

University of Mumbai



No. UG/37 of 2021-22

CIRCULAR:-

Attention of the Principals of the Affiliated Colleges and Directors of the recognized Institutions in Humanities Faculty is invited to this office circular No.UG/163 of 2016-17, dated 16th November, 2016 relating to the revised syllabus as per the (CBCS) for F.Y.B.A.- in English (Introduction to Literature) (Sem. I & II).

They are hereby informed that the recommendations made by the Board of Studies in English at its online meeting held on 21st December, 2020 vide item No. 4 and subsequently made by the Board of Deans at its meeting held on 27th January, 2021 vide item No. 5.4 (R) have been accepted by the Academic Council at its meeting held on 23rd February, 2021 vide item No. 5.4 (R) and that in accordance therewith, that existing nomenclature of the paper Introduction to Literature Paper I & II for Sem 1 & 2 respectively is changed as Introduction to Prose and Fiction Paper I & II for Sem. 1 & 2 and to revised the syllabus as per the (CBCS) of F.Y.B.A. Optional English Paper I Introduction to Prose and Fiction – Sem. I & II has been brought into force with effect from the academic year 2021 -22 accordingly. (The same is available on the University's website www.mu.ac.in).

MUMBAI – 400 032
August, 2021

(Dr. B.N.Gaikwad)
I/c REGISTRAR

To

The Principals of the Affiliated Colleges and Directors of the Recognized Institutions in Humanities Faculty. (Circular No. UG/334 of 2017-18 dated 9th January, 2018.)

A.C/5.4/23/02/2021

No. UG/37 -A of 2021-22

MUMBAI-400 032

17th August, 2021

Copy forwarded with Compliments for information to:-

- 1) The Dean, Faculty of Humanities,
- 2) The Chairman, Board of Studies in English
- 3) The Director, Board of Examinations and Evaluation,
- 4) The Director, Board of Students Development,
- 5) The Co-ordinator, University Computerization Centre,

(Dr. B.N.Gaikwad)
I/c REGISTRAR

Copy to :-

- 1. The Deputy Registrar, Academic Authorities Meetings and Services (AAMS),**
- 2. The Deputy Registrar, College Affiliations & Development Department (CAD),**
- 3. The Deputy Registrar, (Admissions, Enrolment, Eligibility and Migration Department (AEM),**
- 4. The Deputy Registrar, Research Administration & Promotion Cell (RAPC),**
- 5. The Deputy Registrar, Executive Authorities Section (EA),**
- 6. The Deputy Registrar, PRO, Fort, (Publication Section),**
- 7. The Deputy Registrar, (Special Cell),**
- 8. The Deputy Registrar, Fort/ Vidyanagari Administration Department (FAD) (VAD), Record Section,**
- 9. The Director, Institute of Distance and Open Learning (IDOL Admin), Vidyanagari,**

They are requested to treat this as action taken report on the concerned resolution adopted by the Academic Council referred to in the above circular and that on separate Action Taken Report will be sent in this connection.

- 1. P.A to Hon'ble Vice-Chancellor,**
- 2. P.A Pro-Vice-Chancellor,**
- 3. P.A to Registrar,**
- 4. All Deans of all Faculties,**
- 5. P.A to Finance & Account Officers, (F.& A.O),**
- 6. P.A to Director, Board of Examinations and Evaluation,**
- 7. P.A to Director, Innovation, Incubation and Linkages,**
- 8. P.A to Director, Board of Lifelong Learning and Extension (BLLE),**
- 9. The Director, Dept. of Information and Communication Technology (DICT) (CCF & UCC), Vidyanagari,**
- 10. The Director of Board of Student Development,**
- 11. The Director, Department of Students Welfare (DSD),**
- 12. All Deputy Registrar, Examination House,**
- 13. The Deputy Registrars, Finance & Accounts Section,**
- 14. The Assistant Registrar, Administrative sub-Campus Thane,**
- 15. The Assistant Registrar, School of Engg. & Applied Sciences, Kalyan,**
- 16. The Assistant Registrar, Ratnagiri sub-centre, Ratnagiri,**
- 17. The Assistant Registrar, Constituent Colleges Unit,**
- 18. BUCTU,**
- 19. The Receptionist,**
- 20. The Telephone Operator,**
- 21. The Secretary MUASA**

for information.

Cover Page

AC- 23/02/2021
Item No. – 5.3(R)

UNIVERSITY OF MUMBAI



Syllabus for Approval

Sr. No.	Heading	Particulars
1	Title of the Course	FYBA : Communication Skills in English
2	Eligibility for Admission	10+2
3	Passing Marks	40
4	Ordinances / Regulations (if any)	
5	No. of Years / Semesters	1 Year (semester I and II)
6	Level	P.G. / U.G. / Diploma / Certificate (Strike out which is not applicable)
7	Pattern	Yearly / Semester (Strike out which is not applicable)
8	Status	New / Revised (Strike out which is not applicable)
9	To be implemented from Academic Year	From Academic Year 2021 -2022

Date: 21/12/2020

Signature :

Name of BOS Chairperson / ~~Dean~~ :

Dr. Sudhir Nikam



University of Mumbai

Syllabus for F.Y.B.A

Program: B.A.

Course: Communication Skills in English (Core Paper)

(Choice Based Credit System with effect from the academic year 2021-2022)

Board of Studies in English

Dr. Sudhir Nikam (Chairperson)

Dr. Rajesh Karankal (Member)

Dr. Santosh Rathod (Member)

Dr. Bhagyashree Varma (Member)

Dr. Deepa Mishra (Member)

Dr. B. N. Gaikwad (Member)

Dr. Dattaguru Joshi (Member)

Dr. Satyawan Hanegave (Member)

Dr. Deepa Murdeshwar-Katre (Member)

Syllabus Sub-Committee

Dr. Deepa Murdeshwar-Katre (Convener)	:	Department of English, Vartak College, Vasai Road, Dist Palghar
Dr. Susmita Dey (Member)	:	Department of English and Research Centre (Retd.), V. G. Vaze College, Mumbai
Dr. Sachin Labade (Member)	:	Department of English, University of Mumbai
Mr. Vinodsinh Patil (Member)	:	Department of English, Arts & Commerce College, Phondaghat, Dist.Sindhudurg
Ms Gayatri Gadgil (Member)	:	Department of English, D. G. Ruparel College of Arts, Science and Commerce, Mahim, Mumbai
Mrs. Shanti Polamuri (Member)	:	Department of English, Maharashtra College of Arts, Science and Commerce, Mumbai
Mr. Sanjay Kalekar (Member)	:	Department of English, DRT's A. E. Kalsekar Degree College, Kausa, Thane
Mr. Rameshwar Solanke (Member)	:	Department of English, Khare Dhere - Bhosale College, Guhagar, Dist.Ratnagiri
Dr. S. Vishnu Priya (Member)	:	Department of ELT, SDE, EFLU, Hyderabad.

Course: Communication Skills in English

(80:20 Marks Examination Pattern)

(Choice Based Credit System with effect from the academic year 2021-22)

1. Syllabus as per Credit Based Semester and Grading System:		
i)	Name of the Programme	: B.A.
ii)	Course Code	: UACS 101 & UACS 201
iii)	Course Titles	: Communication Skills in English
iv)	Semester-wise Course Content	: Enclosed the copy of syllabus
v)	References and Additional References:	Enclosed in the Syllabus
vi)	Credit Structure	: No. of Credits per Semester – 02
vii)	No. of lectures per Unit	: 15
viii)	No. of lectures per week	: 03 lectures + 01 tutorial
2.	Scheme of Examination	: Written Exam: 4 Questions of 20 Marks each Internal Assessment: 20 marks
3.	Special notes, if any	: No
4.	Eligibility, if any	: No
5.	Fee Structure	: As per University Structure
6.	Special Ordinances / Resolutions if any	: No

Revised Syllabus for FYBA

Communication Skills in English Paper I and Paper II

To be implemented from 2021-22 (80:20 Marks Examination Pattern)

Preamble:

The English language is the dominant medium through which one can connect to the global community. It is, therefore, vital that all learners acquire adequate skills in this language. Communication Skills in English is a core course wherein the first year learners are guided to acquire the four skills of communication viz., Listening, Speaking, Reading and Writing.

The focus of the syllabus is on building confidence in the learners in applying these skills while using the English language both academically and socially. Keeping this in mind, the units will have a multi-pronged approach. The course is graded from basic to higher levels of learning so as to help learners gradually acquire the skills. The 80:20 pattern will also help in accomplishing this goal. The tutorial activities are designed to focus on oral skill development, while the lectures are aimed at honing their cognitive, analytical, linguistic and creative skills.

It is hoped that by the end of the academic year, the learners will have developed confidence in using the English language both for oral and written communication as well as develop interest in enhancing these skills later on.

Objectives:

1. To enhance English language proficiency of students by familiarizing them with the skills of Listening, Speaking, Reading and Writing (LSRW)
2. To introduce learners to different perspectives of looking at a text or passage
3. To equip learners in the functional aspects of English so that they use the acquired language skills correctly and confidently
4. To guide learners in the effective use of the digital medium of communication.

Outcomes:

1. The learners will learn to understand and interpret any text they are reading from different perspectives
2. The interest of learners in listening to and watching good quality audio and visual media will be aroused.
3. Learners will acquire proficiency in the skills of listening, speaking, reading and writing that will help them meet the challenges of the world.
4. The learners will develop good oral and written skills of communication in the English language.

Periods: 45 lectures + 15 Tutorials (3 lectures + 1 tutorial per week per batch) per semester

All passages, stories, articles, poems selected should help the learners develop different communication skills. Learning through example and practice with a theoretical base is the intention.

Semester I

Communication Skills in English Paper I

Course Content

Unit 1: Introduction to Communication Skills

No. of lectures: 08

English as an international language and varieties of English

1. Significance and ways of effective communication in English
2. Listening for academic and professional development
3. Formal and informal communication in spoken English
4. Reading for different purposes
5. Features of effective writing skills
6. Study skills in English

This unit shall work as theoretical base for the following units that are practical in nature.

Unit 2: Developing Comprehension Skills in English

No. of lectures: 12

A. Reading Skills

1. Scanning a text for information
2. Skimming a passage to look for main ideas, understanding text type
3. Guessing meaning of an expression (word/phrase/clause)
4. Building inference skills
5. Understanding language structure (such as subject verb agreement, voice, direct and reported speech)
6. Note making
7. Summarizing

Passages from fables, folk stories, short stories, non-fiction, history, business or environment, of around 250- 300 words, could be chosen in this unit.

b. Listening Skills

1. Listening for main ideas/Gist
2. Listening for detail
3. Listening for text organization features
4. Listening for tone, accent, style and register
5. Predicting content and guessing meaning
6. Making inferences from the audio-visual text
7. Listening for opinion/argument/counter-arguments etc.
8. Taking notes

A variety of relevant audio/visual texts as samples may be drawn from various sources. Listening skills in English should be developed through various activities along with the practice done while teaching in the class.

Unit 3: Speaking Skills in English

No of lectures: 15

a. Public Speaking in English

1. Introduction
2. Characteristics of an effective speech
3. Analysis of model speeches
4. Drafting and presenting a speech in formal and informal gatherings

b. Conversation in English

1. Opening a conversation
2. Introducing oneself in various contexts
3. Introducing others formally and informally
4. Building a conversation
5. Leaving and closing a conversation
6. Conversation in group in various situations

c. Speaking at an Event

1. Anchoring/compering an event
2. Introducing guests/ speakers/dignitaries
3. Proposing a vote of thanks

A variety of relevant texts as samples may be drawn from print and non-print sources such as books, videos, audio files etc. Speaking skills in English should be developed through various activities along with the practice done while teaching in the class.

Unit 4: Formal Writing Skills

No. of lectures: 10

i. Letters:

1. Job applications with bio data (solicited and unsolicited)
2. RTI applications
3. Applications for duplicate documents (I-cards / mark sheet, etc.)

ii. Emails:

1. Job acceptance and joining
2. Resignation
3. Complaints
4. Requests for references
5. Request for sponsorship

Tutorial Activities:

1. Use of YouTube videos for use of grammar study and practice that may be taken from the list recommended or similar relevant videos.
 2. Listening to audio clips/ books to enhance listening skills
 3. Reading aloud from newspapers, magazines, stories, non-fiction followed by classroom discussion on these to enhance reading and speaking skills
 4. Making short presentations on given topics
 5. Official letter writing/ email writing exercises
-

Semester II

Communication Skills in English Paper II

Course Content

Unit 1: English Usage in Communication

No. of lectures: 08

1. Distinction between American English and British English
2. Indianism and Indian English
3. Appropriacy in the Use of English
4. Non-verbal Communication
5. Elevator Pitch
6. Information and Communication Technology and Use of English
7. Modes and Types of Interview
8. Principles of Creative Writing

This unit shall work as theoretical base for the following units that are practical in nature.

Unit 2: Enhancing Reading Competencies

No. of lectures: 12

A variety of passages of 200-250 words may be taken such as extracts from novels, short stories, plays, magazine, newspapers, reports, documents, academic texts. The passages should have complex text type, function and lexis. The learners may be encouraged to gather meaning contextually or by referring to offline and online sources such as dictionary, thesaurus, and encyclopedia.

1. Augmenting active vocabulary
2. Understanding relations between parts of a text
3. Transferring information (Verbal to Non-Verbal)
4. Understanding concepts and arguments,
5. Developing skills in analysis and interpretation
6. Rewriting a passage from a defined perspective
7. Reading critically (presenting a reasoned argument that evaluates and analyses what you have read)

Weightage of questions on texts -

- a. On vocabulary, synonyms and antonyms, prefixes and suffixes, collocations, making sentences of their own from the idioms or difficult words in the extract (50%)
- b. On writing their opinions, perspectives on the passages in longer, more descriptive ways (50%)

Unit 3: Advanced Oral Communication Skills

No. of lectures: 15

A. Presentation skills: (Formal presentations and skits)

1. Planning and structuring
2. Opening and closing a presentation
3. Use of body language
4. Use of technology in making a presentation
5. Drafting a skit (Not to be tested in theory exam)
6. Reading of a skit
7. Presenting a skit

Students are advised to prepare their own presentation scripts. Teachers should help them in drafting, reading and presenting those scripts in the class.

B. Group Discussion

1. Formal and informal discussion
2. Elements of group discussion
3. Using appropriate language: Initiating, seeking and giving opinions, suggesting, responding to a suggestion, agreeing, disagreeing, interrupting, requesting, clarifying, summing up
4. Types of discussion:
Giving and sharing opinions of a given topic, making decisions, problem solving (case study)

C. Interview Skills

1. Interviewing others
 - Researching the interviewee (writer, social worker, entrepreneur, actor etc.)
 - Preparing questions
 - Conducting interview
2. Attending an Interview (Job/Entrance)
 - Researching the organization
 - Reviewing job-profile and your bio-data/CV
 - Preparing for standard questions
 - Responding to questions
 - Preparing your questions to ask to the interviewer/s
3. Analyzing Interviews

Students can be tested on forming actual interview frameworks including questions. Teachers must form the groups and conduct actual interviews involving full strength of students.

Unit 4: Advanced Writing Skills

No. of lectures: 10

A. Report Writing:

1. News report
2. Activity/Event report

B. Creative Writing:

1. Personal Essay
2. Memoir
3. Short Speech on the given occasion/ event
4. Story writing

Tutorial Activities:

1. Dialogue-writing exercises
2. Writing skits and presenting them
3. Giving speeches
4. Group discussions
5. Mock Interviews

6. Development of stories, passages from hints given, in about 200-250 words
7. Report writing tasks
8. Statement of Purpose

Evaluation Pattern:

A. Internal Evaluation (20 Marks)

		Marks	Remarks
1	Performance in Tutorial activities	10	<p>Sem I -- Learners may be asked to make presentations, hold conversation in class, which will be assessed</p> <p>Sem II -- Learners may be asked to participate in group discussions or mock interviews in class, which will be assessed</p>
2	Participation in classes (lectures and tutorials)	05	Learners' response to teaching, timely submission of tasks will be assessed
3.	Overall attendance (lectures and tutorials)	05	Percentage of learners' attendance in class to be considered

B. Written Examination: (80 marks)

Semester I: 4 questions carrying 20 marks each

Q. No.	Question details	Marks
1	Short Notes (4 out of 6) from Unit 1	20
2	Unseen Passage (200-250 words) (Unit 2) <ol style="list-style-type: none"> a. On content, the use of tenses, articles, prepositions, direct-indirect speech and concord, voice, word meanings - (50%) b. On reading sub-skills (pointing out main ideas and supporting details, making inferences) (50%) 	10 10

3	<u>Any four</u> to be attempted from given options (based on Unit 3) <ul style="list-style-type: none"> a. Preparing a speech on a given topic b. Questions on introducing self and others c. Develop a conversation on a given situation\ d. Introducing speakers/guests in a given event e. Drafting vote of thanks at a given event 	20
4	<ul style="list-style-type: none"> a. Job application with bio data b. RTI letter c. Email writing (1 out of 2) 	08 07 05

Semester II: 4 questions carrying 20 marks each

Q. No.	Question details	Marks
1	Short Notes (4 out of 6) on theory from Unit 1	20
2	Unseen Passage (200-250 words) (Unit 2) <ul style="list-style-type: none"> a. On content, synonyms and antonyms, prefixes and suffixes, collocations, making sentences of their own from the idioms or difficult words in the passage (50%) b. On other sub-skills (such as writing their opinions, perspectives on the passages in longer, more descriptive ways (50%) 	10 10
3	Any Two out of Three to be attempted (based on Unit 3) <ul style="list-style-type: none"> a. Preparing a draft of presentation on a given topic b. Preparing a draft for a mock interview based on the given instructions c. Preparing a draft of a group discussion on a given topic & instructions 	20

4	Report writing (1 out of 2)	08
	a. Personal essay/Memoir	07
	b. Story Writing/Speech	05

Recommended Reading:

- Bellare, Nirmala. *Reading & Study Strategies*. Books. 1 and 2. Oxford University Press, 1997, 1998
- Bellare, Nirmala. *Easy Steps to Summary Writing and Note-Making*. Amazon Kindle Edition, 2020
- Comfort, Jeremy, et al. *Speaking Effectively: Developing Speaking Skills for Business English*. Cambridge University Press, 1994.
- Das, Bikram K., et. al. *An Introduction to Professional English and Soft Skills*. Cambridge University Press India Pvt. Ltd., 2010
- Das, Yadfnaseni & R. Saha (eds.) *English for Careers*. Pearson Education India, 2012.
- Devlin, Joseph. *How to Speak And Write Correctly*. New York, The Christian Herald, 1910
- Dimond-Bayir, Stephanie. *Unlock Level 2 Listening and Speaking Skills Student's Book and Online Workbook: Listening and Speaking Skills Student's Book+ Online Workbook*. Cambridge University Press, 2014.
- Doff, Adrian and Christopher Jones. *Language in Use (Intermediate and Upper Intermediate)*. CUP, 2004.
- Glendinning, Eric H. and Beverley Holmstrom. Second edition. *Study Reading: A Course in Reading Skills for Academic Purposes*. CUP, 2004
- Goodale, Malcolm. *Professional Presentations Video Pack: A Video Based Course*. Cambridge University Press, 1998.
- Grellet, F. *Developing Reading Skills*. Cambridge: Cambridge University Press, 1981

- Grussendorf, Marion. *English for Presentations*. Oxford University Press, 2007. Hamp-Lyons, Liz and Ben Heasley. Second edition. *Study Writing: A Course in Writing Skills for Academic Purposes*. CUP, 2006
- Kumar, Sanjay and Pushp Lata. *Communication Skills*. Second Edition. New Delhi, 2011. Oxford University Press, 2015
- Lewis, N. *How to Read Better & Faster*. New Delhi, Goyal Publishers & Distributors Pvt. Ltd, 2006.
- McCarthy, Michael and Felicity O'Dell. *English Vocabulary in Use*. Cambridge: Cambridge University Press, 2001.
- Mohan, RC Sharma Krishna. *Business Correspondence and Report Writing*. Third edition. Tata McGraw-Hill Education, 2002.
- Murphy, Raymond, et al. *Grammar in use: Intermediate*. Cambridge University Press, 2000
- Richards, Jack C., and Chuck Sandy. *Passages Level 2 Student's Book*. Cambridge University Press, 2014.
- Sadanand, Kamlesh & S. Punitha. *Spoken English: A Foundation Course*. (Part 1 & 2). Orient Blackswan. 2009.
- Sasikumar, V., et al. *A Course in Listening & Speaking I*. 2005. Cambridge University Press India Pvt. Ltd. (under the Foundation Books Imprint), 2010
- Savage, Alice, et al *Effective Academic Writing*. Oxford: OUP, 2005
- Sethi, J. *Standard English and Indian usage: Vocabulary and grammar*. PHI Learning Pvt. Ltd., 2011.
- Taylor, Grant. *English Conversation Practice*. 1967. Tata McGraw-Hill, 2013
- Turton, Nigel D. *A B C of Common Grammatical Errors*. 1995. Macmillan India Ltd., 1996
- Vas, Gratian. *English Grammar for Everyone*. Mumbai, Shree Book Centre, 2015
- Watson, T. *Reading Comprehension Skills and Strategies: Level 6*. Saddleback Educational Publishing, 2002
- Wright. Andrew, et al. *Games for Language Learning: Cambridge Handbooks for Language Teachers* (Third Edition). 2006. Cambridge (UK), Cambridge University Press, 2010

Web link Resources:

1. A rendezvous with Simi Garewal: Ratan Tata :
<https://www.youtube.com/watch?v=ozetTgOHu78&t=510s> Here Ratan Tata discusses his personal life, his expectations, his experience as a CEO of Tata and sons.
2. A rendezvous with Simi Garewal: Kiran Bedi:
<https://youtu.be/vX2NyKvEAXQ>
In this video, Kiran Bedi shares her daring adventures, her field, her passion for career with Simi Garewal.
3. In Conversation: Rajiv Mehrotra with J.R.D.Tata:
<https://youtu.be/68otfg601HI>
J. R. D. Tata discloses his dream of India, his experiences with Pandit Nehru, Mahatma Gandhi, Sardar Patel and his contribution to modern India.
4. The Tharoor Guide To Indian English: <https://youtu.be/NsyI9LIXbFM>
Shashi Tharoor talks of new words like “defenstrate”, “brinjol”; talks about Indian English, ethnicity and so on.
5. Dr.A.P.J Abdul Kalam on Discovery, invention and innovation:<https://youtu.be/9CKCfiX3uO0>
Dr. Kalam addresses IIT Delhi students.
6. Malala Yousafzai’s speech on the occasion of her Nobel Peace Prize (2014) on education:<https://youtu.be/c2DHZlkUI6s>
7. Kailash Satyarthi’s speech on the occasion of Nobel Peace Prize(2014) on the innocence of children; he gives voice to voiceless in his speech:https://youtu.be/wt0LSCEuc_M
8. Speech by Mr. Ratan Tata: <https://youtu.be/m7-tKX7aZXM>
9. “I Have a Dream” speech by Martin Luther King Jr. HD (subtitled)
<https://www.youtube.com/watch?v=vP4iY1TtS3s>
“I Have a Dream” is a public speech that was delivered by American civil rights activist Martin Luther King Jr. during the March on Washington for Jobs and Freedom on August 28, 1963, in which he called for civil and economic rights and an end to racism in the United States.
10. Speech by Emma Watson on Gender Equality :<https://youtu.be/nIwU-9ZTTJc>
11. Imaginative science video: Could humans live in underwater cities?
<https://youtu.be/GUGtU7Ii1yk>
12. A conversation about household appliances: <https://youtu.be/rAPI0fSborU>
13. Video on psychology: Why do we dream? <https://youtu.be/2W85Dwxx218>
14. Video on space: Solar system 101: <https://youtu.be/libKVRa01L8>
15. Video on evolution: How Apocalypses paved the way for Humans
<https://youtu.be/libKVRa01L8>
16. Video on biology: Why Bats Aren't as Scary as You Think
https://youtu.be/D6e_qh3YRPs
17. Video on social media: What is a social media influencer?
<https://youtu.be/39A3og7enz8>
18. Tips on communication (TED Talk): The Secrets of Learning a New Languagehttps://youtu.be/o_XVt5rdpFY
19. Expressing opinions: If Cinderella Were a Guy:<https://youtu.be/p4OyCNctKXg>
20. Telling stories without words: Partly Cloudy
<https://youtu.be/ix13P9NqBjo>
21. Telling stories without words: Tree of Unity <https://youtu.be/sAo41Gyl6hY>

22. Bonding over the Radio: A special storytelling series by the much loved author Ruskin Bond: akashvanaiar
<https://youtu.be/oxf60BIR2Q4>
<https://youtu.be/ISX7rUJOms>
https://youtu.be/rrC_s0XPXKI
<https://youtu.be/FUML3q1ncF0>
https://youtu.be/3by_ninqRzg
 23. Video on the English language: Where did English come from?
<https://youtu.be/YEaSxhcns7Y>
 24. Video on biology: The science of skin colour: https://youtu.be/_r4c2NT4naQ
 25. Video on advertising: The Science of Persuasion <https://youtu.be/cFdCzN7RYbw>
 26. “The Happy Prince” Oscar Wilde Michael Mills Classic Animated Short 1974.
<https://www.youtube.com/watch?v=q3RZh1yaqxM>
Learners may be encouraged to watch animated stories such as this one and questions asked later on.
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AC. 6.6.2012

Item No.4.49

UNIVERSITY OF MUMBAI



Revised Syllabus for the F.Y.B.A/F.Y.B.Sc.

Program: F.Y.B.A/F.Y.B.Sc.

Course: Foundation Course

(Semester I & II)

(As per Credit Based Semester and Grading System
with effect from the academic year 2012–2013)

Revised Syllabus (From 2012-13)
Foundation Course for F. Y. B A
Semester 1
Course Code: UA FC 1C1

Lectures 45
Marks 100

Unit 1

Overview of Indian Society:

Understand the multi-cultural diversity of Indian society through its demographic composition: population distribution according to religion, caste, and gender;
Appreciate the concept of linguistic diversity in relation to the Indian situation;
Understand regional variations according to rural, urban and tribal characteristics;
Understanding the concept of diversity as difference. *(5 lectures)*

Unit 2

Concept of Disparity- 1:

Understand the concept of disparity as arising out of stratification and inequality;
Explore the disparities arising out of gender with special reference to violence against women, female foeticide (declining sex ratio), and portrayal of women in media;
Appreciate the inequalities faced by people with disabilities and understand the issues of people with physical and mental disabilities. *(10 lectures)*

Unit 3

Concept of Disparity-2:

Examine inequalities manifested due to the caste system and inter-group conflicts arising thereof;
Understand inter-group conflicts arising out of communalism;
Examine the causes and effects of conflicts arising out of regionalism and linguistic differences. *(10 lectures)*

Unit 4

The Indian Constitution:

Philosophy of the Constitution as set out in the Preamble;
The structure of the Constitution-the Preamble, Main Body and Schedules;
Fundamental Duties of the Indian Citizen; tolerance, peace and communal harmony as crucial values in strengthening the social fabric of Indian society;
Basic features of the Constitution. *(10 lectures)*

Unit 5

Significant Aspects of Political Processes:

The party system in Indian politics;
Local self-government in urban and rural areas; the 73rd and 74th Amendments and their implications for inclusive politics;
Role and significance of women in politics. *(10 lectures)*

Unit 6

Growing Social Problems in India:

- a) Substance abuse- impact on youth & challenges for the future
- b) HIV/AIDS- awareness, prevention, treatment and services
- c) Problems of the elderly- causes, implications and response
- d) Issue of child labour- magnitude, causes, effects and response
- e) Child abuse- effects and ways to prevent
- f) Trafficking of women- causes, effects and response

(15 lectures)

Note:

15 lectures will be allotted for project guidance

Unit Number 6 will not be assessed for the Semester End Exam

Revised Syllabus (From 2012-13)
Foundation Course for F. Y. B.A
Semester II
Course Code: UA FC 2C1

Lectures 45
Marks 100

Unit 1

Globalisation and Indian Society:

Understanding the concepts of liberalization, privatization and globalization;
Growth of information technology and communication and its impact manifested in everyday life;
Impact of globalization on industry: changes in employment and increasing migration;
Changes in agrarian sector due to globalization; rise in corporate farming and increase in farmers' suicides. (7 lectures)

Unit 2

Human Rights

Concept of Human Rights; origin and evolution of the concept;
The Universal Declaration of Human Rights;
Human Rights constituents with special reference to Fundamental Rights stated in the Constitution;
(10lectures)

Unit 3

Ecology

Importance of Environment Studies in the current developmental context;
Understanding concepts of Environment, Ecology and their interconnectedness;
Environment as natural capital and connection to quality of human life;
Environmental Degradation- causes and impact on human life;
Sustainable development- concept and components; poverty and environment
(10 lectures)

Unit 4

Understanding Stress and Conflict:

Causes of stress and conflict in individuals and society;
Agents of socialization and the role played by them in developing the individual;
Significance of values, ethics and prejudices in developing the individual;
Stereotyping and prejudice as significant factors in causing conflicts in society.
Aggression and violence as the public expression of conflict;
(10 lectures)

Unit 5

Managing Stress and Conflict in Contemporary Society:

Types of conflicts and use of coping mechanisms for managing individual stress;

Maslow's theory of self-actualisation;

Different methods of responding to conflicts in society;

Conflict-resolution and efforts towards building peace and harmony in society.

(8 lectures)

Unit 6

Contemporary Societal Challenges:

a) Increasing urbanization, problems of housing, health and sanitation;

b) Changing lifestyles and impact on culture in a globalised world.

c) Farmers' suicides and agrarian distress.

d) Debate regarding Genetically Modified Crops.

e) Development projects and Human Rights violations.

f) Increasing crime/suicides among youth.

(15 lectures)

Note:

15 lectures will be allotted for project guidance

Unit Number 6 will not be assessed for the Semester End Exam

Internal Assessment and **Question Paper Pattern for FC- Semester I & II Course** **At the F Y B A Examinations**

The student will be assessed on the basis of Internal Assessment of 40 marks and a Semester End Exam of 60 marks. The student will have to secure a minimum of 40% marks in aggregate and a minimum of 40% in each component of assessment i.e. 16 out of 40 in Internal Assessment and 24 out of 60 in Semester End Exam.

Internal Assessment:

- ☐ There will be one mid-semester test of 10 marks on Units 1 and 2.
- ☐ The test will, as far as possible, comprise of objective questions and/or short notes.
- ☐ The student will have to submit an assignment/project for 20 marks before appearing for the Semester End Exam. This assignment/project will be entirely based on Unit 6 and can take the form of street-plays/exhibition/power-point presentations or similar other modes suitable to the topic selected; students can work in groups of not more than 8 for the purpose of this assignment. Students will have to submit a hard copy of the assignment before appearing for the Semester End Exam. The assignment will be assessed for 20 marks of which 10 marks may be allotted for a viva, to assess the level of engagement of the student with the topic assigned.
- ☐ Unit 6 will not be included in the Semester End Exam.
- ☐ 10 marks will be assigned to the participation of the student in class discussions and the projects undertaken along with the leadership skills and presentation skills exhibited during the class sessions.

Semester End Exam:

- ☐ There will be a Semester End Exam for 60 marks of 2 hours duration.
- ☐ This exam will comprise of four compulsory questions covering Units 1-5 of the syllabus.
- ☐ Question No. 1, 2 and 3 will be Full-length questions for 15 marks each; there will be an internal choice in each of these questions requiring the students to answer one of two questions asked.
- ☐ Full-length questions will be from Units 2, 3, 4 and 5 only.
- ☐ Question No. 4 will be of the Short Note type where each Short Note will be for 3 marks each. Students will be required to answer 5 out of 8 Short Notes.
- ☐ Short note questions will be from Units 1, 2, 3, 4 and 5.
- ☐ Unit 1 will not feature in the Full-length questions but will be asked only in the form of Short Note questions.

NOTE: All other rules regarding Standard of Passing, ATKT, etc., will be as per those decided by the Faculty of Arts passed by the Academic Council from time to time.

Revised Syllabus (From 2012-13)
Foundation Course for F. Y. B.Sc
Semester 1
Course Code: US FC 1C1

Lectures 45
Marks 100

Unit 1

Overview of Indian Society:

Understand the multi-cultural diversity of Indian society through its demographic composition: population distribution according to religion, caste, and gender;
Appreciate the concept of linguistic diversity in relation to the Indian situation;
Understand regional variations according to rural, urban and tribal characteristics;
Understanding the concept of diversity as difference. *(5 lectures)*

Unit 2

Concept of Disparity- 1:

Understand the concept of disparity as arising out of stratification and inequality;
Explore the disparities arising out of gender with special reference to violence against women, female foeticide (declining sex ratio), and portrayal of women in media;
Appreciate the inequalities faced by people with disabilities and understand the issues of people with physical and mental disabilities. *(10 lectures)*

Unit 3

Concept of Disparity-2:

Examine inequalities manifested due to the caste system and inter-group conflicts arising thereof;
Understand inter-group conflicts arising out of communalism;
Examine the causes and effects of conflicts arising out of regionalism and linguistic differences. *(10 lectures)*

Unit 4

The Indian Constitution:

Philosophy of the Constitution as set out in the Preamble;
The structure of the Constitution-the Preamble, Main Body and Schedules;
Fundamental Duties of the Indian Citizen; tolerance, peace and communal harmony as crucial values in strengthening the social fabric of Indian society;
Basic features of the Constitution. *(10 lectures)*

Unit 5

Significant Aspects of Political Processes:

The party system in Indian politics;
Local self-government in urban and rural areas; the 73rd and 74th Amendments and their implications for inclusive politics;
Role and significance of women in politics. *(10 lectures)*

Unit 6

Growing Social Problems in India:

- a) Substance abuse- impact on youth & challenges for the future
- b) HIV/AIDS- awareness, prevention, treatment and services
- c) Problems of the elderly- causes, implications and response
- d) Issue of child labour- magnitude, causes, effects and response
- e) Child abuse- effects and ways to prevent
- f) Trafficking of women- causes, effects and response

(15 lectures)

Note:

15 lectures will be allotted for project guidance

Unit Number 6 will not be assessed for the Semester End Exam

Revised Syllabus (From 2012-13)
Foundation Course for F. Y. B.Sc.
Semester II
Course Code: US FC 2C1

Lectures 45
Marks 100

Unit 1

Globalisation and Indian Society:

Understanding the concepts of liberalization, privatization and globalization;
Growth of information technology and communication and its impact manifested in everyday life;
Impact of globalization on industry: changes in employment and increasing migration;
Changes in agrarian sector due to globalization; rise in corporate farming and increase in farmers' suicides. (7 lectures)

Unit 2

Human Rights

Concept of Human Rights; origin and evolution of the concept;
The Universal Declaration of Human Rights;
Human Rights constituents with special reference to Fundamental Rights stated in the Constitution;
(10lectures)

Unit 3

Ecology

Importance of Environment Studies in the current developmental context;
Understanding concepts of Environment, Ecology and their interconnectedness;
Environment as natural capital and connection to quality of human life;
Environmental Degradation- causes and impact on human life;
Sustainable development- concept and components; poverty and environment
(10 lectures)

Unit 4

Understanding Stress and Conflict:

Causes of stress and conflict in individuals and society;
Agents of socialization and the role played by them in developing the individual;
Significance of values, ethics and prejudices in developing the individual;
Stereotyping and prejudice as significant factors in causing conflicts in society.
Aggression and violence as the public expression of conflict;
(10 lectures)

Unit 5

Managing Stress and Conflict in Contemporary Society:

Types of conflicts and use of coping mechanisms for managing individual stress;

Maslow's theory of self-actualisation;

Different methods of responding to conflicts in society;

Conflict-resolution and efforts towards building peace and harmony in society.

(8 lectures)

Unit 6

Contemporary Societal Challenges:

a) Increasing urbanization, problems of housing, health and sanitation;

b) Changing lifestyles and impact on culture in a globalised world.

c) Farmers' suicides and agrarian distress.

d) Debate regarding Genetically Modified Crops.

e) Development projects and Human Rights violations.

f) Increasing crime/suicides among youth.

(15 lectures)

Note:

15 lectures will be allotted for project guidance

Unit Number 6 will not be assessed for the Semester End Exam

Internal Assessment and **Question Paper Pattern for FC- Semester I & II Course** **At the F Y B Sc Examinations**

The student will be assessed on the basis of Internal Assessment of 40 marks and a Semester End Exam of 60 marks. The student will have to secure a minimum of 40% marks in aggregate and a minimum of 40% in each component of assessment i.e. 16 out of 40 in Internal Assessment and 24 out of 60 in Semester End Exam.

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- ☐ Full-length questions will be from Units 2, 3, 4 and 5 only.
- ☐ Question No. 4 will be of the Short Note type where each Short Note will be for 3 marks each. Students will be required to answer 5 out of 8 Short Notes.
- ☐ Short note questions will be from Units 1, 2, 3, 4 and 5.
- ☐ Unit 1 will not feature in the Full-length questions but will be asked only in the form of Short Note questions.

NOTE: All other rules regarding Standard of Passing, ATKT, etc., will be as per those decided by the Faculty of Science and passed by the Academic Council from time to time.

UNIVERSITY OF MUMBAI



Revised Syllabus for F.Y.B.A Marathi

(Ancillary And Compulsory)

Semester - I And II

(Choice Based Credit System)

(With effect from the academic year 2022-23)

UNIVERSITY OF MUMBAI



Syllabus for Approval

Sr No.	Heading	Particular
1	Title of the Course	F.Y.B.A (Marathi)
2	Eligibility for Admission	Candidates with at least 50% marks in the senior secondary +2 or its equivalent
3	Passing Marks	40%
4	Ordinances / Regulation (if any) No. of Years/Semester	
5	No. of Years / Semester	Sem-I and II (CBCS)
6	Level	U.G
7	Pattern	Semester
8	Status	Revised Syllabus
9	To be implemented form Academic Year	From Academic Year 2022-23

A handwritten signature in blue ink, appearing to read 'Vandana Mahajan'.

Name & Signature Of BOS Chairperson :

Dr. Vandana Mahajan

Name & Signature Of Dean :

Dr. Rajesh Kharat

FYBA MAR(ANC)
(To be implemented from 2022-23)
SEM-1 (UMAR 101)
SEM2 (UMAR 201)

प्रथम वर्ष बी.ए. मराठी ऐच्छिक (प्रत्येक सत्रात ३ श्रेयांकने)

प्रथम वर्ष बी.ए. मराठी या ऐच्छिक या विषयासाठी २०२२-२३ या शैक्षणिक वर्षापासून नेमलेला अभ्यासक्रम प्रथम वर्ष बी.ए. मराठी ऐच्छिक अभ्यासक्रमात प्रथम सत्रात दोन नाट्यकृती व दुसऱ्या सत्रात दोन ललित गद्याचा समावेश करण्यात आला आहे. या अभ्यासक्रमाची श्रेयांकन पद्धतीनुसार रचना करण्यात आली आहे. वरील अभ्यासक्रम दोन सत्रात विभागलेला असून, नेमलेल्या विशिष्ट तासिकामध्ये तो शिकवला जाणे आवश्यक आहे.

अभ्यासपत्रिकेचे उद्दिष्ट्ये -

मराठी साहित्याचा परिचय करून देत असताना साहित्याच्या अभ्यासाकडे वळणाऱ्या विद्यार्थ्यांना विशिष्ट वाङ्मय प्रकारचे ज्ञान मिळवून देणे व साहित्य प्रकाराचे आकलन करून देणे. हे प्रमुख उद्दिष्ट्य या अभ्यासपत्रिकेचे आहे. मराठीतील नाटक आणि ललितगद्य या साहित्यप्रकारांचा परिचय करून देणे.

सत्र – पहिले - एकूण व्याख्याने – ४५, श्रेयांकने- ०३

घटक १ - नाटक या साहित्यप्रकाराचा सैद्धान्तिक परिचय (४८ मिनिटांच्या १५ तासिका) श्रेयांकन- १

नाटक या साहित्यप्रकाराची संकल्पना, नाटक या साहित्य प्रकाराचे घटक,
नाटकाचे महत्त्वाचे दोन प्रकार (शोकात्मिका व सुखात्मिका), नाटक एक संमिश्र कला, मराठी नाटकाच्या इतिहासातील महत्त्वाचे टप्पे.

घटक २ - देवभाबळी – प्राजक्त देशमुख, पॉप्युलर प्रकाशन, (४८ मिनिटांच्या १५ तासिका) श्रेयांकन १

घटक ३ – माझं घर – जयंत पवार, शब्दालय प्रकाशन, (४८ मिनिटांच्या १५ तासिका) श्रेयांकन १

प्रथम सत्रान्त परीक्षा -

गुण १००

वरील अभ्यासपत्रिकेचे सत्रान्त प्रश्नपत्रिकेचे स्वरूप पुढीलप्रमाणे ठरविण्यात आले आहे.

प्रथम वर्ष बी.ए. मराठी (ऐच्छिक)

प्रश्न १- 'नाटक' या साहित्यप्रकाराचा सैद्धान्तिक परिचय यावर अंतर्गत पर्याय देऊन एक प्रश्न	गुण २०.
प्रश्न २ - देवभाबळी या नाटकावर अंतर्गत पर्याय देऊन एक प्रश्न	गुण २०.
प्रश्न ३ माझं घर या नाटकावर अंतर्गत पर्याय देऊन एक प्रश्न	गुण २०.
प्रश्न ४ प्रत्येक गटातील एकेक टीप लिहा (अंतर्गत पर्यायासह)	गुण ३०.

१) नाटकाचा सैद्धान्तिक परिचय

२) देवभाबळी या नाटकावर टीपा

३) माझं घर या नाटकावर टीपा

प्रश्न ५- अभ्यासपत्रिकेतील घटक २ व ३ वर आधारित वस्तुनिष्ठ प्रश्न प्रत्येक घटकावर ४ असे एकूण ८

वस्तुनिष्ठ स्वरूपाचे प्रश्न विचारले जातील परीक्षार्थींनी त्यापैकी कोणतेही ५ प्रश्न सोडवायचे आहेत. प्रत्येक योग्य उत्तरास २ गुण असे एकूण गुण १०

प्रथम वर्ष बी.ए. मराठी (ऐच्छिक)

सत्र दुसरे - एकूण व्याख्याने ४५, श्रेयांकने - ०३

घटक १- ललितगद्य या साहित्यप्रकाराचा सैद्धांतिक परिचय (१५ तासिका) श्रेयांकन - १
या साहित्यप्रकाराची संकल्पना, ललितगद्य या साहित्य प्रकाराचे विविध घटक व
विविध प्रकार आणि मराठीतील ललितगद्याचा इतिहास याचा परिचय करणे.

घटक २- इरावती कर्वे – परिपूर्ति

घटक ३- ग्रेस – चर्चबेल

दुसरी सत्रान्त परीक्षा

गुण १००

वरील अभ्यासपत्रिकेचे सत्रांत प्रश्नपत्रिकेचे स्वरूप पुढीलप्रमाणे ठरविण्यात आले आहे.

प्रथम वर्ष बी. ए. मराठी (ऐच्छिक)

- | | |
|---|--------|
| प्रश्न १ – घटक १ वर अंतर्गत पर्यायांसह एक प्रश्न | गुण २० |
| प्रश्न २ - घटक २ मधील ललितगद्यावर अंतर्गत पर्याय देऊन एक प्रश्न | गुण २० |
| प्रश्न ३ - घटक ३ मधील ललितगद्यावर अंतर्गत पर्याय देऊन एक प्रश्न | गुण २० |
| प्रश्न ४ - प्रत्येक गटातील एकेक टीप लिहा - (अंतर्गत पर्यायांसह) | गुण ३० |
- १) ललितगद्याचा सैद्धान्तिक परिचय
- २) घटक २ मधील ललितगद्य
- ३) घटक ३ मधील ललितगद्य
- प्रश्न ५ - अभ्यासपत्रिकेतील घटक २ व ३ वर आधारित वस्तुनिष्ठ प्रश्न प्रत्येक घटकावर ४ असे एकूण ८
वस्तुनिष्ठ स्वरूपाचे प्रश्न विचारले जातील परीक्षार्थींनी त्यापैकी कोणतेही ५ प्रश्न सोडवायचे आहेत. प्रत्येक
योग्य उत्तरास २ गुण असे एकूण गुण १०.

FYBA-MAR- Comp
(To be implemented from 2022-23)
SEM-1 (UAMAR 1C1)

प्रथम वर्ष बी.ए. मराठी अनिवार्य

प्रथम वर्ष बी.ए. मराठी अनिवार्य या विषयासाठी २०२२-२३ या शैक्षणिक वर्षापासून नेमलेला अभ्यासक्रम
सत्र – पहिले - एकूण व्याख्याने - ४० श्रेयांकने- ०२

गुण ५०

घटक १- निवडक कथांचा अभ्यास

- १) रत्नाकर मतकरी
- २) योगीराज वाघमारे
- ३) लक्ष्मण माने
- ४) भारत सासणे
- ५) उषाकिरणआत्राम
- ६) जयंत पवार
- ७) अशोक कौतिक कोळी
- ८) शिल्पा कांबळे
- ९) रफिक सूरज
- १०) बबन पोतदार
- ११) प्रणव सखदेव
- १२) विवेक कुडू

(कथांची नावे नंतर कळविण्यात येतील.)

घटक - २ व्यावहारिक मराठी - (घटकविषय) - (२० तासिका) - श्रेयांकन १

गुण ५०

व्यावहारिक मराठी या विषयासाठी घटकविषय

- १) मराठी लेखनाचे नियम व विरामचिन्हे
- २) वर्तमानपत्रासाठी वृत्तलेखन
- ३) वृत्तांतलेखन
- ४) अर्जलेखन
- ५) भाषांतर (इंग्रजीतून मराठीत)

सत्रांत परीक्षा

प्रथम सत्रान्त परीक्षा

गुण १००

वरील अभ्यासपत्रिकेचे सत्रांत प्रश्नपत्रिकेचे स्वरूप पुढीलप्रमाणे ठरविण्यात आले आहे.

प्रथम वर्ष बी.ए. मराठी (अनिवार्य)

प्रश्न १- घटक १ वर आधारित अंतर्गत पर्याय देऊन एक प्रश्न	गुण २०.
प्रश्न २ -घटक १ वर आधारित अंतर्गत पर्याय देऊन एक प्रश्न	गुण २०.
प्रश्न ३ -घटक १ वर आधारित चार पैकी दोन टिपा	गुण १०.
प्रश्न ४- मराठी लेखनाचे नियम व विरामचिन्हे या उपघटकावर आधारित अंतर्गत पर्यायासह प्रत्येकी ५ गुणांचे २ प्रश्न एकूण	गुण १०.
प्रश्न ५ - वर्तमानपत्रासाठी वृत्तलेखन या उपघटकावर अंतर्गत पर्यायासह १ प्रश्न	गुण १०
प्रश्न ६- वृत्तांतलेखन या उपघटकावर अंतर्गत पर्यायांसह १ प्रश्न	गुण १०
प्रश्न ७- अर्जलेखन या उपघटकावर अंतर्गत पर्यायांसह १ प्रश्न	गुण १०
प्रश्न ८- भाषांतर (इंग्रजीतून मराठीत) या उपघटकावर अंतर्गत पर्यायासह १ प्रश्न	गुण १०

संदर्भ सूची

- १) कथा : संकल्पना आणि समीक्षा - सुधा जोशी
- २) मराठी कथामूल्य आणि न्हास – जी. के. ऐनापुरे
- ३) रा. रं. बोराडे यांची कथा शोध आणि समीक्षा - व्यंकटी पावडे
- ४) मराठीतील कथनरूपे – वसंत आबाजी डहाके
- ५) कथनात्म साहित्य आणि समीक्षा - हरिश्चंद्र थोरात
- ६) स्त्रियांचे कथालेखन नवी दृष्टी, नवी शैली – डॉ. मंगला वरखेडे
- ७) मराठी कथा विसावे शतक – संपा. के. ज. पुरोहित

SEM- 2 (UAMAR 2C1)

सत्र – दुसरे - एकूण व्याख्याने ४०, श्रेयांक- ०२

वरील अभ्यासपत्रिकेचे प्रथम सत्रान्तप्रश्नपत्रिकेचे स्वरूप पुढीलप्रमाणे ठरविण्यात आले आहे.

घटक १ निवडक कवितांचा अभ्यास (२० तासिका) श्रेयांकन १

गुण ५०

- १) आसावरी काकडे
- २) सिसिलिया काव्हालो
- ३) किशोर कदम
- ४) भगवान निळे
- ५) नीरजा
- ६) योगिनी राऊळ
- ७) छाया कोरेगावकर
- ८) आय. ए. पवार
- ९) वैभव सोनारकर
- १०) वीरधवल परब
- ११) अजीम नवाज राही
- १२) नीलकंठ शेरे
- १३) महेंद्र गायकवाड
- १४) मच्छिंद्र चोरमारे
- १५) प्रतिभा सराफ
- १६) संजय बोरुडे
- १७) संजय बालघाटे
- १८) पितांबर कोडापे
- १९) हबीब भंडारे
- २०) योजना यादव
- २१) विनायक पवार
- २२) मेघराज मेश्राम
- २३) अनिल साबळे
- २४) नामदेव कोळी
- २५) हेमंत सोनकांबळे

(कविता नंतर कळविण्यात येतील.)

घटक - २ व्यावहारिक मराठी - (४ घटकविषय) - (२० तासिका) - श्रेयांकन १

- १) इतिवृत्तलेखन
- २) वर्तमान पत्रासाठी जाहिरातलेखन
- ३) उताऱ्यावरील प्रश्न
- ४) सारांशलेखन
- ५) निबंधलेखन

प्रश्न १- घटक क्र. १ वर आधारित पर्याय देऊन एक प्रश्न	गुण २०.
प्रश्न २- घटक क्र. १ वर आधारित पर्याय देऊन एक प्रश्न	गुण २०.
प्रश्न ३- घटक क्र. १ वर आधारित चार पैकी दोन टिपा	गुण १०.
प्रश्न ४- इतिवृत्तलेखन या उपघटकावर आधारित अंतर्गत पर्यायांसह १ प्रश्न	गुण १०
प्रश्न ५- वर्तमानपत्रासाठी जाहिरातलेखन या उपघटकावर अंतर्गत पर्यायांसह १ प्रश्न	गुण १०
प्रश्न ६- उताऱ्यावरील या उपघटकावर अंतर्गत पर्यायांसह १ प्रश्न	गुण १०
प्रश्न ७ - सारांशलेखन या उपघटकावर अंतर्गत पर्यायांसह १ प्रश्न	गुण १०
प्रश्न ८- निबंधलेखन या उपघटकावर अंतर्गत पर्यायांसह १ प्रश्न	गुण १०

संदर्भग्रंथ

१. कुलकर्णी, वा० ल०; मराठी कविता-जुनी आणि नवी, पॉप्युलर प्रकाशन आणि मौज प्रकाशन गृह, मुंबई, १९८७.
२. गणोरकर, प्रभा (संपा०); संक्षिप्त मराठी वाङ्मयकोश, (१९२० पासून २००३ पर्यंतचा कालखंड), जी० आर० भटकळ फाउंडेशन, मुंबई, २००४.
३. भागवत, श्री० पु० व इतर (संपा०); साहित्य-अध्यापन आणि प्रकार, पॉप्युलर प्रकाशन गृह, मुंबई.
४. पाटणकर, वसंत; कविता: संकल्पना, निर्मिती आणि समीक्षा, मराठी विभाग, मुंबई विद्यापीठ व अनुभव प्रकाशन, मुंबई, १९९५.
५. पाटणकर, वसंत, शोध कवितेचा, मौज प्रकाशन गृह, मुंबई, २०११. ६. डहाके, वसंत आबाजी; कवितेविषयी, स्वरूप प्रकाशन, औरंगाबाद, १९९९.
७. बेडेकर, दि० के०; आधुनिक मराठी काव्य उद्गम आणि भवितव्य, नागपूर विद्यापीठ, नागपूर, १९६९.
८. रसाळ, सुधीर; काही मराठी कवी जाणवा आणि शैली, जनशक्ती वाचक चळवळ, औरंगाबाद, आवृत्ती ३ री, २०११.
९. करोगल, सुषमा (संपा०); स्वातंत्र्योत्तर मराठी कविता, प्रतिमा प्रकाशन, पुणे, १९९९.
१०. गाडगीळ, डॉ. स. रा., काव्यशास्त्रप्रदीप, व्हीनसप्र काशन, पुणे, २०१६
११. रसाळ, सुधीर, कविता आणि प्रतिमा, मौज प्रकाशनगृह, मुंबई, १९८२
१२. गाडगीळ, डॉ. स. रा., मराठी काव्याचे मानदंड (खंड पहिला), पद्मगंधा प्रकाशन, पुणे, २००५

University of Mumbai



No. UG/29 of 2019-20

CIRCULAR:-

Attention of the Principals of the Affiliated Colleges and Directors of the recognized Institutions in Humanities Faculty is invited to this office Circular No. UG/51 of 2017-18, dated 15th July, 2017 relating to the revised syllabus as per (CBCS) of F.Y.B.A. in Hindi (Compulsory & Ancillary) (Sem. I & II).

They are hereby informed that the recommendations made by the Board of Studies in Hindi at its meeting held on 9th April, 2019 have been accepted by the Academic Council at its meeting held on 15th April, 2019 vide item No. 4.23 & 4.24 and that in accordance therewith, the revised syllabus as per the (CBCS) for the F.Y.B.A. Compulsory & Ancillary (Sem. I & II) in Hindi has been brought into force with effect from the academic year 2019-20, accordingly. (The same is available on the University's website www.mu.ac.in).

MUMBAI – 400 032

3rd June, 2019

To

(Dr. Ajay Deshmukh)
REGISTRAR

The Principals of the affiliated Colleges and Directors of the recognized Institutions in Humanities Faculty. (Circular No. UG/334 of 2017-18 dated 9th January, 2018.)

A.C./4.23 & 4.24 /15/04/2019

No. UG/29 -A of 2019

MUMBAI-400 032

3rd June, 2019

Copy forwarded with Compliments for information to:-

- 1) The I/c Dean, Faculty of Humanities,
- 2) The Chairman, Board of Studies in Hindi,
- 3) The Director, Board of Examinations and Evaluation,
- 4) The Professor-cum-Director, Institute of Distance and Open Learning (IDOL),
- 5) The Director, Board of Students Development,
- 6) The Co-ordinator, University Computerization Centre,

(Dr. Ajay Deshmukh)
REGISTRAR



UNIVERSITY OF MUMBAI
Revised Syllabus
And
Pattern of Question Paper in the
Subject of
Hindi
At the
F.Y.B.A. Compulsory Examination
As per
CHOICE BASED CREDIT SYSTEM (CBCS)

(With effect from the Academic Year: 2019-2020)

UNIVERSITY OF MUMBAI
Revised Syllabus and Pattern of Question Paper in the
Subject of Hindi at the
F.Y.B.A. Compulsory Examination
CHOICE BASED CREDIT SYSTEM (CBCS)
(With effect from the Academic Year: 2019-2020)

हिन्दी अध्ययन मंडल

अध्यक्ष : डॉ. अनिल सिंह

1. डॉ. करुणाशंकर उपाध्याय (सदस्य)
2. डॉ. हूबनाथ पाण्डेय (सदस्य)
3. डॉ. विद्या शिंदे (सदस्य)
4. डॉ. शीला आहुजा (सदस्य)
5. डॉ. चित्रा गोस्वामी (सदस्य)
6. डॉ. संतोष मोटवानी (सदस्य)
7. डॉ. प्रकाश धुमाल (सदस्य)
8. डॉ. गौतम सोनकांबले (सदस्य)
9. डॉ. मोहसिन खान (सदस्य)

पाठ्यक्रम समिति

1. डॉ. शीला आहुजा (समन्वयक)
2. डॉ. रेखा शर्मा (सदस्य)
3. डॉ. सुमनिका सेठी (सदस्य)
4. डॉ. संतोष मोटवानी (सदस्य)
5. डॉ. रमा सिंह (सदस्य)
6. प्रा. जयशंकर पांडेय (सदस्य)

मुंबई विश्वविद्यालय, मुंबई

SEMESTER – I

NAME OF PROGRAM	: B.A.
NAME OF THE COURSE	: F.Y.B.A. Compulsory Hindi (अनिवार्य हिन्दी)
COURSECODE	: UAHINCOM 101
TOTAL LECTURES	: 60
CREDITS	: 3

Aims and Objectives:

१. विद्यार्थियों को कविता और कहानी विधाओं के अतिरिक्त हिन्दी के प्रमुख साहित्यकारों से परिचित कराना।
 २. अनुवाद और पत्र लेखन की कला का ज्ञान देना।
 ३. विद्यार्थियों की भाषा को समृद्ध करना।
-

निर्धारित पाठ्य पुस्तकें:

- 1. काव्य सरिता:** संपादन: हिंदी अध्ययन मंडल, मुंबई विश्वविद्यालय, मुंबई
परिदृश्य प्रकाशन, मरीन लाईन्स, मुंबई-400002

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|-------------------------|-----------------------------|
| १. भारत माता का मंदिर | - मैथिलीशरण गुप्त |
| २. सब जीवन बीता जाता है | - जयशंकर प्रसाद |
| ३. भर देते हो | - सूर्यकांत त्रिपाठी निराला |
| ४. बापू के प्रति | - सुमित्रानंदन पंत |
| ५. यह मंदिर का दीप | - महादेवी वर्मा |
| ६. शक्ति और क्षमा | - रामधारी सिंह दिनकर |
| ७. पुष्प की अभिलाषा | - माखनलाल चतुर्वेदी |
| ८. वे और तुम | - नागार्जुन |
| ९. रीढ़ की हड्डी | - हरिवंश राय बच्चन |
| १०. आज का दैनिक | - भवानी प्रसाद मिश्र |

2. कथा दर्पण: संपादन:हिंदी अध्ययन मंडल, मुंबई विश्वविद्यालय, मुंबई

अमन प्रकशन,रामबाग,कानपुर -208012

१.मनोवृत्ति	- प्रेमचंद
२.व्रत भंग	- जयशंकर प्रसाद
३.प्रलय की रात्रि	- सुदर्शन
४.इनाम	- जैनेंद्रकुमार
५.महादान	- यशपाल
६.प्रायश्चित	- भगवतीचरण वर्मा
७. ठेस	- फणीश्वरनाथ रेणु
८.निष्कासित	- गोविंद मिश्र

● पत्र लेखन -

अनौपचारिक : बधाई,निमंत्रण,क्षमा याचना पत्र

औपचारिक : आवेदन,सुझाव, संपादक के नाम (शिकायती एवं सुझाव पत्र)

● भाषा ज्ञान -

वर्तनी की शुद्धता, संज्ञा, सर्वनाम, विशेषण, क्रिया शब्दों को वाक्य में पहचानना

● अनुवाद (अंग्रेजी से हिन्दी में)

प्रथम सत्र यूनिट विभाजन

1) काव्य सरिता :

यूनिट १ - व्याख्यान ११	- १ से ५ तक कविताएँ
यूनिट २-व्याख्यान ११	- ६ से १० तक कविताएँ

2) कथा दर्पण :

यूनिट ३ - व्याख्यान ११	- १ से ४ तक कहानियाँ
यूनिट ४ - व्याख्यान ११	- ५ से ८ तक कहानियाँ
यूनिट ५ - क - व्याख्यान ८	- पत्र लेखन
ख- व्याख्यान ८	- भाषा ज्ञान तथा अनुवाद

प्रथम सत्रांत परीक्षा के प्रश्न पत्र का प्रारूप

कुल अंक: १००

समय : ३ घंटे

प्रश्न १. संदर्भ सहित व्याख्या (कविता और कहानी में दोनों से विकल्प सहित)	२० अंक
प्रश्न २. दीर्घोत्तरी प्रश्न (कविता और कहानी दोनों में से विकल्प सहित)	३० अंक
प्रश्न ३. टिप्पणियाँ (कविता और कहानी दोनों में से विकल्प सहित)	१० अंक
प्रश्न ४. वस्तुनिष्ठ प्रश्न १० (कविता और कहानी दोनों में से)	१० अंक
प्रश्न ५. पत्र लेखन (दो में से एक)	१० अंक
प्रश्न ६. (अ)भाषा ज्ञान	१० अंक
१. वर्तनी की शुद्धता	
२. संज्ञा	
३. सर्वनाम	
४. विशेषण	
५. क्रिया	
(आ) अनुवाद (अंग्रेजी से हिन्दी में)	१० अंक

SEMESTER – II

NAME OF PROGRAM	: B.A.
NAME OF THE COURSE	: F.Y.B.A. Compulsory Hindi (अनिवार्य हिन्दी)
COURSECODE	: UAHINCOM 201
TOTAL LECTURES	: 60
CREDITS	: 3

Aims and Objectives:

१. निबंध लेखन और संवाद लेखन द्वारा भावों एवं विचारों की अभिव्यक्ति में सक्षम बनाना।
 २. मुहावरों और व्याकरण के माध्यम से विद्यार्थियों की भाषाको समृद्ध करना।
 ३. विद्यार्थियों में लेखन के दौरान होने वाली अशुद्धियों को दूर करना।
-

निर्धारित पाठ्य पुस्तकें:

1. काव्य सरिता :संपादन: हिंदी अध्ययन मंडल, मुंबई विश्वविद्यालय, मुंबई परिदृश्य प्रकाशन, मरीन लाईन्स,मुंबई-400002

- | | |
|----------------------------|--------------------------|
| ११.मेरा नया बचपन | - सुभद्रा कुमारी चौहान |
| १२.आया बसंत | - सोहनलाल द्विवेदी |
| १३.हम जरूर जीतेंगे | - अज्ञेय |
| १४.हम पंछी उन्मुक्त गगन के | - शिवमंगल सिंह 'सुमन' |
| १५.कहीं पे धूप की चादर | - दुष्यन्त कुमार |
| १६.कागज कलम और स्याही | - कुँवर नारायण |
| १७.जड़ें | - सर्वेश्वर दयाल सक्सेना |
| १८.स्त्री | - सुशीला टाकभोरे |
| १९.अपने घर की तलाश | - निर्मला पुतुल |
| २०.मन कितना अभिनय शेष रहा | - भारत भूषण |

2. कथा दर्पण: संपादन: हिंदी अध्ययन मंडल, मुंबई विश्वविद्यालय, मुंबई
अमन प्रकशन, रामबाग, कानपुर-208012

९.ताई	- विश्वभरनाथ शर्मा 'कौशिक'
१०.सजा	- मन्नू भंडारी
११.माता-विमाता	- भीष्म साहनी
१२.पिता	- ज्ञानरंजन
१३.वे तीन घर	- काशीनाथ सिंह
१४.दादी अम्मा	- कृष्णा सोबती
१५.हैरिटेज	- मोहनदास नैमिशराय
१६.पाँचवां बेटा	- नासिरा शर्मा

● **निबंध लेखन -**

सामाजिक, समसामयिक, शैक्षणिक, वैचारिक, आत्मकथात्मक निबंध

● **भाषा ज्ञान -**

लिंग, वचन, पर्यायवाची शब्द, विलोमार्थी शब्द, मुहावरों का वाक्य में प्रयोग

● **संवाद लेखन / अपठित गद्यांश**

द्वितीय सत्र यूनिट विभाजन

1. काव्य सरिता :

यूनिट १. व्याख्यान ११ - ११ से १५ तक कविताएँ

यूनिट २. व्याख्यान ११ - १६ से २० तक कविताएँ

2. कथा दर्पण :

यूनिट ३. व्याख्यान ११ - ९ से १२ तक कहानियाँ

यूनिट ४. व्याख्यान ११ - १३ से १६ तक कहानियाँ

यूनिट ५ - क - व्याख्यान ८ - निबंध लेखन

ख - व्याख्यान ८ - भाषा ज्ञान तथा संवाद लेखन/ अपठित गद्यांश

द्वितीय सत्रांत परीक्षा के प्रश्न पत्र का प्रारूप

कुल अंक : १००

समय : ३ घंटे

प्रश्न १. संदर्भ सहित व्याख्या (कविता और कहानी में दोनों से विकल्प सहित)	२० अंक
प्रश्न २. दीर्घोत्तरी प्रश्न (कविता और कहानी दोनों में से विकल्प सहित)	३० अंक
प्रश्न ३. टिप्पणियाँ (कविता और कहानी दोनों में से विकल्प सहित)	१० अंक
प्रश्न ४. वस्तुनिष्ठ प्रश्न १० (कविता और कहानी दोनों में से)	१० अंक
प्रश्न ५. निबंध लेखन (चार में से एक)	१० अंक
प्रश्न ६. (अ) भाषा ज्ञान	१० अंक

१. लिंग

२. वचन

३. पर्यायवाची शब्द

४. विलोमार्थी शब्द

५. मुहावरों का वाक्य में प्रयोग

(आ) संवाद लेखन (सामान्य वार्तालाप) / अपठित गद्यांश १० अंक

University of Mumbai



No. UG/37 of 2021-22

CIRCULAR:-

Attention of the Principals of the Affiliated Colleges and Directors of the recognized Institutions in Humanities Faculty is invited to this office circular No.UG/163 of 2016-17, dated 16th November, 2016 relating to the revised syllabus as per the (CBCS) for F.Y.B.A.- in English (Introduction to Literature) (Sem. I & II).

They are hereby informed that the recommendations made by the Board of Studies in English at its online meeting held on 21st December, 2020 vide item No. 4 and subsequently made by the Board of Deans at its meeting held on 27th January, 2021 vide item No. 5.4 (R) have been accepted by the Academic Council at its meeting held on 23rd February, 2021 vide item No. 5.4 (R) and that in accordance therewith, that existing nomenclature of the paper Introduction to Literature Paper I & II for Sem 1 & 2 respectively is changed as Introduction to Prose and Fiction Paper I & II for Sem. 1 & 2 and to revised the syllabus as per the (CBCS) of F.Y.B.A. Optional English Paper I Introduction to Prose and Fiction – Sem. I & II has been brought into force with effect from the academic year 2021 -22 accordingly. (The same is available on the University's website www.mu.ac.in).

MUMBAI – 400 032
August, 2021

(Dr. B.N.Gaikwad)
I/c REGISTRAR

To

The Principals of the Affiliated Colleges and Directors of the Recognized Institutions in Humanities Faculty. (Circular No. UG/334 of 2017-18 dated 9th January, 2018.)

A.C/5.4/23/02/2021

No. UG/37 -A of 2021-22

MUMBAI-400 032

17th August, 2021

Copy forwarded with Compliments for information to:-

- 1) The Dean, Faculty of Humanities,
- 2) The Chairman, Board of Studies in English
- 3) The Director, Board of Examinations and Evaluation,
- 4) The Director, Board of Students Development,
- 5) The Co-ordinator, University Computerization Centre,

(Dr. B.N.Gaikwad)
I/c REGISTRAR

Copy to :-

- 1. The Deputy Registrar, Academic Authorities Meetings and Services (AAMS),**
- 2. The Deputy Registrar, College Affiliations & Development Department (CAD),**
- 3. The Deputy Registrar, (Admissions, Enrolment, Eligibility and Migration Department (AEM),**
- 4. The Deputy Registrar, Research Administration & Promotion Cell (RAPC),**
- 5. The Deputy Registrar, Executive Authorities Section (EA),**
- 6. The Deputy Registrar, PRO, Fort, (Publication Section),**
- 7. The Deputy Registrar, (Special Cell),**
- 8. The Deputy Registrar, Fort/ Vidyanagari Administration Department (FAD) (VAD), Record Section,**
- 9. The Director, Institute of Distance and Open Learning (IDOL Admin), Vidyanagari,**

They are requested to treat this as action taken report on the concerned resolution adopted by the Academic Council referred to in the above circular and that on separate Action Taken Report will be sent in this connection.

- 1. P.A to Hon'ble Vice-Chancellor,**
- 2. P.A Pro-Vice-Chancellor,**
- 3. P.A to Registrar,**
- 4. All Deans of all Faculties,**
- 5. P.A to Finance & Account Officers, (F.& A.O),**
- 6. P.A to Director, Board of Examinations and Evaluation,**
- 7. P.A to Director, Innovation, Incubation and Linkages,**
- 8. P.A to Director, Board of Lifelong Learning and Extension (BLLE),**
- 9. The Director, Dept. of Information and Communication Technology (DICT) (CCF & UCC), Vidyanagari,**
- 10. The Director of Board of Student Development,**
- 11. The Director, Department of Students Welfare (DSD),**
- 12. All Deputy Registrar, Examination House,**
- 13. The Deputy Registrars, Finance & Accounts Section,**
- 14. The Assistant Registrar, Administrative sub-Campus Thane,**
- 15. The Assistant Registrar, School of Engg. & Applied Sciences, Kalyan,**
- 16. The Assistant Registrar, Ratnagiri sub-centre, Ratnagiri,**
- 17. The Assistant Registrar, Constituent Colleges Unit,**
- 18. BUCTU,**
- 19. The Receptionist,**
- 20. The Telephone Operator,**
- 21. The Secretary MUASA**

for information.

UNIVERSITY OF MUMBAI**Syllabus for Approval**

Sr. No.	Heading	Particulars
1	Title of the Course	FYBA Optional English: 'Introduction to Prose and Fiction'
2	Eligibility for Admission	10+2
3	Passing Marks	40
4	Ordinances / Regulations (if any)	
5	No. of Years / Semesters	1 Year (Semester I and II)
6	Level	P.G. / U.G./ Diploma / Certificate (Strike out which is not applicable)
7	Pattern	Yearly / Semester (Strike out which is not applicable)
8	Status	New / Revised (Strike out which is not applicable)
9	To be implemented from Academic Year	From Academic Year 2021-2022

Date: 21/12/2020

Signature :

Name of BOS Chairperson / ~~Dean~~ :**Dr. Sudhir Nikam**



University of Mumbai

Syllabus for F.Y.B.A

Program: B.A.

Course: Introduction to Prose and Fiction

(Choice Based Credit System with effect from the academic year 2021-2022)

Board of Studies in English

Dr. Sudhir Nikam (Chairperson)

Dr. Rajesh Karankal (Member)

Dr. Santosh Rathod (Member)

Dr. Bhagyashree Varma (Member)

Dr. Deepa Mishra (Member)

Dr. B. N. Gaikwad (Member)

Dr. Dattaguru Joshi (Member)

Dr. Satyawar Hanegave (Member)

Dr. Deepa Murdeshwar-Katre (Member)

Syllabus Sub-Committee

- Dr. Rajesh Karankal** : Convenor, Head, Department of English,
University of Mumbai
- Dr. Rajesh Yeole** : Member, Head, Department of English, Changu
Kana Thakur A.C.S.College, New Panvel,
- Ms. Sumali Bose** : Member, Department of English, N.E.S Ratnam
College, Mumbai
- Dr. Shweta Salian** : Member, Department of English, Mithibai
College, Mumbai
- Dr. Satyajit Kosambi** : Member, Department of English, Sathaye
College, Mumbai
- Dr. Bharat Tupere** : Member, Department of English, Sant Rawool
Maharaj College, Kudal

Course: Introduction to Prose and Fiction

(100 Marks Examination Pattern)

(Choice Based Credit System with effect from the academic year 2021-22)

1. Syllabus as per Credit Based Semester and Grading System:		
i)	Name of the Programme	: B.A.
ii)	Course Code	: UAENG 101 & UAENG 201
iii)	Course Titles	: Introduction to Prose and Fiction Paper – I and II
iv)	Semester-wise Course Content	: Enclosed the copy of syllabus
v)	References and Additional References:	: Enclosed in the Syllabus
vi)	Credit Structure	: No. of Credits per Semester – 03
vii)	No. of lectures per Unit	: 15
viii)	No. of lectures per week	: 04
2.	Scheme of Examination	: Written Exam: 5 Questions of 20 Marks each
3.	Special notes, if any	: No
4.	Eligibility, if any	: No
5.	Fee Structure	: As per University Structure
6.	Special Ordinances / Resolutions if any	: No

Revised Syllabus for FYBA Optional English

Introduction to Prose and Fiction Paper I and II

To be implemented from 2021-22 (100 Marks Examination Pattern)

Objectives of the Course:

- To create interest and develop passion amongst learners towards English Literature
- To familiarize learners with salient characteristics of literary genres like short story, prose, fiction and non-fiction
- To introduce learners to various elements of selected short stories written in English and translated into English
- To acquaint learners with different forms of prose and its importance through close reading of selected works
- To understand that literature is an expression of human values and universal truths

Course Outcomes:

- To develop passion for reading literary works amongst students
- To make learners at ease in the process of appreciation of literature
- To enable learners to understand and analyze selected stories, prose, fiction and non-fiction masterpieces
- To imbibe the underlying philosophy and values reflected in literature
- To develop sensitivity to nature and understand the relationship between human beings and environment

Semester I

Optional English: Introduction to Prose and Fiction Paper I

Course Content

Unit 1:

No. of lectures: 15

Development of Short Story, Elements of Short Story: Plot, Character, Setting, Narrative, Development of Essay, Features of Prose writing, Types of Prose, Autobiography

Unit 2:

No. of lectures: 15

- O' Henry : "The Cop and the Anthem"
- Ray Bradbury : "A Sound of Thunder"
- Rabindranath Tagore : "The Kabuliwala"
- Bernard Malamud : "The Jewbird"
- Baburao Bagul : "Mother"
- Ken Liu : "The Paper Menagerie"

Unit 3:

No. of lectures: 15

- Sir Francis Bacon : "Of Marriage and Single Life" and "Of Revenge"
- Charles Lamb : "The Two Races Of Men "
- Ralph Waldo Emerson : "Self – Reliance"
- W.E.B. du Bois : "Strivings of the Negro People"
- Shobha De : From "Speedpost": "Dear Arundhati" Aug'99 and "Dear Aditya" June'99
- Subroto Bagchi : From *Go kiss the world*: "Learning to Listen" (p. 145-150) and "Who Is a Good Leader?" (p. 150-155)

Evaluation: First Semester End Examination Pattern 100 Marks: 3 Hours
--

Question 1	:	Short Notes on Unit 1 (4 out of 6)	:	20 Marks
Question 2	:	Essay on Unit 2 (1 out of 2)	:	20 Marks
Question 3	:	Essay on Unit 3 (1 out of 2)	:	20 Marks
Question 4	:	Short Notes on Unit 2 (2 out of 4)	:	20 Marks
Question 5	:	Short Notes on Unit 3 (2 out of 4)	:	20 Marks

Semester II

Optional English: Introduction to Prose and Fiction Paper II

Course Content

Unit 1:

No. of lectures: 15

Novella, Aspects of Novel, Children's Fiction, Adventure Novel, Mystery novel, Science Fiction, Social Novel, Philosophical Novel, Historical Novel

Unit 2:

No. of lectures: 15

- John Steinbeck: *The Pearl*
- OR
- Ruskin Bond: *The Blue Umbrella*

Unit 3:

No. of lectures: 15

- R.K. Narayan: *The Financial Expert*
- OR
- Isaac Asimov: *Fantastic Voyage*

Evaluation: Second Semester End Examination Pattern 100 Marks: 3 Hours

Question 1	:	Short Notes on Unit 1 (4 out of 6)	:	20 Marks
Question 2	:	Essay on Unit 2 (1 out of 2)	:	20 Marks
Question 3	:	Essay on Unit 3 (1 out of 2)	:	20 Marks
Question 4	:	Short Notes on Unit 2 (2 out of 4)	:	20 Marks
Question 5	:	Short Notes on Unit 3 (2 out of 4)	:	20 Marks

References:

- Abrams, M.H. *Glossary of Literary Terms*. India, Macmillan Publishers, 2000.
- Albert, E. *History of English Literature*, India, Oxford University Press, 2009.
- Athenian Society. *Drama, Its History*, England, Nabu Press, 2012.
- Auger, Peter. *The Anthem Glossary of Literary Terms and Theory*, India, Anthem Press, 2011.
- Baldick Chris, *Oxford Dictionary of Literary Terms*. Cambridge University Press, 2008.
- Bennett, Andrew and Nicholas Royle. *Introduction to Literature Criticism and Theory*. Great Britain: Pearson Education Limited, 2004.
- Brooks, Cleanth and Warren, Robert Penn. *Understanding Fiction*, Printice Hall.
- Cavanagh, Dermot Alan Gillis, Michelle Keown, James Loxley and Randall Stevenson (Ed). *The Edinburgh Introduction to Studying Literature*. Edinburgh: Edinburgh University Press, 2010.
- Chakrabarti, Piyas. *Anthem Dictionary of Literary Terms and Theory*. Delhi: Anthem Press, 2006.
- Edmond Gore and Alexander Holmes. *What is Poetry?* England, Nabu Press, 2010.
- Ford, Boris. *The Pelican Guide to English Literature*, Volume I to X
- Forster, E M. *Aspects of the Novel*, (1954) London: Rosetta Books, 2002.
- Fowler, Roger. (Ed.). *A Dictionary of Modern Critical Terms*. (Rev.Ed.) London: Routledge & Kegan Paul, 1987.
- Gibson Arthur. *What is Literature*, Peter Lang Pub Inc, 2007.
- Hudson, W.H., 2011, *An Outline History of English Literature*, India, G K Publishers Pvt. Ltd
- McKeon, Michael. *Theory of the Novel: A Historical Approach*. Baltimore : John Hopkins University Press, 2000.
- Prasad, B. . *Background of the Study of English Literature*, Chennai, Macmillan, 1999.
- Rees, R.J. *English Literature : An Introduction to Foreign Readers*, New Delhi: Macmillan, 1982.
- Turco, Lewis. *The Book of Literary Terms*, UK, University Press of New England, 1999.
- Widdowson, Peter. *The Palgrave Guide to English Literature and its Contexts 1500-2000*, Hampshire: Palgrave, Macmillan, 2004


UNIVERSITY OF MUMBAI

No. UG/86 of 2016-17

CIRCULAR:-

A reference is invited to the Syllabi relating to the B. A. degree course vide this office Circular No.UG/159 of 2011 dated 20th June, 2011 and the Principals of affiliated Colleges in Arts Colleges are hereby informed that the recommendation made by Board of Studies in History & Archaeology at its meeting held on 25th May, 2016 has been accepted by the Academic Council at its meeting held on 24th June, 2016 vide item No. 4.21 and that in accordance therewith, the revised syllabus as per the Choice Based Credit System for the F.Y.B.A. in History & Archaeology (Sem.I & II), which is available on the University's web site (www.mu.ac.in) and that the same has been brought into force with effect from the academic year 2016-17.

MUMBAI – 400 032
October, 2016


(Dr.M.A.Khan)
REGISTRAR

To,

The Principals of affiliated Colleges in Arts.

A.C/4.21/24/06/2016

No. UG/86 -A of 2016-17

MUMBAI-400 032 25th October, 2016

Copy forwarded with compliments for information to:-

- 1) The Dean, Faculty of Arts,
- 2) The Chairman, Board of Studies in History,
- 3) The Director, Board of College and University Development,
- 4) The Controller of Examinations,
- 5) The Co-Ordinator, University Computerization Centre.
- 6) The Professor-cum-Director, Institute of Distance and Open Learning (IDOL)


(Dr.M.A.Khan)
REGISTRAR

PTO...

UNIVERSITY OF MUMBAI



Revised syllabus for Sem I and II

Program: B. A.

Course: History & Archaeology

(Choice Based Credit System with effect from the Academic
year 2016-17)

F.Y.B.A. (History)
History of Modern India (1857-1947)
Semester - I

Objectives:-

The course is designed to make the student aware about the making of modern India and the struggle for independence.

Module I: Growth of Political Awakening

- (a) Revolt of 1857 – Causes and Consequences
- (b) Contribution of the Provincial Associations
- (c) Foundation of Indian National Congress.

Module II: Trends in Indian Nationalism

- (a) Moderates
- (b) Extremists
- (c) Revolutionary Nationalists

Module III: Gandhian Movements

- (a) Non Co-operation Movement
- (b) Civil Disobedience Movement
- (c) Quit India Movement

Module IV: Towards Independence and Partition

- (a) The Indian Act of 1935
- (b) Attempts to Resolve the Constitutional Deadlock -The Cripps Mission, The Cabinet Mission and the Mountbatten Plan
- (c) Indian Independence Act and Partition

Semester –II
History of Modern India: Society and Economy.

Module I: Socio Religious Reform Movements: Reforms and Revival

- (a) Brahmo Samaj, Arya Samaj and Ramakrishna Mission
- (b) Satyashodhak Samaj, Aligarh movement and Singh Sabha Movement.
- (c) Impact of Reform Movements

Module II: Education, Press and Transport

- (a) Introduction of Western Education and its Impact
- (b) Development of Press
- (c) Transport and Communications

Module III: Impact of the British Rule on Indian Economy.

- (a) Revenue Settlements, Commercialisation of Agriculture
- (b) Drain Theory
- (c) Deindustrialisation and Growth of Large Scale Industry

Module IV: Nationalism and Social Groups: interfaces.

- (a) Women
- (b) Dalits
- (c) Peasants and Tribals

References:

Aloysius G., *Nationalism Without Nation in India*, OUP, New Delhi, 1998.

Bandyopadhyay Sekhar, *From Plassey to Partition, A History of Modern India*, Orient Longman, New Delhi, 2004.

Bhattachaterjee Arun, *History of Modern India (1707 – 1947)*, Ashish Publishing House, New Delhi 1976.

Chakravarti Aroop, *The History of India (1857 – 2000)*, Pearson, New Delhi 2012.

Chandra Bipan et al., *India's Struggle for Independence*, Penguin, New Delhi,

Chandra Bipan, A. Tripathi, Barun De, *Freedom struggle*, National Book Trust, India, 1972.

Chandra Bipan, *Rise and Growth of Economic Nationalism in India*, Delhi, 1966.

Chattergy Partho, *The Nation and its Fragments*, OUP, New Delhi, 1933

Chopra P.N.,Puri B.N, Das M.N,Pradhan A.C, *A Comprehensive History of Modern India*, Sterling Publishers 2003.

Desai A.R., *Social Background of Indian Nationalism*, 5th Edition,Popular Prakashan, Bombay, 1976.

Ganachari Arvind, *Nationalism and Social Reform in a Colonial Situation*, Kalpaz Publication, New Delhi, 2005.

Grover B.L, Grover S., *A New Look at Modern Indian History (1707 – present day)*, S. Chand and Company, New Delhi 2001.

Keswani K.B., *History of Modern India (1800 – 1964)*, Himalaya Publishing House, Bombay 1996.

Majumdar R.C., *Comprehensive History of India*, Vol.3 (Part III), People's Publishing House.

Mehrotra S.R., *Emergence of Indian National Congress*, Vikas Publication, Delhi, 1971.

Nanda S.P., *History of Modern India (1707 – Present Time)*, Dominant Pub, New Delhi 2012.

Pannikar K.N. (ed). *National and Left Movement in India*, Vikas Publishing House Pvt. Ltd.. New Delhi. 1980.

Pawar Jaisingh Rao, *Aadhunik Hindustanacha Itihas*, Vidya Publications, Nagpur.

Ray Rajat, *Industrialization of India: Growth and Conflict in the Private Corporate Sector, 1914-47*, OUP, Delhi, 1982.

Sarkar Sumit, *Aadhunik Bharat*, Rajkamal Publication, New Delhi, 2009.

Sarkar Sumit, *Modern India 1885-1947*, Macmillan, Madras, 1996.

Seal Anil, *The Emergence of Indian Nationalism: Competition and Collaboration in the Later Nineteenth Century*, Cambridge University Press, 1971.

Shukla Ramlakhan, *Aadhunik Bharat ka Itihas*, Hindi Madhyam Karyalay Nideshalay, Delhi.

B.A.
HISTORY

Question Paper Pattern For F.Y.B.A. History
Semester I & II

As per University rules and guidelines.

Cover Page

AC _____
Item No. _____**UNIVERSITY OF MUMBAI****Syllabus for Approval**

Sr. No.	Heading	Particulars
1	Title of the Course	First Year Bachelor of Arts in Sociology
2	Eligibility for Admission	XII Pass in Art Stream (For others as per University Rules in this regard)
3	Passing Marks	45% (or as per University of Mumbai rules in this regards)
4	Ordinances / Regulations (if any)	---
5	No. of Years / Semesters	3 Years (VI Semesters)
6	Level	U.G.
7	Pattern	Semester
8	Status	Revised
9	To be implemented from Academic Year	From Academic Year: - 2020-21

Date: 04/06/2020

Signature: _____

Chairman/ Chairperson: Dr. Balaji Kendre

Dean Faculty of Humanities: _____

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PROGRAMME: SOCIOLOGY- FYBA SEMESTER I

UASOC101 IN THE SUBJECT OF SOCIOLOGY

CBSGS (CREDIT BASED SEMESTER SYSTEM)

Revised Syllabus to be implemented from 2020-21

Course -I FOUNDATIONS OF SOCIOLOGY

Objectives:

1. To introduce the students to the basic concepts in Sociology
2. To familiarize students with the theoretical aspects of different concepts

Course Outcomes:

This Course work will help learners to understand:

1. The emergence of Sociology and its relationship with other sciences
2. And define the nature and importance of Social Institutions
3. The influence of Culture on the society
4. The process of Socialization in the development of individuals in the society

UNIT I: PERSPECTIVES IN SOCIOLOGY

12 lectures

- a. Emergence of Sociology as a discipline and its relevance today
 - Origin and development of the discipline of Sociology
 - Relationship between sociology and other social sciences
- b. Development of Sociology
 - Pioneers of Sociology: Comte (Law of 3 stages), Spencer (Organic analogy), Durkheim (Division of Labor) and Marx (Conflict)
- c. Careers in Sociology

UNIT II: SOCIAL INSTITUTIONS

12 lectures

- a. Marriage
 - Patterns in Marriage: Endogamy, Exogamy, Monogamy, Polygamy
 - Patterns of Descent: Patrilineal, Matrilineal, Bilateral
- b. Family
 - Functions of the family
 - Variations in family structure: Traditional and Contemporary
- c. Religion
 - Meaning, and Functions of religion
 - Types: Magic, Sect and Cult, Totemism, Naturism, Animism, Monotheism, Polytheism

UNIT III: SOCIETY and CULTURE

09 lectures

- a. Evolution of society
 - Hunting and gathering
 - Agrarian

FYBA SOCIOLOGY Revised Syllabus for 2020-21

- Industrial
- Post- industrial, Network society, Risk society.
- b. Culture
 - Meaning, Characteristics, Components and types of culture
- c. Cultural Diversity:
 - Cultural Universals/Cultural Differences, Ethnocentrism/Cultural Relativity, Sub Culture/Counterculture

UNIT IV: SOCIALIZATION

12 lectures

- a. Understanding Socialization: The Self and Socialization
 - George Herbert Mead: Theory of the Social Self
 - Charles Horton Cooley: Looking Glass Self
- b. The Role and agencies of Socialization
 - Family, School, Peer group and Mass media
- c. Gender Socialization, Re-Socialization, Political Socialization, Occupational- Professional Socialization

Texts/Readings

Dasgupta and Saha (2012) An introduction to Sociology, Pearson

Giddens, Anthony (2017) Sociology (8th edition), Atlantic Publishers

Haralambos M and Heald (2009) Sociology Themes and Perspectives. New Delhi Oxford University Press

Julia Jary and David Jary (2005) Dictionary of Sociology Collins

Macionis, John (2005) Sociology (10th edition) Prentice Hall

Marshall Gordon. Dictionary of Sociology New Delhi Oxford University Press

Schaefer Richard Sociology A Brief Introduction (2006) sixth edition Tata McGraw Hill New Delhi

Schaeffer and Lamm (1998) Sociology (6th edition) McGraw Hill

Stolley S, Kathy (2005) The Basics of Sociology, Greenwood Press

সংস্করণের কারণে সংশোধন করা হয়েছে। এই সংস্করণের কারণে, সংশোধন করা হয়েছে।

সংস্করণের কারণে সংশোধন করা হয়েছে। সংস্করণের কারণে, সংশোধন করা হয়েছে।

সংস্করণের কারণে, সংশোধন করা হয়েছে।

সংস্করণের কারণে, (সংস্করণের কারণে সংশোধন করা হয়েছে) সংস্করণের কারণে সংশোধন করা হয়েছে।

সংস্করণের কারণে, সংশোধন করা হয়েছে।

সংস্করণের কারণে: সংস্করণের কারণে সংশোধন করা হয়েছে। এই সংস্করণের কারণে, সংশোধন করা হয়েছে।

সংস্করণের কারণে, সংশোধন করা হয়েছে।

সংস্করণের কারণে সংশোধন করা হয়েছে। সংস্করণের কারণে, সংশোধন করা হয়েছে (সংস্করণের কারণে)

Please Note: Syllabus should be supplemented by field visits / educational trips for better understanding of the paper.

FUNDAMENTALS OF SOCIOLOGY SEMESTER II

Course Objectives:

- 1.To introduce the students to the basic concepts in Sociology
- 2.To familiarize students with the theoretical aspects of different concepts

Course outcomes:

This Course work will help you to understand:

1. The context and theoretical approaches that influences Social Interaction
2. The evolutionary processes and the organizing principles of Social Stratification
3. The nature and forms of deviant behaviour and the methods of Social Control

UNIT I: SOCIAL INTERACTION

12 lectures

- a. Daily life encounter -- relationship between culture and communication, verbal and non-verbal communication (face, body, gestures).
- b. Theories -- Dramaturgy (Erving Goffman), Ethnomethodology (Garfinkel)
- c. Virtual Interaction -- Interaction, relationships at a distance on a global/virtual platform, building trust, etc.

UNIT II: SOCIAL STRATIFICATION

09 lectures

- a. Concept of Social stratification

- b. Types of Social Stratification and Discrimination - Age, Caste, Class, Gender, Religion, Race and Differently Abled
- c. Social Mobility

UNIT III: SOCIAL CONTROL AND DEVIANCE

12 lectures

- a. Social Control, Conformity and deviance: Meaning and forms
- b. Perspectives on Crime: Functionalist (Merton), Symbolic Interactionist (Becker), Marxist perspective (Chambliss)
- c. Types of Crime – Inequality and Crime, White-collar crime, Corporate crimes, Cyber crimes

UNIT IV: COLLECTIVE BEHAVIOUR

12 lectures

- a. Forms of Collective Behaviour – Folk and Mass, Crowds, Mobs, Riots, Mob hysteria
- b. Theories of Collective Behaviour – Contagion, Emergent Norm, Value-added
- c. . Social Movements – Formation, Types

Texts and Readings

Dasgupta and Saha (2012) An introduction to Sociology, Pearson

Giddens, Anthony (2017) Sociology (8th edition), Atlantic Publishers

Haralambos M and Heald (2009) Sociology Themes and Perspectives. New Delhi Oxford University Press

Julia Jary and David Jary (2005) Dictionary of Sociology Collins

Maconis, John (2005) Sociology (10th edition) Prentice Hall

Marshall Gordon. Dictionary of Sociology New Delhi Oxford University Press

Schaefer Richard Sociology A Brief Introduction (2006) sixth edition Tata McGraw Hill New Delhi

Schaeffer and Lamm (1998) Sociology (6th edition) McGraw Hill

Stolley S, Kathy (2005) The Basics of Sociology, Greenwood Press

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FYBA SOCIOLOGY Revised Syllabus for 2020-21

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Please Note: Syllabus should be supplemented by field visits / educational trips for better understanding of the paper.

University of Mumbai



No. UG/124 of 2019-20

CIRCULAR:-

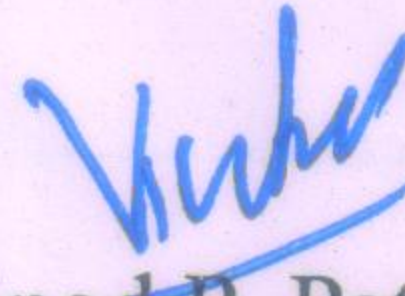
Attention of the Principals of the Affiliated Colleges, Directors of the recognized Institutions in Humanities Faculty is invited to this office Circular No. UG/151 of 2016-17 dated 16th November, 2016 relating to the revised syllabus as per (CBCS) for F.Y.B.A. degree program in Micro Economics (Sem. I).

They are hereby informed that the recommendations made by the Board of Studies in Economics at its meeting held on 7th June, 2019 have been accepted by the Academic Council at its meeting held on 26th July, 2019 vide item No.4.19/ & 4.20 and that in accordance therewith, the revised syllabus as per the (CBCS) for the F.Y. B.A. (Sem. I) Microeconomics – I in Economics and F.Y. B.A. (Sem. II) Microeconomics – II in Economics has been brought into force with effect from the academic year 2019-20, accordingly. (The same is available on the University's website www.mu.ac.in).

MUMBAI – 400 032

26th September, 2019

To


(Dr. Vinod P. Patil)
I/c REGISTRAR

The Principals of the affiliated Colleges, and Directors of the recognized Institutions in Humanities Faculty. (Circular No. UG/334 of 2017-18 dated 9th January, 2018.)

A.C/4.19/ & 4.20/26/07/2019

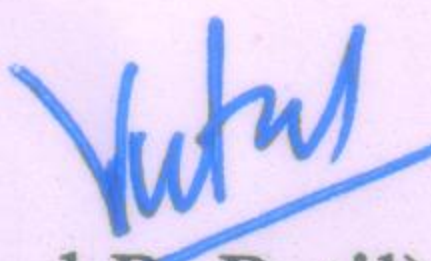
No. UG/124 -A of 2019-20

MUMBAI-400 032

26th September, 2019

Copy forwarded with Compliments for information to:-

- 1) The I/c Dean, Faculty of Humanities,
- 2) The Chairman, Board of Studies in Economics,
- 3) The Director, Board of Examinations and Evaluation,
- 4) The Professor-cum-Director, Institute of Distance and Open Learning (IDOL),
- 5) The Director, Board of Students Development,
- 6) The Co-ordinator, University Computerization Centre,


(Dr. Vinod P. Patil)
I/c REGISTRAR

AC. 26107/2019
Item No. 4.19

UNIVERSITY OF MUMBAI



Syllabus for Approval

Sr. No.	Heading	Particulars
1	Title of the Course	F.Y.B.A. Semester- I Microeconomics - I
2	Eligibility for Admission	HSC (<i>Arts</i>)
3	Passing Marks	40 Percentage (Pass Class)
4	Ordinances / Regulations (if any)	-
5	No. of Years / Semesters	2 Semesters
6	Level	U.G
7	Pattern	Semester
8	Status	Revised
9	To be implemented from Academic Year	From Academic Year: 2019 - 20

Date:

Signature :

Chairman/ Chairperson : _____

Dean Faculty of Humanities : _____

UNIVERSITY OF MUMBAI



Revised Syllabus for the F.Y.B.A. (Sem I)

Microeconomics – I

Course: Economics

(As Per Choice Based Credit System with effect from the academic
year 2019-20)

F.Y.B.A.
Subject: Economics
Microeconomics – I
Semester – I

(Academic Year: 2019 - 20)

Preamble: This course is designed to expose the students to the basic principles of microeconomic theory. The emphasis will be on the development of analytical thinking with the help of statistical tools among the students and develop the skill of application of microeconomics concepts to analyze the real life situations.

Module - I: Introduction to Microeconomics (12 Lectures)

Microeconomics: Meaning, Scope, Nature, Importance and Limitations; Basic Economic Problems; Role of Price Mechanism in a Market Economy; Positive Economics and Normative Economics; Concepts of Equation, Functions, Graphs, Diagrams, Line, Slope and Intercept

Module - II: Ten Principles of Economics (12 Lectures)

Trade-Off Faced by the Individuals; Significance of Opportunity Cost in Decision Making; Thinking at the Margin; Responses to incentives; Benefits from Exchange; Organization of Economic Activities through Markets and its Benefits; Role of Government in improving Market Outcomes; Dependence of Standard of Living on Production; Growth in Quantity of Money; Inflation and Unemployment Trade Off

Module - III: Markets, Demand and Supply (12 Lectures)

What is a Market; What is Competition; Demand Curves: Market Demand versus Individual Demand, Movements along the Demand Curve, Shifts in the Demand Curve; Supply Curves: Market Supply and Individual Supply, Shifts in Supply Curve; Market Equilibrium - Three Steps to Analyze Changes in Equilibrium; Price Elasticity of Demand, Methods of Measuring Price Elasticity of Demand – Total Outlay Method, Percentage Method and Point Method; Concepts of Income Elasticity of Demand, Cross Elasticity of Demand and Promotional Elasticity of Demand

Module IV: Consumer's Behavior (12 Lectures)

Introduction to Cardinal and Ordinal Approaches; Indifference Curve Analysis - Properties of Indifference Curves, Budget Line, and Consumer's Equilibrium; Income, Price and Substitution Effect; Derivation of Demand Curve; Consumer's Surplus: Strong Ordering and Weak Ordering

Reference

- 1.N.Gregory Mankiw, (2015), “Principles of Microeconomics” 7th edition- Cengage Learning.
- 2.Sen Anindya, (2007),“Microeconomics Theory and Applications” Oxford University press, New Delhi.
3. Salvator D, (2003) “Microeconomics Theory and Applications” Oxford University press, New Delhi.
4. M.L.Jhingan, (2006) “Microeconomics Theory”, 5th edition Vrinda Publication (P) Ltd.
5. H.L.Ahuja, (2016) “Advance Economics Theory” S.Chand & Company Ltd.
6. Paul Samuelson and W. Nordhaus, (2009): Economics, 19th Edition McGrawHill Publications.

UNIVERSITY OF MUMBAI



Revised Syllabus for the F.Y.B.A. (Sem II)

Microeconomics – II

Course: Economics

(As Per Choice Based Credit System with effect from the
academic year 2019-20)

F.Y.B.A.
Subject: Economics
Microeconomics – II
Semester – II

(Academic Year: 2019 - 20)

Preamble:

As a logical sequence to Microeconomics Paper I, this paper is aimed at giving supply side knowledge of Economics to the learner which will enhance their knowledge about aspects of production, cost and revenue analysis, theories of distribution and understanding about the market structure.

Module I: Production Analysis **(12 Lectures)**

Production Function: Concept And Types; Concepts of Total, Average and Marginal Product; Law of Variable Proportion and Returns to Scale, Isoquant and Producer's Equilibrium

Module II: Cost & Revenue Analysis **(12 lectures)**

Concepts of Costs: Money and Real Cost, Social Cost, Private Cost, Explicit and Implicit Cost, Opportunity Cost; Relationship between Average, Marginal and Total Cost; Derivation of Short Run and Long Run Cost Curves; Concepts of Revenue: Types and Interrelationship

Module III: Factor Pricing **(12 lectures)**

Marginal Productivity Theory of Distribution; Rent: Ricardian Theory of Rent, Modern Theory of Rent, Quasi Rent; Wages: Modern Theory of Wages; Collective Bargaining; Supply Curve of Labour; Interest: Classical Theory of Interest, Loanable Funds Theory of Interest; Profit: Risk and Uncertainty Theory, Innovation Theory

Module IV: Equilibrium in Different Market Structure **(12 Lectures)**

Concept Of Equilibrium: TR - TC And MR - MC Approach; Features of Perfect Competition; Monopoly and Monopolistic Competition, Short Run and Long Run Equilibrium of Firm and Industry under each Market Condition; Selling Cost and Wastages under Monopolistic Competition

Note: we may include case studies and numerical examples for modules 1, 2 and 4 from examination point of view.

Reference

1. A. Koutsoyannis, (2015), Modern Microeconomics, 2nd edition, Palgrave Macmillan.
2. Paul Samuelson and W. Nordhaus, (2009), Economics, 19th edition: Economics, McGrawHill Publications.
3. Mankiw M.G (2015), Principles of Micro economics 7th edition - Cengage Learning.
4. Anindya Sen, (2006), Microeconomics, OUP India Publisher.
5. M.L.Jhingan, (2006), “Microeconomics Theory”, 5th edition, Vrinda Publication (P) Ltd.
6. H.L.Ahuja, (2016), “Advance Economics Theory” S.Chand & Company Ltd.

UNIVERSITY OF MUMBAI**Syllabus for Approval**

Sr. No.	Heading	Particulars
1	Title of the Course	S.Y.B.A. (MARATHI)
2	Eligibility for Admission	F.Y.B.A. Pass
3	Passing Marks	40
4	Ordinances / Regulations (if any)	Nil
5	No. of Years / Semesters	01 (Two Semester)
6	Level	U.G.
7	Pattern	Semester
8	Status	Revised
9	To be implemented from Academic Year	From Academic Year 2021-22

Name & Signature of BOS Chairperson :

Name & Signature of Dean:

UNIVERSITY OF MUMBAI



Revised Syllabus

(Choice Based Credit System, CBCS)

Sem. III & Sem. IV

Program: S.Y.B.A.

Course: Marathi

From 2021-22

मुंबई विद्यापीठ
द्वितीय वर्ष बी.ए.
मराठी
अभ्यासक्रम (CBCS)

Course Code	Core Course	No of Credits
सत्र ३ रे		
UAMAR ३०१	कथन साहित्य	३
UAMAR ३०२	भाषा आणि बोली अभ्यास	३
सत्र ४ थे		
UAMAR ४०१	नाट्य साहित्य	३
UAMAR ४०२	मराठी व्याकरण आणि लेखन कौशल्ये (स्पर्धा परीक्षा)	३

द्वितीय वर्ष बी. ए. मराठी अभ्यासपत्रिका क्र.२ कथन साहित्य

सत्र ३ (तिसरे)- एकूण व्याख्याने ४५ - श्रेयांकने - ०३

उद्दिष्टे (Objective)

- १) कथन साहित्याचा परिचय करून घेणे
- २) कादंबरी या वाङ्मय प्रकाराचे स्वरूप व वैशिष्ट्ये समजून घेणे
- ३) नेमलेल्या कादंबरीचे विविध घटकानुसार विवेचन व विश्लेषण करणे
- ४) कथा या वाङ्मय प्रकाराचा घटकानुसार नेमलेल्या कथासंग्रहाचे विश्लेषण करणे

घटक-१ कथन साहित्याचा परिचय (१५ तासिका) श्रेयांकन १

अ) कथा व कादंबरी या साहित्य प्रकाराचा सैद्धान्तिक परिचय

घटक- २ 'फेसाटी - कादंबरी - नवनाथ गोरे, अक्षर वाङ्मय प्रकाशन (१५ तासिका) श्रेयांकन १

घटक -३ 'बक-याची बॉडी - समर खडस, शब्दालय प्रकाशन (१५ तासिका) श्रेयांकन १

तृतीय सत्रान्त परीक्षा - गुण १००

वरील अभ्यासपत्रिकेचे प्रथम सत्रान्त प्रश्नपत्रिकेचे स्वरूप पुढीलप्रमाणे -

प्रश्न १- ' कथन' साहित्यप्रकाराचा सैद्धान्तिक परिचय यावर पर्याय देऊन एक प्रश्न - गुण २०.

प्रश्न २ - "फेसाटी ' या कादंबरीवर पर्याय देऊन एक प्रश्न - गुण २०.

प्रश्न ३ - "'बक-याची बॉडी" कथा संग्रहावर ' पर्याय देऊन एक प्रश्न - गुण २०.

प्रश्न ४ - तिन्ही गटातील सहा टीपा विचाराव्यात किंवा लघुत्तरी प्रश्न विचारावेत विद्यार्थ्यांनी कोणतेही चार सोडवाव्यात - गुण ४०.

१) कथन' साहित्यप्रकाराचा सैद्धान्तिक परिचय

२) 'फेसाटी '

३) "'बक-याची बॉडी"

साध्ये (Outcome)

१) मराठी साहित्यातील कथन साहित्य अभ्यासून विद्यार्थ्यांना कथन साहित्याचे विश्लेषण करून मर्म ग्रहण करता येईल

२) कथा कादंबरी वाचताना कोणत्या दृष्टीने वाचावे याचे ज्ञान प्राप्त होईल

संदर्भ ग्रंथ

१) फेसाटी : चिंतन आणि मंथन, संपा. आशा मुंडे, संग्राम टेकले, अथर्व पब्लिकेशन्स, जळगाव

२) फेसाटी विशेषांक, वारूळ त्रैमासिक दिवाळी २०१८

नाट्य साहित्य

उद्दिष्टे (Objective)

- १) नाटक या वाङ्मय प्रकारची संकल्पना व त्याचे स्वरूप समजून घेणे
- २) मराठी नाट्य वाङ्मयाची वाटचाल ठळक नाट्याधारे लक्षात घेणे
- ३) एकांकिका या नाट्यप्रकारचे स्वरूप व त्याची वैशिष्ट्ये जाणून घेणे
- ४) मराठीतील एकांकिका वाटचाल लक्षात घेणे
- ५) निवडक एकांकिकांचा अभ्यास करणे आणि लेखनाचे स्वरूप वैशिष्ट्ये समजून घेणे

घटक १: नाट्य ('नाटक व एकांकिका') या साहित्यप्रकाराची ठळक वैशिष्ट्ये (१५ तासिका) श्रेयांकन- १

घटक २: 'आमदार सौभाग्यवती' - नाटक – श्रीनिवास जोशी (रा रं बोराडे यांच्या कादंबरीवर आधारित नाटक)
काँटिनेनटल प्रकाशन, (१५ तासिका) श्रेयांकन १

घटक ३: निवडक एकांकिकांचा अभ्यास (१५ तासिका)श्रेयांकन १

- १ झूलता पूल – सतीश आळेकर
- २ रक्तपुष्प – महेश एलकुंचवार
- ३ जहाज फुटलं आहे : दत्ता भगत
- ४ दुकान कुणी मांडू नये : संजय पवार
- ५ काजळ कुबड्या एकांताला : प्रा. दिलीप परदेशी
- ६ कृष्णाजी केशव : प्रल्हाद जाधव
- ७ चिऊताई चिऊताई दार उघड : प्रदीप राणे
- ८ रिश्वावाला : चंद्रशेखर फणसळकर
९. दगड आणि माती : दत्ता पाटील

चतुर्थ सत्रान्त परीक्षा - गुण १००

वरील अभ्यासपत्रिकेचे प्रथम सत्रान्त प्रश्नपत्रिकेचे स्वरूप पुढीलप्रमाणे -

प्रश्न १- नाट्य ('नाटक व एकांकिका') या साहित्यप्रकाराचा सैद्धान्तिक परिचय यावर पर्याय देऊन एक प्रश्न - गुण २०.

प्रश्न २ -'आमदार सौभाग्यवती' या नाटकावर पर्याय देऊन एक प्रश्न – गुण २०.

प्रश्न ३ - निवडक एकांकिकावर ' पर्याय देऊन एक प्रश्न – गुण २०.

प्रश्न ४ – तिन्ही गटातील सहा टीपा विचाराव्यात किंवा लघुत्तरी प्रश्न विचारावेत विद्यार्थ्यांनी कोणतेही चार सोडवाव्यात - गुण ४०.

१) नाट्य ('नाटक व एकांकिका') या साहित्यप्रकाराचा सैद्धान्तिक परिचय

२) 'आमदार सौभाग्यवती'

३) निवडक एकांकिका

साध्ये (Outcome)

- १) नाटक आणि एकांकिका या प्रकारचे वाङ्मयीन स्वरूप लक्षात येईल

- २) नाट्य साहित्याची वाटचाल समजेल
३) नाट्य ज्ञान मिळून नाट्य रचना करता येईल

संदर्भ ग्रंथ

- १) आधुनिक मराठी नाटक (आशय आणि आकृतीबंध) सुषमा जोगळेकर
- २) दलित रंगभूमी – संपादन व प्रस्तावना : भालचंद्र फडके, सुरेश एजन्सी, पुणे
- ३) मराठी नाटक आणि रंगभूमी : पहिले शतक (१८४३ ते १९४३) वि.भा. देशपांडे, व्हीनस, पुणे
- ४) मराठी नाटक (स्वातंत्र्योत्तर काळ) १९४७ ते १९९० वि.भा. देशपांडे, पुणे, व्हीनस,
- ५) मराठी नाटक आणि रंगभूमी (विसावे शतक : वसंत आबाजी डहाके पॉप्युलर प्रकाशन मुंबई
- ६) मराठी नाटक आणि रंगभूमी (: हिमांशू स्मार्त, विश्वनाथ शिंदे, प्रतिमा प्रकाशन, पुणे.
- ७) नाटक एक वाङ्मय प्रकार : दत्ता भगत, य.च.म.मु.वि., नाशिक
- ८) नाटक आणि मी, विजय तेंडुलकर, डिम्पल प्रकाशन, मुंबई, १९९७.
- ९) नाटक एक चिंतन – कानेटकर वसंत
- १०) नाटकातली चिन्ह – नाईक राजीव
- ११) महानगरी नाटक – नाईक राजीव
- १२) मराठी नाटक : नव्या दिशा आणि वळणे, भवाळकर, तारा
- १३) नाटक कालचं आणि आजचं : राजापुरे-तापास, पुष्पलता
- १४) प्रायोगिक नाटक : भारतीय आणि जागतिक-(संपा) सूर्यवंशी नानासाहेब
- १५) निवडक मराठी एकांकिका : संपा. सुधा जोशी, रत्नाकर मतकरी, साहित्य अकादमी, दिल्ली.
- १६) निवडक एकांकिका : वि.भा. देशपांडे, १९७७
- १७) सर्वोत्कृष्ट मराठी एकांकिका, प्रभाकर नारायण परांजपे, सुपर्ण प्रकाशन, पुणे, १९४८
- १८) मराठी एकांकिका तंत्र आणि विकास, संपादक श्री. रं.भी. भिडे सुपर्ण प्रकाशन पुणे.
- १९) एकांकिका विशेषांक, पंचधारा, जुलै-सप्टेंबर, २०१५

भाषा आणि बोली अभ्यास

उद्दिष्टे (Objective)

- १) भाषेचे स्वरूप समजून घेणे
- २) भाषाबोली समाजाचा परस्पर संबंध अभ्यासणे
- ३) बोलीचे स्वरूप व विषय समजून घेणे

घटक १ (अ) मानवी भाषेचे स्वरूप, एकूण व्याख्याने १५, श्रेयांकने १

संप्रेषण – मानवी आणि मानवेतरांचे, मानवांचे भाषिक व भाषेतर संप्रेषण, मानवी भाषेची लक्षणे किंवा स्वरूप विशेष (ध्वन्यात्मकता, चिन्हात्मकता, यादृच्छिकता, सर्जनशीलता, प्रत्यक्षातीतता, सामाजिकता, परिवर्जनशीलता इ.) मानवी भाषेच्या व्याख्या

(आ) भाषेची विविध कार्ये - रोमान याकबसनचे संप्रेषणाचे नमुनारूप व ६ भाषिक कार्ये (निर्देशात्म, आविष्कारात्म, परिणामनिष्ठ, सौंदर्यात्म, संपर्कनिष्ठ, अतिभाषात्म)

घटक २ (अ) भाषा, समाज आणि संस्कृती - एकूण व्याख्याने १५, श्रेयांकने १

भाषा - एक सांस्कृतिक संचित, सांस्कृतिक जडणघडणीचे, संक्रमणाचे माध्यम एडवर्ड सपीरबेंजामीन बोर्फ यांचा भाषिक सापेक्षतावादाचा अभ्युपगम भाषेकडे पाहण्याचा समाज भाषावैज्ञानिक दृष्टिकोण, समाजातील भाषावैविध्य आणि भाषेचा बहुजिनसीपणा, भाषिकसांस्कृतिक विविधता परस्परसंबंध

आ) भाषा, प्रमाण भाषा आणि बोली : संकल्पना विचार व्याख्याने १५ श्रेयांकने १

'प्रमाण भाषा' म्हणजे काय, प्रमाण भाषेची आवश्यकता, प्रमाण भाषा व बोली यांच्यातील संबंध, त्यांचे वापरक्षेत्र, बोलीवैविध्य- उपबोली, स्थानिक बोली-प्रादेशिक बोली- जातिनिष्ठ बोली-सामाजिक बोली इ., बोलीविषयीचे गैरसमज (शुद्धाशुद्धता, श्रेष्ठकनिष्ठता, अंगभूत क्षमता इ.) व तथ्ये, मराठीच्या विविध बोली

घटक ३ (अ) बोलींच्या अभ्यासाची गरज व महत्त्व

बोलीविज्ञान (Dialectology), बोलींच्या अभ्यासाची दिशा - बोलींचा विजनात्मक अभ्यास, सामाजिक-सांस्कृतिक अभ्यास, बोलींच्या अभ्यासाची साधने, क्षेत्रीय कार्य (Field Work), बोलींची व्याकरणे व कोशरचना यांचे महत्त्व, बोलींसमोरील आव्हाने व त्यांचे जतन व संवर्धन यांसाठी करावयाच्या प्रयत्नांची दिशा

आ) मराठीतील प्रमुख बोली : वऱ्हाडी, अहिराणी, कोकणी बोलीचे स्वरूप विशेष

इ) मालवणी व आगरी बोलींची वैशिष्ट्ये- व्युत्पत्ती आणि विकास, व्याकरणिक वैशिष्ट्ये, उच्चार प्रक्रिया, म्हणी, वाक् प्रचार, शब्दसंग्रह इ.

सत्रांत परिक्षेचे स्वरूप

प्रश्न क्र. १ घटक १ वर अंतर्गत पर्यायासह एक प्रश्न (गुण २०)

प्रश्न क्र. २ घटक २ वर अंतर्गत पर्यायासह एक प्रश्न (गुण २०)

प्रश्न क्र. ३ घटक ३ वर अंतर्गत पर्यायासह एक प्रश्न (गुण २०)

प्रश्न ४ – तिन्ही गटातील सहा टीपा विचाराव्यात किंवा लघुत्तरी प्रश्न विचारावेत विद्यार्थ्यांनी कोणतेही चार सोडवाव्यात - गुण ४०.

साध्ये (Outcome)

- १) मराठी भाषेचे स्वरूप समजेल
- २) मराठीच्या विविध बोलींचे ज्ञान होईल
- ३) मराठी बोलीअभ्यासाला चालना मिळेल

संदर्भ ग्रंथ:

- १) भारतीय भाषांचे लोकसर्वेक्षण: सर्वेक्षण मालिका मुख्य संपादक- डॉ. गणेश देवी, महाराष्ट्र खंड संपादन: अरुण जाखडे, पद्मगंधा प्रकाशन, २०१३
- २) मालवणी बोली-व्याकरण, साहित्य व शब्द कोश, संपा डॉ. पुष्पलता राजापुरे-तापस, डॉ. रमेश धोंगडे, शब्दपरी प्रकाशन.

सत्र ४ (चौथे) एकूण व्याख्याने ४५ श्रेयांकने ३
मराठी व्याकरण आणि लेखन कौशल्ये (स्पर्धा परीक्षा)

उद्दिष्टे (Objective)

- १) भाषा लेखन कौशल्य आत्मसात करणे
- २) निबंध लेखनाचे कौशल्ये आत्मसात करणे
- ३) निबंध लेखनाचा सराव करणे
- ४) संगणकीय उपयोजन करणे
- ५) मराठी व्याकरण समजून त्याचे उपयोजन करणे

घटक १ व्याकरण एकूण व्याख्याने १५ श्रेयांकने १

वर्णमाला शब्दांच्या जाती काळ

लिंग वचन प्रयोग अलंकार

वृत्ते समास वाक्यांचे प्रकार शब्दसंधी

संधी-स्वरसंधी विभक्ती विरामचिन्हे

समानार्थी शब्द

विरुद्धार्थी शब्द

वाक्प्रचार

म्हणी व अर्थ

विरामचिन्हे

शब्द समूहाबद्दल एक शब्द

अलंकाराचे प्रकार इत्यादी घटकांची संक्षेपाने चर्चा

घटक २ एकूण व्याख्याने १५ श्रेयांकने १

मराठी भाषा आणि आधुनिक तंत्रज्ञान परिचय व प्रात्यक्षिक

पॉवरपॉइंट प्रेझेंटेशन, युनिकोड टंकलेखन.

घटक ३ एकूण व्याख्याने १५ श्रेयांकने १

अ निबंध

आ कल्पना विस्तार

इ आकलन

ई सारांश लेखन

चतुर्थ सत्रांत परीक्षेचे स्वरूप

प्रश्न क्र. १ घटक १ वस्तुनिष्ठ स्वरूपाचे ४० पैकी कोणतेही ३० प्रश्न सोडविणे (गुण ६०)

प्रश्न क्र. २ घटक २ वर अंतर्गत पर्यायासह एक प्रश्न (गुण २०)

प्रश्न क्र. ३ घटक ३ वर अंतर्गत पर्यायासह एक प्रश्न (गुण २०)

संदर्भ ग्रंथ:

साध्ये (Outcome)

- १) भाषालेखन कौशल्य आत्मसात होईल
- २) मराठीचे लेखन कौशल्य प्राप्त होईल
- ३) संगणकासाठी मराठी भाषेचा उपयोग होईल
- ४) स्पर्धा परीक्षा उत्तीर्ण होण्यासाठी हा अभ्यासक्रम उपयुक्त ठरेल.

संदर्भ ग्रंथ-

- १) मराठी व्याकरण : प्रा. डॉ. के.पी. शहा, ओम पब्लिकेशन, सप्टेंबर २०१२
- २) मराठीचे व्याकरण : डॉ. लीला गोविलकर, शब्दालय प्रकाशन, जून २०१५
- ३) मराठी भाषेचे वाक्यप्रकार व म्हणी : कै. विद्याधर वामन भिडे, चित्रशाळा प्रकाशन पुणे, ऑक्टोबर १९१८
- ४) मराठी भाषेचा भाषावैज्ञानिक अभ्यास : डॉ. अलका मटकर, शब्दालय प्रकाशन, २०१७
- ५) मराठी लेखन शुद्धी : डॉ. भास्कर गिरिधारी, गौतमी प्रकाशन, नाशिक, २०१२
- ६) मराठी व्याकरण वाद आणि प्रवाद, कृष्ण श्री अर्जुनवाडकर
- ७) मराठी व्याकरण काही समस्या : प्र. ना. दीक्षित
- ८) मराठी व्याकरणाचा इतिहास कृष्ण श्री अर्जुनवाडकर
- ९) मराठी व्याकरण : मो. रा. वाळंबे
- १०) मराठी व्याकरणविवेक : मा. ना. आचार्य
- ११) मराठी व्याकरणाचा पुनर्विचार : अरविंद मंगरुळकर
- १२) मराठीचे व्याकरण : लीला गोविलकर
- १३) शास्त्रीय मराठी व्याकरण : मोरो केशव दामले
- १४) शुद्धलेखनविवेक : द.ना गोखले
- १५) आधुनिक माहिती तंत्रज्ञानाच्या विश्वात : दीपक शिकारपूर, उज्ज्वल साठे, उत्कर्ष प्रकाशन पुणे.

University of Mumbai



No. AAMS(UG)/ 37 of 2022-23

CIRCULAR:-

Attention of the Principals of the Affiliated Colleges and Directors of the Recognized Institutions in Faculty of Humanities is invited to this office circular No.UG/191 of 2017-18 dated 9th August, 2017 relating to revised syllabus as per the (CBCS) of Bachelor of Arts in S.Y.B.A. (English) (Ancillary) and (Applied Component) (Sem III & IV).

They are hereby informed that the recommendations made by the Board of Studies in **English** at its meeting held on 25th October, 2021 and subsequently passed in the faculty and then by the Board of Deans at its meeting held on 23rd February, 2022 vide item No. (R) have been accepted by the Academic Council at its meeting held on 17th May, 2022 vide item No. 5.1(R) and that in accordance therewith, the revised syllabus of **S.Y.B.A. (English) (Ancillary) and (Applied Component) - Sem III & IV (CBCS)** has been brought into force with effect from the academic year 2022-23. (The same is available on the University's website www.mu.ac.in).

MUMBAI - 400 032

27th June, 2022

To

The Principals of the Affiliated Colleges and Directors of the Recognized Institutions in Faculty of Humanities.

A.C/5.1(R)/17/05/2022

No. AAMS(UG)/ 37 -A of 2022-23

Copy forwarded with Compliments for information to:-

- 1) The Dean, Faculty of Humanities,
- 2) The Chairman. Board of Studies English,
- 3) The Director, Board of Examinations and Evaluation,
- 4) The Director, Board of Students Development,
- 5) The Director, Department of Information & Communication Technology,
- 6) The Co-ordinator, MKCL.

Vinod
(Dr. Vinod Patil)
I/c Registrar

27th June, 2022

Vinod
(Dr. Vinod Patil)
I/c Registrar

Copy to :-

- 1. The Deputy Registrar, Academic Authorities Meetings and Services (AAMS),**
- 2. The Deputy Registrar, College Affiliations & Development Department (CAD),**
- 3. The Deputy Registrar, (Admissions, Enrolment, Eligibility and Migration Department (AEM),**
- 4. The Deputy Registrar, Research Administration & Promotion Cell (RAPC),**
- 5. The Deputy Registrar, Executive Authorities Section (EA),**
- 6. The Deputy Registrar, PRO, Fort, (Publication Section),**
- 7. The Deputy Registrar, (Special Cell),**
- 8. The Deputy Registrar, Fort/ Vidyanagari Administration Department (FAD) (VAD), Record Section,**
- 9. The Director, Institute of Distance and Open Learning (IDOL Admin), Vidyanagari,**

They are requested to treat this as action taken report on the concerned resolution adopted by the Academic Council referred to in the above circular and that on separate Action Taken Report will be sent in this connection.

- 1. P.A to Hon'ble Vice-Chancellor,**
- 2. P.A Pro-Vice-Chancellor,**
- 3. P.A to Registrar,**
- 4. All Deans of all Faculties,**
- 5. P.A to Finance & Account Officers, (F.& A.O),**
- 6. P.A to Director, Board of Examinations and Evaluation,**
- 7. P.A to Director, Innovation, Incubation and Linkages,**
- 8. P.A to Director, Board of Lifelong Learning and Extension (BLLE),**
- 9. The Director, Dept. of Information and Communication Technology (DICT) (CCF & UCC), Vidyanagari,**
- 10. The Director of Board of Student Development,**
- 11. The Director, Department of Students Welfare (DSD),**
- 12. All Deputy Registrar, Examination House,**
- 13. The Deputy Registrars, Finance & Accounts Section,**
- 14. The Assistant Registrar, Administrative sub-Campus Thane,**
- 15. The Assistant Registrar, School of Engg. & Applied Sciences, Kalyan,**
- 16. The Assistant Registrar, Ratnagiri sub-centre, Ratnagiri,**
- 17. The Assistant Registrar, Constituent Colleges Unit,**
- 18. BUCTU,**
- 19. The Receptionist,**
- 20. The Telephone Operator,**
- 21. The Secretary MUASA**

for information.

UNIVERSITY OF MUMBAI



**Revised Syllabus for S.Y.B.A. (English) (Ancillary) and
(Applied Component)
Semester - Sem III and IV
(Choice Based Credit System)**

(With effect from the academic year 2022-23)

UNIVERSITY OF MUMBAI



Syllabus for Approval

Sr. No.	Heading	Particulars
1	Title of the Course	S.Y.B.A. (English) (Ancillary) and (Applied Component)
2	Eligibility for Admission	F.Y.B.A.
3	Passing Marks	40%
4	Ordinances / Regulations (if any)	
5	No. of Years / Semesters	02 years & 04 semesters
6	Level	P.G. / U.G. / Diploma / Certificate (Strike out which is not applicable)
7	Pattern	Yearly / Semester (Strike out which is not applicable)
8	Status	New / Revised (Strike out which is not applicable)
9	To be implemented from Academic Year	From Academic Year 2022-2023

Date: 25/10/2021

Signature :

Name of BOS Chairperson / Dean : Dr. Sudhir Nikam



University of Mumbai
Revised Syllabus for S.Y.B.A. (English)
(Ancillary) & (Applied Component)

Semester- III / IV

(Choice Based Credit System)

With effect from the academic year 2022-23

Board of Studies in English

Dr. Sudhir Nikam (Chairperson)

Dr. Rajesh Karankal (Member)

Dr. Santosh Rathod (Member)

Dr. Bhagyashree Varma (Member)

Dr. Deepa Mishra (Member)

Dr. B. N. Gaikwad (Member)

Dr. Dattaguru Joshi (Member)

Dr. Satyawan Hanegave (Member)

Dr. Deepa Murdeshwar-Katre (Member)



University of Mumbai

Syllabus for S.Y.B.A. (English) (Ancillary)

Program: B.A.

Course: Optional English: Introduction to Drama

Paper II

(Choice Based Credit System with effect from the Academic Year 2022- 2023)

1. Syllabus as per Choice Based Credit System (CBCS):

- i) **Name of the Program** : S.Y.B.A. English (Ancillary)
- ii) **Course Code** : Semester III UAENG301
& Semester IV UAENG401
- iii) **Course Title** : **Optional English: Introduction to Drama
Paper II**
- iv) **Semester wise Course Contents** : Enclosed the copy of the syllabus
- v) **References and Additional References:** Enclosed in the Syllabus
- vi) **Credit Structure** 03
- vii) **No. of lectures per Unit** 15
- viii) **No. of lectures per week** 03
- 2. **Scheme of Examination** : 5 Questions of 20 marks each
- 3. **Special notes, if any** : No
- 4. **Eligibility, if any** : No
- 5. **Fee Structure** : As per University Structure
- 6. **Special Ordinances / Resolutions if any:** No.

SYBA English (Ancillary) Course Title
Optional English: Introduction to Drama

Paper II

(100 Marks Examination Pattern)

Objectives of the Course:

- To create interest and develop passion amongst learners towards drama (and theatre)
- To familiarize learners with the salient elements and characteristics of drama
- To introduce learners to different forms and types of drama
- To introduce learners to the trends and characteristics of significant dramatic movements through representative dramas
- To equip the learners with the tools and techniques to critically appreciate drama
- To inculcate and propagate human values reflected in the plays among learners
- To demonstrate that drama is reflection / representation of life
- To Develop analytical skills and critical thinking through close reading of drama

Course Outcomes:

By the end of the course, a learner will:

- develop interest and passion for drama (and theatre).
- be familiarized with the salient elements and characteristics of drama.
- be able to identify the different forms and types of drama.
- be capable to identify the various trends and characteristics of significant dramatic movements through the representative dramas.
- be equipped with the tools and techniques to critically appreciate drama.
- imbibe human values reflected in the selected plays.
- justify that drama is reflection / representation of life.
- develop analytical skills and critical thinking through close reading of the representative dramas.

Semester III:	Paper II	Total Credits: 03
Course Title: Optional English: Introduction to Drama		
Total Lectures: 45		

Course Content

Unit 1:

No. of lectures: 15

Definition, Concept and Significance of Drama

Origin and Development of Drama

Terms and Concepts associated with Drama:

Plot (Main Plot, Sub-plot, Simple, Complex, Peripeteia and Anagnorisis, Exposition, Complication, Resolution, Denouement, Climax, Anti-climax)

Character (Hero, Villain, Confidante, Foil)

Act and Scene,

Soliloquy and Aside,

Music, Chorus Lights, Masks, Proscenium Arch, Play within Play, Subtext, Catharsis, Hamartia, Comic relief, Unity of action, time and place, Narrator and Sutradhar, etc.

Unit 2:

No. of lectures: 15

Sophocles : *Oedipus Rex / Oedipus, The King*

OR

John Galsworthy : *Strife*

Unit 3:

No. of lectures: 15

Girish Karnad : *Flowers*

OR

Mohan Rakesh : *Half-way House (Adhe Adhure)*

Evaluation: First Semester End Examination Pattern 100 Marks: 3 Hours

Question 1	:	Short Notes on Unit 1 (4 out of 6)	:	20 Marks
Question 2	:	Essay on Unit 2 (1 out of 2)	:	20 Marks
Question 3	:	Essay on Unit 3 (1 out of 2)	:	20 Marks
Question 4	:	Short Notes on Unit 2 (2 out of 4)	:	20 Marks
Question 5	:	Short Notes on Unit 3 (2 out of 4)	:	20 Marks

Semester IV:	Paper II	Total Credits: 03
Course Title: Optional English: Introduction to Drama		
Total Lectures: 45		

Course Content

Unit 1: No. of lectures: 15

Types of Drama (based on form, content, function, theme, style, etc.):

Interlude, Chronicle Plays, Mystery Plays, Miracle Plays, Morality Plays, Romantic Comedy, Comedy of Humours, Restoration Comedy of Manners, Sentimental Comedy, Senecan Plays or Revenge Plays, History Plays, Heroic Drama, Blank Verse Drama, Poetic Drama / Verse Drama, Drama of Ideas / Problem Play, Expressionist Plays, Epic Theatre, Absurd Plays, Plays by Angry Young Men, Kitchen Sink Drama, Theatre of Cruelty, Comedy of Menace, etc.

Unit 2: No. of lectures: 15

Eugene O’Neil : *The Hairy Ape*
OR
Lorraine Hansberry : *A Raisin in the Sun*

Unit 3: No. of lectures: 15

Wole Soyinka : *The Lion and the Jewel*
OR
David Williamson : *The Removalists*

Evaluation: Second Semester End Examination Pattern 100 Marks: 3 Hours

Question 1	:	Short Notes on Unit 1 (4 out of 6)	:	20 Marks
Question 2	:	Essay on Unit 2 (1 out of 2)	:	20 Marks
Question 3	:	Essay on Unit 3 (1 out of 2)	:	20 Marks
Question 4	:	Short Notes on Unit 2 (2 out of 4)	:	20 Marks
Question 5	:	Short Notes on Unit 3 (2 out of 4)	:	20 Marks

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Albert, Edward. *History of English Literature*. Oxford UP, 2009.

Andermahr, Sonya. et al. *A Glossary of Feminist Theory*. Arnold, 2000.

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- Fleming, Mike. *Starting Drama Teaching*. Routledge, 2017.
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- Galsworthy, John. *Strife*. Books Way, 2021.
- Gibson, Arthur. *What is Literature*. Peter Lang Pub Inc, 2007.
- Hansberry, Lorraine. *A Raisin in the Sun*. Vintage, 2004.
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- Kennedy X. J. and Dana Gioia. *An Introduction to Fiction, Poetry, and Drama*. HarperCollins College Publishers Inc., 1995.
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- Krasner, David. *A History of Modern Drama*. Volume I, Wiley-Blackwell, 2012.
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- Naik, M. K. *A History of Indian English Literature*. Sahitya Akademi, 2009.
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- O'Neil, Eugene. *The Hairy Ape*. Good Press, 2019.
- Prasad, Birjadish. *Background of the Study of English Literature*. Macmillan, 1999.
- Pritner, Cal, and Scott E. Walters. *Introduction to Play Analysis*. Waveland Press, 2017.
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- Rakesh, Mohan. *Halfway House*. Translated by Bindu Batra. Worldview Publications, 1999.
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- Salgado, Gamini. *English Drama: A Critical Introduction*. St. Martin's Press, 1980.

Sanders, Andrew. *The Short Oxford History of English Literature*. Oxford UP, 2004.
 Shepherd-Barr, Kirsten. *Modern Drama: A Very Short Introduction*. Oxford UP, 2016.
 Sophocles. *Oedipus Rex*. edited by R. D. Dawe, Cambridge UP, 2006.
 Soyinka, Wole. *The Lion and the Jewel*. Oxford UP, 1974.
 Styan, J. L. *Elements of Drama*. Cambridge UP, 2001.
 Styan, J. L. *Modern Drama in Theory and Practice*. Cambridge UP, 1980.
 Turco, Lewis. *The Book of Literary Terms*. UP of New England, 1999.
 Walsh William, *Commonwealth Literature*. Oxford UP, 1973.
 Widdowson, Peter. *The Palgrave Guide to English Literature and its Contexts 1500-2000*. Palgrave Macmillan, 2004.
 Williamson, David. *The Removalists*. Currency Press, 1980.

Activity: Students should be encouraged to perform any scene or act from any play.

MOOCs:

Merin Simi Raj. Twentieth Century American Drama. IIT Madras.
<https://nptel.ac.in/noc/courses/noc21/SEM2/noc21-hs75/>

Prof. Aysha Iqbal. American Literature and Culture. IIT Madras.
<https://nptel.ac.in/noc/courses/noc21/SEM2/noc21-hs63/>

Chattopadhyay, Sayan. 'Introduction to Literary Theory.' IIT Kanpur.
https://onlinecourses.nptel.ac.in/noc20_hs82/preview

Perui, Avishek . 'Gender and Literature'. IIT Madras.
https://onlinecourses.nptel.ac.in/noc20_hs59/preview

Raj, Merin Simi. 'History of English Language and Literature'. IIT Madras.
https://onlinecourses.nptel.ac.in/noc20_hs52/preview

Perui. Avishek. 'Feminists Writings'. IIT Madras.
https://onlinecourses.nptel.ac.in/noc20_hs58/preview

Web Resources:

1. <https://youtu.be/2CVO9Vd067U> (Greek Theatre Explained)
2. https://youtu.be/4_XPcAwmULg (Ancient Greek Theatre and Machinery)
3. https://ingilizedebiyati.net/wp-content/uploads/ABSURD_DRAMA.pdf
The Theatre Of The Absurd: The Basics
4. <https://asianethnology.org/downloads/ae/pdf/a430.pdf>
Indian Folk Traditions and the Modern Theatre
5. <https://www.mansworldindia.com/currentedition/from-the-magazine/drama-mahesh-dattanis-life/>
6. https://en.wikipedia.org/wiki/Indian_classical_drama#:~:text=The%20term%20Indian%20classical%20drama,highest%20achievement%20of%20Sanskrit%20literature. (Indian Classical Drama)
7. <http://www.unishivaji.ac.in/uploads/distedu/Home/SIM%202015/B.%20A.%20III%20Understanding%20Drama%20Paper-9.PDF>
Understanding Drama

8. <http://notedesk.blogspot.com/2017/05/allied-i-background-to-study-of-english.html>
Elements of Drama
9. <http://notedesk.blogspot.com/2017/05/allied-paper-ii-background-to-study-of.html>
Drama
10. https://web.archive.org/web/20051107010423/http://www.hccy.cg.catholic.edu.au/home/pamela_cohen/removalists/removalistindex.htm
The Removalists: A Study Guide

Syllabus Drafting Committee

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Shankar Pandurang Khobare: Assistant Professor, Department of English, S. K. Patil Sindhudurg Mahavidyalaya, Malvan, Dist. Sindhudurg, – 416606.

Surendra Athawale: Assistant Professor, Department of English, Vikas College Of Arts, Science & Commerce, Vikas High School Marg, Kannamwar Nagar–2, Vikhroli (East), Mumbai – 400083.

University of Mumbai



Syllabus for S.Y.B.A. (English) (Ancillary)

Course: Optional English: Introduction to Poetry

Paper III

(Choice Based Credit System with effect from the Academic Year 2022-2023)

1. Syllabus as per Choice Based Credit System (CBCS):

i) **Name of the Program** : S.Y.B.A. English (Ancillary)

- ii) **Course Code** : Semester III UAENG302
& Semester IV UAENG402
- iii) **Course Title** : **Optional English: Introduction to Poetry Paper III**
- iv) **Semesterwise Course Contents** : Enclosed the copy of the syllabus
- v) **References and Additional References:** Enclosed in the Syllabus
- vi) **Credit Structure** 03
- vii) **No. of lectures per Unit** 15
- viii) **No. of lectures per week** 03
2. **Scheme of Examination** : 5 Questions of 20 marks each
3. **Special notes , if any** : No
4. **Eligibility, if any** : No
5. **Fee Structure** : As per University Structure
6. **Special Ordinances / Resolutions if any:** No.

SYBA English (Ancillary) Course Title:
Optional English: Introduction to Poetry
Paper III
(100 Marks Examination Pattern)

Objectives of the Course:

- To introduce students to different genres and forms of poetry
- To sensitize them to the rhythmical and formal properties of poetry by introducing key elements of poetry
- To provide them with basic poetic devices for analyzing poems
- To introduce them to the trends and characteristics of significant poetic movements through representative poems
- To develop their skills in reading, writing and to critically appreciate poetry
- To introduce students to poetry produced in various social and cultural context

Course Outcome: By the end of the course, a student should develop the ability to:

- Identify different genres and forms of poetry
- Identify poetic technique, style and rhetorical devices used in poetry
- Critically appreciate poems by separating various component parts and investigating the relationship of the parts to the whole
- Demonstrate understanding of wide range of poems from different historical periods, written in a wide range of forms, styles and subject matter
- Identify the major poets of world literature and define the importance of their works
- Enhance their cultural sensitivity through reading of representative poems from diverse cultural context

Semester III:	Paper III	Total Credits: 03
Course Title: Optional English: Introduction to Poetry		

Total Lectures: 45

Unit I

15 Lectures

- A) Elements of Poetry:** Turns of Speech: Voice and persona, tone, mood, attitude; Diction: Denotation and connotation; Imagery; Symbol; Allegory; Figurative Language; Music: Rhyme and Rhythm, Scansion (scansion to be taught and practiced; not for evaluation)
- B) Types of Verse:** Nature, characteristics and functions: Epic, lyric, sonnet, elegy, ode, ballad, dramatic monologue and free verse

Unit II

15 Lectures

- John Milton : 'Invocation' (from *Paradise Lost*), Book 1, Lines 1-26
- Robert Frost : 'The Road Not Taken'
- Edmund Spenser : 'Men Call you Fayre...' (*Amoretti* LXXIX)
- William Shakespeare : Sonnet 19, 'Devouring Time, blunt thou the Lion's paws'
- Walt Whitman : 'O Captain! My Captain!'
- Ralph Waldo Emerson: 'Ode to Beauty'
- W. B. Yeats : 'The Song of Wandering Aengus'

Unit III

15 Lectures

- John Keats : 'La Belle Dame sans Merci'
- Alfred Lord Tennyson: 'Ulysses'
- Rabindranath Tagore : 'Freedom'
- Sarojini Naidu : 'Indian Weavers'
- Wole Soyinka : 'To My First White Hairs'
- Pablo Neruda : 'You Start Dying Slowly'
- Nissim Ezekiel : 'Enterprise'

Evaluation Pattern:

Third Semester End Examination Pattern	Duration: 3 Hours	Marks: 100
Question 1(A): Short notes on Unit I (A) (2 out of 4)		:10 Marks
and		
Question 1 (B): Short notes on Unit I (B) (2 out of 4)		:10 Marks
Question 2: Essay on Unit II (1 out of 3)		:20 Marks
Question 3: Essay on Unit III (1 out of 3)		:20 Marks
Question 4: Short Notes on Unit II (2 out of 4)		:20 Marks
Question 5: Short Notes on Unit III (2 out of 4)		:20 marks

Semester IV:**Paper III****Total Credits:03****Course Title: Introduction to Poetry****Total Lectures: 45****Unit I: Trends and Movements in Poetry: Modernism and after****15 Lectures**

Modernism, War Poetry, Harlem Renaissance, Imagism, Symbolism, Surrealism, Confessional Poetry, Beat poetry, Modernism in Indian English Poetry

Unit II**15 Lectures**

T.S. Eliot	: ‘The Love Song of J. Alfred Prufrock’
Wilfred Owen	: ‘Anthem for Doomed Youth’
Claude McKay	: ‘If We Must Die’
William Carlos Williams	: ‘The Red Wheelbarrow’
Wallace Stevens	: ‘Sunday Morning’
Kamala Das	: ‘An Introduction’
Arun Kolatkar	: ‘The Bus’

Unit III**15 Lectures**

Phillip Larkin	: ‘Church Going’
Robert Creeley	: ‘I Know a Man’
Meena Kandasamy	: ‘Touch’
Gabriel Okara:	: ‘The Mystic Drum’
Chinua Achebe	: ‘Refugee Mother and Child’
Margaret Atwood	: ‘This is a Photograph of Me’
Derek Walcott	: ‘A Far Cry from Africa’

Evaluation Pattern:**Fourth Semester End Examination Pattern****Duration: 3 Hours****Marks: 100**

Question 1: Short notes on Unit I	(4 out of 6)	:20Marks
Question 2: Essay on Unit II	(1out of 3)	:20 Marks
Question 3: Essay on Unit III	(1 out of 3)	:20 Marks
Question 4: Short Notes on Unit II	(2 out of 4)	:20 Marks
Question 5: Short Notes on Unit III	(2 out of 4)	:20 marks

References:

- Abrams, M.H. *Glossary of Literary Terms*. Macmillan Publishers, 2000.
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- Albert, E. *History of English Literature*, Oxford University Press, 2009.
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- Edmond Gore and Alexander Holmes. *What is Poetry?* Nabu Press, 2010.
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Smith A. J. M., (ed.), *The Oxford Book of Canadian Verse*. Oxford University Press 1965.

Smith A. J. M. (ed.), *Masks of Poetry: Canadian Critics on Canadian Verse*. McClelland and Stewart, 1968.

Soyinka Wole (ed.), *Poems of Black Africa, African Writers Series*. Heinemann Educational Books, 1975.

Spenser, Edmund. *Amoretti: A Sonnet Cycle*. Portable Poetry, 2017.

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Turco, Lewis. *The Book of Literary Terms*. University Press of New England, 1999.

Walsh William, *Commonwealth Literature*, Oxford University Press, 1973.

Widdowson, Peter. *The Palgrave Guide to English Literature and its Contexts 1500-2000*. Palgrave Macmillan, 2004

MOOCs:

Dhanwal, S. P. 'Poetry'. IIT Madras.

https://onlinecourses.nptel.ac.in/noc20_hs64/preview

Chattopadhyay, Sayan. 'Introduction to Literary Theory.' IIT Kanpur.

https://onlinecourses.nptel.ac.in/noc20_hs82/preview

Perui, Avishek . 'Gender and Literature'. IIT Madras.

https://onlinecourses.nptel.ac.in/noc20_hs59/preview

Raj, Merin Simi. 'History of English Language and Literature'. IIT Madras.

https://onlinecourses.nptel.ac.in/noc20_hs52/preview

Perui. Avishek. 'Feminists Writings'. IIT Madras.

https://onlinecourses.nptel.ac.in/noc20_hs58/preview

Syllabus Sub-Committee:

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University of Mumbai



Syllabus for S.Y.B.A. (Applied Component)

Course: Business Communication

Paper I & II

(Choice Based Credit System with effect from the Academic Year 2022-2023)

1. Syllabus as per Choice Based Credit System (CBCS):

i.Name of the Program	: S.Y.B.A. (Applied Component)
ii. Course Code	: Semester III (UABC301) Semester IV (UABC401)
iii. Course Title	: Business Communication Papers I and II
iv.Semester wise Course Contents	: Enclosed in the Copy of the Syllabus
v.References & Additional References	: Enclosed in the Syllabus
vi. Credit Structure	: Number of credits per Semester – 02
vii. No. of lectures per Unit	: As mentioned in the syllabus
viii. No. of lectures per week	04
2. Scheme of Examination	: 05 Questions of 20 Marks each
3. Special notes, if any	: No
4. Eligibility, if any	: No
5. Fee Structure	: As per University Fee Structure
6. Special Ordinances / Resolutions if any	: No

Syllabus for S.Y.B.A. (Applied Component)

Course Title: Business Communication

Paper I & II

(100 Marks Examination Pattern)

Objectives of the Course: This course aims to introduce students with

- To build up comprehensive understanding of business correspondence and conditions.
- To create influential oral, written and practical skills among students.
- To develop the powerful utilization of communication technologies.
- To equip students with the career skills such as collaborative working at workplace, interviews, etc.

Course Outcome: At end of the course learners will develop

- Theoretical understanding of both business and communication
- The business correspondence techniques.
- Competency in effective use of media and electronic devices in business.
- Interpersonal skills, presentation skills, oral, written and listening skills.

Semester III:	Applied Component:	Paper-I	Total Credits: 02
Course Title: Business Communication			

Total Lectures: 60

Unit I : Theory of Communication (05)

- Concept of Communication
- Meaning
- Definition
- Process
- Need
- Feedback
- Emergence of Communication as a key concept in the Corporate and Global world

Unit II : Communication at the Workplace

i. Channels of Communication (03)

Formal and Informal – Vertical, Horizontal, Diagonal and Grapevine

ii. Methods of Communication (05)

Verbal, Non-Verbal and Visual (including Kinesics, Para-Language, Proxemics, Silence, Sign, Signal and Symbol)

iii. Business Etiquette (04)

Office Etiquette, Internet Etiquette / Netiquette, Business Card Etiquette, Handshake Etiquette, Mobile Phone Etiquette

iv. Barriers to Communication and Ways to Overcome Them (06)

Physical or Environmental, Semantic or Language, Psychological and Cross-Cultural Barriers

Ways to Overcome these Barriers

v. Listening (04)

What is Listening?

The Listening Process

Importance of Good Listening

How to Develop Effective Listening Skills

Obstacles to Listening

vi. Business Ethics (07)

What is Ethics? Business Ethics?

Importance of Business Ethics at Workplace

Digital Ethics

Environmental Ethics

Ethics in International Business

Corporate Social Responsibility

Unit III: New Media in Communication (07)

- Impact of Technology Enabled Communication
- Video Conference: Skype, Google Meet, Go-To-Meeting and Jio-Meet
- Social Media: WhatsApp, Twitter, Facebook, Instagram, Telegram and Blogs

Unit IV: Business Correspondence

i. Theory of Business Letter Writing (05)

- Principles of Effective Letter Writing
- Parts of a Business Letter
- Layout of a Business Letter (Full Block)

ii. Personnel Correspondence (09)

Job Application Letter and Resume

Letter of Recommendation

Letter of Appointment

Letter of Acceptance of Job Offer

Letter of Appreciation

Letter of Resignation

Unit V: Paragraph Writing and Book Review

i. Paragraph Writing (02)

Developing an idea, using appropriate linking devices, etc.
Cohesion and Coherence, etc.

ii. Book Review (03)

Steps in writing a book review: Introduction, Summary, Opinion and Conclusion
Recommended Books are: *The Wings of Fire* by Dr. APJ Abdul Kalam,
Bhujia Barons: *The Untold Story of How Haldiram Built a 5000 Crore Empire* by
Pavitra Kumar and
The 7 Habits of Highly Effective People by Stephen Covey

Evaluation Pattern:

Third Semester	End Examination Pattern	Duration: 3 Hours	Marks: 100
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Question 1. :20 Marks (10+05+05)

- A. Explain the terms in 2 to 3 sentences (five out of eight) (from all Units)
- B. Objective type questions (From all Units)
- C. True or False (From all Units)

Question 2. Short Notes (four out of six) (From Unit – I and III) :20 Marks

Question 3. Essay Type Questions (two out of three (From Unit – II) :20 Marks

Question 4. Personnel Letters (four out of five) :20 Marks

- Letter of Recommendation
- Letter of Appointment
- Letter of Acceptance of Job Offer
- Letter of Appreciation
- Letter of Resignation

Question 5. 20 Marks (10+05+05)

- A. Job Application Letter with Resume (05+05)
- B. Book Review
- C. Paragraph Writing

Semester IV:	Title of the paper:	Paper- II	Total Credits:03
	Course Title: Business Communication		

Total Lectures: 60

Unit I : Group Communication

i. Group Discussion and Interview (08)

- Group Discussion

What is GD? Effective Participation in GD, Role of Participants in GD and Role of Evaluators

- Interview, Definition

Preparing for an interview: the Interviewer and the Interviewee

Types of interview: Selection Interview, Appraisal Interview, Stress Interview, Exit Interview and Online Interview

- Soft Skills - Emotional Quotient (EQ), Conflict Management

ii. Meetings (10)

- Need and Importance of Meetings
- Types of Meetings: Formal and Informal Meetings
- Preparation and Conduct of Formal Meetings and Group Dynamics
- Role of the Chairperson
- Role of the Participants
- Drafting of Notice, Agenda and Resolutions
- Secretary: Types of Secretaries- Company Secretary/Private Secretary, Functions of Secretaries.

iii. Committees and Conferences (08)

- Committee

Definition of Committee

Types of Committees

Advantages and Disadvantages of Committee

- Conference

Definition of Conference

Organizing a Conference

Advantages and Disadvantages of organizing a conference

Unit II: Public Relations (10)

- Meaning
- Functions of the PR Department of an Organization
- Qualification of a PRO
- External and Internal Measures of Promoting PR
- Crisis Management
- Definition
- Causes of Crisis
- Types of Crisis
- Stages for Crisis Management

- Role of Crisis Manager

Unit III: Business Correspondence

(10)

- Letters of Inquiry
- Letters of Reply to Inquiry
- Letters of Complaint, Claim and Adjustments
- Sales Letters
- Consumer Grievance Redressal Letters

Unit III : Report Writing

(06)

- Parts of a Business Report
- Drafting Feasibility Reports
- Drafting Investigative Reports

Unit V: Language and Writing Skills

(08)

- i. Presentation Skills**
 - Principles of Effective Presentation
 - Use of PPT
 - How to make effective Power-Point Presentation
- ii. Interactive Sessions (Not to be assessed in exam)**
 - Group Discussion
 - Mock Interview

Evaluation Pattern:

Fourth Semester End Examination Pattern	Duration: 3 Hours	Marks: 100
Question 1. Short Notes (four out of six) (From Unit – I Group Discussion, Interviews, Meetings)	:20 Marks	
Question 2. Essay Type Questions (two out of three) (Based on Committees, Conferences and Public Relations)	:20 Marks	
Question 3. Trade Letters (four out of five) Letters of Inquiry Letters of Reply to Inquiry Letters of Complaint, Claim and Adjustments Sales Letters Consumer Grievance Redressal Letters	:20 Marks	
Question 4. Answer the following questions A. Drafting Notice, Agenda and Two Resolutions B. Report Writing (One out of two)	:20 Marks (10+10) (03+03+04) (10)	
Question 5. Answer the following questions. A. Explain the terms in 2 to 3 sentences (five out of eight) (from all Units) B. Multiple Choice Questions (From all Units) C. Short Notes (From Unit-V (i) Presentation Skills)	:20 Marks (10+05+05)	

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Books for Book Review:

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2. Covey, Stephen. *The 7 Habits of Highly Effective People*. Electronic Ed. RosettaBooks LLC, 2012.
3. Kumar, Pavitra. *Bhujia Barons: The Untold Story of How Haldiram Built a 5000 Crore Empire*. Potfolio/Penguin, 2016.

Web Resources:

1. <http://lifehacker.com/top-10-ways-to-improve-your-communication-skills-1590488550>
2. <https://www.thebalance.com/verbal-communication-skills-list-2059698>
3. <https://bemycareercoach.com/soft-skills/list-soft-skills.html>
4. <https://www.thebalance.com/verbal-communication-skills-list-2059698>
5. <https://bemycareercoach.com/soft-skills/list-soft-skills.html>
6. <https://www.sitepoint.com/social-networking-sites-for-business>

Suggested List of YouTube Videos:

1. <https://www.youtube.com/watch?v=K15ca0n0ois>
2. <https://www.youtube.com/watch?v=ixSUB11WNxk>
3. <https://www.youtube.com/watch?v=K15ca0n0ois>

MOOCs:

1. <https://www.mooc-list.com/tags/communication-skills>
2. <https://www.mooc-list.com/tags/effective-communication>
3. <http://www.about.com/Communication+Skills+List>

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UNIVERSITY OF MUMBAI



Syllabus for

S.Y.B.A. (Applied Component)

Course Title: Mass Communication

Paper I & II

(Choice Based Credit System with effect from the Academic Year 2022-2023)

7. Syllabus as per Choice Based Credit System (CBCS):

ix. Name of the Program	: S.Y.B.A. (Applied Component)
x. Course Code	: Semester III (UAMASSCOM301) Semester IV (UAMASSCOM401)
xi. Course Title	: Mass Communication Papers I and II
xii. Semester wise Course Contents	: Enclosed in the Copy of the Syllabus
xiii. References & Additional References	: Enclosed in the Syllabus
xiv. Credit Structure	: Number of credits per Semester – 02
xv. No. of lectures per Unit	: As mentioned in the syllabus
xvi. No. of lectures per week	04
8. Scheme of Examination	: 05 Questions of 20 Marks each
9. Special notes, if any	: No
10. Eligibility, if any	: No
11. Fee Structure	: As per University Fee Structure
12. Special Ordinances / Resolutions if any	: No

Syllabus for S.Y.B.A. (Applied Component)

Course Title: Mass Communication

Paper I & II

(100 Marks Examination Pattern)

Learning Objectives:

1. To introduce some major aspects of communication, mass communication processes, crucial mass media theories and mass communication industries
2. To develop a broad perspective of the past and the present status of mass media in India
3. To comprehend different types of Mass Media and gain a critical understanding of the impact of mass media on Indian history, society and culture
4. To develop critical awareness of the ethics and ideologies in mass media products
5. To understand the mass media laws in India, and how these laws shape the media practices
6. To introduce students to the application of social media
7. To identify various careers opportunities in media industry.

Course Outcome:

By the end of the course the students should be able to

1. understand the importance, scope, and function of communication and media
2. understand the strengths and limitations of basic theories of mass communication
3. demonstrate knowledge of growth and development of various mass media
4. throw light on the present status of various mass media
5. gain knowledge about various media laws and ethics
6. critically understand and analyse various mass media products and explore various career opportunities in media industry.

Semester III – Paper I

Credits: 02

Lectures per week: 04

Total lectures: 60 per semester

Unit 1- Nature of Mass Communication (20 lectures)

- A) Scope, need, and elements of communication
- B) Meaning, definition, and features of Mass Communication
- C) Mass media theories like Cultivation theory, Gatekeeping theory, Magic bullet/hypodermic needle theory
- D) Functions of Mass Communication: entertainment, surveillance, education, interpretation, persuasion, socialization, opinion building
- E) Mass audience & opinion leaders: concept, sociology and psychology

Unit II- Traditional media, Print Media and Radio (15 lectures)

- A) Folk media
- B) The making of a newspaper: major formats of newspaper items
- C) Partisan Journalism/Yellow Journalism/Objective Reporting
- D) Major types of magazines
- E) Radio as a patron of music
- F) Radio News, Radio Drama, Community Radio and Campus Radio

Unit III- Films/ Cinema (15 lectures)

- A) History of Indian cinema and major milestones
- B) Major types of films/cinema: Documentaries, Art films, Animations, Short films, and Biopics
- C) Some aspects of film making (scripting, directing, sounds)
- D) The impact of films/cinema on society
- E) Ethics of cinema

Unit IV- Trends in New media or Digital media (10 lectures)

- A) Online news websites

- B) Social media and social networking sites
- C) Special issues regarding social media: mass campaigns; fake news; fact-checkers
- D) Film streaming services (Netflix, Amazon Prime)
- E) Web series

Evaluation Pattern:

Third Semester End Examination

Duration: 3 Hours

100 Marks

Q.1. Objective Type:

- a) Explain the following in 2/3 sentences (5 terms from all the 4 units): 10 marks
- b) Multiple choice questions (5 questions on all the 4 units): 05 marks
- c) State whether the statements are true or false (5 statements on all the 4 units): 05 marks

Question No. 2 to 5 on Unit No. 1 to 4 respectively:

- | | | |
|-----|---|----------|
| Q.2 | a) 1 Full length essay type question:
marks | 20 |
| | OR | |
| | b) 2 Short essay type questions (a and b): (10+10) = | 20 marks |
| Q.3 | a) 1 Full length essay type question:
marks | 20 |
| | OR | |
| | b) 2 Short essay type questions (a and b) :(10+10) = | 20 marks |
| Q.4 | a) 1 Full length essay type question: 20 marks | |
| | OR | |
| | b) 2 Short essay type questions (a and b): (10+10) = | 20 marks |
| Q.5 | a) 1 Full length essay type question:
marks | 20 |
| | OR | |
| | b) 2 Short essay type questions (a and b): (10+10) = | 20 marks |

Semester IV – Paper II

Credits: 2

Lectures per week: 04

Total lectures: 60 per semester

Course Title: Mass Communication

Unit I- Evolution of Different Media and the Contemporary Context (10 Lectures)

- A) Beginnings of mass media in India
- B) Technological milestones and changing trends from conventional to digital media
- C) Role of media in national development
- D) Reach of media (regional and demographic coverage)

Unit II - Television (15 lectures)

- A) Major formats of TV programmes
- B) Television and its impact on Indian families
- C) Television and consumerism
- D) Television and surveillance
- E) Reality Television

Unit III- Media-related Issues and Laws in India (20 lectures)

- A) Freedom of expression and Censorship
- B) Relationship between media and government
- C) Media objectivity, media bias, and political leanings
- D) Trial by media and media ethics (Television and Print)
- E) Objectionable advertising
- F) Information technology (IT) Acts related to media
- G) Major laws in India related to media

Unit IV- Functions of Media Personnel and Careers in Media (15 lectures)

- A) Cyber Journalism
- B) Editors

- C) Translators
- D) Copywriters
- E) Role of Radio Jockey/Video Jockey
- F) Blogging
- G) Writing jingles
- H) Voice-over Artists
- I) Public Relations specialists
- J) Advertising/marketing specialists
- K) Script-writers
- L) Newsreaders
- M) Researchers/Writers
- N) Music specialists
- O) Social media specialist

Evaluation Pattern:
Fourth Semester End Examination

Duration: 3 Hours

100 Marks

Q.1 Objective Type:

- a) Explain the following in 2/3 sentences (5 terms from all the 4 units) :10 marks
- b) Multiple choice questions (5 questions on all the 4 units) :05 marks
- c) State whether the statements are true or false (5 statements on all the 4 units):05 marks.

Question No. 2 to 5 on Unit No. 1 to 4 respectively:

Q.2 a) 1 Full length essay type question :20 marks

OR

b) 2 Short essay type questions (a and b): (10+10) = 20 marks

Q.3 a) 1 Full length essay type question :20 marks

OR

b) 2 Short essay type questions (a and b): (10+10) = 20 marks

Q.4 a) 1 Full length essay type question :20 marks

OR

b) 2 Short essay type questions (a and b): (10+10) = 20 marks

Q.5 a) 1 Full length essay type question : 20 marks

OR

b) 2 Short essay type questions (a and b): (10+10) = 20 marks

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UNIVERSITY OF MUMBAI



**Syllabus for S.Y.B.A. (English)
(Applied Component)
Program: B.A.**

Course: Introduction to Journalism

(Choice Based Credit System with effect from the academic year 2022-2023)

1. Syllabus as per Choice Based Credit System with effect from the academic year 2021-2022

- i) **Name of the Program** : **B.A.**
- ii) **Course Code** : **Semester III UAJOUR301**
Semester IV UAJOUR401
- iii) **Course Title** : **S.Y.B.A. Introduction to Journalism**
(Applied Component)
SEM III: Fundamentals of Journalism and Reporting
SEM IV: Editing, Feature Writing and Layout
- iv) **Semester wise Course Contents** : **Enclosed the copy of syllabus**
- v) **References and Additional References:** **Enclosed in the Syllabus**
- vi) **Credit Structure** : **No. of Credits per Semester – 02**
- vii) **No. of lectures per week** : **04**
- 2. Scheme of Examination** : **5 Questions of 20 marks each**
- 3. Special notes , if any** : **No**
- 4. Eligibility, if any** : **No**
- 5. Fee Structure** : **As per University Structure**
- 6. Special Ordinances / Resolutions if any** : **No**

Syllabus for S.Y.B.A. (Applied Component)

Course Title: Introduction to Journalism

Paper I & II

(100 Marks Examination Pattern)

Objectives of the Course

- 1) To acquaint the learners with the basic concepts of journalism and to familiarize them with the content of a newspaper and departments of the newspaper publishing house.
- 2) To sensitize them to the styles of journalistic prose
- 3) To inculcate in them the skills of reporting, editing and feature writing in print medium
- 4) To enable the students to have a career perspective in journalism

Course Outcomes: By the end of the course, a student should develop the ability:

- To write in various journalistic formats effectively
- To write and edit reports and features
- To develop a career perspective in journalism

Semester III: Fundamentals of Journalism and Reporting (Applied Component) Paper I

Course code-UAJOUR301

Credits 2

Total: 60 Lectures

Unit 1: Introduction:

12 lectures

(i) What is news (ii) Origin and development of the Indian Press (iii) Major Press Laws in India: Adam's Regulations, Vernacular Press Act (iv) Press and Socio-Political issues in pre- and post-Independence India (v) Journalism during Freedom Movement (vi) Press during the Emergency (vii) Photo-journalism

Unit 2: Agencies, Electronic Journalism, Ethics:

12 lectures

(i) News Agencies, (ii) Press Syndicate (iii) Electronic Journalism (iv) Ethics in Journalism

Unit 3: Organization and Structure of a Newspaper House:

12 lectures

Circulation, Advertising, Editorial and Mechanical Departments

Unit 4: Basics of Reporting:**12 lectures**

News Value, News Gathering, Readers' interest, Qualities and aptitude necessary for a reporter,
Types of reports

Unit 5: Writing of Reports:**12 lectures**

Basic principles: objectivity, accuracy, speed, clarity and integrity; Parts of a news report; 5Ws;
Headline writing; Types of Leads; and Report writing

Evaluation: Third Semester End Examination Pattern	100 Marks	3 Hours
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Question 1: Essay (1/2) or Short Notes (2/4) on Unit 1 :20 Marks

Question 2: Essay (1/2) or Short Notes (2/4) on Unit 2 : 20 Marks

Question 3: Essay (1/2) or Short Notes (2/4) on Unit 3 : 20 Marks

Question 4: Essay (1/2) or Short Notes (2/4) on Unit 4 : 20 Marks

Question 5: Students to write a news report with clear headlines and lead on a given topic or essay (1/2)
on the basics of reporting on Unit :20 Marks

Semester IV: Editing, Feature Writing and Layout (Applied Component)	Paper 2
Course code-UAJOUR401	Credits 2

Total: 60 Lectures

Unit 1: Basics of Editing: 8 lectures

Principles of editing, Editorial policy, Role of the Editor, Role of the News Editor, Role of Chief Sub-editor, Role of Sub-editors

Unit 2: Process of Editing: 16 lectures

Compiling of data, Editing for language and style, Editing for space, Editing for correctness, Editing for clarity

Unit 3: Editing an Article: 12 lectures

Students are expected to learn how to edit an article for newsworthiness, length and suitable expression.

Unit 4: Basics of Feature Writing: 12 lectures

Types of features: Obits, Reviews, Columns, Trend Stories.

Students are expected to learn how to write a feature on a contemporary topic.

Unit 5: Design and Make up: 12 lectures

Make up and its functions, Types of Layout: Horizontal, Vertical Make up, Circus Make up, Modular layout, Broadsheet layout, Tabloid layout, Fonts and Typography

Evaluation:	Fourth Semester End Examination Pattern	100 Marks	3 Hours
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Question 1: Essay (1/2) or Short Notes (2/4) on Unit 1	:20 Marks
Question 2: Essay (1/2) or Short Notes (2/4) on Unit 2	:20 Marks
Question 3: Edit an article or report.	: 20 Marks
Question 4: Write a feature on a contemporary topic (1/2)	:20 Marks
Question 5: Essay (1/2) or Short Notes (2/4) Unit 5	: 20 Marks

References

- Kamath. M V. *Professional Journalism*. New Delhi: Vikas Publishing House, 1980.
- Mencher, Melvin. *Basic News Writing*. New Delhi: Universal Book Stall, 1992.
- Menon, P. K. *Practical Journalism*. Jaipur: Avishkar Publishers, 2005.
- Natrajan. J. *History of Indian Journalism*. New Delhi: Ministry of Information and Broadcasting, 1995.
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- Prasad, Sharada, Rukun Advani (et al) *Editors on Editing*. New Delhi: National Book Trust, 2004.
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Syllabus for S.Y.B.A. (Public Relations)
(Applied Component)

Program: B.A.

Course: Public Relations

(Choice Based Credit System with effect from the academic year 2022-2023)

1. Syllabus as per Choice Based Credit System:

- i) Name of the Program : S.Y.B.A. (Applied Component)
Semester III and IV
- ii) Course Code : UAPR3A1 & UAPR4A1
- iii) Course Title : Public Relations Papers I & II
- iv) Semester wise Course Contents : Enclosed the copy of syllabus
- v) References and Additional References : Enclosed in the Syllabus
- vi) Credit Structure : No. of Credits per Semester – 02
- vii) No. of lectures per week 04
- viii) No. of lectures per unit 15
2. Scheme of Examination : 5 Questions of 20 marks each
3. Special notes, if any : No
4. Eligibility, if any : No
5. Fee Structure : As per University Structure
6. Special Ordinances / Resolutions if any : No

Syllabus for S.Y.B.A. (Applied Component)

Course Title: Public Relations

Paper I & II

(100 Marks Examination Pattern)

Objectives of the Course:

- To introduce learners to the origin, basic concepts and activities of Public Relations.
- To motivate learners to practice various basic skills required for successful career in the field of Public Relations
- To give learners an insight about the significance, uses and functions of Public Relations.
- To explain the learners importance of ethics and professional code for PR practitioners.
- To explicate the learners the role and function of Public Relations for Corporate field, education institutions, local self-government, government and NGOs
- To create awareness among students about various career opportunities available in the field of public relations and also to motivate them to pursue the same

Course Outcomes: By the end of the course,

- Students will be able to understand and explain the basic components and aspects of the Public Relations
- Students will comprehend and recognise the importance of Public Relations for achieving success in the various fields like business, education, works carried out by various government, local government bodies as well as non-government organisations
- Students will be able to practice various communication skills required in the field of Public Relations as well as in other fields
- Students will opt for various careers like PR officer as well as attempt to pursue other career opportunities in the field of Public Relations

Unit 1: Introduction to Public Relations

- The concept of Public Relations: Origin, definitions, activities, and role of PR
- Objectives of Public Relations
- Evolution and the development of modern Public Relations
- Development of Public Relations in India, Pre and post-independence period.

Unit 2: Principles, Components and importance of Public Relations for various sectors

- Principles of Public Relations
- Components of PR-Employees Relations, Industrial Relations, Community Relations, Customer Relations, Financial Relations, Press Relations, Government Relations and Liaison, Special Events, Counseling Research, Publicity, Fundraising/Launches
- Importance of Public Relations in business, industry, and for governmental, Public, nonprofit, nongovernmental organizations such as cultural, sports, educational organizations like trusts, clubs, schools, colleges etc.
- Misconceptions about PR –Propaganda, Fine Appearance, Free Gifts, Annual Parties, Protocol, Goodwill

Unit 3 : Process of Public Relations

- Defining the model, planning, execution and evaluation of the Action Plan of PR process
- Importance of communication in the process of PR, including theory, objectives, types, barriers, art of listening and communication skills required for successful process of PR
- Process and activities of Internal PR
- Process and activities of External PR

Unit 4 : Functions and tools of PR

- Functions and uses of Public Relations
- Media tools for PR- Press Release, Press Conference, Special Issue, News Clippings, Photo Gallery, Meetings
- Specific tools for PR- Family get together and outing, cultural programme for employees, Celebration of foundation day, week for specific purpose, camp, competition, lecture series, exhibition, open day, sponsorship, newsletter, in- house Journal etc.
- Crisis Management as PR function-types, guiding principles, preparation and role of PR in the Crisis management, services provided by PR during the crisis, the review of Crisis Management, Crisis communication in the times of Industrial disaster, consumer pressures, image problems, quality issues

Evaluation Pattern:
Third Semester End Examination
Duration:3 Hours 100 Marks

Question1. Objective type questions: (based on all units)

a) Explain the following concepts in three to five sentences each. (Any five) :10 Marks

(7 Short answer Questions should be framed)

b) Match the following pairs. :05 marks

c) State whether the following statements are true or false. :05 marks

Question 2. Based on Unit 1

a) 1 Full length essay type question :20 marks

OR

b) 2 Short essay type questions (a and b) :(10+10) =20 marks

Question 3. Based on Unit 2

a) 1 Full length essay type question :20 marks

OR

b) 2 Short essay type questions (a and b) :(10+10) =20 marks

Question 4. Based on Unit 3

a) 1 Full length essay type question :20 marks

OR

b) 2 Short essay type questions (a and b) :(10+10) = 20 marks

Question 5. Based on Unit 4

a) 1 Full length essay type question :20 marks

OR

b) 2 Short essay type questions (a and b) :(10+10) = 20 marks

Unit 1: Public Relations in Corporate Business

- Image Building of the brand, company and constituents of Image Building
- Corporate Social Responsibility and Public Relations
- New trends in corporate Public Relations-Benchmarking, Consultancy, Team Building, Branding and Image Building, Public Opinion, ICT technology and Digital Social Media like Facebook, twitter, linkedin, blogs etc.
- Corporate Citizenship and Public Relations
- Professional nature of Public Relations, reasons and factors responsible for the development of professional nature of public relations in business world, Research and training in the Public Relations

Unit 2: Ethics and Code of Conduct in PR

- Principles of Public Relations Practice
- Code of Ethics prescribed by PR Society of India
- IPRA Code of Conduct
- Purpose of Professional Bodies
- Code of AIR and T.V. Channels
- Code of commercial advertising on T.V. Channels
- Advertising and PR ethics.
- Impact of PR on the society

Unit 3: Public Relations in Practice

- Qualities of a PR Practitioner
- Areas of Work (Functions) of Public Relations Practitioners—Writing, Editing, Media Relations, Special Events, Mass Media Production ,Corporate Counseling, Crisis Communication, Managing News and Features
- Effective Oral Communication skill
- Skills for PR -Effective Public Speaking, Writing Skills, Debating Skills, Group Interaction.
- Written Communication and Audio-Visual Aids for PR

Unit 4: Public Relations and other related areas

- PR and Marketing, PR and Journalism, PR and Business Communication, PR and Psychology
- PR and advertising, types, creativity, message through entertainment, correlation and differences between PR and advertising
- PR Campaign
- Relations with Shareholders, Relations with Dealer – Distributor, Relations with Financial Institutions, Relations with other Business Groups Community Relations, Consumer Relations.

Evaluation Pattern:

Fourth Semester End Examination

Duration:3 Hours

100 Marks

Question1. Objective type questions: (based on all units)

- a) Explain the following concepts in three to five sentences each. (Any five) :10 Marks
(7 Short answer Questions should be framed)
- b) Match the following pairs. :05 marks
- c) State whether the following statements are true or false. :05 marks

Question 2. Based on Unit 1

- a) 1 Full length essay type question :20 marks
OR
- b) 2 Short essay type questions (a and b) :(10+10) =20 marks

Question 3. Based on Unit 2

- a) 1 Full length essay type question :20 marks
OR
- b) 2 Short essay type questions (a and b) :(10+10) =20 marks

Question 4. Based on Unit 3

- a) 1 Full length essay type question :20 marks
OR
- b) 2 Short essay type questions (a and b) :(10+10) = 20 marks

Question 5. Based on Unit 4

- a) 1 Full length essay type question :20 marks
OR
- b) 2 Short essay type questions (a and b) :(10+10) = 20 marks

Suggested Readings :-

- Ahuja, B. N., (2006) *Public Relations*, Ed. 5th, New Delhi: Surjeet Publication.
- Alison, Theaker., (2008) *The Public Relations Handbook*, :Routledge.
- Banks Stephen P., (2003) *Multicultural Public Relations*, New Delhi: Surjeet Publications.
- Block, Caroline. ,(2003) *The PR Practitioner's : A Handbook* , Vivabooks Pvt Ltd.
- Butterick, Keith. ,(2010) *Introducing Public Relations: Theory and Practice*, New Delhi: Sage Publications.
- Cutlip & Centre., (2005) *Effective Public Relations*., New Delhi : Pearson.
- David, Meerman Scot, (2008) *The New rules of Marketing and Public Relations*, New Delhi: Prentice Hall.
- James E. Grunig, David M. Dozier, William P. Ehling, Larissa A. Grunig, Fred C. Repper, Jon White., (1992) *Excellence in Public Relations and Communication*, Management., Lawrence Erlbaum Associates.
- Jethwaney, Jaishri., (2018) *Corporate Communication-Principles and Practice*, New Delhi: Sage Publication.
- Krishnamurthy, Sriramesh., (2004) *Public Relations in Asia: An Anthology*, Thomson.

Nayyar, Deepak., (2006) *Public Relations and Communication*, Jaipur :ABD Publishers.

Parvati, (2005),*Text Book of Public Relations and Communications*, New Delhi : Dominant Publishers .

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Sardana,CK (ed.), (1999),*Applied Public Relations in the Indian Context*, New Delhi: Har-Anand Publications Pvt. Ltd.

Silvia, Cambie and Yang-May, Ooi., (2009) *International Communications Strategy – Developments in Cross-Cultural Communications, PR and Social Media*, Kogan Page.

Shelburne, Merry., (2003) *Effective Public Relations: A Practical Approach*, New Delhi: Biztantra.

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Tomar, Dinesh., (2008) *Public Relations Management*, New Delhi: Vista International Publishing House.

Vachani, Jagdish., (2007) *Public Relations Management in Media and Journalism*, New Delhi: Kanishka Publications.

Wragg, David, W., (1992) *An introduction to Public- Relations* :U.K, Oxford.

प्रा डा कप्तान, संजय., प्रा फु ले, ककशोर., (2009) जनसंपर्क, पुणे

: डायमंड पब्लिकेशन. प्रा पुरी, सुरेश. (2013) जनसंपर्क : संकल्पना एवं कसद्वारा, औरंगाबाद : साद प्रकाशन.

Web Resources

The Era of Corporate Social Responsibility is Ending | Rachel Hutchisson | TEDxWilmington, @ <https://www.youtube.com/watch?v=N8dXNzCIVxg> accessed on 10th July 2020

The social responsibility of business | Alex Edmans | TEDxLondonBusinessSchool, @ <https://www.youtube.com/watch?v=Z5KZhm19EO0> accessed on 12th July 2020

Re-thinking corporate social responsibility: Andy Le Seelluer at TEDxStHelier, @ <https://www.youtube.com/watch?v=jga4s0Ei7Zs> accessed on 15th July 2020

Book Review on "Corporate Communication", @ https://www.youtube.com/watch?v=iu1I_zkq444 accessed on 25th July 2020

Career in Public Relations, @ <https://www.youtube.com/watch?v=zdiNCOixLBA> accessed on 25th July 2020

About PR in general: <https://apps.prsa.org/AboutPRSA/PublicRelationsDefined/> accessed on 26th July 2020

Readings on Global PR: <http://www.instituteforpr.org/global-public-relations/> accessed on 5th August 2020

Anderson, F., & Hadley, L. (1999). Guidelines for setting measurable public relations objectives. Institute for Public Relations, retrieved February 6, 2010, from http://www.instituteforpr.org/ipr_info/measurable_public_objectives accessed on 7th August 2020.

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UNIVERSITY OF MUMBAI



**Syllabus for S.Y.B.A.
(Women's Studies) (Applied Component)
Program: B.A.**

Course: Women's Studies

(Choice Based Credit System with effect from the academic year 2022-2023)

1. Syllabus as per Choice Based Credit System:

- i) Name of the Program : B.A.**
- ii) Course Code : Semester III (UAWS3A1) and
Semester IV (UAWS4A1)**
- iii) Course Title : Women's Studies (Applied Component)**
- iv) Semester wise Course Contents : Enclosed the copy of syllabus**
- v) References and Additional References: Enclosed in the Syllabus**
- vi) Credit Structure : No. of Credits per Semester – 02**
- vii) No. of lectures per week 04**

2. Scheme of Examination : 5 Questions of 20 marks each

3. Special notes , if any : No

4. Eligibility, if any : No

5. Fee Structure : As per University Structure

6. Special Ordinances / Resolutions if any : No

Syllabus for S.Y.B.A. (Applied Component)

Course Title: Women's Studies

Paper I & II

(100 Marks Examination Pattern)

Objectives of the Course:

- i. To enable an understanding of concepts such as sex and gender, patriarchy
- ii. To enable an understanding of the construction of gender
- iii. To provide insight into the workings of patriarchy and its oppressive nature
- iv. To familiarize students with an understanding of feminist theory and the schools of feminist thought
- v. To empower students with a knowledge of women's rights and legal safeguards
- vi. To provide an understanding of major historical developments and feminist movements in feminist history
- vii. To engender a critical understanding of literary and media texts dealing with women's issues

Course Outcome: By the end of the course, a student should develop the ability:

- i. To articulate concepts linked to gender and feminism
- ii. To have an understanding of patriarchy
- iii. To have an awareness of crimes against women, and the constitutional and legal safeguards protecting / empowering women
- iv. To have knowledge and understanding of feminist theory
- v. To have a knowledge of feminist history
- vi. To analyze and critically evaluate literary and media texts dealing with women's issues
- vii. To be gender-sensitive, have a feminist outlook, and combat stereotypes and gender biases prevalent in society

<p>Semester Three: Women's Studies : Paper 1 (Applied Component) 2 Credits</p>
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Lectures: 60

Unit 1: An Introduction to Concepts, and the Scope and Practice of Women's Studies

- a) Women's Studies: Relevance, Prospects and the Indian Context
- b) Sex, Gender and Biological Determinism
- c) Patriarchy as an oppressive ideology
- d) Three Waves: Feminine, Feminist and Female

Unit 2: Schools of Feminism and Feminist Theory

- a) Liberal Feminism
- b) Marxist Feminism
- c) Psychoanalytical Feminism
- d) Radical Feminism

Unit 3: Combatting Crimes and Discrimination - Constitutional and Legal Safeguards for Women

- a) Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW)
- b) National Policy on Empowerment of Women
- c) Laws and safeguards against Rape and Sexual Harassment: Indian Penal Code; the Indecent Representation of Women Prohibition Act, 1987; the Vishakha Guidelines; the 'Sexual Harassment of Women at the Workplace (Prevention, Prohibition and Redressal) Act, 2013'; the Internal Complaints Committee in organizations; the Zero FIR
- d) Laws related to Women and Pregnancy: Maternity Benefit Act, 1961; Medical Termination of Pregnancy Act, 1971; The Pre-Conception and Pre-Natal Diagnostic Techniques (Prohibition of Sex Selection) Act, 2003; the Surrogacy (Regulation) Bill, 2016

Unit 4: Feminist historiography and Feminist Movements in India

- a) Locating Women in History: The need for Feminist historiography
- b) The Brahmo Samaj in India
- c) The White Revolution, Amul and Women's Empowerment
- d) The Nirbhaya case and combatting 'rape culture'

Unit 5: Literary Texts

- a) Charlotte Perkins Gilman: "The Yellow Wallpaper"
- b) James Joyce: "Eveline"
- c) Fay Weldon: "Weekend"
- d) Mahasweta Devi: "The Breast Giver"

Evaluation:	Third Semester End Examination Pattern	100 Marks : 3 Hours
Question 1:	One Essay or Two Short Notes	:20 Marks
Question 2:	One Essay or Two Short Notes	:20 Marks
Question 3:	One Essay or Two Short Notes	:20 Marks
Question 4:	One Essay or Two Short Notes	:20 Marks
Question 5:	One Essay or Two Short Notes	:20 Marks

Each question corresponds to the respective unit in the syllabus. In each question, there will be 2 essay type questions in options A and B respectively, and option C will have four short notes, with two to be attempted. There will be a choice of 3 questions: A (essay) or B (essay) or C (short notes).

Unit 1: Feminist History and Global Movements

- a) The Seneca Falls Convention and Women's Suffrage Movement
- b) Women Scientists and women in science
- c) Women, Self-help Groups and Entrepreneurship
- d) The #MeToo Movement

Unit 2: Schools of Feminism and Feminist Theory

- a) Gynocriticism
- b) Postmodern Feminism
- c) Postcolonial Feminism
- d) Intersectional Feminism

Unit 3: Women and Work

- a) The Public-Private Dichotomy, sexual division of work and perceptions of jobs as gender-specific
- b) Concepts of visible and invisible work, paid and unpaid labour
- c) The Glass Ceiling, Sticky Floor and Glass Escalator Effects
- d) Issues of working mothers and single working women

Unit 4: Women and the Media: Sexuality, Body Politics and Media Representations

- a) Women and the Beauty Industry: Ageism, beauty standards, racism, cosmetic surgery, the Male gaze, and the casting couch phenomenon
- b) Pregnancy related issues: Family Planning, Contraception, Abortion, Sex-determination, mental health and post-partum depression
- c) Women on social media platforms, body shaming, cyber-bullying, cat-phishing, online stalking and harassment
- d) The Representation of Women in the Media: Ads, Films, Music Videos and in the news

Unit 5: Literary and Media Texts

- a) Sylvia Plath: "The Mirror"
- b) Maya Angelou: "Still I Rise"
- c) Short Films: *Juice* (directed by Neeraj Ghaywan), *Going Dutch* (Tittar Lodge Productions); *Ahalya* (directed by Sujoy Ghosh) and *Devi* (directed by Priyanka Banerjee)
- d) Dove ads focusing on the campaign of 'real beauty'

Evaluation:	Fourth Semester End Examination Pattern	100 Marks: 3 Hours
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|--|-----------|
| Question 1: One Essay or Two Short Notes | :20 Marks |
| Question 2: One Essay or Two Short Notes | :20 Marks |
| Question 3: One Essay or Two Short Notes | :20 Marks |
| Question 4: One Essay or Two Short Notes | :20 Marks |
| Question 5: One Essay or Two Short Notes | :20 Marks |

Each question corresponds to the respective unit in the syllabus. In each question, there will be 2 essay type questions in options A and B respectively, and option C will have four short notes, with two to be attempted. There will be a choice of 3 questions: A (essay) or B (essay) or C (short notes).

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- Crasnow, Sharon and Kristen Intermann (eds.) (2021). *The Routledge Handbook of Feminist Philosophy of Science*. London and New York: Routledge. Print.
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1. Juice:
<https://www.youtube.com/watch?v=R-Sk7fQGIjE>
2. Going Dutch:
<https://www.youtube.com/watch?v=iFFYF-fykaU>
3. Devi
<https://youtu.be/2KP0aDTVtFI>
4. Ahalya
<https://youtu.be/Ff82XtV78xo>

MOOC

Andrea Walsh, and Elizabeth Fox. *WGS.101 Introduction to Women's and Gender Studies*. Fall 2014. Massachusetts Institute of Technology: MIT OpenCourseWare, <https://ocw.mit.edu>.
License: Creative Commons BY-NC-SA.

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University of Mumbai

Syllabus for S.Y.B.A. (Applied Component)

Program: B.A.

Course: Introduction to Advertising

(Choice Based Credit System with effect from the Academic Year 2022-23)

1. Syllabus as per Choice-Based Credit System:

a) Name of the Program : S. Y. B.A. (Applied Component) Semester III and IV

b) Course Code : Semester III (UAIA3A1) Semester IV (UAIA4A1)

c) Course Title : Introduction to Advertising Semester III: Paper I,
(Basic Concepts of Advertising)

Semester IV: Paper II, (Creativity and Research in Advertising)

d) Semester wise Course Contents : Enclosed the copy of syllabus

e) References and Additional References: Enclosed in the Syllabus

f) Credit Structure : No. of Credits per Semester – 02

g) No. of lectures per Unit 12

h) No. of lectures per week 04

2. Scheme of Examination : 5 Questions of 20 marks each

3. Special notes, if any : No

4. Eligibility, if any : No

5. Fee Structure : As per University Structure

6. Special Ordinances /: No Resolutions if any: No

S.Y. B.A. (Applied Component)
Course Title: Introduction to Advertising
Paper I & II
(100 Marks Examination Pattern)

• **Objectives:**

- i) To introduce learners to the main subfields and basic modern concepts/ideas, theoretical models, empirical instruments and data sources in advertising.
- ii) To encourage learners for further interest in advertising studies
- iii) To develop professional communicative competence
- iv) To introduce learners to different tools of communication for corporate identity /brand building through various advertising techniques

• **Course Outcomes:**

By the end of the course, learners should develop the following abilities:

- i) To demonstrate a working knowledge of the following areas associated with the advertising industry: Target marketing, Ad agency organizations and operations, media strategies, use of electronic media, outdoor media, print media, sales promotions, etc.
- ii) To write clearly, coherently and effectively about various concepts in advertising
- iii) To define the economic and social impact of advertising on society
- iv) To understand the communication process of advertising, marketing research, campaign strategies, concepts, budgets, creative process, and ethics in advertising.

Semester-III	Applied Component	Paper – I	Total Credits – 2
Course Title: Introduction to Advertising - Basic Concepts of Advertising			

Unit- I Introduction to Advertising

Total Lectures: 60
12 Lectures

- a) Advertising: Evolution of Advertising, Features of Advertising, Active participants, Role of Advertising in Marketing Mix, Role of Advertising in society.
- b) Classification of Advertising: Social Advertising, Political Advertising, Advocacy Advertising, Retail Advertising, Financial Advertising, Corporate Image Advertising, Print Media Advertising, Electronic or Broadcast Media Advertising, National Advertising, International Advertising, Advertising on Social media

Unit- II Advertising and Media for Marketing and Communication

12 Lectures

- a) Introduction to Integrated Marketing Communication, Advertising and Publicity, Public Relation, Sales promotion, Different Forms of Displays - Window Display, Showcases, Showrooms , Exhibitions, Trade Fairs,

Traveling Displays, Car Cards, Sky Writing or Sky Balloons, Word of Mouth Influence (WOM), Packaging,

- b) Advertising and Brand Management, A History of Branding and Advertising, Psychology of Advertising, Media Ecology, Consumer Behaviour, Environmental Marketing Communications

Unit- III The impact of Media in Advertising

12 Lectures

- a) Factors influencing Media selection and Media Planning Strategies, Importance of Advertising in Marketing , Role of Celebrity Endorsers in Advertising,
- b) Media options for advertising – Television, Radio , Internet, Print, Film, Outdoor advertising and Social Media,
- c) Concepts - Media Buying, Media Selling, Media Mix, Clutter, Zipping & Zapping, Branding & Brand Positioning

Unit- IV Economic & Social Aspects of Advertising

12 Lectures

- a) Economic aspects of Advertising: Impact on production, distribution and consumer cost, advertising and competition, Understanding the role of advertising agencies.
- b) Social aspects of advertising, advertising and culture (values, festivals, customs), standard of living, ethics in advertising, Advertising and Women, Advertising and Children, Ethical issues of Packaging and Branding, Ethical issues in Online and Social Media Marketing,
- c) Regulation and control on advertising in India – Advertising Standard Council of India (ASCI), Advertising Agencies Association of India (AAAI), and Information & Broadcasting Ministry, Advertising self-Regulation

Unit- V Advertising Agency and Advertising as a Career

12 Lectures

- a) Advertising Agency – definition, types of services offered, types of advertising agencies, structure of Ad agencies, agency selection criterion, ways of getting clients with special reference to creative pitch, Top advertising agencies and their campaigns.
- b) Career options available in advertising field – Advertising agency, media, production houses, research and allied fields - printing, graphics and animation, modelling and dubbing, brand managers, copywriters, Art Directors, Web content Managers, Creative writers, Freelancing

Unit-VI Practical Segment

(This Unit is not to be considered for the Assessment/ Examination)

- a) Poster / Technology based group presentations on various Advertisements on socially relevant topics with relevant case studies.
- b) Creating a print Advertisement (Students can be asked to make a print advertisement and displaying it to the class)

Evaluation Pattern:**Third Semester End Examination****Duration: 3 Hours****100 Marks**

Question 1	One Essay or Two Short notes on Unit I	20 Marks
Question 2	One Essay or Two Short notes on Unit II	20 Marks
Question 3	One Essay or Two Short notes on Unit III	20 Marks
Question 4	One Essay or Two Short notes on Unit IV	20 Marks
Question 5	One Essay or Two Short notes on Unit V	20 Marks

Semester IV	Applied Component	Paper II	2 Credits
Course Title: Introduction to Advertising - Creativity and Research in Advertising			

Total Lectures: 60**Unit- I Creativity and Psychology in Advertising****12 Lectures**

- Role of Creativity in Advertising, Positioning strategies, Role of Persuasion, Determining the message theme, USP, Decision on Advertising appeals and selling styles (soft selling / hard selling skills), Appropriateness and Novelty, Styles of Creative Advertising- Generic Creative Style, Pre-emptive Creative Style, Resonance Creative Style
- Psychology in Advertising – Perception, attitudes and values, personality and motivations (including buying motives), Use of Metaphors in Advertising

Unit-II Copy Writing**12 Lectures**

- Copy – types and essentials, Copy writing for print, Outdoor, Radio, Web and Television (concept of storyboards)
- Elements of copy – headline (functions and types), over line, body copy, captions, taglines, slogans, call to action, logo, company name

Unit-III Creativity in Advertising**12 Lectures**

- Illustrations – functions and types, Essentials of a good illustration
- Visualization – Techniques of Visualization, Layouts- Stages and Types, Slogans, Logo, Headlines, Memes, GIFs as means of creative marketing strategy etc.
- Digital Advertising: The societal and business impact of digital advertising, Types of digital advertising, The future of online advertising

Unit-IV Advertising Research**12 Lectures**

- a) Evaluating advertising effectiveness, Importance of research in Advertising, Types of research: copy research and behavioural research, Psychographic Segmentation
- b) The impact of Ideology on Advertisements- Various ideological issues and concerns
- c) Pre-testing and Post-testing methods of evaluation, Pre-testing methods: methods for concept testing and copy testing , Post-testing methods: sales and response rates, recall tests, recognition tests and attitude and opinion tests.

Unit- V Advertising Budget**12 Lectures**

- a) Meaning of Advertising Budget: Collection of Data and Preparation of Advertising Budget, Presentation and Approval of the Budget, Budget Execution, Control of Budget
- b) Methods of Framing the Advertising Budget: Affordable Method, Percentage of Sales Method, Competitive Parity Method, Return on Investment Method, Objective and Task Method, Judgment Method
- c) Approaches to Advertising Budget: Traditional Approach, Modern Approach, Marcom Budgeting

Unit-VI Practical Segment:

(This Unit is not to be considered for the Assessment/ Examination)

- a) A visit to an Advertising agency or group presentation on Copy writing
- b) Creating an electronic Advertisement and displaying it to the class via electronic communication medium

Evaluation Pattern:

Fourth Semester End Examination	Duration: 3 Hours	100 Marks
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Question 1	One Essay or Two Short notes on Unit I	20 Marks
Question 2	One Essay or Two Short notes on Unit II	20 Marks
Question 3	One Essay or Two Short notes on Unit III	20 Marks
Question 4	One Essay or Two Short notes on Unit IV	20 Marks
Question 5	One Essay or Two Short notes on Unit V	20 Marks

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19. Kleppner Otto (1966); *Advertising Procedure*; New Jersey, Prentice-Hall.
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22. Piyush N. Marthak (2013). Creative Advertising and Advertising Effectiveness in India, Global Research Analysis, 2 (3).
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2. www.advertisinginindia.com
3. www.tamindia.com
4. www.tamadex.com

5. www.aidem.in
6. <http://en.wikipedia.org/wiki/Chennai>
7. http://en.wikipedia.org/wiki/Pondicherry_urban_area
8. <http://www.census2011.co.in/census/district/482-puducherry.html>
9. www.digitalimpulse.in/insights/wp-content/uploads/2013/01/Digital-advertising-Industry-inIndia.jpg
10. http://findarticles.com/p/articles/mi_hb3192/is_200205/ai_n7866610/
11. http://www.revistalatinacs.org/_2008/23_34_Santiago/Francisco_Campos.html
12. <http://www.anthropoetics.ucla.edu/a>
13. <http://ideasmakit.blogspot.in/2009/02/indian-advertising-2009-2013-kpmg-ficci.html>
14. http://info.shine.com/Industry-Information/Automobiles/783.aspx=Media_advertising - By Shailja Shah Purohit
15. http://www.inderscience.com/search/index.php?action=record&rec_id=11489
16. <http://Writingfordigital.Com/2010/04/19/Three-Key-Media-Variables-Time-Attention-And-Memory/>
17. <http://www.merineews.com/article/the-changing-scenario-of-advertising/126596.shtml>
18. <http://www.entrepreneur.com/encyclopedia/media-planning>
19. http://www.chillibreeze.com/articles_various/advertising-firms.asp
20. www.afaqs.com
21. www.ascionline.org;
22. www.campaignindia.in
23. www.exchange4media.com
24. www.tamindia.com
25. www.cengage.com/global

MOOC Courses:

- 1) <<[<https://www.mooc-list.com/course/online-advertising-onlinead-open2study>>](https://www.mooc-list.com/course/online-advertising-onlinead-open2study)
- 2) \<<[<https://www.mooc-list.com/course/integrated-marketing-communications-advertisingpublic-relations-digital-marketing-and-more>>](https://www.mooc-list.com/course/integrated-marketing-communications-advertisingpublic-relations-digital-marketing-and-more)
- 3) <<[<https://www.mooc-list.com/course/content-advertising-social-imc-coursera>>](https://www.mooc-list.com/course/content-advertising-social-imc-coursera)
- 4) <<[<https://www.mooc-list.com/course/advertising-and-society-coursera>>](https://www.mooc-list.com/course/advertising-and-society-coursera)

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UNIVERSITY OF MUMBAI**Syllabus for Approval**

Sr. No.	Heading	Particulars
1	Title of the Course	Foundation Course (SYBA, SYBSc, SYBCom; Semesters III and IV)
2	Eligibility for Admission	Not Applicable
3	Passing Marks	40 %
4	Ordinances / Regulations (if any)	Not Applicable
5	No. of Years / Semesters	III and IV Semesters
6	Level	P.G./ U.G./ Diploma / Certificate (Strike out which is not applicable)
7	Pattern	Yearly / Semester (Strike out which is not applicable)
8	Status	New / Revised (Strike out which is not applicable)
9	To be implemented from Academic Year	From Academic Year 2017-18

Date: **8th May, 2017**

Signature :

Name of BOS Chairperson / ~~Dean~~ : **Dr Agnelo Menezes**

UNIVERSITY OF MUMBAI



Essentials Elements of the Syllabus

1	Title of the Course	Foundation Course (SYBA, SYBSc, SYBCom – III and IV Semesters)
2	Course Code	
3	Preamble / Scope	Not Applicable
4	Objective of Course / Course Outcome	Not Applicable
5	Eligibility	Not Applicable
6	Fee Structure	Not Applicable
7	No. of Lectures	3 lectures per week
8	No. of Practical	Not Applicable
9	Duration of the Course	III and IV Semesters respectively
10	Notional hours	Not Applicable
11	No. of Students per Batch	Not Applicable
12	Selection	Not Applicable
13	Assessment	Not Applicable
14	Syllabus Details	Given
15	Title of the Unit	Not Applicable
16	Title of the Sub-Unit	Not Applicable
17	Semester wise Theory	Not Applicable
18	Semester wise List of Practical	Not Applicable
19	Question Paper Pattern	Given
20	Pattern of Practical Exam	Not Applicable
21	Scheme of Evaluation of Project / Internship	Given
22	List of Suggested Reading	Given
23	List of Websites	Given
24	List of You-Tube Videos	Not Applicable
25	List of MOOCs	Not Applicable

UNIVERSITY OF MUMBAI

**SECOND YEAR B.A., SECOND YEAR B.Sc.,
SECOND YEAR B.Com.**

SEMESTER III AND IV

FOUNDATION COURSE

UNDER THE CBCGSS SYSTEM

EFFECTIVE FROM 2017-2018

FOUNDATION COURSE

Semester III

Internal marks: 25

External marks: 75

Total Marks: 100

Lectures: 45

Objectives

- i. Develop a basic understanding about issues related to Human Rights of weaker sections, ecology, and science and technology.
- ii. Gain an overview of significant skills required to address competition in career choices
- iii. Appreciate the importance of developing a scientific temper towards technology and its use in everyday life

Module 1 Human Rights Provisions, Violations and Redressal (12 lectures)

- A. Scheduled Castes- Constitutional and legal rights, Forms of violations, Redressal mechanisms. **(2 Lectures)**
- B. Scheduled tribes- Constitutional and legal rights, Forms of violations, Redressal mechanisms. **(2 Lectures)**
- C. Women- Constitutional and legal rights, Forms of violations, Redressal mechanisms. **(2 Lectures)**
- D. Children- Constitutional and legal rights, Forms of violations, Redressal mechanisms. **(2 Lectures)**
- E. People with Disabilities, Minorities, and the Elderly population- Constitutional and legal rights, Forms of violations, Redressal mechanisms. **(4 Lectures)**

Module 2 Dealing With Environmental Concerns (11 lectures)

- A. Concept of Disaster and general effects of Disasters on human life- physical, psychological, economic and social effects. **(3 Lectures)**
- B. Some locally relevant case studies of environmental disasters. **(2 Lectures)**
- C. Dealing with Disasters - Factors to be considered in Prevention, Mitigation (Relief and Rehabilitation) and disaster Preparedness. **(3 Lectures)**
- D. Human Rights issues in addressing disasters- issues related to compensation, equitable and fair distribution of relief and humanitarian approach to resettlement and rehabilitation. **(3 Lectures)**

Module 3 Science and Technology I (11 lectures)

- A. **Development of Science**- the ancient cultures, the Classical era, the Middle Ages, the Renaissance, the Age of Reason and Enlightenment. **(3 Lectures)**
- B. **Nature of science**- its principles and characteristics; Science as empirical, practical, theoretical, validated knowledge. **(2 Lectures)**
- C. **Science and Superstition**- the role of science in exploding myths, blind beliefs and prejudices; Science and scientific temper- scientific temper as a fundamental duty of the Indian citizen. **(3 Lectures)**

- D. **Science in everyday life**- technology, its meaning and role in development; Interrelation and distinction between science and technology. **(3 Lectures)**

Module 4 Soft Skills for Effective Interpersonal Communication (11 lectures)

Part A (4 Lectures)

- I) Effective Listening - Importance and Features.
- II) Verbal and Non-Verbal Communication; Public-Speaking and Presentation Skills.
- III) Barriers to Effective Communication; Importance of Self-Awareness and Body Language.

Part B (4 Lectures)

- I) Formal and Informal Communication - Purpose and Types.
- II) Writing Formal Applications, Statement of Purpose (SOP) and Resume.
- III) Preparing for Group Discussions, Interviews and Presentations.

Part C (3 Lectures)

- I) Leadership Skills and Self-Improvement - Characteristics of Effective Leadership.
- II) Styles of Leadership and Team-Building.

Projects / Assignments (for Internal Assessment)

- i. Projects/Assignments should be drawn for the component on Internal Assessment from the topics in **Module 1 to Module 4**.
- ii. Students should be given a list of possible topics - at least 3 from each Module at the beginning of the semester.
- iii. The Project/Assignment can take the form of Street-Plays / Power-Point Presentations / Poster Exhibitions and similar other modes of presentation appropriate to the topic.
- iv. Students can work in groups of not more than 8 per topic.
- v. Students must submit a hard / soft copy of the Project / Assignment before appearing for the semester end examination.

QUESTION PAPER PATTERN (Semester III)

The Question Paper Pattern for Semester End Examination shall be as follows:

TOTAL MARKS: 75

DURATION: 150 MINUTES

QUESTION NUMBER	DESCRIPTION	MARKS ASSIGNED
1	i. Question 1 A will be asked on the meaning / definition of concepts / terms from all	a) Total marks: 15

	<p>Modules.</p> <p>ii. Question 1 B will be asked on the topic of the Project / Assignment done by the student during the Semester</p> <p>iii. In all 8 Questions will be asked out of which 5 have to be attempted.</p>	<p>b)For 1 A, there will be 3 marks for each sub-question.</p> <p>c)For 1 B there will be 15 marks without any break-up.</p>
2	Descriptive Question with internal option (A or B) on Module 1	15
3	Descriptive Question with internal option (A or B) on Module 2	15
4	Descriptive Question with internal option (A or B) on Module 3	15
5	Descriptive Question with internal option (A or B) on Module 4	15

FOUNDATION COURSE

Semester IV

Internal marks: 25

External marks: 75

Total Marks: 100

Lectures: 45

Module 1 Significant, contemporary Rights of Citizens (12 lectures)

- A. Rights of Consumers**-Violations of consumer rights and important provisions of the Consumer Protection Act, 2016; Other important laws to protect consumers; Consumer courts and consumer movements. **(3 Lectures)**
- B. Right to Information**- Genesis and relation with transparency and accountability; important provisions of the Right to Information Act, 2005; some success stories. **(3 Lectures)**
- C. Protection of Citizens'/Public Interest**-Public Interest Litigation, need and procedure to file a PIL; some landmark cases. **(3 Lectures)**
- D. Citizens' Charters, Public Service Guarantee Acts.** **(3 Lectures)**

Module 2 Approaches to understanding Ecology (11 lectures)

- A. Understanding approaches to ecology**- Anthropocentrism, Biocentrism and Eco centrism, Ecofeminism and Deep Ecology. **(3 Lectures)**
- B. Environmental Principles-1**: the sustainability principle; the polluter pays principle; the precautionary principle. **(4 Lectures)**
- C. Environmental Principles-2**: the equity principle; human rights principles; the participation principle. **(4 Lectures)**

Module 3 Science and Technology II (11 lectures)

Part A: Some Significant Modern Technologies, Features and Applications: **(7 Lectures)**

- i. **Laser Technology**- Light Amplification by Stimulated Emission of Radiation; use of laser in remote sensing, GIS/GPS mapping, medical use.
- ii. **Satellite Technology**- various uses in satellite navigation systems, GPS, and imprecise climate and weather analyses.
- iii. **Information and Communication Technology**- convergence of various technologies like satellite, computer and digital in the information revolution of today's society.
- iv. **Biotechnology and Genetic engineering**- applied biology and uses in medicine, pharmaceuticals and agriculture; genetically modified plant, animal and human life.
- v. **Nanotechnology**- definition: the study, control and application of phenomena and materials at length scales below 100 nm; uses in medicine, military intelligence and consumer products.

Part B: Issues of Control, Access and Misuse of Technology. (4 Lectures)

Module 4 Introduction to Competitive Examinations (11 lectures)

Part A. Basic information on Competitive Examinations- the pattern, eligibility criteria and local centres: (4 Lectures)

- i. Examinations conducted for entry into professional courses - Graduate Record Examinations (GRE), Graduate Management Admission Test (GMAT), Common Admission Test (CAT) and Scholastic Aptitude Test (SAT).
- ii. Examinations conducted for entry into jobs by Union Public Service Commission, Staff Selection Commission (SSC), State Public Service Commissions, Banking and Insurance sectors, and the National and State Eligibility Tests (NET / SET) for entry into teaching profession.

Part B. Soft skills required for competitive examinations- (7 Lectures)

- i. Information on areas tested: Quantitative Ability, Data Interpretation, Verbal Ability and Logical Reasoning, Creativity and Lateral Thinking
- ii. Motivation: Concept, Theories and Types of Motivation
- iii. Goal-Setting: Types of Goals, SMART Goals, Stephen Covey's concept of human endowment
- iv. Time Management: Effective Strategies for Time Management
- v. Writing Skills: Paragraph Writing, Report Writing, Filing an application under the RTI Act, Consumer Grievance Letter.

Projects / Assignments (for Internal Assessment)

- i. Projects/Assignments should be drawn for the component on Internal Assessment from the topics in **Module 1 to Module 4**.
- ii. Students should be given a list of possible topics - at least 3 from each Module at the beginning of the semester.
- iii. The Project/Assignment can take the form of Street-Plays / Power-Point Presentations / Poster Exhibitions and similar other modes of presentation appropriate to the topic.
- iv. Students can work in groups of not more than 8 per topic.
- v. Students must submit a hard / soft copy of the Project / Assignment before appearing for the semester end examination.

QUESTION PAPER PATTERN (Semester IV)

The Question Paper Pattern for Semester End Examination shall be as follows:

TOTAL MARKS: 75

DURATION: 150 MINUTES

QUESTION NUMBER	DESCRIPTION	MARKS ASSIGNED
1	i. Question 1 A will be asked on the meaning / definition of concepts / terms from all Modules.	a) Total marks: 15 b) For 1 A, there will be 3 marks for each sub-question.

	ii. Question 1 B will be asked on the topic of the Project / Assignment done by the student during the Semester iii. In all 8 Questions will be asked out of which 5 have to be attempted.	c) For 1 B there will be 15 marks without any break-up.
2	Descriptive Question with internal option (A or B) on Module 1	15
3	Descriptive Question with internal option (A or B) on Module 2	15
4	Descriptive Question with internal option (A or B) on Module 3	15
5	Descriptive Question with internal option (A or B) on Module 4	15

References

1. Asthana, D. K., and Asthana, Meera, *Environmental Problems and Solutions*, S. Chand, New Delhi, 2012.
2. Bajpai, Asha, *Child Rights in India*, Oxford University Press, New Delhi, 2010.
3. Bhatnagar Mamta and Bhatnagar Nitin, *Effective Communication and Soft Skills*, Pearson India, New Delhi, 2011.
4. G Subba Rao, *Writing Skills for Civil Services Examination*, Access Publishing, New Delhi, 2014
5. Kaushal, Rachana, *Women and Human Rights in India*, Kaveri Books, New Delhi, 2000.
6. Mohapatra, Gaur Krishna Das, *Environmental Ecology*, Vikas, Noida, 2008.
7. Motilal, Shashi, and Nanda, Bijoy Lakshmi, *Human Rights: Gender and Environment*, Allied Publishers, New Delhi, 2007.

8. Murthy, D. B. N., *Disaster Management: Text and Case Studies*, Deep and Deep Publications, New Delhi, 2013.
9. Parsuraman, S., and Unnikrishnan, ed., *India Disasters Report II*, Oxford, New Delhi, 2013
10. Reza, B. K., *Disaster Management*, Global Publications, New Delhi, 2010.
11. Sathe, Satyaranjan P., *Judicial Activism in India*, Oxford University Press, New Delhi, 2003.
12. Singh, Ashok Kumar, *Science and Technology for Civil Service Examination*, Tata McGraw Hill, New Delhi, 2012.
13. Thorpe, Edgar, *General Studies Paper I Volume V*, Pearson, New Delhi, 2017.

UNIVERSITY OF MUMBAI**Syllabus for Approval**

Sr. No.	Heading	Particulars
1	Title of the Course	SYBA -SOCIOLOGY
2	Eligibility for Admission	FYBA in SOCIOLOGY
3	Passing Marks	As Per University of Mumbai Rules and Regulations
4	Ordinances / Regulations (if any)	----
5	No. of Years / Semesters	Semester III and IV
6	Level	U.G (Strike out which is not applicable)
7	Pattern	Semester (Strike out which is not applicable)
8	Status	Revised 2021 (Strike out which is not applicable)
9	To be implemented from Academic Year	From Academic Year 2021-22

Name & Signature of BOS Chairperson :

Dr. Balaji Kendre *Balaji Kendre*

Name & Signature of Dean:

**SYBA SYLLABUS
SOCIOLOGY
UASOC301 Paper II (100 Marks)**

SEMESTER III- CREDIT 03

INDIAN SOCIETY: STRUCTURE AND CHANGE

Course Learning Objectives:

1. To introduce students to the Indian Sociological Traditions.
2. To familiarise students with the Research traditions in Indian Sociology
3. To acquaint students with the emerging Issues in Indian society

Course Outcome

1. After learning this course students will understand complex social structure of Indian Society
2. Students shall develop understanding co-existence of different groups and communities.

Unit I Indian Sociological Perspectives

12 Lectures

- a. Orientalist Approach/Indology and Structure--functionalism (G. S. Ghurye & M.N.Srinivas)
- b. Dialectical approach to Sociology (A. R. Desai)
- c. Non- Brahmanical Approach (Dr.B.R.Ambedkar)

Unit II Contemporary Sociologists (Selected readings)

12 Lectures

- a. Sharmila Rege (Caste and Gender)
- b. Leela Dube (Kinship)
- c. T. K. Oommen (Religion)

Unit III Contemporary Challenges in Indian Society

12 Lectures

- a. Current Trends in Dalit Movement
- b. Resurgence of Ethnic identities
- c. Gender and Marginalization

Unit IV Socio– Cultural Landscape of Maharashtra

09 Lectures

- a. Regional diversity and communities in Maharashtra
- b. Tourism in Maharashtra – Economy and Society
- c. Food Culture intertwined with different cultural identities

Reading List:

1. Ambedkar, B. R. (2007). "Annihilation of Caste" Critical Quest, New Delhi
2. Arya Priya, (2016). "Ethnicity in Post- Independence India: A Sociological Perspective on Its Causes and Manifestations", IOSR Journal of Humanities and Social Sciences, Vol. 21, Issue 1, Ver. 5: 55-61.
3. Dhanagare, D. N. (1999). "Themes and perspectives in Indian Sociology" Rawat Publications
4. Deshpande, S. (2001). "Contemporary India: Sociological View" Penguin Books India Limited
5. Dsouza, Leela (.2006). "Globalisation, Nationalism and Ethnic Identities: The Future of Nation State" in Sankarama Somayaji and Ganesha Somayaji. (Eds): Sociology of Globalisation: Perspectives from India 69-97 Jaipur: Rawat Publications.
6. Dube, Leela. (2001). "Anthropological Explorations in Gender" Sage publications, New Delhi
7. Guru, Gopal. (1993). "Dalit Movement in Mainstream Sociology" EPW, 28 (14)
8. Guru, Gopal. (2016). "Shifting Categories in the Discourse of Caste and Class" EPW, Vol. 44(14): 10-12
9. Mridul Kumar. (2019). "Reservations of Marathas in Maharashtra" Economic and Political Weekly, Vol. 44 (14): 10-12.
10. Oommen, T. K. (2001) "Religion as a Source of Violence. A Sociological Perspective" The Ecumenical Review. Vol. 53, issue 2, April 2001. PP 168 –179
11. Oommen T. K. (2005) "Crisis and Contention in Indian Society" Sage publications.
12. Omvedt, Gail. (1994). "Dalits and Democratic Revolution" Sage, New Delhi
13. Patel, Sujata. (2011). (Ed) Doing Sociology in India: Genealogies, locations and Practices. New Delhi: Oxford University Press
14. Phadnis, Urmila. (2001). "Ethnicity and Nation Building in South Asia" Sage Publications
15. Rege, Sharmila. (2006). "Writing Caste, Writing Gender: Narrating Dalit Women's Testimonies" Zubaan Publications. New Delhi
16. Teltumbade, Anand. (2016). 'Behind the Ire of Marathas', Economic and Political Weekly, Vol. 51 (40): 10-11.
17. Uberoi, Sundar, Deshpande. (2007) (Ed) Anthropology in the East. Founders of Indian Sociology and Anthropology. New Delhi, Permanent Black

18. Vivek Kumar. (2016). "Caste Contemporaneity and Assertion", Economic and Political Weekly, Vol. 51 (50): 84-86).

**SYBA SYLLABUS
SOCIOLOGY
UASOC302 Paper III (100 Marks)**

**SEMESTER III- CREDIT 03
EMERGING ISSUES AND CONCERNS IN INDIAN CONTEMPORARY SOCIETY**

Course Learning Objectives:

1. To familiarize the emerging socio- economic issues in contemporary society.
2. To critically evaluate and bring awareness among the students .

Course outcomes:

This course will help the student to understand:

1. The demographic variable that influence structure of the Society.
2. The environmental concerns of the society today.
3. Sensitization and create awareness with regards to health care system.
4. Critically evaluate the meaning of justice and the role of the criminal justice system of the country.

Unit I: Changing population pattern: Impact and concern **12 Lectures**

- a. The Right to the city- Henry Lefebvre
- b. Pattern of Migration: Case study on Mumbai
- c. Migrant and labour concerns

Unit II: Environment and sustainability **12 Lectures**

- a. Carbon footprints and Sustainable development
- b. Eco- feminism and Feminist Environmentalism
- c. Digital activism

Unit III: Health and Disease **12 Lectures**

- a. Right to Public health
- b. Disability Act 2016 (Differently abled)
- c. Social epidemiology

Unit IV: Crime and Justice **09 Lectures**

- a. Rights and duties of the people
- b. An overview of the criminal Justice system in India: Police, Court and Law
- c. Need for reforms in the criminal justice system

Reading list:

- Dalai Ajit K. & Subha Ray (ed) 2005: *Social dimensions of health*, Rawat Publishers N.Delhi.
- Dak, T. M. (ed) 1997 *Sociology of Health in India*, Rawat Publishers, Jaipur.
- Dash, Dhanalaxmi, 2005 *Women, Environment and Health*, Mangaldeep Publishers, Jaipur
- Indu Mathur & Sanjay Sharma 2002 *Health Hazards, Gender & Society* Rawat Pub. WHO 1988 *Education for Health*, WHO report, Geneva.
- Ram B.Bhagat,Gavin W.Jones 2013 'Population Change and Migration in Mumbai Metropolitan Region: Implications for Planning and Governance-Asia Research Institute, National University of Singapore.
- South Asia Human Rights Documentation Centre.(2006). *Handbook of Human Rights and Criminal Justice in India: The System and Procedure*. New Delhi: OUP.
- Vibhute, K. I. (2004) *Criminal Justice: A human rights perspective of the criminal justice process in India*. Eastern Book Co
- World Bank 2005 *The Millennium Development Goals for Health Rising to the challenges*

Please Note: Syllabus should be supplemented by field visits/educational trips for better understanding of the paper

SOCIOLOGY OF DEVELOPMENT

1. To introduce students to the concept of development in general and in the context of India in particular.
2. To help students to gain an insight into emerging issues and contemporary debates within the development discourse.

1. Students shall be able to understand what is economic development and social development.
2. Students will understand development in Indian Context.

- a. Meaning of Development and theories of Modernization
- b. Dependency Theory- (Samir Amin), World System Theory-Wallerstein
- c. Neo-Liberal approach-David Harvey

- a. Indicators of Development – Human Development Index (HDI)
- b. Social Inequality and development (caste, class and gender)
- c. Regional disparity and development

- Globalization and Industry (Delhi Mumbai Industrial Corridor (DMIC))
- Globalization and Environment (Jaitapur (Nuclear power))
- Globalization and Agriculture (Farmers Mobilization)

- a. Millennium Development Goals and Sustainable Development Goals
- b. Forest Rights Act (2006) and its impact on the Tribal Community
- c. People - Centric Development –Menda Lekha (Gadchiroli), Adarsh Gaon (Hiware Bazaar)

Reading List:

1. Ahmed, Kundu et al (ed), (2010) India's New Economic Policy: A Critical Analysis, New York: Routledge
2. Arundhati Roy Choudhury, (2000) Amusement Parks versus People's Livelihood, EPW, Vol. 35, Sept. 9-15
3. Banerjee Swapna, (2011) Contradictions of 'development' in contemporary India, Open Democracy
4. Bryan Alan, (2012) Social research methods, Oxford Publication
5. Bidwai Praful, 19 Feb, 2011, People v/s Nuclear Power in Jaitapur, Maharashtra, EPW, Vol. 46
6. Collective water management through water banks, July 2010, Clean India Journal
7. Dias Anthony, (2012) Development and its human cost, Rawat publication
8. Deshpande M G, 2007. The nature of ecological problems, Environmental changes and natural disasters, Md. Babar, New India Publication
9. Devale Kaustubh and Paranjape Suhas, Pani Sang harsh Chalwal, www.waterconflictforum.org
10. Giddens Anthony, 2000, Runaway world: How globalization is reshaping our lives Routledge, New York
11. Hiware Bazaar – Dec 22, 2010, Model village for the nation, The Better India
12. India HDR: (2011) Towards social exclusion, Oxford Publication
13. Jogdand P G & Michael S M (2003), Globalization and social movements, Rawat Publication
14. Munshi Indra, (2012) The Adivasi Question – Issues of land, Forests & livelihood, Orient Black swan
15. Neeraj, (2013) Globalization or Re-colonization, Lokayat Publication
16. Padel, Felix and Das Samarendra (2010), Out of This Earth. East India: Adivasis and the Aluminium Cartel, New Delhi: Orient Black swan
17. www.payog.org. Arun Deshpande, Development of Ankoli village, Solapur

**SYBA SYLLABUS
SOCIOLOGY
UASOC402 Paper III (100 Marks)**

SEMESTER IV- CREDIT 03

EMERGING FIELDS IN SOCIOLOGICAL STUDIES

Course Learning Objectives:

1. To introduce students to the emerging and relevant fields in Sociology.
2. To sensitize students with in-depth understanding of struggle and survival in today's competitive scenario.

Course outcomes:

This course will help the student to understand:

1. To create awareness among the students about various media challenges.
2. To critically analyze the new trends in Education.
3. To provide information to the students about the laws and policies of urban governance.
4. To understand the growing numbers and concerns of the ageing community.

Unit I: Communication, Media and Society

12 Lectures

- a. Media Theories: Functionalist, Conflict, Interactionist & Feminist
- b. Advertising and New Social Media- objectification of *women*
- c. Gatekeepers of media/journalism

Unit II: Contemporary Issues in Education

12 Lectures

- a. Right To Education
- b. New trends in education system: Concept based learning, Personalized learning (MOOCs)
- c. Critique- NEP: Privatization of Higher education,

Unit III: Urban Governance

12 Lectures

- a. Disaster Management: Mithi mitigation in Mumbai, Drought in Vidharba
- b. Lack of availability of Open Space- Consumerist spaces and Green spaces
- c. Street Vendors and Hawkers- The Street Vendors Act 2014

Unit IV: Geriatric Care

09 Lectures

- a. Phenomenon of Population Ageing
- b. Old Age Home, Senior Citizens Association, Day care center
- c. Geriatric care: Government and non-governmental initiatives in India

Reading list:

- Dhar Chakraborti, Rajagopal (2004) *The Greying of India: Population Ageing in the Context of Asia*. New Delhi: Sage
- EPW 1999 *Women and Ageing Review of Women's Studies*, vol. XXXIV, No. 44, Oct. 30 - Nov. 5, 1999.
- Irudaya Rajan, S., U. S. Mishra and P. Sankara Sarma 1999 *India's Elderly: Burden or Challenge*. New Delhi: Sage.
- Jayaram, N. 2015- '*Sociology of Education in India*'- Rawat Publications. New Delhi
- Karin Wahl-Jorgensen, Thomas Hanitzsh 2009- '*Handbook of Journalism*'-Routledge. New York.
- Muttagi, P. K. 1997 *Ageing Issues and Old Age Care: A Global Perspective*. New Delhi: Classical Publishing Company.
- Singh, Y. M. (1992). '*Sociological Foundations of Education*', Sheth Publishers, Bombay
- Denis McQuail (2005). *Mass Communication Theory*. New Delhi, Vista Publications
- Uma Joshi (2005). *Mass Communication and Media*. New Delhi. Anmol Publications.
- Bhaskaran N. (2009) ed, *Vision Juhu-Expanding Public Space in Mumbai*. Synergy Creation
- Karinwahl-Jorgensen, Thomas Hanitzsh, (2009) ed, *Handbook of journalism*. Routledge. New York
- Sen, A. Nagendra, H (2019) *Mumbai's Blinkered Vision of Development*, EPW. VOL LIVN09, pp20-23
- Revi, Aromar, (2005) *Lessons from Deluge*, EPW, VOL40, Issue No36

Please Note: Syllabus should be supplemented by field visits/educational trips for better understanding of the paper

SYBA Sociology Paper II and III Paper Pattern for Sem. III and IV

Time: 3 hrs

Marks: 100

Note: Question 1 is compulsory

Attempt Any FIVE from question 2 to 9

1. Attempt any five concepts

25

- a.
- b.
- c.
- d.
- e.
- f.
- g.
- h.

concepts from all units

- 2. (Unit 1)
- 3. (Unit 2)
- 4. (Unit 3)
- 5. (Unit 4)
- 6. (Unit 1)
- 7. (Unit 2)
- 8. (Unit 3)
- 9. (Unit 4)

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AC 19-3-2012

Item No.4.73

UNIVERSITY OF MUMBAI



Revised Syllabus for the S.Y.B.A.

Program: B.A.

Course: History

Semester III & IV

(As per Credit Based Semester and Grading System
with effect from the academic year 2012–2013)

S.Y.B.A. HISTORY PAPER II

Syllabus As per Credit Based Semester And Grading System

- | | | |
|-------|-------------------------------|--|
| i. | Name of the Programme | - B.A |
| ii. | Course Code | - UAHIS 301
UAHIS 401 |
| iii. | Course Title | - Landmarks In World History
(1453-1945) |
| iv. | Semester Wise Course Contents | - As per Syllabus |
| v. | Credit Structure | - Credit (03) for semester III & IV |
| vi. | No. of Lectures Per Module | - 12,12,11,10 & 12,12,11,10 |
| vii. | No. of lectures Per Semester | - 45 + 15 Total 90 |
| viii. | Scheme of Examination | - 40 marks for Internal &
60 marks for External Exam. |
| ix. | Special Notes, if any | - Scheme of Exam. Given already |

“Landmarks in World History (1453-1945)”
Paper II Credit & Grade System from – 2012-13

Objective :

1. To enable the students comprehend the transition of Europe from medieval to modern times and its impact on the rest of the world.
2. To acquaint the students with growth of various political movements that shaped the modern world.
3. To highlight the rise and growth of nationalism as a movement in different parts of the world.
4. To equip the students with an ability to understand and assess the contribution of world personalities during the period under study.

S.Y.B.A. HISTORY PAPER II
SEMESTER – III
(UAHIS 301)

Module	1: Beginning of Modern Age	12 Lectures
	A. Renaissance and New Learning	
	B. Geographical Discoveries and Reformation	
Module	2: Age of Revolutions	12 Lectures
	A. American Revolution and French Revolution	
	B. Industrial Revolution and Agricultural Revolution	
Module	3. Rise of Democracy and Nationalism	11 lectures
	A. Parliamentary Democracy in Britain	
	B. Emergence of Nation States – Italy and Germany	
Module	4: World in Transition (1870-1919)	10 Lectures
	A. Colonial Expansion :- Asia and Africa	
	B. World war I and Russian Revolution of 1917.	

**SEMESTER – IV
(UAHIS 401)**

Module	5: Inter – War Period (1919- 1945) A. Kemal Pasha and Reza Shah Pahlavi B. Birth of Israel and Arab Nationalism	12 Lectures
Module	6: World at Arms A. Dictatorships in Italy and Germany B. Militarism in Japan and world war II	12 Lectures
Module	7: Nationalists and Freedom Movements (Far East and South East Asia) A. Dr. Sun – Yat – Sen and China B. Dr. Sukarno, Ho-Chi-Minh, Aung Sang	11 Lectures
Module	8. Efforts for Peace and India A. International Organizations – League of Nations and United Nations Organisation (U.N.O) B. Gandhi Era. Non Violence and Satyagraha	10 Lectures

**Use of maps is highly recommended.
LANDMARKS IN WORLD HISTORY
LIST OF MAPS**

1. World Discoveries and Colonization (1763)
Pub: Vidya Chitra Prakashan, New Delhi.
2. The American War of Independence
Pub : Pub: Vidya Chitra Prakashan, New Delhi.
3. The French Revolution Part I (1989)
Pub: Vidya Chitra Prakashan,
4. Unification of Italy
Pub : Vidya Chitra Prakashan
5. Unification of Germany
Pub: Vidya Chitra Prakashan
6. The Imperialist Expansion in Africa (1914)
Pub: Vidya Chitra Prakashan

READING LIST

1. Bennis F.L. **European History since 1870** – New York Appleton Century Gofts 1950.
2. Carrie Albercht. R.A. **Diplomatic History of European Since the congress of Vienna-** New York, Harper 1958.
3. Chatterjee N.C. **History of Modern Middle East.** Abhinav Publication, New Delhi 1987
4. Cycle and Beers – **Far East.**: N.D. Prentice Hall of India Pvt. Ltd. 1976.
5. Cornell R.D. **World History in the Twentieth Century** – Longman, Essex 1999.
6. David M.D. **Rise and Growth of Modern Japan-** Himalaya Publication House, Mumbai 1999.
7. Fay S.B. **Origins of the World War 1930** New York- Second Ed. New York Free Press 1999.
8. Grant and Temperley : **Europe in 19th & 20th Centuries 1940.** 5th Ed. New York Longman 2005.
9. Hayes C.J. H. **Contemporary Europe Since 1870-1955** New York Macmillan
10. Hsu Immanuel C.Y. **The Rise of Modern China** OUP New York 1975.
11. Kennedy MA, **A Short History of Japan** North American Library Press 1965.
12. Kirk S.E. **A Short History of the Middle East.** New York 1959.
13. Lewis Bernard, **The Emergence of Modern Turkey-** Oxford University London.
14. Lipson E. **Europe in the 19th 20th Centuries** – 1916 London. A.H. Black.
15. Lipton Joseph M. **The History of Modern Iran: An Interpretation** Harvard University Press 1975.
16. Lowe Norman, **Mastering Modern World History** -4th Ed. 2005 Palgrane Macmillan.
17. Story Richard **Japan & The Decline of the West in Asia 1894- 1943,** 1979 New York City, St. Martin Press.
18. Taylor's A.J.P. **The struggle for Mastery in Europe (1848- 1918)** – 1954 Oxford.
19. Thomson David: **Europe Since Napoleon** – 1962, Longman. (Indian Ed. Jain Pushpak Mandir Jaipur 1977.)

मराठी संदर्भ

१	सदाशिवराव आठवले	-	आधुनिक जगाचा इतिहास (१८७०- १९६०) ओरीएंट लाँगमन लिमिटेड मुंबई १९७४
२	डॉ.श.गो. कोलारकर	-	आधुनिक जगाचा इतिहास. श्री.मंगेश प्रकाशन नागपूर १९७९
३	अ.रा. कुलकर्णी व प्र.नं. देशपांडे	-	आधुनिक जगाचा इतिहास भाग १ व भाग २, स्नेहवर्धन प्रकाशन पुणे.
४	य.ना. कदम	-	२० व्या शतकातील जगाचा इतिहास फडके प्रकाशन, कोल्हापूर
५	डॉ. साहेबराव गाठाल	-	आधुनिक जगाचा इतिहास कैलास प्रकाशन, औरंगाबाद
६	डॉ. खाबडे दिनकर	-	युरोपचा इतिहास, कैलास प्रकाशन औरंगाबाद
७	म.न. उद्गावकर व गणेश राऊत	-	आधुनिक जग, डायमंड पब्लीशिंग पुणे
८	खने बी.डी.	-	आधुनिक युरोप विद्या प्रकाशन, नागपूर
९	डॉ.धनंजय आचार्य		२० व्या शतकातील जग साईनाथ प्रकाशन नागपूर २००७

हिन्दी संदर्भ

१	एम.एल. धवन		विश्व का इतिहास भाग १ व २ अर्जून पब्लीशिंग हाऊस, नवी दिल्ली
२	डॉ. गौरी शंकर असावा		युरोप का इतिहास
३	आर.एस. अग्रवाल		आधुनिक युरोप का इतिहास सत्यकेतू विद्यालंकार

S.Y.B.A. HISTORY PAPER III

Syllabus As per Credit Based Semester And Grading System

- | | | |
|-------|-------------------------------|--|
| i. | Name of the Programme | - B.A. |
| ii. | Course Code | - UAHIS 302
UAHIS 402 |
| iii. | Course Title | - History of Ancient India
(From Earliest Times to 1000 A.D.) |
| iv. | Semester Wise Course Contents | - As per Syllabus |
| v. | Credit Structure | - Credit (03) for semester III & IV |
| vi. | No. of Lectures Per Module | - 12,10,12 11 & 12,12,11,10 |
| vii. | No. of lectures Per Semester | - 45 + 45 Total 90 |
| viii. | Scheme of Examination | - 40 marks for Internal &
60 marks for External Exam. |
| ix. | Special Notes, if any | - Scheme of Exam. Given already |

S.Y.B.A. HISTORY PAPER III
HISTORY OF ANCIENT INDIA
(From Earliest Times To 1000 A.D.)

Objectives :

1. To acquaint the students with the different sources / tools of Ancient Indian History.
2. To enable the students to understand the Political, Socio- Economic and Cultural Developments of India from Pre Historic times.
3. To enable the students to appreciate the rich cultural heritage of India.

SEMESTER – III
(UAHIS 302)

Module 1: Sources of Ancient India	12 Lectures
1. Archaeological Sources.	
2. Literary Sources And Foreign Travelers Accounts	
Module 2: Indus Valley Civilization	10 Lectures
1. Socio – Economic, Religious and Cultural Life.	
2. Town Planning, Architecture, Script and Decline	
Module3: Vedic Age	12 lectures
1. Polity and Economy	
2. Socio – Religious life and education	
Module4: India in the 6 th century B.C.	11 Lectures
1. Age of Janpadas; Persian & Greeek Invasions	
Jainism & Buddhism: Teaching & Impact.	

SEMESTER – IV
(UAHIS 402)

Module 5:	Mauryan and Post Mauryan Period (322 B.C. -320 A.D.)	12 Lectures
	1. Chandragupta Maurya, Ashoka & Mauryan administration	
	2. Post Mauryan Dynasties – Sungas, Kushanas & Satavahans	
Module 6	Gupta and Vakataka Age (320 A.D.- 600 A.D.)	12 Lectures
	1. Imperial Expansion & Administration	
	2. Classical Age – Literature, Art and Architecture.	
Module7	India in the Post Gupta period (600A.D. – 1000 A.D.)	11 lectures
	1. Reign of Harshvardhan	
	2. Invasions of Hunas, Arabs & Rise of Rajputas	
Module8	Major Dynasties of Deccan & South India	10 Lectures
	1. Chalukyas of Badami & Rashtrakutas.	
	2. Pallavas & Cholas .	

Use of maps is highly recommended.

Reading List

1. Altekhar A.S. - Rashtrakutas & Their Times
2. Ayyanger S.K. - Ancient India and South Indian History & Culture
Oriental Book Agency, Pune 1941
3. Bhattacharya N.N. - Ancient Rituals and their Social Contents,
(Delhi, Manohar Publication) 1996
4. Chakravarti Uma - The Social Dimensions of Early Buddhism – Delhi,
Munshiram Manoharlal – 1996
5. Chakaravarti K.C. - Ancient Indian Culture & Civilization
Vora &Co Bombay 1992
6. Jha D.N. - Ancient India in Historical Outline
Motilal Banarasidas. Publishers
Pvt.New Delhi.
7. Kulkarni C.M. - Ancient Indian History & Culture
Karnataka Publishing House,
Mumbai 1956.
- Pannikar K.M. - Harsha & His Times,
Bombay,
Taraporewalla & Sons Co. 1922
8. Kautilya - The Arthshartra
Penguin Books, 1987
9. Luniya B.N. - Life & Culture in Ancient India,
Lakshmi Narain
Agarwal, Agra-1994

10. Majumdar R. C - Ancient India,
Motilal Banarasidas,
Publishers Pvt. Ltd.
New Delhi 1974
11. Mookerjee R. K. - Ancient India,
Allahabad, Indian Press, 1956
12. Mukherjee B. N. - Rise and Fall of the Kushanas
- Empire
13. Nilkantha Shastri - A History of South India
Madras, OOP 1979
14. Nandi R. N - Social Roots of Religion in Ancient
India
15. Pathak V. S - Historians of India (Ancient India)
- Asia publishing Bombay 1966
16. Pannikar K. M. - Harsha and His Times,
Bombay,
Taraporewalla and Sons Co. 1922

मराठी संदर्भ ग्रंथ

१.	डॉ. मोरवंचीकर आर.एस	प्राचीन भारत, कैलास प्रकाशन औरंगाबाद
२.	प्रा. मारडीकर मदन	प्राचीन भारत, विद्या प्रकाशन; औरंगाबाद
३.	प्रा. डॉ. अनिल सिंगारे	दक्षिण भारताचा इतिहास कैलास प्रकाशन औरंगाबाद
४.	आळतेकर अ.स.	राष्ट्रकुट साम्राजाचा इतिहास (इ.स. ७५० ते ९७४ दामोदर सावळाराम आणि कंपनी १९३८)
५.	डॉ. प्रभाकर देव	प्राचीन भारत, विद्या प्रकाशन औरंगाबाद
६.	डॉ. साहेबराव गाठाळ	प्राचीन भारत, कैलास प्रकाशन औरंगाबाद
७.	डॉ. खाबडे दिनकर	प्राचीन भारत, कैलास प्रकाशन औरंगाबाद
८.	डॉ. मोरवंचीकर आर.एस.	सातवाहनकालीन महाराष्ट्र, -कैलास प्रकाशन, औरंगाबाद
९.	डॉ. समदानी ओ.बी.	प्राचीन भारताचा इतिहास चिन्मय प्रकाशन औरंगाबाद
१०.	श.गो. कोलारकर	प्राचीन भारताचा इतिहास
११.	कोसंबी डी.डी.	प्राचीन भारतीय संस्कृती व सभ्यता, डायमंड पब्लीशिंग पुणे
१२.	डॉ. अ.रा. कुलकर्णी	प्राचीन भारत, स्नेहवर्धन प्रकाशन, पुणे
१३.	गायधनी र.ना. आणि राहूरकर व.ग.	प्राचीन भारताचा इतिहास कॉन्टीनेन्टल प्रकाशन पुणे
१४.	जोशी पी.जी.	प्राचीन भारताचा सांस्कृतिक इतिहास विद्या प्रकाशन पुणे.

हिन्दी

	डॉ.एस.एल.नागोरी	प्राचीन भारत- आर.बी.एस.ए.पब्लिशर्स जयपूर १९८०
	डॉ.एल.एल.नागोरी	गुप्तोत्तरकालीन भारत-पोइन्टर पब्लिकेशन जयपूर २००८
	श्रीनेत्र पाण्डेय	भारत वर्ष का संपूर्ण इतिहास -लोकभारती प्रकाशन इलाहाबाद १९७५

SCHEME OF EXAMINATION

The performance of the learner shall be evaluated into two parts. The Learner's performance shall be assessed by Internal Assessment with 40 % marks in the first part by conducting the Semester End with 60% marks in the second part. The allocation of marks for the internal Assessment and Semester End Examinations are as shown below :-

A) Internal Assessment 40 Marks 40 % :

Sr. No.	Types of Evaluation	Marks
1.	Two Assignment (10 Marks each)	20
2.	One Class Test	10
3.	Active Participation in routine Class (Case Studies /Seminars / Presentation)	05
4.	Overall conduct as per responsible students, Mannerism and articulation	05

QUESTION PAPER PATTERN FOR SEMESTER END EXAMINATION

(B) EXTERNAL, THEORY EXAMINATION Total Marks - 60

- N.B. 1 All Question are Compulsory Time – 2 hours
2 Each Question carries 15 Marks.

Semester –III		Semester –IV
Q1.	Based on Module I	Module V
Q1.	OR	OR
Q2.	Based on Module II	Module VI
Q2.	OR	OR
Q3.	Based on Module III	Module VII
Q3.	OR	OR
Q4.	Based on Module IV	Module VIII
Q4.	OR	OR

UNIVERSITY OF MUMBAI**Syllabus for Approval**

Sr. No.	Heading	Particulars
1	Title of the Course	S.Y.B.A. (MARATHI)
2	Eligibility for Admission	F.Y.B.A. Pass
3	Passing Marks	40
4	Ordinances / Regulations (if any)	Nil
5	No. of Years / Semesters	01 (Two Semester)
6	Level	U.G.
7	Pattern	Semester
8	Status	Revised
9	To be implemented from Academic Year	From Academic Year 2021-22

Name & Signature of BOS Chairperson :

Name & Signature of Dean:

UNIVERSITY OF MUMBAI



Revised Syllabus

(Choice Based Credit System, CBCS)

Sem. III & Sem. IV

Program: S.Y.B.A.

Course: Marathi

From 2021-22

मुंबई विद्यापीठ
द्वितीय वर्ष बी.ए.
मराठी
अभ्यासक्रम (CBCS)

Course Code	Core Course	No of Credits
सत्र ३ रे		
UAMAR ३०१	कथन साहित्य	३
UAMAR ३०२	भाषा आणि बोली अभ्यास	३
सत्र ४ थे		
UAMAR ४०१	नाट्य साहित्य	३
UAMAR ४०२	मराठी व्याकरण आणि लेखन कौशल्ये (स्पर्धा परीक्षा)	३

द्वितीय वर्ष बी. ए. मराठी अभ्यासपत्रिका क्र.२ कथन साहित्य

सत्र ३ (तिसरे)- एकूण व्याख्याने ४५ - श्रेयांकने - ०३

उद्दिष्टे (Objective)

- १) कथन साहित्याचा परिचय करून घेणे
- २) कादंबरी या वाङ्मय प्रकाराचे स्वरूप व वैशिष्ट्ये समजून घेणे
- ३) नेमलेल्या कादंबरीचे विविध घटकानुसार विवेचन व विश्लेषण करणे
- ४) कथा या वाङ्मय प्रकाराचा घटकानुसार नेमलेल्या कथासंग्रहाचे विश्लेषण करणे

घटक-१ कथन साहित्याचा परिचय (१५ तासिका) श्रेयांकन १

अ) कथा व कादंबरी या साहित्य प्रकाराचा सैद्धान्तिक परिचय

घटक- २ 'फेसाटी - कादंबरी - नवनाथ गोरे, अक्षर वाङ्मय प्रकाशन (१५ तासिका) श्रेयांकन १

घटक -३ 'बक-याची बॉडी - समर खडस, शब्दालय प्रकाशन (१५ तासिका) श्रेयांकन १

तृतीय सत्रान्त परीक्षा - गुण १००

वरील अभ्यासपत्रिकेचे प्रथम सत्रान्त प्रश्नपत्रिकेचे स्वरूप पुढीलप्रमाणे -

प्रश्न १- ' कथन' साहित्यप्रकाराचा सैद्धान्तिक परिचय यावर पर्याय देऊन एक प्रश्न - गुण २०.

प्रश्न २ - "फेसाटी ' या कादंबरीवर पर्याय देऊन एक प्रश्न - गुण २०.

प्रश्न ३ - "'बक-याची बॉडी" कथा संग्रहावर ' पर्याय देऊन एक प्रश्न - गुण २०.

प्रश्न ४ - तिन्ही गटातील सहा टीपा विचाराव्यात किंवा लघुत्तरी प्रश्न विचारावेत विद्यार्थ्यांनी कोणतेही चार सोडवाव्यात - गुण ४०.

१) कथन' साहित्यप्रकाराचा सैद्धान्तिक परिचय

२) 'फेसाटी '

३) "'बक-याची बॉडी"

साध्ये (Outcome)

१) मराठी साहित्यातील कथन साहित्य अभ्यासून विद्यार्थ्यांना कथन साहित्याचे विश्लेषण करून मर्म ग्रहण करता येईल

२) कथा कादंबरी वाचताना कोणत्या दृष्टीने वाचावे याचे ज्ञान प्राप्त होईल

संदर्भ ग्रंथ

१) फेसाटी : चिंतन आणि मंथन, संपा. आशा मुंडे, संग्राम टेकले, अथर्व पब्लिकेशन्स, जळगाव

२) फेसाटी विशेषांक, वारूळ त्रैमासिक दिवाळी २०१८

नाट्य साहित्य

उद्दिष्टे (Objective)

- १) नाटक या वाङ्मय प्रकारची संकल्पना व त्याचे स्वरूप समजून घेणे
- २) मराठी नाट्य वाङ्मयाची वाटचाल ठळक नाट्याधारे लक्षात घेणे
- ३) एकांकिका या नाट्यप्रकारचे स्वरूप व त्याची वैशिष्ट्ये जाणून घेणे
- ४) मराठीतील एकांकिका वाटचाल लक्षात घेणे
- ५) निवडक एकांकिकांचा अभ्यास करणे आणि लेखनाचे स्वरूप वैशिष्ट्ये समजून घेणे

घटक १: नाट्य ('नाटक व एकांकिका') या साहित्यप्रकाराची ठळक वैशिष्ट्ये (१५ तासिका) श्रेयांकन- १

घटक २: 'आमदार सौभाग्यवती' - नाटक – श्रीनिवास जोशी (रा रं बोराडे यांच्या कादंबरीवर आधारित नाटक)
काँटिनेनटल प्रकाशन, (१५ तासिका) श्रेयांकन १

घटक ३: निवडक एकांकिकांचा अभ्यास (१५ तासिका)श्रेयांकन १

- १ झूलता पूल – सतीश आळेकर
- २ रक्तपुष्प – महेश एलकुंचवार
- ३ जहाज फुटलं आहे : दत्ता भगत
- ४ दुकान कुणी मांडू नये : संजय पवार
- ५ काजळ कुबड्या एकांताला : प्रा. दिलीप परदेशी
- ६ कृष्णाजी केशव : प्रल्हाद जाधव
- ७ चिऊताई चिऊताई दार उघड : प्रदीप राणे
- ८ रिश्वावाला : चंद्रशेखर फणसळकर
९. दगड आणि माती : दत्ता पाटील

चतुर्थ सत्रान्त परीक्षा - गुण १००

वरील अभ्यासपत्रिकेचे प्रथम सत्रान्त प्रश्नपत्रिकेचे स्वरूप पुढीलप्रमाणे -

प्रश्न १- नाट्य ('नाटक व एकांकिका') या साहित्यप्रकाराचा सैद्धान्तिक परिचय यावर पर्याय देऊन एक प्रश्न - गुण २०.

प्रश्न २ -'आमदार सौभाग्यवती' या नाटकावर पर्याय देऊन एक प्रश्न – गुण २०.

प्रश्न ३ - निवडक एकांकिकावर ' पर्याय देऊन एक प्रश्न – गुण २०.

प्रश्न ४ – तिन्ही गटातील सहा टीपा विचाराव्यात किंवा लघुत्तरी प्रश्न विचारावेत विद्यार्थ्यांनी कोणतेही चार सोडवाव्यात - गुण ४०.

१) नाट्य ('नाटक व एकांकिका') या साहित्यप्रकाराचा सैद्धान्तिक परिचय

२) 'आमदार सौभाग्यवती'

३) निवडक एकांकिका

साध्ये (Outcome)

- १) नाटक आणि एकांकिका या प्रकारचे वाङ्मयीन स्वरूप लक्षात येईल

- २) नाट्य साहित्याची वाटचाल समजेल
३) नाट्य ज्ञान मिळून नाट्य रचना करता येईल

संदर्भ ग्रंथ

- १) आधुनिक मराठी नाटक (आशय आणि आकृतीबंध) सुषमा जोगळेकर
- २) दलित रंगभूमी – संपादन व प्रस्तावना : भालचंद्र फडके, सुरेश एजन्सी, पुणे
- ३) मराठी नाटक आणि रंगभूमी : पहिले शतक (१८४३ ते १९४३) वि.भा. देशपांडे, व्हीनस, पुणे
- ४) मराठी नाटक (स्वातंत्र्योत्तर काळ) १९४७ ते १९९० वि.भा. देशपांडे, पुणे, व्हीनस,
- ५) मराठी नाटक आणि रंगभूमी (विसावे शतक : वसंत आबाजी डहाके पॉप्युलर प्रकाशन मुंबई
- ६) मराठी नाटक आणि रंगभूमी (: हिमांशू स्मार्त, विश्वनाथ शिंदे, प्रतिमा प्रकाशन, पुणे.
- ७) नाटक एक वाङ्मय प्रकार : दत्ता भगत, य.च.म.मु.वि., नाशिक
- ८) नाटक आणि मी, विजय तेंडुलकर, डिम्पल प्रकाशन, मुंबई, १९९७.
- ९) नाटक एक चिंतन – कानेटकर वसंत
- १०) नाटकातली चिन्ह – नाईक राजीव
- ११) महानगरी नाटक – नाईक राजीव
- १२) मराठी नाटक : नव्या दिशा आणि वळणे, भवाळकर, तारा
- १३) नाटक कालचं आणि आजचं : राजापुरे-तापास, पुष्पलता
- १४) प्रायोगिक नाटक : भारतीय आणि जागतिक-(संपा) सूर्यवंशी नानासाहेब
- १५) निवडक मराठी एकांकिका : संपा. सुधा जोशी, रत्नाकर मतकरी, साहित्य अकादमी, दिल्ली.
- १६) निवडक एकांकिका : वि.भा. देशपांडे, १९७७
- १७) सर्वोत्कृष्ट मराठी एकांकिका, प्रभाकर नारायण परांजपे, सुपर्ण प्रकाशन, पुणे, १९४८
- १८) मराठी एकांकिका तंत्र आणि विकास, संपादक श्री. रं.भी. भिडे सुपर्ण प्रकाशन पुणे.
- १९) एकांकिका विशेषांक, पंचधारा, जुलै-सप्टेंबर, २०१५

भाषा आणि बोली अभ्यास

उद्दिष्टे (Objective)

- १) भाषेचे स्वरूप समजून घेणे
- २) भाषाबोली समाजाचा परस्पर संबंध अभ्यासणे
- ३) बोलीचे स्वरूप व विषय समजून घेणे

घटक १ (अ) मानवी भाषेचे स्वरूप, एकूण व्याख्याने १५, श्रेयांकने १

संप्रेषण – मानवी आणि मानवेतरांचे, मानवांचे भाषिक व भाषेतर संप्रेषण, मानवी भाषेची लक्षणे किंवा स्वरूप विशेष (ध्वन्यात्मकता, चिन्हात्मकता, यादृच्छिकता, सर्जनशीलता, प्रत्यक्षातीतता, सामाजिकता, परिवर्जनशीलता इ.) मानवी भाषेच्या व्याख्या

(आ) भाषेची विविध कार्ये - रोमान याकबसनचे संप्रेषणाचे नमुनारूप व ६ भाषिक कार्ये (निर्देशात्म, आविष्कारात्म, परिणामनिष्ठ, सौंदर्यात्म, संपर्कनिष्ठ, अतिभाषात्म)

घटक २ (अ) भाषा, समाज आणि संस्कृती - एकूण व्याख्याने १५, श्रेयांकने १

भाषा - एक सांस्कृतिक संचित, सांस्कृतिक जडणघडणीचे, संक्रमणाचे माध्यम एडवर्ड सपीरबेंजामीन बोर्फ यांचा भाषिक सापेक्षतावादाचा अभ्युपगम भाषेकडे पाहण्याचा समाज भाषावैज्ञानिक दृष्टिकोण, समाजातील भाषावैविध्य आणि भाषेचा बहुजिनसीपणा, भाषिकसांस्कृतिक विविधता परस्परसंबंध

आ) भाषा, प्रमाण भाषा आणि बोली : संकल्पना विचार व्याख्याने १५ श्रेयांकने १

'प्रमाण भाषा' म्हणजे काय, प्रमाण भाषेची आवश्यकता, प्रमाण भाषा व बोली यांच्यातील संबंध, त्यांचे वापरक्षेत्र, बोलीवैविध्य- उपबोली, स्थानिक बोली-प्रादेशिक बोली- जातिनिष्ठ बोली-सामाजिक बोली इ., बोलीविषयीचे गैरसमज (शुद्धाशुद्धता, श्रेष्ठकनिष्ठता, अंगभूत क्षमता इ.) व तथ्ये, मराठीच्या विविध बोली

घटक ३ (अ) बोलींच्या अभ्यासाची गरज व महत्त्व

बोलीविज्ञान (Dialectology), बोलींच्या अभ्यासाची दिशा - बोलींचा विजनात्मक अभ्यास, सामाजिक-सांस्कृतिक अभ्यास, बोलींच्या अभ्यासाची साधने, क्षेत्रीय कार्य (Field Work), बोलींची व्याकरणे व कोशरचना यांचे महत्त्व, बोलींसमोरील आव्हाने व त्यांचे जतन व संवर्धन यांसाठी करावयाच्या प्रयत्नांची दिशा

आ) मराठीतील प्रमुख बोली : वऱ्हाडी, अहिराणी, कोकणी बोलीचे स्वरूप विशेष

इ) मालवणी व आगरी बोलींची वैशिष्ट्ये- व्युत्पत्ती आणि विकास, व्याकरणिक वैशिष्ट्ये, उच्चार प्रक्रिया, म्हणी, वाक् प्रचार, शब्दसंग्रह इ.

सत्रांत परिक्षेचे स्वरूप

प्रश्न क्र. १ घटक १ वर अंतर्गत पर्यायासह एक प्रश्न (गुण २०)

प्रश्न क्र. २ घटक २ वर अंतर्गत पर्यायासह एक प्रश्न (गुण २०)

प्रश्न क्र. ३ घटक ३ वर अंतर्गत पर्यायासह एक प्रश्न (गुण २०)

प्रश्न ४ – तिन्ही गटातील सहा टीपा विचाराव्यात किंवा लघुत्तरी प्रश्न विचारावेत विद्यार्थ्यांनी कोणतेही चार सोडवाव्यात - गुण ४०.

साध्ये (Outcome)

- १) मराठी भाषेचे स्वरूप समजेल
- २) मराठीच्या विविध बोलींचे ज्ञान होईल
- ३) मराठी बोलीअभ्यासाला चालना मिळेल

संदर्भ ग्रंथ:

- १) भारतीय भाषांचे लोकसर्वेक्षण: सर्वेक्षण मालिका मुख्य संपादक- डॉ. गणेश देवी, महाराष्ट्र खंड संपादन: अरुण जाखडे, पद्मगंधा प्रकाशन, २०१३
- २) मालवणी बोली-व्याकरण, साहित्य व शब्द कोश, संपा डॉ. पुष्पलता राजापुरे-तापस, डॉ. रमेश धोंगडे, शब्दपरी प्रकाशन.

सत्र ४ (चौथे) एकूण व्याख्याने ४५ श्रेयांकने ३
मराठी व्याकरण आणि लेखन कौशल्ये (स्पर्धा परीक्षा)

उद्दिष्टे (Objective)

- १) भाषा लेखन कौशल्य आत्मसात करणे
- २) निबंध लेखनाचे कौशल्ये आत्मसात करणे
- ३) निबंध लेखनाचा सराव करणे
- ४) संगणकीय उपयोजन करणे
- ५) मराठी व्याकरण समजून त्याचे उपयोजन करणे

घटक १ व्याकरण एकूण व्याख्याने १५ श्रेयांकने १

वर्णमाला शब्दांच्या जाती काळ

लिंग वचन प्रयोग अलंकार

वृत्ते समास वाक्यांचे प्रकार शब्दसंधी

संधी-स्वरसंधी विभक्ती विरामचिन्हे

समानार्थी शब्द

विरुद्धार्थी शब्द

वाक्प्रचार

म्हणी व अर्थ

विरामचिन्हे

शब्द समूहाबद्दल एक शब्द

अलंकाराचे प्रकार इत्यादी घटकांची संक्षेपाने चर्चा

घटक २ एकूण व्याख्याने १५ श्रेयांकने १

मराठी भाषा आणि आधुनिक तंत्रज्ञान परिचय व प्रात्यक्षिक

पॉवरपॉइंट प्रेझेंटेशन, युनिकोड टंकलेखन.

घटक ३ एकूण व्याख्याने १५ श्रेयांकने १

अ निबंध

आ कल्पना विस्तार

इ आकलन

ई सारांश लेखन

चतुर्थ सत्रांत परीक्षेचे स्वरूप

प्रश्न क्र. १ घटक १ वस्तुनिष्ठ स्वरूपाचे ४० पैकी कोणतेही ३० प्रश्न सोडविणे (गुण ६०)

प्रश्न क्र. २ घटक २ वर अंतर्गत पर्यायासह एक प्रश्न (गुण २०)

प्रश्न क्र. ३ घटक ३ वर अंतर्गत पर्यायासह एक प्रश्न (गुण २०)

संदर्भ ग्रंथ:

साध्ये (Outcome)

- १) भाषालेखन कौशल्य आत्मसात होईल
- २) मराठीचे लेखन कौशल्य प्राप्त होईल
- ३) संगणकासाठी मराठी भाषेचा उपयोग होईल
- ४) स्पर्धा परीक्षा उत्तीर्ण होण्यासाठी हा अभ्यासक्रम उपयुक्त ठरेल.

संदर्भ ग्रंथ-

- १) मराठी व्याकरण : प्रा. डॉ. के.पी. शहा, ओम पब्लिकेशन, सप्टेंबर २०१२
- २) मराठीचे व्याकरण : डॉ. लीला गोविलकर, शब्दालय प्रकाशन, जून २०१५
- ३) मराठी भाषेचे वाक्यप्रकार व म्हणी : कै. विद्याधर वामन भिडे, चित्रशाळा प्रकाशन पुणे, ऑक्टोबर १९१८
- ४) मराठी भाषेचा भाषावैज्ञानिक अभ्यास : डॉ. अलका मटकर, शब्दालय प्रकाशन, २०१७
- ५) मराठी लेखन शुद्धी : डॉ. भास्कर गिरिधारी, गौतमी प्रकाशन, नाशिक, २०१२
- ६) मराठी व्याकरण वाद आणि प्रवाद, कृष्ण श्री अर्जुनवाडकर
- ७) मराठी व्याकरण काही समस्या : प्र. ना. दीक्षित
- ८) मराठी व्याकरणाचा इतिहास कृष्ण श्री अर्जुनवाडकर
- ९) मराठी व्याकरण : मो. रा. वाळंबे
- १०) मराठी व्याकरणविवेक : मा. ना. आचार्य
- ११) मराठी व्याकरणाचा पुनर्विचार : अरविंद मंगरुळकर
- १२) मराठीचे व्याकरण : लीला गोविलकर
- १३) शास्त्रीय मराठी व्याकरण : मोरो केशव दामले
- १४) शुद्धलेखनविवेक : द.ना गोखले
- १५) आधुनिक माहिती तंत्रज्ञानाच्या विश्वात : दीपक शिकारपूर, उज्ज्वल साठे, उत्कर्ष प्रकाशन पुणे.

University of Mumbai



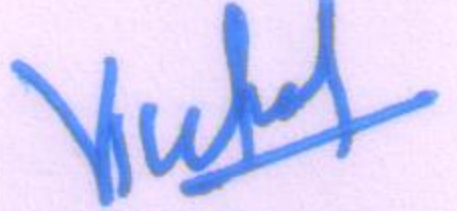
No. UG/128 of 2019-20

CIRCULAR:-

Attention of the Principals of the Affiliated Colleges and Directors of the recognized Institutions in Humanities Faculty is invited to this office Circular No. UG/40 of 2012-13, dated 25th June, 2012 relating to the revised syllabus as per the (CBSGS) of Paper II & III in Semester III & Semester IV of B.A. programme in the course of Economics.

They are hereby informed that the recommendations made by the Board of Studies in Economics at its meeting held on 7th June, 2019 have been accepted by the Academic Council at its meeting held on 26th July, 2019 vide item No.4.28 and that in accordance therewith, the revised syllabus as per the (CBCS) for the S.Y.B.A. (Sem. IV) Indian Economy – Paper VI in Economics has been brought into force with effect from the academic year 2020-21, accordingly. (The same is available on the University's website www.mu.ac.in).

MUMBAI – 400 032
26th September, 2019


(Dr. Vinod P. Patil)
I/c REGISTRAR

To

The Principals of the affiliated Colleges and Directors of the recognized Institutions in Humanities Faculty. (Circular No. UG/334 of 2017-18 dated 9th January, 2018.)

A.C/4.28/26/07/2019

No. UG/128 -A of 2019-20

MUMBAI-400 032

26th September, 2019

Copy forwarded with Compliments for information to:-

- 1) The I/c Dean, Faculty of Humanities,
- 2) The Chairman, Board of Studies in Economics,
- 3) The Director, Board of Examinations and Evaluation,
- 4) The Professor-cum-Director, Institute of Distance and Open Learning (IDOL),
- 5) The Director, Board of Students Development,
- 6) The Co-ordinator, University Computerization Centre,


(Dr. Vinod P. Patil)
I/c REGISTRAR

UNIVERSITY OF MUMBAI**Syllabus for Approval**

Sr. No.	Heading	Particulars
1	Title of the Course	S.Y.B.A. Semester IV Economics- Paper VI Indian Economy
2	Eligibility for Admission	FYBA
3	Passing Marks	40
4	Ordinances / Regulations (if any)	
5	No. of Years / Semesters	2 Semesters
6	Level	U.G
7	Pattern	Semester
8	Status	Revised
9	To be implemented from Academic Year	From Academic Year 2020-21

Date:

Signature :

Chairman/ Chairperson :

Dean Faculty of Humanities :

AC- 26/07/2019

Item No.- 4.28

UNIVERSITY OF MUMBAI



Revised Syllabus for the S.Y.B.A. (Sem IV) Paper VI

Indian Economy

Course: Economics

(As Per Choice Based Credit System with effect from the
academic year 2020-21)

Economics
S.Y.B.A. Semester IV
Paper VI
Indian Economy

Preamble

This paper deals with the nature and sector wise composition of Indian economy. The learners shall be able to understand the problems and prospects of Indian Economy. The content has also intended to orient the learners about the recent developments in the economy.

Module- I: Introduction (12 Lectures)

Trends in India's National Income and PCI Since 1990; Structural Changes In Indian Economy; Brief Overview of the Employment Generation and Poverty Alleviation Programmes; Regional Inequalities; Measures to Reduce Regional Inequalities in India

Module - II: Agricultural Sector (12 Lectures)

Role of Agriculture in Economic Development; Causes of Low Productivity; Agricultural Inputs; Agricultural Price Policy: Recent Minimum Support Price Policy; Income Support for Farmers; Sources of Agricultural Finance; Micro Finance; NABARD: Role and Function; Agricultural Marketing: Structure and Problems; National Policy for Farmers, 2007; Organic Farming Policy; Food Security in India

Module -III: Industrial Sector (12 Lectures)

Infrastructure for Industrial Development; Industrial Policies in India; Industrial Policy of 1991; Micro, Small and Medium Enterprises (MSMEs): Classification, Role and Policy Measures; Growth of Large Scale Industries and Economic Development; Recent Policies and Programs for Industrial Development: Start Up India, Make in India, Skill India; Role and Trends of FDI in Industrial Sector Development

Module -IV: Service Sector (12 Lectures)

Role of Service Sector in Indian Economy; Growth and Performance of Healthcare; Performance of Trade and Tourism, Information Technology and IT - Enabled Services; Research and Development Services With Reference to Education and Skill Development in Employment Generation in India; Performance of Service Sector during XIIth Five Year Plan

Reference

- 1) Ashwini Mahajan, Gaurav Datt, (2018) 'Indian Economy', S. Chand and Company, New Delhi.
- 2) Brahmananda, P.R. and V.R. Panchmukhi (Eds.), (2001), 'Development Experience in the Indian Economy: Inter-State Perspectives', Bookwell, New Delhi.
- 3) Datt, Ruddra and K.P.M, Sundaram, (2017), 'Indian Economy', S. Chand & Company Ltd., New Delhi.
- 4) Misra, S. K. and V. K. Puri, (2018) 'Indian Economy', Himalaya Publishing House, Mumbai.

- 5) Gaurav Datt and Ashwani Mahajan, (2016) 'Indian Economy', S Chand Publishing House, New Delhi.
- 6) Uma Kapila, (2018), 'Indian Economy: Performance and Policies, 2018-19', Academic Foundation, New Delhi.

University of Mumbai



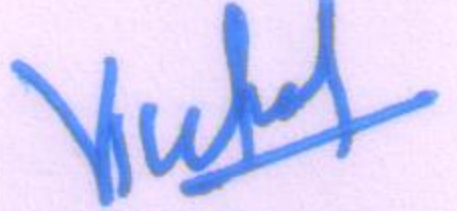
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MUMBAI – 400 032
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(Dr. Vinod P. Patil)
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Chairman/ Chairperson :

Dean Faculty of Humanities :

AC- 26/07/2019

Item No.- 4.28

UNIVERSITY OF MUMBAI



Revised Syllabus for the S.Y.B.A. (Sem IV) Paper VI

Indian Economy

Course: Economics

(As Per Choice Based Credit System with effect from the
academic year 2020-21)

Economics
S.Y.B.A. Semester IV
Paper VI
Indian Economy

Preamble

This paper deals with the nature and sector wise composition of Indian economy. The learners shall be able to understand the problems and prospects of Indian Economy. The content has also intended to orient the learners about the recent developments in the economy.

Module- I: Introduction (12 Lectures)

Trends in India's National Income and PCI Since 1990; Structural Changes In Indian Economy; Brief Overview of the Employment Generation and Poverty Alleviation Programmes; Regional Inequalities; Measures to Reduce Regional Inequalities in India

Module - II: Agricultural Sector (12 Lectures)

Role of Agriculture in Economic Development; Causes of Low Productivity; Agricultural Inputs; Agricultural Price Policy: Recent Minimum Support Price Policy; Income Support for Farmers; Sources of Agricultural Finance; Micro Finance; NABARD: Role and Function; Agricultural Marketing: Structure and Problems; National Policy for Farmers, 2007; Organic Farming Policy; Food Security in India

Module -III: Industrial Sector (12 Lectures)

Infrastructure for Industrial Development; Industrial Policies in India; Industrial Policy of 1991; Micro, Small and Medium Enterprises (MSMEs): Classification, Role and Policy Measures; Growth of Large Scale Industries and Economic Development; Recent Policies and Programs for Industrial Development: Start Up India, Make in India, Skill India; Role and Trends of FDI in Industrial Sector Development

Module -IV: Service Sector (12 Lectures)

Role of Service Sector in Indian Economy; Growth and Performance of Healthcare; Performance of Trade and Tourism, Information Technology and IT - Enabled Services; Research and Development Services With Reference to Education and Skill Development in Employment Generation in India; Performance of Service Sector during XIIth Five Year Plan

Reference

- 1) Ashwini Mahajan, Gaurav Datt, (2018) 'Indian Economy', S. Chand and Company, New Delhi.
- 2) Brahmananda, P.R. and V.R. Panchmukhi (Eds.), (2001), 'Development Experience in the Indian Economy: Inter-State Perspectives', Bookwell, New Delhi.
- 3) Datt, Ruddra and K.P.M, Sundaram, (2017), 'Indian Economy', S. Chand & Company Ltd., New Delhi.
- 4) Misra, S. K. and V. K. Puri, (2018) 'Indian Economy', Himalaya Publishing House, Mumbai.

- 5) Gaurav Datt and Ashwani Mahajan, (2016) 'Indian Economy', S Chand Publishing House, New Delhi.
- 6) Uma Kapila, (2018), 'Indian Economy: Performance and Policies, 2018-19', Academic Foundation, New Delhi.

University of Mumbai



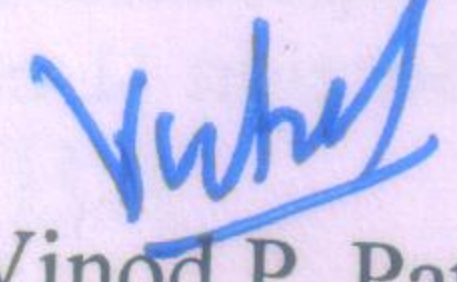
No. UG/ 126 of 2019-20

CIRCULAR:-

Attention of the Principals of the Affiliated Colleges and Directors of the recognized Institutions in Science & Technology, Humanities Faculties is invited to this office Circular No. UG/258 of 2011, dated 18th August, 2011 relating to the revised syllabus as per the (CBSGS) for First Year of B.Sc. programme and for Second Year of S.Y.B.A. programme in Economics (paper II).

They are hereby informed that the recommendations made by the Board of Studies in Economics at its meeting held on 7th June, 2019 have been accepted by the Academic Council at its meeting held on 26th July, 2019 vide item No.4.26 and that in accordance therewith, the revised syllabus as per the (CBCS) for the S.Y.B.A. (Sem. III) Public Finance – Paper IV in Economics has been brought into force with effect from the academic year 2020-21, accordingly. (The same is available on the University's website www.mu.ac.in).

MUMBAI – 400 032
26th September, 2019


(Dr. Vinod P. Patil)
I/c REGISTRAR

To

The Principals of the affiliated Colleges and Directors of the recognized Institutions in Humanities Faculty. (Circular No. UG/334 of 2017-18 dated 9th January, 2018.)

A.C/4.26/26/07/2019

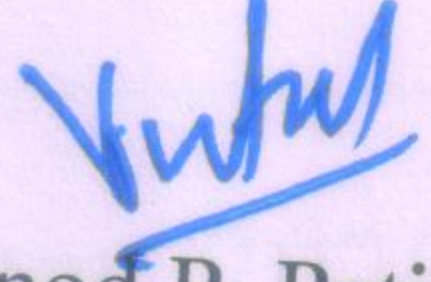
No. UG/ 126 -A of 2019-20

MUMBAI-400 032

26th September, 2019

Copy forwarded with Compliments for information to:-

- 1) The I/c Dean, Faculty of Humanities,
- 2) The Chairman, Board of Studies in Economics,
- 3) The Director, Board of Examinations and Evaluation,
- 4) The Professor-cum-Director, Institute of Distance and Open Learning (IDOL),
- 5) The Director, Board of Students Development,
- 6) The Co-ordinator, University Computerization Centre,


(Dr. Vinod P. Patil)
I/c REGISTRAR

UNIVERSITY OF MUMBAI**Syllabus for Approval**

Sr. No.	Heading	Particulars
1	Title of the Course	S.Y.B.A. Semester- III Economics- Paper- III Macroeconomics – I
2	Eligibility for Admission	HSC (Science)
3	Passing Marks	40 Percentage (Pass Class)
4	Ordinances / Regulations (if any)	-
5	No. of Years / Semesters	2 Semesters
6	Level	U.G
7	Pattern	Semester
8	Status	Revised
9	To be implemented from Academic Year	From Academic Year: 2020-21

Date:

Signature :

Chairman/ Chairperson :

Dean Faculty of Humanities :

UNIVERSITY OF MUMBAI



Revised Syllabus for the S.Y.B.A. (Sem III) Paper IV

Public Finance

Course: Economics

(As Per Choice Based Credit System with effect from the
academic year 2020-21)

SYBA - SEMESTER III
Economics – Paper IV
Public Finance

Preamble

Public Finance is the study of government policy from the point of economic efficiency and equity. The role and functions of the government have been changing throughout time. The existence of externalities, acceleration of economic growth, raising the level of employment, the need and concern for adjustment in the distribution of income and wealth etc. require the use of package of policies which require tax systems, expenditure programmes, rising of debt, issues of deficit etc. This paper deals with basic concepts which explain the need for government intervention. It exposes the student to public budget through issues of taxation, expenditure, debt and concepts of deficit. The last Unit is related to topics concerning Indian Public Finance.

Unit – I Introduction (12 Lectures)

Meaning and Scope of Public Finance; Public Finance versus Private Finance; Market Failure: Public Goods and Private Goods, Externalities, Efficiency versus Equity; Principles of Sound Finance and Functional Finance; Allocation, Distribution, Stabilisation and Growth Functions of the Government

Unit - II Fiscal Policy: Budget and Taxation (12 Lectures)

Dalton's and Musgrave Versions of the Law of Maximum Social Advantage; Role of Government in a Modern Economy; Types of Public Budget; Structure of Public Budget; Role of Taxation; Merits and Demerits of Direct and Indirect Tax Policy; Features of Good Tax System; Concept of Impact, Incidence and Shifting of Taxation; Elasticity and Determination of Tax Burden

Unit III Fiscal Policy: Public Expenditure and Debt (12 Lectures)

Canons of Public Expenditure; Classification of Public Expenditure; Wagner's Law of Public Expenditure; Public Expenditure as an Instrument of Fiscal Policy; Meaning and Types of Public Debt; Burden of Public Debt; Principles of Public Debt Management; Concepts of Deficits

Unit IV Indian Public Finance (12 Lectures)

Budget of The Government of India (Previous Financial Year); Sources of Public Receipts (Tax And Non-Tax, Introduction To GST); Components of Public Expenditure; Sources of Public Borrowing and Debt Liabilities; Deficits; Appraisal of FRBM Act 2004; Fiscal Federalism: Fourteenth Finance Commission Recommendations

References:

1. J. Hindriks, G. Myles, (2006), Intermediate Public Economics, MIT Press.
2. Harvey Rosen, (2005), Public Finance, Seventh Edition, McGraw Hill Publications.

3. KaushikBasu and Maertens (ed), (2013), The New Oxford Companion to Economics in India, Oxford University Press.
4. Sury M.M., (1990), Government Budgeting in India, Commonwealth Publishers.
5. Bhatia H.L., (2012), Public Finance, Vikas Publications.
6. Report of the Fourteenth Finance Commission, Government of India.

University of Mumbai



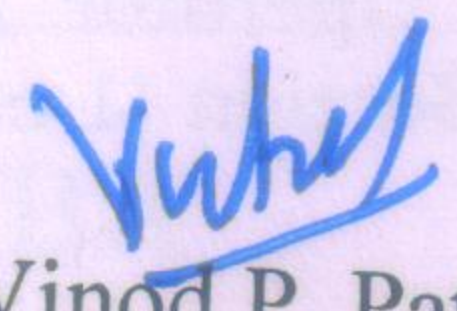
No. UG/ 126 of 2019-20

CIRCULAR:-

Attention of the Principals of the Affiliated Colleges and Directors of the recognized Institutions in Science & Technology, Humanities Faculties is invited to this office Circular No. UG/258 of 2011, dated 18th August, 2011 relating to the revised syllabus as per the (CBSGS) for First Year of B.Sc. programme and for Second Year of S.Y.B.A. programme in Economics (paper II).

They are hereby informed that the recommendations made by the Board of Studies in Economics at its meeting held on 7th June, 2019 have been accepted by the Academic Council at its meeting held on 26th July, 2019 vide item No.4.26 and that in accordance therewith, the revised syllabus as per the (CBCS) for the S.Y.B.A. (Sem. III) Public Finance – Paper IV in Economics has been brought into force with effect from the academic year 2020-21, accordingly. (The same is available on the University's website www.mu.ac.in).

MUMBAI – 400 032
26th September, 2019


(Dr. Vinod P. Patil)
I/c REGISTRAR

To

The Principals of the affiliated Colleges and Directors of the recognized Institutions in Humanities Faculty. (Circular No. UG/334 of 2017-18 dated 9th January, 2018.)

A.C/4.26/26/07/2019

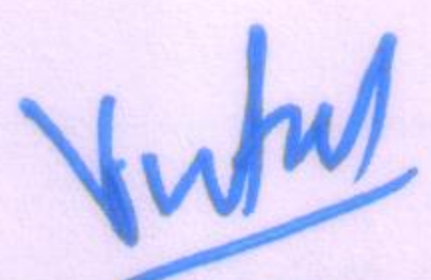
No. UG/ 126 -A of 2019-20

MUMBAI-400 032

26th September, 2019

Copy forwarded with Compliments for information to:-

- 1) The I/c Dean, Faculty of Humanities,
- 2) The Chairman, Board of Studies in Economics,
- 3) The Director, Board of Examinations and Evaluation,
- 4) The Professor-cum-Director, Institute of Distance and Open Learning (IDOL),
- 5) The Director, Board of Students Development,
- 6) The Co-ordinator, University Computerization Centre,


(Dr. Vinod P. Patil)
I/c REGISTRAR

UNIVERSITY OF MUMBAI**Syllabus for Approval**

Sr. No.	Heading	Particulars
1	Title of the Course	S.Y.B.A. Semester- III Economics- Paper- III Macroeconomics – I
2	Eligibility for Admission	HSC (Science)
3	Passing Marks	40 Percentage (Pass Class)
4	Ordinances / Regulations (if any)	-
5	No. of Years / Semesters	2 Semesters
6	Level	U.G
7	Pattern	Semester
8	Status	Revised
9	To be implemented from Academic Year	From Academic Year: 2020-21

Date:

Signature :

Chairman/ Chairperson :

Dean Faculty of Humanities :

UNIVERSITY OF MUMBAI



Revised Syllabus for the S.Y.B.A. (Sem III) Paper IV

Public Finance

Course: Economics

(As Per Choice Based Credit System with effect from the
academic year 2020-21)

SYBA - SEMESTER III
Economics – Paper IV
Public Finance

Preamble

Public Finance is the study of government policy from the point of economic efficiency and equity. The role and functions of the government have been changing throughout time. The existence of externalities, acceleration of economic growth, raising the level of employment, the need and concern for adjustment in the distribution of income and wealth etc. require the use of package of policies which require tax systems, expenditure programmes, rising of debt, issues of deficit etc. This paper deals with basic concepts which explain the need for government intervention. It exposes the student to public budget through issues of taxation, expenditure, debt and concepts of deficit. The last Unit is related to topics concerning Indian Public Finance.

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1. J. Hindriks, G. Myles, (2006), Intermediate Public Economics, MIT Press.
2. Harvey Rosen, (2005), Public Finance, Seventh Edition, McGraw Hill Publications.

3. KaushikBasu and Maertens (ed), (2013), The New Oxford Companion to Economics in India, Oxford University Press.
4. Sury M.M., (1990), Government Budgeting in India, Commonwealth Publishers.
5. Bhatia H.L., (2012), Public Finance, Vikas Publications.
6. Report of the Fourteenth Finance Commission, Government of India.

University of Mumbai



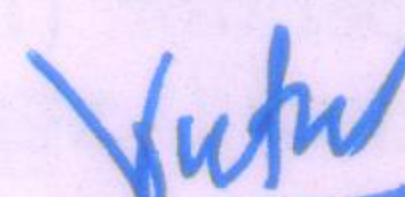
No. UG/125 of 2019-20

CIRCULAR:-

Attention of the Principals of the Affiliated Colleges and Directors of the recognized Institutions in Humanities Faculty is invited to syllabus uploaded by Academic Authority Unit which was accepted by the Academic Council at its meeting held on 19th March, 2012 vide item No. 4.5 relating to the revised syllabus as per the (CBSGS) for the S.Y.B.A. Programme – B.A. Course – Economics Paper – II & III (Semester – III & IV).

They are hereby informed that the recommendations made by the Board of Studies in Economics at its meeting held on 07th June, 2019 have been accepted by the Academic Council at its meeting held on 26th July, 2019 vide item No.4.25 and that in accordance therewith, the revised syllabus as per the (CBCS) for the S.Y.B.A. (Sem. III) Macro Economics – I in Economics has been brought into force with effect from the academic year 2020-21, accordingly. (The same is available on the University's website www.mu.ac.in).

MUMBAI – 400 032
26th September, 2019


(Dr. Vinod P. Patil)
I/c REGISTRAR

To

The Principals of the affiliated Colleges and Directors of the recognized Institutions in Humanities Faculty. (Circular No. UG/334 of 2017-18 dated 9th January, 2018.)

A.C/4.25/26/07/2019

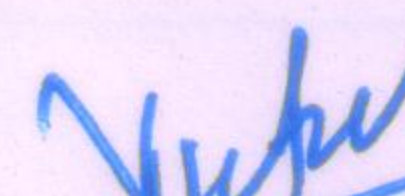
No. UG/125-A of 2019-20

MUMBAI-400 032

26th September, 2019

Copy forwarded with Compliments for information to:-

- 1) The I/c Dean, Faculty of Humanities,
- 2) The Chairman, Board of Studies in Economics,
- 3) The Director, Board of Examinations and Evaluation,
- 4) The Professor-cum-Director, Institute of Distance and Open Learning (IDOL),
- 5) The Director, Board of Students Development,
- 6) The Co-ordinator, University Computerization Centre,


(Dr. Vinod P. Patil)
I/c REGISTRAR

UNIVERSITY OF MUMBAI**Syllabus for Approval**

Sr. No.	Heading	Particulars
1	Title of the Course	S.Y.B.A. Semester- III Economics- Paper- III Macroeconomics – I
2	Eligibility for Admission	HSC (Science)
3	Passing Marks	40 Percentage (Pass Class)
4	Ordinances / Regulations (if any)	-
5	No. of Years / Semesters	2 Semesters
6	Level	U.G
7	Pattern	Semester
8	Status	Revised
9	To be implemented from Academic Year	From Academic Year: 2020-21

Date:

Signature :

Chairman/ Chairperson :

Dean Faculty of Humanities :

UNIVERSITY OF MUMBAI



Revised Syllabus for the S.Y.B.A. (Sem III) **Paper III** **Macro Economics – I**

Course: Economics

(As Per Choice Based Credit System with effect from the
academic year 2020-21)

Macro Economics - I

S.Y.B.A. Semester – III Paper III (Academic Year: 2020 - 21)

Preamble: This course is designed to provide an introduction to the students about the basic building blocks of Macro Economics which will serve as a foundation throughout their career.

Module – I: Introduction to Macro Economics and National Income (12 Lectures)

Introduction: Meaning and Scope of Macro Economics; Concepts of National Income: GNP, NNP, NDP, Per Capita Income, Personal Income and Disposal Income; Methods and Difficulties in Measurement of National Income; Circular Flow of National Income: Closed Economy (Two and Three Sector) and Open Economy Models (Four Sector Model)

Module – II: Consumption and Investment (12 Lectures)

Consumption and Investment; Says Law of Market; Theory of Effective Demand; Consumption Function; Investment Function; Marginal Efficiency of Capital and Rate of Interest- Investment Multiplier

Module – III: Supply of Money and Demand for Money (12 Lectures)

Supply of Money; Determinants of Money Supply; Velocity of Circulation of Money; RBI's Approach to Measurement of Money Supply; Demand for Money: Classical, Keynesian and Friedman's Approaches

Module – IV: Banking (12 Lectures)

Banking: Commercial Bank, Functions of Commercial Banks, Multiple Credit Creation, Balance Sheet of Commercial Bank; Development in Commercial Banking Sector Since 1990-91; Central Bank: Functions of Central Bank - Traditional, Developmental, Promotional

Reference

- 1) N. Gregory Mankiw, (2015), Principle of Macroeconomics, 7th edition, Cengage Learning.
- 2) Abel A. B. B. S. Beranake and D. Croushore (2011), Macroeconomics, Pearson, New Delhi.
- 3) Ahuja H. L., (2008), Macroeconomics theory and Policy, S. Chand and company Ltd. New Delhi.
- 4) Dwivedi D.N., (2007), Macroeconomics theory and Policy, TATA Mcgraw - Hill Publication company Ltd. Delhi.
- 5) Dornbusch Rudiger, Fischer, Stanley and Startz, (2017) (Indian Edition), Macroeconomics Delhi: Mcgraw Hill Publication.
- 6) Paul Samuelson and William Nordhaus, (2010), Economics, Mcgraw Hill Publication.

University of



No. UG/127 of 2019-20

CIRCULAR:-

Attention of the Principals of the Affiliated Colleges and Directors of the recognized Institutions in Humanities Faculty is invited to syllabus uploaded by Academic Authority Unit which was accepted by the Academic Council at its meeting held on 19th March, 2012 vide item No. 4.5 relating to the revised syllabus as per (CBSGS) for the S.Y.B.A. Programme – B.A. Course – Economics Paper – II & III (Semester – III & IV).

They are hereby informed that the recommendations made by the Board of Studies in Economics at its meeting held on 07th June, 2019 have been accepted by the Academic Council at its meeting held on 26th July, 2019 vide item No.4.27 and that in accordance therewith, the revised syllabus as per the (CBCS) for the S.Y.B.A. (Sem. -IV) Macro Economics - II in Economics has been brought into force with effect from the academic year 2020-21, accordingly. (The same is available on the University's website www.mu.ac.in).

MUMBAI – 400 032

26th September, 2019

(Dr. Vinod P. Patil)
I/c REGISTRAR

To

The Principals of the affiliated Colleges and Directors of the recognized Institutions in Humanities Faculty. (Circular No. UG/334 of 2017-18 dated 9th January, 2018.)

A.C/4.27/26/07/2019

No. UG/127-A of 2019-20

MUMBAI-400 032

26th September, 2019

Copy forwarded with Compliments for information to:-

- 1) The I/c Dean, Faculty of Humanities,
- 2) The Chairman, Board of Studies in Economics,
- 3) The Director, Board of Examinations and Evaluation,
- 4) The Professor-cum-Director, Institute of Distance and Open Learning (IDOL),
- 5) The Director, Board of Students Development,
- 6) The Co-ordinator, University Computerization Centre,

(Dr. Vinod P. Patil)
I/c REGISTRAR

UNIVERSITY OF MUMBAI



Syllabus for Approval

Sr. No.	Heading	Particulars
1	Title of the Course	S.Y.B.A. Semester- IV Economics- Paper- V Macroeconomics – II
2	Eligibility for Admission	HSC (Science)
3	Passing Marks	40 Percentage (Pass Class)
4	Ordinances / Regulations (if any)	-
5	No. of Years / Semesters	2 Semesters
6	Level	U.G
7	Pattern	Semester
8	Status	Revised
9	To be implemented from Academic Year	From Academic Year: 2020-21

Date: _____

Signature : _____

Chairman/ Chairperson : _____

Dean Faculty of Humanities : _____

AC- 26/07/2019

Item No.- 4.27

UNIVERSITY OF MUMBAI



Revised Syllabus for the S.Y.B.A. (Sem IV) Paper V

Macro Economics – II

Course: Economics

(As Per Choice Based Credit System with effect from the academic
year 2020-21)

Macro Economics - II

S.Y.B.A. Semester – IV Paper V (Academic Year: 2020 - 21)

Preamble: This course is designed to make students aware of macroeconomic terminologies and make them familiar with macroeconomic terms and concepts in order to understand economics at aggregate level. It also aims to make the students aware about recent developments in macroeconomic literature.

Module - I: Inflation (12 Lectures)

The Economics of Depression, Hyper Inflation; Inflation: Features and Causes, Demand Pull Inflation and Cost Push Inflation, Effects of Inflation; Nature of Inflation in Developing Economy; Phillips Curve; Stagflation: Meaning, Causes and Consequences

Module – II: Economic Policy (12 Lectures)

Monetary Policy: Objectives, Instruments, Limitations, Role of Monetary Policy in Developing Economies; Fiscal Policy - Objectives, Instruments, Limitations and Role of Fiscal Policy in Developing Economies

Module – III: Post Keynesian Economics (12 Lectures)

The IS-LM Model of Integration of Commodity and Money Market; IS Curve: Derivation of IS Curve, Shift in IS Curve, Equilibrium in Goods Market; LM Curve: Derivation of LM Curve, Shift in LM Curve, Equilibrium in Money Market; Simultaneous Equilibrium in Goods and Money Market

Module – IV: External Sector (12 Lectures)

Balance of Payment: Structure, Disequilibrium in Balance of Payment, Types, Causes and Measures to Correct Balance of Payment Disequilibrium; Foreign Exchange Market: Determination of Exchange Rate: Fixed and Flexible Exchange Rate; Spot and Forward Exchange Rate; Exchange Rate Policy

Reference

- 1 Richard Froyan, (2012), Macroeconomics: Theories and policies, Pearson Education.
- 2 Eroll D'Souza, (2008), Macroeconomics, Pearson Education.
- 3 Suman Kalyan Chakravarty, (2010), Macroeconomics, Himalaya Publishing House.
- 4 N. Gregory Mankiw, (2015), Principle of Macroeconomics Cengage Learning.
- 5 Francis Cherunilam, (1999), International Economics, Tata McGraw-Hill.
- 6 Bo Soderstein, (1994), International Economics, Palgrave Macmillan.

University of Mumbai



No. AAMS(UG)/60 of 2021-22

CIRCULAR:-

Attention of the Principals of the Affiliated Colleges and Directors of the Recognized Institutions in Faculty of Humanities is invited to this office circular No. UG/58 of 2018-19, dated 6th July, 2018 relating to the revised syllabus as per the (CBCS) for the T.Y.B.A. in Economics – Sem V & VI.

They are hereby informed that the recommendations made by the Board of Studies in Economics at its online meeting held on 9th June, 2021 vide Item No. 1 and subsequently passed by the Board of Deans at its online meeting held on 11th June, 2021 vide item No. 5.37 (R) have been accepted by the Academic Council at its meeting held on 29th June, 2021 vide item No. 5.37 (R) and that in accordance therewith, the revised syllabus as per the (CBCS) for the T.Y.B.A. in Economics- Sem V & VI has been brought into force with effect from the academic year 2021-22 accordingly. (The same is available on the University's website www.mu.ac.in).

MUMBAI – 400 032
22nd September, 2021


(Dr. B.N. Gaikwad)
I/c REGISTRAR

To

The Principals of the Affiliated Colleges the head of the University Departments and Directors of the Recognized Institutions in Faculty of Humanities.

A.C/5.37 (R) 29/06/2021

No. AAMS(UG)/60 -A of 2021-22

MUMBAI-400 032

22nd September, 2021

Copy forwarded with Compliments for information to:-

- 1) The Dean, Faculty of Humanities,
- 2) The Chairman, Board of Studies in Economics,
- 3) The Director, Board of Examinations and Evaluation,
- 4) The Director, Board of Students Development,
- 5) The Co-ordinator, University Computerization Centre,


(Dr. B.N. Gaikwad)
I/c REGISTRAR

Copy to :-

- 1. The Deputy Registrar, Academic Authorities Meetings and Services (AAMS),**
- 2. The Deputy Registrar, College Affiliations & Development Department (CAD),**
- 3. The Deputy Registrar, (Admissions, Enrolment, Eligibility and Migration Department (AEM),**
- 4. The Deputy Registrar, Research Administration & Promotion Cell (RAPC),**
- 5. The Deputy Registrar, Executive Authorities Section (EA),**
- 6. The Deputy Registrar, PRO, Fort, (Publication Section),**
- 7. The Deputy Registrar, (Special Cell),**
- 8. The Deputy Registrar, Fort/ Vidyanagari Administration Department (FAD) (VAD), Record Section,**
- 9. The Director, Institute of Distance and Open Learning (IDOL Admin), Vidyanagari,**

They are requested to treat this as action taken report on the concerned resolution adopted by the Academic Council referred to in the above circular and that on separate Action Taken Report will be sent in this connection.

- 1. P.A to Hon'ble Vice-Chancellor,**
- 2. P.A Pro-Vice-Chancellor,**
- 3. P.A to Registrar,**
- 4. All Deans of all Faculties,**
- 5. P.A to Finance & Account Officers, (F.& A.O),**
- 6. P.A to Director, Board of Examinations and Evaluation,**
- 7. P.A to Director, Innovation, Incubation and Linkages,**
- 8. P.A to Director, Board of Lifelong Learning and Extension (BLLE),**
- 9. The Director, Dept. of Information and Communication Technology (DICT) (CCF & UCC), Vidyanagari,**
- 10. The Director of Board of Student Development,**
- 11. The Director, Department of Students Welfare (DSD),**
- 12. All Deputy Registrar, Examination House,**
- 13. The Deputy Registrars, Finance & Accounts Section,**
- 14. The Assistant Registrar, Administrative sub-Campus Thane,**
- 15. The Assistant Registrar, School of Engg. & Applied Sciences, Kalyan,**
- 16. The Assistant Registrar, Ratnagiri sub-centre, Ratnagiri,**
- 17. The Assistant Registrar, Constituent Colleges Unit,**
- 18. BUCTU,**
- 19. The Receptionist,**
- 20. The Telephone Operator,**
- 21. The Secretary MUASA**

for information.

UNIVERSITY OF MUMBAI



**Revised Syllabus for the
T.Y.B.A. (Economics)
Sem - V and VI**

(As per the Choice Based Credit System with effect from the academic
year 2021-22)

UNIVERSITY OF MUMBAI



Syllabus for Approval

Sr. No.	Heading	Particulars
1	Title of the Course	T.Y.B.A. (Economics)
2	Eligibility for Admission	As per University Rule
3	Passing Marks	-
4	Ordinances / Regulations (if any)	-
5	No. of Years / Semesters	One Year / Two Semesters
6	Level	U.G.
7	Pattern	Semester
8	Status	Revised
9	To be implemented from Academic Year	From Academic Year 2021-2022

Name & Signature of BOS Chairperson : _____

Name & Signature of Dean: _____

PREAMBLE:

The syllabus of TYBA has been revised owing to the revised syllabus introduced by the University of Mumbai for FY and SYBA as per the recommendation of Board of Studies of Economics (BOS-E) by keeping in view of the recent trends in the subject of Economics. The BOS-E has further revised the syllabi of papers at the TYBA which will be made effective **from the Academic Year 2021-22**. A broad overview of the revised structure, which includes the core papers and electives as described below.

DURATION:

- The course shall be a full time course.
- The duration of B.A. course shall be of Three years across Six Semesters.

FYBA: SEMESTER – I & II (One paper each semester)

SYBA: SEMESTER – III & IV (Two papers each semester)

TYBA: SEMESTER – V & VI (Six papers each semester)

PATTERN:

The T.Y.B. A. [Entire Economics] Course shall have 12 papers. Every semester shall have six papers, each carrying 100 marks. However students can opt for combination of any two subjects in Economics and the rest in any other subject) in which every semester shall have three papers of each Subject, carrying 100 marks each. Moreover, exams based on Papers IX and Papers XII of Semester V and Paper XV and XVIII of Semester VI are bifurcated into 80 marks of written exam and 20 marks of project. It is hereby stipulated that the projects shall have a maximum page limit of 20.

CASE STUDY APPROACH

As per the latest guidelines issued by UGC in 2021, the themes of the Projects related to applied component papers IX and XII of semester V and papers XV and XVIII of semester VI are resolved to be based on Case Study Approach. Even for the Core Papers and Electives, the relevant modules are focused on Case Study approach.

SCHEME OF EXAMINATION

The duration of the examination, paper pattern and the allotment of lectures as well as marks are given in detail in subsequently.

DURATION:

- Three **Hours** for each 100 marks paper and **Two and Half an Hour** for 80 marks paper.

ALLOTMENT OF LECTURES:

- The allotment of lectures is as per the common guidelines stipulated by the Academic Council for Humanities of University of Mumbai.

PAPER PATTERN:

- There shall be five questions each of 20 marks, for 100 marks paper divided into three sub questions (a, b, c) with an internal option to choose any two.
- There shall be four questions of 20 marks for 80 marks paper with internal options mentioned as the same above.
- All questions shall be compulsory with internal choice within the questions.
- Questions may be subdivided into sub-questions a, b, c as mentioned earlier and the allocation of marks shall depend on the weightage given to the topic.

Questions	Modules	Marks
Qn.1	Unit I	20
Qn.2	Unit II	20
Qn.3	Unit III	20
Qn.4	Unit IV	20
Qn.5	4 Sub-questions from Unit I, II, III & IV OR 20 MCQs from Unit I, II, III & IV	20

COURSE STRUCTURE
(APPLICABLE FROM ACADEMIC YEAR: 2021-22)
TYBA (SEMESTER –V)

COURSE CODE	REVISED PAPER		CREDIT	MARKS
GROUP - I : CORE PAPERS				
ECOAME501	VII	ADVANCED MICROECONOMICS – III	4	100
ECOGAD502	VIII	ECONOMICS OF GROWTH AND DEVELOPMENT	4	100
GROUP-II : ELECTIVE PAPERS				
ECOIFSA503	IX	INDIAN FINANIAL SYSTEM-I	3	80
OR				
ECOACB503	IX	ECONOMICS OF AGRICULTURE AND CO - OPERATION – I	3	80
OR				
ECOILC503	IX	INDUSTRIAL AND LABOUR ECONOMICS – I	3	80
ECORMA504	X	RESEARCH METHODOLOGY - I	4	100
OR				
ECOQEB504	X	QUANTITATIVE ECONOMICS - I	4	100
OR				
ECOESSIC504	X	ENTREPRENEURSHIP & SMALL SCALE INDUSTRIES	4	100
ECOEAA505	XI	ENVIRONMENTAL ECONOMICS -I	4	100
OR				
ECOEIB505	XI	ECONOMICS OF INSURANCE - I	4	100
OR				
ECOMEAC505	XI	MATHEMATICS FOR ECONOMIC ANALYSIS - I	4	100
ECOEMA506	XII	ECONOMY OF MAHARASHTRA -I	3	80
OR				
ECOHETB506	XII	HISTORY OF ECONOMIC THOUGHTS – I	3	80
OR				
ECOIBFC506	XII	INTERNATIONAL BANKING AND FINANCE – I	3	80

TYBA ECONOMICS (SEMESTER-V)

COURSE CODE	GROUP-I : CORE PAPER PAPER NO -VII	CREDIT	MARKS
ECOAME501	ADVANCED MICROECONOMICS - III	4	100

Course Objectives

The course is designed to provide sound understanding in micro economic theory. Since students have been taught perfect competition, this course focuses on three main pillars of microeconomics such as imperfect competition, welfare economics and information economics.

Course Outcomes

- Enables students to get knowledge on new market structure, imperfect competition.
- Provides understanding on the welfare economics and economics of information.

Module 1: General Equilibrium and Welfare Economics

(12 Lectures)

Concept of General Equilibrium and Walrasian General Equilibrium Model - Pareto Optimality – The Pareto Optimality Condition of Social Welfare - Marginal Conditions for Pareto Optimal Resource Allocation - Perfect Competition and Pareto Optimality - Arrow's Impossibility Theorem

Module 2: Market Structure: Monopoly and Monopolistic Competition

(14 Lectures)

Concept of Monopoly - Measurement of Monopoly Power - Price Discrimination: Types and Classification of Price Discrimination (Degrees of Price Discrimination) - Equilibrium under discriminating Monopoly - Regulation of Monopoly Market Product Differentiation in Monopolistic Competition - Chamberlin's Alternative approach- Equilibrium under Monopolistic Competition - Excess Capacity

Module 3: Oligopoly

(12 Lectures)

The Cournot Model - Meaning and Characteristics of Oligopoly Market - Rigid Prices - The Sweezy Model of Kinked Demand Curve - Collusive Oligopoly - Cartel: Centralised and Market Sharing Cartel - Imperfect Collusion- Price Leadership Models, Game Theory - Prisoner's Dilemma, Nash Equilibrium and Dominant Strategy Equilibrium

Module 4: Information Economics

(12 Lectures)

Economics of Search and Search Cost - The Theory of Asymmetric Information-The Market for Lemons and Adverse Selection - Risk Preference and Expected Utility - The Problem of Moral Hazard - Market Signaling - Principal-Agent Problem

References:

1. Jhingan MLL. (2012), Advanced Economic Theory, Vrinda Publications, Delhi.
2. Mankiw N. Gregory (2015), Principles of Microeconomics, Cengage Learning.
3. Mansfield, Edwin (1985), Micro-economics: Theory & Applications, 5th edition, W.W. Norton & Company, New York.
4. Patil K. A (Second edition, 2011, Marathi), Advanced Economic Theory-Micro Analysis, Shri Mangesh Prakashan, Nagpur.
5. Salvatore D. (2006), Microeconomics: Theory and Applications, Oxford University Press, New Delhi.
6. Varian Hal R. (8 Edition 2010) Intermediate Microeconomics A Modern Approach, East-West Press, New Delhi

TYBA (ECONOMICS) (SEMESTER-V)

COURSE CODE	GROUP-I : CORE PAPER PAPER NO - VIII	CREDIT	MARKS
ECOGAD502	ECONOMICS OF GROWTH AND DEVELOPMENT	4	100

Course Objectives

This paper introduces the concepts, theories, process and policies regarding growth and development. The meaning of the development as it has evolved over the years is clarified. The contemporary as well as classical theories of growth, development, and underdevelopment are considered in detail. Theories and issues related to population, poverty, inequality and human capital are considered. Urban and rural aspects of the development process studied. Importance of technology, infrastructure and planning in development process are considered. The approach has been to cover all important areas of development economics.

Course Outcomes

- Enable students to apply and analyse issues in the development process.
- Students will be able to identify the issues related to Growth and Development
- Students will be able to understand the policy options and analyzed the Measures taken for the Development of an economy.

Module 1: Meaning of Economic Growth and Development

(12 Lectures)

Concepts of Economic Growth and Development-Distinction between Economic Growth and Development- Concept of Human Development- H.D.I, G.D.I, Green GDP- Sen's Capability approach- Millennium Development Goals (MDGs)- Initiative by Indian government towards MDGs.

Module 2: Theories of Economic Development

(12 Lectures)

Rostow's stages of growth; Big Push Theory- Leibenstein's Critical Minimum Effort Thesis - Harrod - Domar Growth Model- Lewis Model of unlimited supply of labour - Ragner Nurkse's Theory of Disguised Unemployment- Schumpeter's Theory of Development

Module 3: Structural Issues in Development Process

(12 Lectures)

Concept of Human Capital- Role of Education, Health and nutrition in Human Capital - Meaning and Measurement of Poverty and Inequality- Measures to eradicate poverty and Inequality - Meaning of Inclusive growth - SHG and Microfinance- Migration – Urbanization- Formal and Informal Sector- Urban Informal Sector

Module 4: Planning, Technology and Economic Development

(12 Lectures)

Concept and Role of infrastructure in Economic Development- Role of technology in Economic Development- Labour intensive versus Capital intensive technology- Schumacher's concepts of intermediate and appropriate technology- Green Technology- Meaning and Types of Economic Planning- Role of Planning in Economic Development

References:

1. Baldwin, Economic Development: Theory, History and Policy, Willy Publishers, 1957.
2. Mamoria, Joshi, Principles and practice of marketing in India, Kitab Mahal, 1979.
3. Meier, Gerald M. and James E. Rauch. Leading Issues in Economic Development, New Delhi: Oxford Univ. Press, 2006.
4. Thirlwall, A.P. Growth and Development 8e. New York: Palgrave MacMillan, 2005. 7
5. Todaro, Michael P. and Stephen C. Smith. Economic Development, 8e. Delhi: Pearson Education, 2003.
6. V.K. Puri and S.K. Mishra, Indian Economy, Himalaya Publishing House, 2019

TYBA (ECONOMICS) (SEMESTER-V)

COURSE CODE	GROUP-I : CORE PAPER PAPER NO – IX	CREDIT	MARKS
ECOIFSA503	INDIAN FINANCIAL SYSTEM – I	3	80

Course Objectives

In this semester the students get introduced with various aspects related to Indian Financial system. Indicators of financial development will be introduced and overview of financial sector reforms will be undertaken. Students will be able to understand performance, progress and issues in Indian Banking system. An overview of development of non-banking institutions in India will be undertaken. Students will also be introduced with traditional, modern and hybrid financial instruments.

Course Outcomes

- Empowering students about Indian Financial system, indicators of financial development and overview of financial sector reforms
- Awareness on performance, progress and issues in Indian Banking and overview of non-banking institutions in India
- The course leads to project work/ case studies based on empirical examples such as: Management of NPAs by banks, performance analysis of commercial banks, financial instruments- comparative analysis, performance of NBFIs

Module 1: Introduction to Indian Financial System

(12 Lectures)

Evolution- meaning-characteristics – components - significance - Financial system and economic development - Indicators of Financial Development: FR, FIR, NIR and IR. -Reforms and trends/ turns in Indian financial sector: 1991-2019.

Module 2: Performance, Progress and Issues in Indian Banking

(12 Lectures)

Overview of development of Banking in India-Commercial banking-Liquidity management-Commercial banking developments since mid 1980s- Management of NPAs-Concept of Bad bank-Mudra bank scheme - Capital adequacy norms- Basel III

Module 3: Non- banking Finance Institutions in India

(12 Lectures)

Overview of development of non- banking institutions in India – Growth - Components, types, role in financial system - Regulation of NBFIs-Provident funds - Pension funds - Venture capital funds

Module 4: Financial Instruments: Traditional, Modern and Hybrid

(12 Lectures)

Traditional instruments: equities- debentures and bonds -Hybrid instruments- different types of bonds such as floating rate bonds- zero interest bonds- deep discount bonds- inverse float bonds-sovereign gold bonds- municipal bonds- convertible debentures- warrants, Cryptocurrency - Derivatives - meaning, concept and types of derivatives

References:

1. Bhole, L. M. (2008): Financial Institutions and Markets, Growth and Innovation, Tata McGraw-Hill, New Delhi.
2. Khan, M.Y. (2007): Financial Services, Tata McGraw Hill, New Delhi.
3. Machiraju, Indian Financial system, Vikas publishing house, 2nd edition, 2002.
4. Pathak, Bharati (2008) : The Indian Financial System-Markets, Institutions, and Services, (2nd Edition), Pearson Education, New Delhi.
5. Strong, R. A. (2002): Derivatives: An introduction; Thomson Asia Pte Ltd, Bangalore.
6. Varshney P N and Mittal D K, Indian financial system, sultan Chand and sons , New Delhi, 2002.

TYBA (ECONOMICS) (SEMESTER-V)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – IX	CREDIT	MARKS
ECOACB503	ECONOMICS OF AGRICULTURE AND CO-OPERATION-I	3	80

Course Objectives

This paper provides an overview of the role of agriculture in the economic development of the country and the salient features associated to agricultural productivity and agricultural labour. The pertinent aspects related to agricultural credit, agricultural marketing as well as the global problems existing in the marketing are dealt in. Students can acquire understanding about the features of agricultural policy and the agrarian crisis as well as the problems and challenges in the field of Agriculture and cooperation.

Course Outcomes

- Students will obtain information regarding various agricultural issues in India and remedies for it.
- Making awareness about self- employment through various local business like agro- tourism, travel agents, horticulture, floriculture, fishery and animal husbandry.

Module 1: Agricultural Productivity

(12 Lectures)

Role of agriculture in Economic Development - Cropping pattern in India, Recent trends, Factors affecting - cropping pattern - Physical, Technical and Economic - Agricultural Productivity, Causes of Low Productivity in Agriculture - Measures taken to improve the Agricultural Productivity in India - Irrigation and Water Management and agricultural development - Agricultural labour Problems and suggestions.

Module 2: Agricultural Credit

(12 Lectures)

Institutional and Non-Institutional Sources of Credit Co-operative Credit and Agriculture Rural Indebtedness - Commercial Banks and Regional Rural Banks - Microfinance and NABARD - Role and Performance - Crop loan and Crop Insurance, Kisan Credit card Yojana.

Module 3: Agricultural Marketing

(12 Lectures)

Types of Marketing - Corporate, Commodity and Global Problems and Measures of Agricultural Marketing - Regulated Market - WTO and Indian Agriculture - Problems of Agricultural Marketing and its measures - National Agricultural Market - FPO – Farmers Producer Organizations

Module 4: Agricultural Price and Policy

(12 Lectures)

Food Security in India - Price Policy of CACP Evaluation - Agricultural Crisis and Farmers Suicide - Agro-Tourism and its policy - Organic Farming - Mechanization of Agriculture

References:

1. Bilgrami S.A.R. (2000), An Introduction of agricultural Economics, Himalaya Publishing House, Mumbai
2. Datta Ruddra and Mahajan Ashwini (2016), Indian Economy, Chand and Company Ltd., New Delhi.
3. Gupta P. K.,(2012), Agricultural Economics, Vrinda Publications (P) Ltd. Delhi.
4. Mamoria C.B. and B.B. Tripalhi (1991), Agricultural Problems in India, Kitab Mahal, Allahabad.
5. Sadhu and Singh (2008), Fundamental of Agricultural Economics, Himalaya Publishing House, Mumbai.
6. Tyagi B.P., (2016), Agricultural Economics and Rural Development, Jaiprakash Nath and Co. Meerut.

TYBA (ECONOMICS) (SEMESTER-V)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – IX	CREDIT	MARKS
ECOILC503	INDUSTRIAL AND LABOUR ECONOMICS-I	3	80

Course Objectives

There has been a paradigm shift in the structure of the Indian industrial sector and the policies governing it ever since the new era of globalization and liberalization has ushered in. This paper intends to equip the students with the knowledge about the fundamentals of Industrial Economics and also the latest policies relating to the Indian industry.

Course Outcomes

- Learners will study the different contemporary issues of industrial sector.
- Learners will know the problems of industries.
- Learners will get the idea about productivity.
- Learners will get with new Policies and its impact on industries.

Module 1: Introduction

(12 Lectures)

Meaning and Scope of Industrial Economics- Industrial Profile- Private sector- Performance and Problems - Cooperatives sector and its role, merits and demerits- Public Sector – Role - Performance and Problems -Role of agriculture in Industrial development, Industrial Combinations - Motives for Mergers and Acquisitions.

Module 2: Industrial Location and Problem of Regional Imbalance

(12 Lectures)

Determinants of Industrial Location, Theories of Industrial Location - Weber's and Sargent Florence's Theories, Dispersal and Decentralization of Industries, Problem of Regional Imbalance.

Module 3: Industrial Productivity and Industrial Sickness

(12 Lectures)

Concept and Measurement of Industrial Productivity- Factors Affecting Industrial Productivity-Industrial Sickness - Causes, Effects and Remedial Measures - Rationalisation - Concept, Aspects and Impact.

Module 4: Industrial Development in India

(12 Lectures)

New Industrial Policy, 1991; Disinvestment Policy; Small Scale Industries and Rural Industrialization; National Manufacturing Policy, 2011 - Recent Trends in India's Industrial Growth- Role of MNCs in the Indian Economy - Merits and Demerits, Industrial Finance in India.

References:

1. Barthwal R.R. (2007), Industrial Economics, New Age International Publishers, New Delhi.
2. D. Agrawal A.N. (2011), Indian Economy, New Age International Publishers, New Delhi.
3. Datt R. and Sundaram K.P.M. (2009), Indian Economy, S.Chand & Co., New Delhi.
4. Kuchhal S.C. (1980), Industrial Economy of India, Chaitanya Publishing House, Allahabad.
5. Mishra S.K. and Puri V.K.(2008), Indian Economy, Himalaya Publishing House, Mumbai.
6. Ranjana Seth, Industrial Economics (2010), Ane Books Pvt. Ltd., New Delhi.

TYBA (ECONOMICS) (SEMESTER-V)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – X	CREDIT	MARKS
ECORMA504	RESEARCH METHODOLOGY - I	4	100

Course Objectives

This paper contains within the various objectives, such as to understand and make aware as well as inculcate research in Economics amongst the learners, to encourage exchange of ideas and application of results of economic research at the same time to enable students in understanding data collection and presentation for quality research in social sciences.

Course Outcomes

- The learners will understand and inculcate research in Economics
- The learners will exchange ideas and application of results of economic research.
- The course will help in formulation of problems in social science research.
- The students will understand data collection and presentation for quality research in social sciences.

Module 1: Introduction to Research

(12 Lectures)

Meaning and scope of social science research- Basic assumptions of research- Features and importance of social science research- Objectives and types of research; Basic, Applied, Pure, Descriptive, Analytical, and Empirical research- Limitations of social science research- Difficulties in social science research

Module 2: Formulation of Problem in Social Science Research

(12 Lectures)

Research process: Identification, selection and formulation of research problem-Sources of research problem - Criteria of a good research problem- Review of literature-Formulation of hypothesis- Research design: Definition, Concepts, and types- Data Collection and analysis- Interpretation and report writing- Use of web search in research process.

Module 3: Types of Data: Primary and Secondary

(12 Lectures)

Types of Data: Primary data and its collection methods: Observation method- Interview Technique - Design of schedule and questionnaire - Survey method and Field visits - Secondary data : Meaning- advantages- sources- relevance and limitations of secondary data- Sampling Techniques : Census and sample survey- Essentials of a good sampling - Advantages and limitations of sampling- Types of sampling: Random sampling and Non-random sampling-Sampling and Non-Sampling errors.

Module 4: Representation and Analysis of Data

(12 Lectures)

Classification, Tabulation and Graphical presentation of socio-economic data- Need and importance of data analysis- Statistical analytical tools: Measures of Central Tendency - Measures of Variation : Absolute and relative measures - Quartile deviation, standard deviation, coefficient of variation- Skewness: Meaning and measurement (Karl Pearson's and Bowley's methods) - Preliminaries of computer applications in data organization and data processing.

References:

1. Bhandarkar P.L., (1994), Samajik Sanshodhan Padhati, Himalaya Publication, New Delhi.
2. Dawson, Catherine (2002), Practical research methods, UBS Publishers, New Delhi.

3. Ghosh, B.N. (1992), Scientific methods and social research, Sterling Publishers Pvt. Ltd, New Delhi.
4. Gupta S P, (1987), Statistical methods, Sultan Chand and Sons, New Delhi.
5. Kothari R.C. (2008), Research methodology, methods and techniques, New Age International Publishers, New Delhi.
6. Krishnaswamy O.R.(1993), Methodology of research in social sciences, Himalaya publishing House, Mumbai.

TYBA (ECONOMICS) (SEMESTER-V)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – X	CREDIT	MARKS
ECOQEB504	QUANTITATIVE ECONOMICS – I	4	100

Course Objectives

Economics is increasingly becoming quantitative in nature. This course introduces a variety of quantitative skills as per the current requirements of industry. The objective of this paper is to equip students with the mathematical and statistical techniques, which are needed for analysis of data in general and economic analysis in particular.

Course Outcomes

- Students can perform graphical analysis of functions, sketch curves defined by simple equations. Furthermore, it will help to interpret the algebraic solution of economic concepts
- It will build an ability to explain the economic applications of differentiation, and use it to understand economic concepts such as elasticity, marginal cost and input- output determination and linear programming.
- Help to develop various quantitative concepts and their application not only in economics but also for other subjects.

Module 1: Equations, Graphs and Derivatives

(12 Lectures)

Linear and non-linear relationships in economic analysis– Derivatives– Higher order derivatives– Increasing and decreasing functions- Necessary and sufficient conditions for maxima and minima– Optimization of economic functions- Economic applications: equations and graphs Market demand and supply models, taxes, elasticity.

Module 2: Linear Algebra

(12 Lectures)

Matrices and basic operations on matrices– Rank of a matrix– Inverse of a matrix– Cramer's rule and its application to the IS-LM model-Input-Output Analysis and policy implications– Linear Programming Problem: Formulation and graphical solution.

Module 3: Descriptive Statistics and graphing techniques for presenting data

(12 Lectures)

Concept of primary and secondary data along with tabulation and graphs – Measures of central tendency (arithmetic mean, median and mode) – Absolute and relative measures of dispersion (range, quartile deviation, mean deviation and standard deviation) with simple applications – Measures of skewness and kurtosis – Lorenz Curve

Module 4: Elementary Probability Theory

(12 Lectures)

Sample space and events– Mutually exclusive - Exhaustive and complementary events– Conditional probability– Binomial probability distribution– Nature and Properties of the Normal Probability Distribution -Standard Scores and the Normal Curve -The Standard Normal Curve: Finding Areas when the Score is Known- Finding Scores when the Area is Known.

References:

1. Chiang A. C.: Fundamental Methods of Mathematical Economics, 3rd edition, McGraw-Hill, 1984.
2. Dowling Edward T: Introduction to Mathematical Economics, Schaum Outline Series in Economics, Tata McGraw -Hill, New Delhi, 2004.
3. Dowling Edward T: Theory and Problems of Mathematical Methods for Business and Economics, McGraw Hill, 1993.

4. Gupta S.P.: Statistical Methods, S. Chand, New Delhi, 2014.
5. Lerner Joel J and P.Zima: Theory and Problems of Business Mathematics, McGraw Hill, New York, 1986.
6. Sancheti D.C. and V.K. Kapoor: Statistics-Theory, Methods and Applications, S. Chand, New Delhi, 2014.

TYBA (ECONOMICS) (SEMESTER-V)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – X	CREDIT	MARKS
ECOESSIC504	ENTREPRENEURSHIP & SMALL SCALE INDUSTRIES	4	100

Course Objectives

This paper is designed with the aim of encouraging students to foresee themselves as potential entrepreneurs. The paper includes within the scope for case studies, Interviews of Entrepreneurs, Preparation of project report, group discussion, survey etc.

Course outcomes

- Nurture the qualities of successful entrepreneurship
- Provides them knowledge about various processes to register for small scale industries which results in successful maintenances of such industries

Module 1: Entrepreneurship

(12 Lectures)

Concept of an entrepreneur and entrepreneurship, qualities of the successful entrepreneurs- role and functions of entrepreneurs in economic development- factors influencing entrepreneurship- Challenges before women entrepreneurship.

Module 2: Starting a new venture

(12 Lectures)

Project identification - selection and formulation, Registration of small scale industries - project report- Sources of finance for a business - Export documents and trends of small enterprises- major constraints in export performance.

Module 3: Small scale industries

(12 Lectures)

Meaning and scope of small scale industries, importance of small scale industries, problem faced by small scale industries, SWOT analysis for small scale industries, forms of business organizations: Sole proprietorship – Features, advantages & disadvantages. Partnership - Features, advantages & disadvantages. Joint stock Company – Features, advantages & disadvantages. Co-operative – Features, advantages & disadvantages.

Module 4: Management and incentives for small scale industries

(12 Lectures)

Fundamentals of management: productions and operations management- working capital management, marketing management - Human resource management- Total quality management- Management information system- Incentives to small scale industries.

References:

1. Barra G.S, Dangwal R.C. Entrepreneurship and Small Scale Industries New Potentials – Deep & Publications 1999
2. Desai Vasant, Dynamics of Entrepreneurial Development and Management, Himalaya Publication
3. Khanka C.S., Entrepreneurial Development. S. Chand and Company
4. Khushpat S. Jain House Export Import Procedures and Documentation' Himalaya Publishing House
5. Murthy C.S.V. Small Industries & Entrepreneurship Development, Himalaya Publication
6. Singh P.N. and Saboo J.C., Entrepreneurship Management, P.N.Singh Centre

TYBA (ECONOMICS) (SEMESTER-V)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – XI	CREDIT	MARKS
ECOEEA505	ENVIRONMENTAL ECONOMICS - I	4	100

Course Objectives

This course introduces the learner to the basic concepts, economic instruments and policy options in managing the environment. The impact of development on environment is suitably addressed under the rubric of sustainable development. Economic implications of environmental policy and valuation of environmental quality are important areas of concern to be covered. The students are sensitized to the role of human decisions in affecting the environmental quality and managing global environmental issues. The causes, effects and measures to control different types of pollution are impressed upon. The environmental accounting practices, policies, impact and risk analysis focusses on India.

Course Outcomes

- On the completion of this course, the student will have a good understanding of contemporary environmental issues and their relation to economic development.
- The learner will be equipped to understand the methodologies and tools of valuing the environment.
- In the light of international environmental agreements, the learners will be able to understand the global approaches and policies adopted by India to deal with the environmental issues.

Module1: Introduction to Environmental Economics

(12 Lectures)

Environmental Economics: Nature, Significance and Scope; Environment and the economy; Environmental Kuznets Curve; Common resources, externalities and property rights; Coase Theorem; Rio Declaration and Agenda 21 programme of action for sustainable development.

Module 2: The Design and Implementation of Environmental Policy

(12 Lectures)

Criteria for evaluating environmental policies; Tools of Environmental Policy: Standards, Pigovian taxes/effluent fees, quotas/tradable permits; Choice between taxes and quotas; Environmental Policy: Regulation and Implementation.

Module 3: Measuring Benefits of Environmental Improvements

(12 Lectures)

Economic value of Environment: Use and Non-use values; Measurement methods of environmental value: Market based and Non-market based methods; Contingent Valuation Method; Travel Cost Method; Hedonic Price Method.

Module 4: Global Environmental Issues

(12 Lectures)

Trade and environment-Overview of trans-boundary environmental problems-Global Warming - Climate Change - Energy Crisis - Challenges of urbanization - International environmental agreements.

References:

1. Barry Field and Martha K Field: Environmental Economics, McGraw Hill International Edition, 2017.
2. Benneer, Lori Snyder, and Cary Coglianese (2004), Evaluating Environmental Policies, KSG Faculty Research Working Paper Series RWP04-049, USA
3. Charles Kolstad : Environmental Economics, Oxford University Press, New York, 2000.
4. Hanley Nick, Shogren Jason and White Ben: Introduction to Environmental Economics, Oxford University Press, 2001.
5. Mickwitz, Per. (2003). A Framework for Evaluating Environmental Policy Instruments Context and Key Concepts. Evaluation.
6. Smith Stephen: Environmental Economics: A very Short Introduction, 1st Edition, Oxford University Press, New York, 2011.

TYBA (ECONOMICS) (SEMESTER-V)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – XI	CREDIT	MARKS
ECOEIB505	ECONOMICS OF INSURANCE - I	4	100

Course Objectives

The course is designed to provide an understanding of the fundamentals of insurance. Insurance has a profound impact on the society as it manages, diversifies and absorbs the risk of individuals and organisations. Insurance companies as risk management service providers serve as bulwarks for the development of productive activities fuelling demand, facilitating supply and trade. The important role played by the insurance institutions in mobilizing savings and diverting them for capital formation is well known. In recent years, uncertainties experienced in life have been increasing and this in turn has created demand for insurance. With the opening of the insurance sector to private players, the interest in the subject has increased. The paper on Economics of Insurance attempts to provide a fairly comprehensive view of the subject to the undergraduate students in Economics.

Course Outcomes

- Identify and define basic terms and concepts of insurance
- Describe the importance of insurance for an individual and the economy
- Understand the concept of risk and its types, and the process of risk management.

Module 1: Introduction

(12 lectures)

Definition of Insurance, Characteristics of Insurance, Principles of Insurance, Distinction between Assurance and Insurance, Purpose and need of insurance, Functions of Insurance, Classification of Insurance, Limitations of Insurance.

Module 2: Risk and Risk Management

(12 lectures)

Concept of Risk, Risk Vs Uncertainty – Loss and chances of loss, Perils, Hazards, Types of Risk, Classification of Pure risk, Elements of insurable risk, Losses and methods of handling pure risk, Asymmetries of information - Adverse selection and Moral hazard in insurance, Risk management process - Risk analysis, Risk control, Risk financing, Risk transfer.

Module 3: Recent Trends in Insurance Sector

(12 lectures)

Insurance and economic development, Insurance institutions as financial intermediaries; insurance institution as investment institution; Growth & Performance of Public & Private Insurance Companies in India: Life and Non-Life sector including foreign collaborations; Disinvestment of LIC, Listing of Public & Private Insurance companies in Stock market; Government policies in insurance – Ayushman Bharat Yojna, Pradhan Mantri Suraksha Bima Yojna, Pradhan Mantri Jeevan Jyoti Bima Yojna.

Module 4: Reinsurance

(12 lectures)

Definition, Objectives of Reinsurance, Role of Reinsurance, Techniques of Reinsurance. Role of Reinsurer, Role of General Insurance Corporation of India (GIC Re), Issues and challenges in Indian Reinsurance.

References:

1. Dr. PK Gupta (2011), Insurance & Risk Management, Himalaya Publishing House.
2. Dr. MJ Mathew (2005), Insurance Principles & Practice, RBSA Publishers.
3. E. Rejda George, McNamara Michael (2017), Principles of Risk Management & Insurance, Pearson Education.
4. Kishore Kumar Das (2016), Insurance Sector in India: Problems, Possibilities and Prospects, IBP, New Delhi.
5. Meltem Tumay (2009), Asymmetric Information & Adverse Selection in Insurance Markets: The problem of Moral Hazard at dergipark.org.tr/tr/download/article-file/146009.
6. PK Gupta (2017), Fundamentals of Insurance, Himalaya Publishing House.

TYBA (ECONOMICS) (SEMESTER-V)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – XI	CREDIT	MARKS
ECOMEAC505	MATHEMATICS FOR ECONOMIC ANALYSIS	4	100

Course Objectives

This course aims to equip students with mathematical tools, formulae and expressions, which will enhance their capacity to understand and interpret economic theory. The course introduces mathematical techniques commonly used for planning and resource allocation.

Course Outcomes

- By the completion of the course, students can solve the economic problems by using mathematical techniques.
- The application of these mathematical techniques will help them to analyse the real world problems and to bring out impeccable interpretations in any discipline.

Module 1: Set Theory, functions and Graphs

(12 Lectures)

A set and its elements- basic set operations- Functions and Graphs- Algebraic and Non- Algebraic; Slope and intercept of a straight line- Economic Applications: Demand and supply functions-Savings-Investment- Consumption function etc.

Module 2: Derivatives and its Applications

(12 Lectures)

Derivative of function – Rules of differentiation, Partial derivatives - First and Second orders - Total differentiation- Maxima and minima of two or more than two variables.

Applications in Economics: Constrained and unconstrained optimization- Cost minimisation- Profit maximisation- Optimization of utility and production functions using Lagrange Multiplier.

Module 3: Integration and its Applications

(12 Lectures)

Basic rules of integration – Definite and Indefinite integrals- Area under the curve. Economic applications- Capital formation- Consumer's and Producer's Surplus- Measures of Inequality-Lorenz curve- Gini- coefficient and Pareto distribution.

Module 4: Matrix Algebra

(12 Lectures)

Meaning and types of Matrices- Matrix Operations (upto 3×3) Matrix – Addition- Matrix multiplication, Transpose of matrix- Inverse of a Square Matrix- Rank of a matrix- Adjoint of a matrix- Characteristic Roots and Vectors- Simultaneous linear equations- Determinants- Minors and Cofactors- Solution to equations by Cramer's Rule- Applications in economics: Input -Output model.

References:

1. Chiang, Alpha (1994). Fundamental Methods of Mathematical Economics. McGraw Hill.
2. Dowling, Edward T (2004): Introduction to Mathematical Economics Schaum's Outline Series in Economics. Tata McGraw –Hill.
3. Lerner, Joel J and P. Zima (1986). Theory and Problems of Business Mathematics. McGraw Hill.
4. Rosser, Mike (2003). Basic Mathematics for Economists. Routledge, Taylor & Francis Group.
5. Soni, R. S. (2009). Essential Business Mathematics & Business Statistics, Ane Books Pvt. Ltd.
6. Sydsaeter, K and P. Hammond (2002). Mathematics for Economic Analysis. Pearson Educational Asia.

TYBA (ECONOMICS) (SEMESTER-V)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – XII	CREDIT	MARKS
ECOEMA506	ECONOMY OF MAHARASHTRA-I	3	80

Course Objectives

This paper provides a detailed account of various sectors of economy of Maharashtra i.e. natural resources, population, agriculture, industry, infrastructure, fiscal policy and human development. These units will introduce the various challenges faced by the economy of Maharashtra and efforts of the Government to tackle them.

Course Outcomes

- Students get acquainted with all varied sectors of the economy of Maharashtra
- Awareness on challenges to be faced and measures to tackle the challenges

Module 1: Introduction to Economy of Maharashtra

(12 Lectures)

Location and administrative divisions- Important features of the economy of Maharashtra- land, forest, climate and rainfall, fisheries and mineral resources-Formation of Maharashtra state- Sanyukt Maharashtra Movement – structural changes in state domestic product since 1991 -Maharashtra's place in India in various economic indicators.

Module 2: Demography of Maharashtra

(12 Lectures)

Size and growth rate –Density- Birth rate, Death rate and infant mortality rate - Urban and rural population -Literacy rate - Sex ratio - Migration - Labour force -SC and ST population - Employment Guarantee Scheme (EGS) - Unemployment and poverty

Module 3: Agriculture Development in Maharashtra

(12 Lectures)

Significance of agriculture in the economy of Maharashtra - Land utilisation in Maharashtra- Cropping pattern and per hectare yield -Trends in land productivity - Land reforms -Intensity of irrigation - Inequalities in land distribution in Maharashtra - Cooperatives in Maharashtra- Agricultural finance - Food security-Concept of PDS- Buffer stock of food grains- Allocation - Issue of farmers suicide - Agricultural policy in Maharashtra.

Module 4: Industrial Sector & Service Sector in Maharashtra

(12 Lectures)

Major manufacturing industries - Important ratios of industrial groups in Maharashtra - Incentives and promotions to various industries in Maharashtra -Industrial policy of Maharashtra 2019 and 2024 -The role of MIDC, SICOM, MSFC, SEZ in industrial development - Foreign Direct Investment (FDI) in Maharashtra since 1991- Role of service sector in the economy of Maharashtra - sector in employment - Banking and finance.

References:

1. JungaleMangala (2008): Maharashtrachi Arthvyavastha (Marathi), Prashant Publications, 17, Stadium Shopping Centre, Opp. State Bank, Jalgaon –age No. 9 to 19.
2. Kurulkar R. P. (1997): Maharashtrachi Arthvyavastha (Marathi), Vidya Prakashan, Ruikar Marg, Nagpur. Page No. 153 to 179.

3. Munagekar Bhalchandra (2003) :The Economy of Maharashtra – Changing Structure and Emerging Issues, Dr. Ambedkar Institute of Social and Economic Change, Mumbai.
4. Patil J. F. (2010) :Suvarna Mahotsavi Maharashtrachi Badalati Arthvyavastha (Marathi), Abhijit Pratap Pawar, Sakal Papers Ltd., 595, Budhwar Peth, Pune-411002Page No. 41 to 57.
5. Pansare Govind (2012) :Maharashtrachi Arthik Pahani – Paryayi Drushtikon (Marathi), Shramik Pratishthan, Red Plug Bldg., Bindu Chowk, Kolhapur, Page No. 159 to 195.
6. World Bank (2002) India: Maharashtra Reorienting Govt. to Facilitate Growth and Reduce Poverty.

TYBA (ECONOMICS) (SEMESTER-V)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – XII	CREDIT	MARKS
ECOHETB506	HISTORY OF ECONOMIC THOUGHT - I	3	80

Course Objectives

The very purpose of this course is to provide information about the biography and contribution of the most influential economists who influenced the economic fraternity and to whom we are obliged to for shaping up the economic thought process.

Course Outcome:

- Students will get information about the genesis of Economics and its modern scenario.
- Establish the co-relation of Economics with other subjects.

Module 1: Classical Economics

(12 Lectures)

Mercantilism and Physiocracy: Introduction -Adam Smith: Liberalism -Division of Labour -Theory of Value - David Ricardo: Rent Theory- Wage Theory - Theory of Value- Karl Marx: Surplus Value Materialistic Interpretation of History -Scientific Socialism.

Module 2: Neo-Classical Economics

(12 Lectures)

Alfred Marshall : Thought on Value - Representative Firm - Consumer's Surplus - Internal and External Economies-Quasi Rent - Schumpeter: Economic Development And Innovation- Pigou :Welfare Economics.

Module 3: Keynesian Ideas

(12 Lectures)

Employment Theory- Money- Wage Rigidity Model- Multiplier and accelerator and their interaction - Trade Cycle - Inflation -Role of Fiscal Policy - Keynesian Economics and Developing Countries.

Module 4: Post-Keynesian Economics

(12 Lectures)

Supply Side Economics -Hayek's Theory of Trade Cycle- Life Cycle theory Consumption- Friedman: Theory of Demand for Money - Long-Run Philips Curve - Mankiw's New Keynesian Model - Stagflation.

References:

1. Dasgupta A. K, Epochs of Economic Theory Oxford University Press. New Delhi, 1985.
2. Ernesto Screpanti and Stefano Zamagni, An Outline Of The History Of Economic Thought, OxfordUniversity Press Inc., New York, 5005.
3. Ghosh and Ghosh: Concise History of Economic Thought, Himalaya Publishers.
4. Gide, O. and G. Rist, A History of Economics Doctrine. George Harrop Co. London. 1956.
5. Harry Landreth and David C. Colander, History of Economic Thought, Houghton Mifflin Company Boston Toronto, 2001.
6. Roll, E., A History of Economics Thought. Faber Landon, 1973.

TYBA (ECONOMICS) (SEMESTER-V)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO -XII	CREDIT	MARKS
ECOIBFC506	INTERNATIONAL BANKING AND FINANCE- I	3	80

Course Objectives

This syllabus serves as an introduction to the fundamentals of international finance. Various types of exchange rate systems and related developments are incorporated to understand the emergence of contemporary exchange rate systems. The students will make an in-depth study of foreign exchange market and international capital markets.

Course Outcomes

- Upon completion of the course the students are clear about the fundamentals of International Finance.
- They come across various types of exchange rate systems and related developments and emergence of contemporary exchange rate systems.
- It enable them in-depth study of foreign exchange market and international capital markets
- The course will result in the project work based on empirical case studies suggestive- examples: foreign exchange arithmetic, direct, indirect and cross rate and percentage spread.

Module 1: Fundamentals of International Finance

(12 Lectures)

Meaning and scope of international l Finance - Balance of payments: structure and components- Convertibility of currency- International Monetary system- Gold Standard - Bretton Woods System - failure of Bretton Woods- Smithsonian agreement- Special Drawing Rights- European Monetary system.

Module 2: contemporary Exchange Rate Systems

(12 Lectures)

Current exchange rate system- Fixed exchange rate - Flexible exchange rate - Merits and Demerits of fixed and flexible exchange rate - Types of fixed exchange rates hard pegs and soft pegs-Types of flexible exchange rate managed float and free float- Exchange rate determination under fixed and flexible exchange rate system.

Module 3: Foreign Exchange Market

(12 Lectures)

Meaning and nature of foreign exchange market-Participants in foreign exchange market- Retail and wholesale components of forex market - Role of FEDAI, FEMA and regulatory framework- Foreign exchange arithmetic - Exchange rate quotation-direct, indirect and cross rate - Percentage spread.

Module 4: International Capital Markets

(12 Lectures)

Euro currency market-origin and reasons of growth- Euro currency deposits-loan bonds and notes markets- International equity market- depositary receipt-ADR, GDR and IDR- characteristics and mechanism of depositary receipts-International bond market- domestic bonds and foreign currency bonds FCCB & FCEB.

References:

1. Cheol S. Eun ET. AL. International Finance (2012), McGraw Hill India.
2. Rajiv Srivastava, International Finance (2014) Oxford University Press, India.
3. S. AshokKumar, Global financial and Indian economy, New Century Publications, New Delhi.
4. Salvatore, Dominick, International Economics, 2008, 3rd edition, Wiley India.
5. Sodersten, Bo and Geoffery Reed, International Economics, 2006, 3rd edition.
6. V.A. Avadhani, International Finance, (2009), Himalaya Publishing House.

COURSE STRUCTURE
(APPLICABLE FROM ACADEMIC YEAR: 2021-22)
TYBA (SEMESTER –VI)

COURSE CODE		REVISED PAPER	CREDIT	MARKS
GROUP - I : CORE PAPERS				
ECOAME601	XIII	ADVANCED MACROECONOMICS – III	4	100
ECOIE602	VIV	INTERNATIONAL ECONOMICS	4	100
GROUP-II :ELECTIVE PAPERS				
ECOIFSA603	XV	INDIAN FINANIAL SYSTEM-II	3	80
OR				
ECOACB603	XV	ECONOMICS OF AGRICULTURE AND CO - OPERATION – II	3	80
OR				
ECOILC603	XV	INDUSTRIAL AND LABOUR ECONOMICS – II	3	80
ECORMA604	XVI	RESEARCH METHODOLOGY - II	4	100
OR				
ECOQEB604	XVI	QUANTITATIVE ECONOMICS - II	4	100
OR				
ECORDC604	XVI	RURAL DEVLOPMENT	4	100
ECOEEA605	XVII	ENVIRONMENTAL ECONOMICS - II	4	100
OR				
ECOEIB605	XVII	ECONOMICS OF INSURANCE - II	4	100
OR				
ECOBEC505	XVII	BASIC ECONOMETRICS	4	100
ECOEMA606	XVIII	ECONOMY OF MAHARASHTRA –II	3	80
OR				
ECOHETB606	XVIII	HISTORY OF ECONOMIC THOUGHTS – II	3	80
OR				
ECOIBFC606	XVIII	INTERNATIONAL BANKING AND FINANCE – II	3	80

TYBA (ECONOMICS) (SEMESTER-VI)

COURSE CODE	GROUP-I : CORE PAPER PAPER NO –XIII	CREDIT	MARKS
ECOAME601	ADVANCED MACROECONOMICS - III	4	100

Course Objectives

This course introduces the students to formal modeling of a macro economic theory with analytical tools. Since students have been taught Keynesian Synthesis, this course focuses on four aspects which are the study of Post Keynesian Synthesis, Trade Cycles, Exchange Rate Regimes and International Monetary System.

Course Outcomes

- To make students aware about Post Keynesian Synthesis and understand various aspects of Trade Cycles.
- Students will be able to describe the contemporary Exchange Rate Regimes and International Monetary System.

Module 1: Post Keynesian Synthesis

(14 Lectures)

Derivation of Aggregate Demand Curve with IS-LM - Aggregate Supply Curve - Determination of Equilibrium National Income and Price Level under Aggregate Demand and Aggregate Supply Model - Extension of IS-LM Model with Labour Market and Flexible Prices - Natural Rate of Unemployment- Long run Philips Curve - Friedman's Expectation Model - Tobin's Modified Philips Curve - Adaptive Expectations and Rational Expectations.

Module 2: Trade Cycles

(12 Lectures)

Meaning- Nature- Features and Types of Trade Cycles - Phases of Trade Cycles - Theories of Trade Cycles- Hawtrey's, Kaldor, Paul Samuelson and Hicks - Measures to Control Trade Cycles.

Module 3: Exchange Rate Regimes and Currency Crises

(12 Lectures)

Managed Exchange Rate- Advantage and Disadvantage - Policy of Managed Flexibility-Adjustable Peg System, Crawling Peg System, Managed Floating System, Clean and Dirty Float System - Balance of Payment and Exchange Rate - Is Balance of Payments Always in Balance? – Convertibility of Currency- Currency Crisis-Causes, Impact and Measures.

Module 4: International Monetary System

(12 Lectures)

Rise and Fall of International Gold Standard - Bretton Woods System- Breakdown of the Bretton Woods System - Monetary System after the Collapse of Bretton Woods System - Maastricht Treaty, Features, Effects and Importance of Euro- Currency Market - Causes and Consequences of Global Economic Crisis - Impact of Global Recession on the Indian Economy - Asia Infrastructure Investment Bank (AIIB) - New Development Bank (NDB): Asian Development Bank (ADB).

References:

1. Blanchard, Oliver (2008), Macroeconomics, Pearson education, New Delhi, India.
2. Dornbusch, Fisher and Startz (2018): Macroeconomics, McGraw Hill Education (India) Pvt. Ltd.
3. Mankiw N Gregory (2003), Macroeconomics, 6" edition, Worth Publishers, New York.
4. Patil J. F (2005, Marathi Edition), Macroeconomic Analysis, Phadke Prakashan, Kolhapur.
5. Rana K. C. & Verma K.N (2017), International Economics, Vishal Publishing CO. Jalandhar.
6. Salvatore D. (1997), International Economics, Printice Hall, New York.

TYBA (ECONOMICS) (SEMESTER-VI)

COURSE CODE	GROUP-I : CORE PAPER PAPER NO – XIV	CREDIT	MARKS
ECOIE602	INTERNATIONAL ECONOMICS	4	100

Course Objectives

The course is designed to provide a general understanding of the fundamentals of International Trade Theories along with the balance of payment concepts, crisis and various policy measures to correct the same. It also provides overview of the working of foreign exchange market, determination of exchange rate and different terms related with the foreign exchange market. The course introduces the main features of the international economic institutions and enables them to critically understand role and functions of those institutions.

Course Outcomes

- Students will be able to understand the trade theories and determinants of trade which helps them to analyze the international trade policies.
- Students will be able to understand the role of various international institutions and trade blocks and their approaches in framing the policies for trade.

Module 1: Introduction to Trade Theories

(12 Lectures)

Meaning, scope and importance of International Trade- Difference between Internal and International Trade - Adam Smith's Theory of International Trade - Ricardian theory of comparative cost difference Heckscher- Ohlin Theory-Leontief's Paradox- Krugman's Model

Module 2: Balance of Trade and Balance of Payment

(12 Lectures)

Concepts of Terms of Trade(Net barter, Gross barter and Income terms of trade)-Meaning and difference between Balance of Trade (BOT) and Balance of Payment (BOP)-Purchasing Power Parity theory, Law of Reciprocal Demand-Marshall-Edgeworth Offer curves, Gains from trade-Case for and against Free Trade and Protection policy

Module 3: Foreign Exchange Market

(12 Lectures)

Meaning and Functions of Foreign Exchange Market-Exchange rate determination, Factors influencing foreign exchange rate-Managed Flexibility-SWAP Market, Components of foreign exchange reserves Foreign Aid Vs Foreign Trade, FDI and MNCs

Module 4: International Economic Institutions and Economic Integration

(12 Lectures)

IMF, World Bank - Role and functions-WTO-Objectives, Functions and Agreements with respect to TRIPS, TRIMS, GATS, AoA - Forms and objectives of Economic Integration-Cartels-Trade Blocs, ASEAN- European Union (EU)- NAFTA and SAARC.

References:

1. Appleyard Dennis and Alfred j Field, Jr, International Economics, 2001, 4th Edition, Tata McGraw-Hill Education Private Limited.
2. Cherunilam Francis, International Economics, 2009, 5th Edition, Tata McGraw-Hill Education Private Limited, New Delhi.
3. Krugman R Paul, Maurice Obstfeld, International Economics Theory and Policy, 2009, 8th Edition, Pearson.
4. Melitz M. and Trefler D., Gains from Trade When Firms Matter, Journal of Economic Perspectives, Spring 2012.
5. Salvatore, Dominick, International Economics, 2008, 8th Edition, Wiley India.
6. Sodersten, Bo and Geoffery Reed, International Economics, 2006, 3rd Edition.

TYBA (ECONOMICS) (SEMESTER-VI)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – XV	CREDIT	MARKS
ECOIFSA603	INDIAN FINANCIAL SYSTEM-II	3	80

Course Objectives

The paper is framed to provide information on various financial markets including the participants, regulators of the respective markets and role of intermediaries. The syllabus also provides students with an overview of the features of the markets in India and the reforms that have been carried out in them over a period of time. Certain topics have been also incorporated to facilitate the students with practical exposure to the functioning of these markets and they indicate potential topics for case studies and taking up small research projects.

Course outcomes

- Focuses on features and functioning of financial markets as well as reforms therein.
- Empowers students about the evolution and significance of financial services, overview of new products and practices in the provision of financial services.
- Project work based on empirical case studies involving data analysis; suggestive examples: equity research, derivative pricing, analysis of financial performance of corporates, study of capital structure of corporates, mapping the trends in stock market indices, CIBIL score & lending practices of banks.

Module 1: Money Market and Debt Market

(12 Lectures)

Money market: meaning and functions- Structure of money market in India (dichotomous & heterogeneous) - Participants and instruments in Indian money market- Features of Indian money market- Reforms in Indian money market - Role of the RBI.

Debt market: meaning & functions - Segments in debt market- Participants & instruments in debt market- Role of intermediaries and the government in debt market - Recent trends in India's debt market.

Module 2: Capital market

(12 Lectures)

Capital market: meaning, role and factors affecting growth of capital market - Structure of capital market- New issues or primary market: features, participants & intermediaries - Overview of issue mechanisms or methods of raising primary issues- Reforms in primary segment of Indian capital market & role of the SEBI.

Secondary market: features, participants & intermediaries - Listing of securities: types, advantages, requisites of listing - Basic mechanism of trading in securities - DEMAT- introduction to major stock exchanges in India: BSE, NSE and OTCEI- Reforms in secondary segment of Indian capital market.

Module 3: Derivatives Market

(12 Lectures)

Derivatives: Need and significance - Participants in derivative markets- Types of derivatives (a. based on the underlying entity- financial, commodity, foreign currency, credit & interest rates and b. based on instruments- forwards, futures, options, swaps) - Pricing of derivatives: futures pricing, cost-of-carry model, options pricing -Derivative markets in India: evolution & growth, NCDEX, MCX, regulation of derivatives trading in India.

Module 4: Financial Services in India

(12 Lectures)

Insurance: meaning, types, evolution and growth, E-portal for insurance policies, IRDA and PFRDA- Mutual Funds: meaning, composition, advantages, types of schemes-Evolution & growth, AMFI- Merchant banking: Evolution & growth, scope and recent developments in India - Credit rating: meaning, role and significance, agencies- depository services.

References:

1. Bhole, L. M. (2008): Financial Institutions and Markets, Growth and Innovation, Tata McGraw-Hill, New Delhi.
2. Khan, M.Y. (2007): Financial Services, Tata McGraw Hill, New Delhi.
3. M.Y. Khan, Indian Financial System
4. Pathak, Bharati (2008): The Indian Financial System –Markets, Institutions, and Services, (2nd Edition), Pearson Education, New Delhi.
5. Rajesh Kothari, Financial Services in India: Concept and Application
6. Vasant Desai, Indian Financial system.

TYBA (ECONOMICS) (SEMESTER-VI)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – XV	CREDIT	MARKS
ECOACB603	ECONOMICS OF AGRICULTURE AND CO-OPERATION-II	3	80

Course Objectives

The paper is designed to provide various aspects related to the Principles of cooperation and cooperative organizations in the globalized economy. The essentials of cooperative finance are dealt in with reference to the latest trends. The cooperative movement has a long history of more than hundred years. Indian Cooperatives Structure is one of the largest networks in the world. Under this backdrop the student should study the principles and role of cooperation in the modern era.

Course Outcomes

- Students can understand the basic Principles of Cooperation, Globalization and Cooperation.
- Provides information about co-operative Movement in India and its performance and role in rural development.
- Students get introduced to the problems and measures of agro industries and Cooperative farming and Leadership in cooperative development.

Module 1: Co-operation

(12 Lectures)

Meaning and features of Co-operation- Principles of Co-operation (Manchester-1995) - Role of Co-operation in Economic development - Globalization and Co-operation-Importance and Benefits of Co-operation - Co-operative Movement in foreign Countries - Consumer Cooperative Movement in U.K- Agricultural Cooperative Movement in Israel.

Module 2: Co-operative Finance in India

(12 Lectures)

Co-Operative Finance: Need, Structure. Progress and Problems - National Co-operative Development Corporation (NCDC) - Farmers service societies - Urban Co-operative banks,

Module 3: Agricultural Co-operatives**(12 Lectures)**

Role and Types of Agro-Industries - Problems and Measures of Agro-Industries - Sugar and Dairy Co-operatives - Food and Fruits Processing Industry - Co-Operative Farming.

Module 4: Co-operative Organizations in India**(12 Lectures)**

Consumer Co-operatives - Co-operative Marketing - NAFED - Housing Co-operative societies Labour Co-operative societies - Leadership in Cooperative development - Concept of Co-Operatives Audit.

References:

1. Bedi R. D. (2001), Theory, History and Practice of Co-Operation, International Publishing House, Meerut (U.P.).
2. Government of Maharashtra - Co-operative movement at a Glance (latest annual report).
3. Hajela T.N, (2000), principles, problem and practice of Co-operation, Agarwal Publication, New Delhi.
4. Mathur B. S, (2000), Co-Operation in India, Sahitya Bhavan, Agra.
5. Matthai John, (1996), Agricultural Co-Operation in India, Reliance Publishing House, New Delhi.
6. Swami Krishna, (1985), Fundamentals of Co-Operation, S. Chand and Company Ltd, New Delhi.

TYBA (ECONOMICS) (SEMESTER-VI)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – XV	CREDIT	MARKS
ECOILC603	INDUSTRIAL AND LABOUR ECONOMICS-I	3	80

Course Objectives

Issues pertaining to the labour market, wage policy, trade unions and amicable solutions to industrial disputes have become vital for developing countries, especially for India, where the bulk of the labour force is employed in the unorganised sector, and the organized sector is witnessing a phenomenon of

jobless' growth. This paper intends to provide knowledge of the same and also discusses the importance of labour welfare and social security measures for the growing labour force in India.

Course outcomes

- Learners become aware about different problems and policies of labour.
- Learners will get intoned about trade unions and industrial relation in contemporary world.
- Learned will know the different policies of labour welfare.

Module 1: Introduction - Indian Labour Market

(12 Lectures)

Characteristics of the Indian Labour Market, Child Labour and Women Labour -Problems and Measures, Labour Market Reforms - Exit Policy and Need for Safety Nets, Second National Commission on Labour, Globalization and its impact on Indian Labours.

Module 2: Trade Unionism

(12 Lectures)

Definition and Functions of Trade Unions, Historical Evolution of Trade Unions in India and their Present Status- Problems of Trade Unions in India- Role of Outside Leadership- International Labour Organization.

Module 3: Industrial Relations

(12 Lectures)

Causes of Industrial Disputes and Their Settlement Mechanism- Collective Bargaining - Concept, Features - Importance and Pre-requisites for Successful Collective Bargaining - Collective Bargaining in India -Workers' Participation in Management- Concept, Objectives and Forms of Workers'Participation in India -Working Conditions and life style of Indian workers.

Module 4: Labour Welfare and Social Security

(12 Lectures)

Concept -Theories and Principles of Labour Welfare- Agencies for Labour Welfare, Role of the Labour Welfare Officer - Social Security-Concept; Social Assistance and Social Insurance – Social Security Measures in India - Indian Labour Legislations.

References:

1. Agrawal A.N. (2011), Indian Economy, New Age International Publishers, New Delhi.
2. CO Monappa A, (2006), Industrial Relations, Tata McGraw Hill Publishing Company Ltd, New Delhi.
3. Datt R. and Sundaram K.P.M. (2009), Indian Economy, S.Chand & Co., New Delhi.
4. Mamoria C.B. and Mamoria S. (2002), Dynamics of Industrial Relations, Himalaya Publishing House, Mumbai.
5. U. Mishra S.K. and Puri V.K.(2008), Indian Economy, Himalaya Publishing House, Mumbai.
6. U. Ratna Sen, Industrial Relations in India - Shifting Paradigms (2005), Macmillan, New Delhi.

TYBA (ECONOMICS) (SEMESTER-VI)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – XVI	CREDIT	MARKS
ECORMA604	RESEARCH METHODOLOGY - II	4	100

Course Objectives

This paper has various objectives, like to enable students in understanding application of statistics in research, to prepare learners to realize about various analytical tools and methods in research, to orient the students to know index numbers, hypothesis formulations and testing and to make student understand about the research report writing.

Course Outcomes

- The learners get assimilated to the research culture in Economics through application of Statistics.
- The learners will understand the concept of index number with its use and applications.
- The course will help in formulation of hypotheses and its testing in social science research.
- The students will understand the writing of social science research reports with its various types, organization and styles.

Module 1: Application of Statistics in Research

(10 Lectures)

Methods of studying correlation- measurement of simple correlation: graphic method- Scatter diagram- Coefficient of correlation- Karl Pearson and rank correlation- Interpretation of $r = +1$. Linear regression analysis: Meaning, regression lines, regression equation, regression equation relationship between correlation and regression- Analysis of time series- Components- Trend analysis- Moving averages (3, 4 and 5 Yearly) - Method of least square.

Module 2: Index Number:

(14 Lectures)

Meaning and classification of index number - Problems encountered while constructing index numbers- Uses and limitation of index numbers - Methods of constructing index numbers: Simple index: i) Aggregate method ii) Simple average of Relative method - Weighted index: Laspeyer's, Paache's, Fisher's and Marshall- Edgeworth - Base shifting - Deflating and Cost of living index number: Weighted average of Relative method - Aggregate Expenditure method- Chain based index - Concepts of base shifting, splicing, and deflating - Consumer price index- Meaning, need and construction.

Module 3: Hypothesis Formulation and Testing

(10 Lectures)

Definition and functions of Hypothesis - Criteria of workable Hypothesis - Forms and sources of hypothesis- Concepts in testing of hypothesis: Universe / Population parameter and sample statistics- Types of hypotheses: Null and Alternative Hypotheses-Levels of significance-Critical region -Type I and Type II Errors -Student t- test.

Module 4: Research Report Writing

(14 Lectures)

Types of research reports: Technical, Popular, Interim, Summary, Article- Format of a research report- Principles of writing the research report: Organization and style - Contents- Styles of reporting- Steps in drafting reports- Editing the final draft-Evaluating the final draft -Organization of the research report: Preliminaries, Contents of report, Structuring the report: Chapter format- Pagination- Identification- Using quotations, Presenting footnotes- Abbreviations- Presentation of tables and figures- Referencing documentation-Use and format of appendices- Indexing - Bibliography, Appendices.

References:

1. Allen, T. Harrell (1978), New methods in social science research, Praeger Publishes, New York
2. Bhandarkar P.L.,(1994), Samajik Sanshodhan Padhati, Himalaya Publication, New Delhi, (Marathi)
3. Ghosh, B.N, (1992). Scientific methods and social research, Sterling publishers Pvt. Ltd, New Delhi.
4. Gupta S. P, (1987), Statistical methods, Sultan Chand and Sons, New Delhi
5. Kothari R.C. (2008), Research methodology, methods and techniques, New Age International Publishers, 2nd revised edition, New Delhi.
6. Krishnaswamy O.R. (1993), Methodology of research in social sciences, Himalaya Publishing House, Mumbai

TYBA (ECONOMICS) (SEMESTER-VI)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – XVI	CREDIT	MARKS
ECOQEB604	QUANTITATIVE ECONOMICS – II	4	100

Course Objectives

This paper proposes to equip the students with the idea of derivatives and integration along with its application in economic theory. The aim is to empower students with quantitative techniques such as correlation, regression and time-series, which will aid in for data analysis.

Course Outcomes

- Upon the completion of course students will be able to apply the techniques of derivatives and integration to economic theory
- Students can handle time series data and interpret the results.

Module 1: Techniques and applications of partial derivatives

(12 Lectures)

Functions of several variables and partial derivatives - Second order partial derivatives - Optimization of multivariable functions-Constrained optimization with Lagrange multiplier and its economic

interpretation -Marginal productivity, Income and cross price elasticity of demand - Homogeneous production functions and returns to scale - Cobb- Douglas production function

Module 2: Integral Calculus

(12 Lectures)

Integration and Definite integral; area under the curve - Economic applications - Present value of cash flows (present value of a sum to be received in future and present value of a stream of future income) - Consumer's and Producer's Surplus.

Module 3: Correlation and Regression Analysis

(12 Lectures)

The meaning and significance of Correlation; Scatter plot of Bivariate Distributions; Correlation and Causation - Karl Pearson's coefficient of correlation: Spearman's rank correlation coefficient - Simple regression analysis- Method of Least Squares and Regression Lines, Regression Coefficients, Relationship between correlation coefficients and regression coefficients, Estimation and forecasting of trend by the Least Squares Method.

Module 4: Index Numbers and Sampling Methods

(12 Lectures)

Simple and composite index numbers- Construction, uses and problems of index numbers- Laspeyre's, Paasche's and Fisher's Index numbers- Cost of living index numbers-real income - wholesale price index number- Splicing of index numbers, Sampling -Principal steps in a sample survey, methods of sampling, the role of sampling theory.

References:

1. Chiang A.C (1984). Fundamental Methods of Mathematical Economics, 3rd ed., McGraw-Hill.
2. Dowling Edward T. (1993). Theory and Problems of Mathematical methods for Business and Economics. McGraw - Hill.
3. Dowling Edward T. (2004). Introduction to Mathematical Economics Schaum's Outline Series in Economics, Tata McGraw Hill.
4. Gupta S.P. (2014). Statistical Methods, S. Chand publishing.
5. Lerner Joel J and P. Zima (1986). Theory and Problems of Business Mathematics. McGraw Hill.
6. Sancheti D.C. and V.K. Kapoor (2014). Statistics-Theory Methods and Applications, S. Chand.

TYBA (ECONOMICS) (SEMESTER-VI)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – XVI	CREDIT	MARKS
ECORDC604	RURAL DEVELOPMENT	4	100

Course Objectives

This course would be helpful to understand the various types of relationships in rural area. The learners will understand the basic issues in rural development. The course sheds light on a range of new developments and a host of issues studied by generations of rural area experts. The course is constructed from the point of rural development arrangement.

Course Outcomes

- On the completion of the course, the students will be able to understand the basic Concept of rural development.
- Learners will also be understanding objectives and importance of rural development.
- Learners will have good understanding of problems in relation of rural development.
- Learners will come to know what rural development programmes have initiated by the government to overcome the problems of rural development

Module 1: Rural Development: Introductory Aspects

(12 Lectures)

Concept, Nature and Scope of Rural Development, Characteristics of the Rural Economy, Objectives and Importance of Rural Development, The problems of Rural Development in India

Module 2: Approaches to Rural Development

(12 Lectures)

Gandhian Approach, Rural Reconstruction Approach, Community Development Approach, Sectoral Approach, Participatory Approach, Area- Specific and Target Group Oriented Approach, Integrated Rural Development and Economic Development with Social Justice Approach

Module 3: Diversification of Rural Economy

(12 Lectures)

Livestock economics, Dairy Development, Social Forestry, Agro-Based Industries: Problems & Remedial Measures, Role of KVIC in Rural Development, Recent Development of Science & Technology in Rural Development.

Module 4: Rural Empowerment Programmes

(12 Lectures)

An Overview of Rural Development Programmes, Provisions of Urban Amenities in Rural Area (PURA), Rural Employment: Mahatma Gandhi National Rural Employment Guarantee Act-2005 (MGNREGA), Rural Livelihoods: Deendayal Antyodaya Yojana - National Rural Livelihoods Mission (DAY-NRLM), National Social Assistance Programme (NSAP), Microfinance and Self-help Groups

References:

1. Thomas William and A.J. Christopher (2011), Rural Development: Concept and Recent Approaches, Rawat Publication, Jaipur.
2. Annual Report 2019-20, 2018-19 & State performance report-2018-19 and Action plan 2019-20, Volume-I, Ministry of Rural Development, Department of Animal Husbandary & Dairying, Government of India, New Delhi.
3. Datt & Sundharam (2012), Indian Economy, S. Chand & Company LTD. Mumbai.
4. Desai Vasant (2012), Rural Development in India, Himalaya Publishing House, Mumbai.
5. Dr. I. Satya Sundaram (2002), Rural Development, Himalaya Publishing House, Mumbai. Page No. 3 to 24
6. Eleventh Five Year Plan 2007-12, Planning Commission, Government of India, New Delhi.

TYBA (ECONOMICS) (SEMESTER-VI)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – XVII	CREDIT	MARKS
ECOEEA605	ENVIRONMENTAL ECONOMICS - II	4	100

Course Objectives

This paper introduces vital aspects related to environmental degradation and advocates the need for environmental accounting. The paper also focuses on the attainment of SDGs

Course Outcomes

- Students are empowered about the environmental challenges and the need for environmental accounting
- Develop understanding on the policy measures to attain SDGs.

Module1: Environmental Degradation

(12 Lectures)

Concept and types of Environmental Degradation; Renewable and Non-renewable natural resources: Land, Air, Water and Noise Pollution: Causes, effects and measures.

Module 2: Environmental Accounting

(12 Lectures)

Accounting for environmental and natural resources: Meaning and importance; System of Environmental-Economic Accounting (SEEA) and Environmental and Natural Resources Accounting (ENRA); Integration of Environmental Accounts with System of National Accounts: Green GDP; Concept of Green Growth and its Indicators; Concepts of Green Consumer and Green Business.

Module 3: Sustainable Development and India

(12 Lectures)

Concept of Sustainable Development; Characteristics and dimensions of Sustainable Development; Sustainable Development Goals and Measures with special reference to India; Smart Cities Mission in India; National Mission For Sustainable Agriculture (NMSA): Objectives, strategy and components.

Module 4: Environmental Policy in India

(12 Lectures)

Overview of laws to improve the environment in India; Central pollution Control Board; Industrial Pollution Control Measures in India; Pradhan Mantri Ujjwala Yojana (PMUY); National Green Tribunal.; Environmental Education in India.

References:

1. Barry Field and Martha k Field: Environmental Economics, McGraw Hill International Edition, 2017.
2. Bhattacharya R.N. (Ed) (2001), Environmental Economics: An Indian Perspective, Oxford University Press, New Delhi.
3. Charles Kolstad : Environmental Economics, Oxford University Press, New York, 2000.
4. Hanley Nick, Shogren Jason and White Ben: Introduction to Environmental Economics, Oxford University Press, 2001.
5. Kaltschmitt, Martin, Streicher, Wolfgang, Wiese, Andreas, Renewable Energy: Technology, Economics and Environment, Springer, Germany, 2007.
6. V.S. Ganesamurthy: Environmental Economics in India, New Century Publications, New Delhi, 2009.

TYBA (ECONOMICS) (SEMESTER-VI)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – XVII	CREDIT	MARKS
ECOIEB605	ECONOMICS OF INSURANCE - II	4	100

Course Objectives

The course is designed to provide an understanding of the fundamentals of insurance. Insurance has a profound impact on the society as it manages, diversifies and absorbs the risk of individuals and organizations. Insurance companies as risk management service providers serve as bulwarks for the development of productive activities fuelling demand, facilitating supply and trade. The important role played by the insurance institutions in mobilizing savings and diverting them for capital formation is well known. In recent years, uncertainties experienced in life have been increasing and this in turn has created demand for insurance. With the opening of the insurance sector to private players, the interest in the

subject has increased. The paper on Economics of Insurance attempts to provide a fairly comprehensive view of the subject to the undergraduate students in Economics.

Course Outcomes:

At the end of this course students will be able to:

- Identify and define basic terms and concepts of life, health & general insurance
- Assess the role of Insurance Sector regulator
- Understand risk classification, underwriting & premium calculation associated with insurance sector

Module 1: Introduction to Life Insurance

(12 lectures)

Meaning and Definition, Features of Life Insurance, Benefits of Life Insurance - Method of risk classification in Life Insurance - Treatment of Sub-standard risk in Life Insurance - Types of life insurance policies -Term insurance plan, Endowment policy - ULIP plan - Retirement plan - Calculation of net Premium - Calculation of single premium for one year term insurance policy - Calculation of single premium for five year term policy - Calculation of single premium for pure endowment insurance policy and calculation of single premium for ordinary endowment policy.

Module 2: Fundamentals of Life, General and Health Insurance

(12 lectures)

Functions of Health & General Insurance - Underwriting process and methods: Definition - Objectives and Principles of Underwriting - Life insurance; Group Insurance: Meaning - Importance-Types of Group Insurance schemes.

Module 3: IRDAI & Rural Insurance

(12 lectures)

The Insurance Act, 1938 (as amended)-The Insurance Regulatory and Development Authority Act, 1999 (as amended) -The Regulatory Body- IRDAI duties- functions-powers and role- Rural Insurance: Need and potential of rural insurance - IRDAI provisions on obligations of insurers to rural and social sector- Need and significance of Micro Insurance.

Module 4: Information Technology & Marketing in Insurance

(12 lectures)

Need for Information technology-Technologies for Insurance (Artificial Intelligence and Machine Learning)- IT application in functional areas - Marketing of Insurance products - Critical success factors for insurance players - Distribution channels - Marketing strategies of insurance players in India.

References:

1. Dr. MJ Mathew (2005), Insurance Principles & Practice, RBSA Publishers.
2. Dr. PK Gupta (2011), Insurance & Risk Management, Himalaya Publishing House.
3. Mahipal Naresh (2017), Insurance Laws, Central Law Publications.
4. Patukale Kshitij (2016), Mediclaim & Health Insurance, Prabhat Prakashan.
5. PK Gupta (2017), Fundamentals of Insurance, Himalaya Publishing House.
6. Zweifel Peter and Roland Eisen (2012), Insurance Economics, Springer Publication.

TYBA (ECONOMICS) (SEMESTER-VI)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – XVII	CREDIT	MARKS
ECOBEC505	BASIC ECONOMETRICS	4	100

Course Objectives

The objective of this course is to impart a basic understanding of econometrics. At the same time, it will enhance the student's ability to apply the theoretical techniques to solve the problems of the real world.

Course Outcomes

By the completion of this course student will be able to do

- Testing of hypothesis and interpret the results in research.
- Regression analysis and interpret the results of the same in any discipline.
- Applications of relevant techniques for empirical problems in any discipline.

Module 1: Idea of a random variable & Probability Distribution

(12 lectures)

Concept of a random variable: Expected values of a random variable - Variance of a random variable – Types of distributions: Bernoulli, Binomial and Poisson, normal distribution. Conditional probability- Conditional mean and variance – Covariance and Correlation -Central limit theorem (without proof).

Module 2: Elements of Hypothesis Testing

(12 lectures)

Point and interval estimation - The Z distribution - The Null and Alternate hypotheses and significance testing for mean using Z distribution when population variance is known-The chi-square distribution and testing for sample variance with known population variance - The F distribution and comparing sample variances - The t distribution and hypothesis tests when population variance is unknown.

Module 3: Classical Linear Regression Model: Two Variable Case

(12 lectures)

Two variable regression model-The concept of the PRF-Classical assumptions of regression - Derivation of the OLS estimators and their variance - Properties of OLS estimators under classical assumptions, Gauss-Markov Theorem (without proof) – Tests of Hypothesis, confidence intervals for OLS estimators - Measures of goodness of fit: R square and its limitations, adjusted R square and its Limitations.

Module 4: Violation of Classical Assumptions and Specification Analysis

(12 lectures)

Multi-collinearity and its implications - Auto-correlation: Consequences and Durbin- Watson test- Heteroskedasticity: Consequences and the Goldfeld -Quandt test - Omission of a relevant variable - Inclusion of irrelevant variable.

References:

1. Damodar Gujarati (2011). Econometrics by Example. Palgrave Macmillan.
2. Damodar N., Gujarati (2003). Basic Econometrics. McGraw-Hill.
3. Hitekar N. (2010). Principles of Econometrics: An Introduction. Sage publications.
4. Jeffrey M. Wooldridge (2009). Econometrics, Cengage Learning.
5. Murray R. Spiegel (1998). Schaum's Outline of Theory and Problems of Statistics. McGraw- Hill.
6. Stock J. Watson (2003) Introduction to Econometrics. Prentice Hall.

TYBA (ECONOMICS) (SEMESTER-VI)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – XVIII	CREDIT	MARKS
ECOEMA606	ECONOMY OF MAHARASHTRA-II	3	80

Course Objectives

This paper enables the students to get awareness on the infrastructural aspects and policy related issues. The paper also throws light on the regional imbalances within the state.

Course Outcomes

- Provides deep understanding on the infrastructural and imbalances confronting the state.
- Throws light on the skills needed to tackle such issues

Module 1: Infrastructure in the Economy of Maharashtra

(12 Lectures)

Importance of infrastructure in economic development -Types of infrastructure: 1. Economic infrastructure; Energy, Transport & Communication - Sources of energy -Power generation - Existing Capacity - Power crises -Development of roads - Rail transport- Water transport- Civil aviation- Irrigation projects - Communication Network 2. Social Infrastructure: Health and education facilities in Maharashtra.

Module 2: Fiscal Policy of Maharashtra

(12 Lectures)

State Finance Commission, budget of state Government - Revenue Expenditure - Development and non development expenditure- Capital Expenditure- Development and non development expenditure - Trends in state Government expenditure Share in Central Government tax revenue -Taxes collected by state Government- Sources of non-tax revenue- Capital revenue sources- Trends in state Government revenue

Module 3: Regional Imbalance in Maharashtra State

(12 Lectures)

Meaning of regional imbalance -Nature of regional imbalances in Maharashtra - Causes of Regional Imbalance in Maharashtra - Problems Creates by Regional Imbalance in Maharashtra -Policy measures by State Government of Maharashtra for Regional Development.

Module 4: Human Development in Maharashtra

(12 Lectures)

Concept and importance - Comparison of HDI with other states in India - Region-wise HDI - Indicators of HDI - District-wise HDI in Maharashtra - Present situation and problems of weaker section in Maharashtra - Schemes of empowerment of weaker section in Maharashtra - Women empowerment in Maharashtra.

References:

1. Government of Maharashtra: Economic Survey of Maharashtra, Various Issues.
2. Jungale Mangala (2008): Maharashtrachi Arthvyavastha (Marathi), Prashant Publications, 17, Stadium Shopping Centre, Opp. State Bank, Jalgaon -age No. 9 to 19.
3. Munagekar Bhalchandra (2003): The Economy of Maharashtra - Changing Structure and Emerging Issues, Dr. Ambedkar Institute of Social and Economic Change, Mumbai.
4. Pansare Govind (2012) :Maharashtra Arthik Pahani — Paryayi Drushtikon (Marathi), Shramik Pratishthan, Red Plug Bldg., Bindu Chowk, Kolhapur, Page No.159 to 195.
5. Patil J. F. (2010): Suvarna Mahotsavi Maharashtrachi Badalati Arthvyavastha yio)) (Marathi), Abhijit Pratap Pawar, Sakal Papers Ltd., 595, Budhwar Peth, Pune- 411002.
6. World Bank (2002) India: Maharashtra Reorienting Govt. to Facilitate Growth and Reduce Poverty.

TYBA (ECONOMIC) (SEMESTER-VI)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO – XVIII	CREDIT	MARKS
ECOHETB606	HISTORY OF ECONOMIC THOUGHT-II	3	80

Course Objectives

This paper aims to provide the information about the biography and contribution of various economic thinkers. This paper is framed with the objective of making students aware of the varying phases of economic thoughts and development of that into economic science.

Course Outcome

- Students will get information about the genesis of Economics and its modern scenario.
- Students get familiarized with the leading Indian economists who significantly contributed to the stream of Indian economic thought.

Module 1: Indian Economic Thought

(12 Lectures)

Kautilya on welfare state -Dadabhai Naoroji's Thoughts on Drain Theory- Ranade's Case on Protection - R. C. Dutt on Imperialism - Land Tax and Public Finance - Gopal Ganesh Agarkar.

Module 2: Economic Thought of Mahatma Phule and Gandhi

(12 Lectures)

Mahatma Phule's Views on Agriculture - Reasons of Farmer's Poverty - Gandhian Economic Thoughts on Self-Sufficient Village Economy - Dignity of Labour – Trusteeship - and Sarvodaya.

Module 3: Economic Thought of Dr. B.R. Ambedkar, G.K. Gokhale and Dr. Manmohan Singh

(12 Lectures)

Dr. Ambedkar's Case for State Socialism - Problem of Rupee - Public Finance – G.K. Gokhale on Development and Welfare - Dr. Manmohan Singh's ' Three Steps' to Stem India's Economic Crisis.

Module 4: Nobel Prize Winners in Economics

(12 Lectures)

Dr. Amartya Sen (1998) -Robert. A. Mundell (1999) -Joseph Stiglitz(2001) -Dr. Abhijeet Banarjee (2019)

References:

1. B.R.Nanda Gokhale (1977):- The Indian moderates and the British raj, Delhi.
2. Ajit K.Dasgupta,A History of Indian Economic Thought, (1993)Routledge London and New York.
3. Bipin Chandra (ed) (1999) Rande's economic writings, Gyan Publication House, New Delhi.
4. Encyclopaedia of Nobel Laureate, Ed's, (2002) R. Kapila & A. Kapila, Academic Foundation.
5. Gandhi. M. K., (1959), India of my dreams, Navjivan publishing house Ahmadabad.
6. R. P. Mansi, Dadabhai Naoroji, (1960) publication Division, Government of India Delhi.

TYBA (ECONOMICS) (SEMESTER-VI)

COURSE CODE	GROUP-II : ELECTIVE PAPER PAPER NO –XVIII	CREDIT	MARKS
ECOIBFC606	INTERNATIONAL BANKING AND FINANCE- II	3	80

Course Objectives

This paper introduced to the fundamentals of international Banking to the students. The recent trend in international banking such as Islamic banking, Crypto currencies and their advantages and disadvantages will be familiarized. Role of International banking in foreign trade finance is incorporated to understand the international finance. In this semester, the students will make an in-depth study of international banking, financing and risk management.

Course Outcomes

- Equip students with fundamentals of International Banking.
- Provides an insight on emergence of Crypto currencies and Types of International Banking.
- Awareness on Foreign trade finance and Letter of Credit (L/C) & its types.
- The course will lead to the project work-based on empirical case studies

Module 1: International Banking –I

12 Lectures)

Introduction to International banking- Reasons for growth of international banking- Recent trends in international banking- Emergence of Crypto currency -Advantages and disadvantages of Cryptocurrencies- Bit coins

Module 2: International Banking II

12 Lectures)

Functions of international banking- Correspondent banking- International payment system- NRI accounts- Foreign Trade Finance - International Merchant banking - Offshore banking - International banking investment- Islamic banking.

Module 3: International Bank Financing

12 Lectures)

Financing Export project- International Remittances-Letter of Credit - L/C -Bank guarantee-International lending operations-Loan syndication-Phases of loan syndication- Types of loan syndication-Role of International Credit Rating agencies.

Module 4: Risk Management

12 Lectures)

Risk management and Derivatives- Types of Risks: Transaction risk, Translation risk, Economic risk, Settlement risk - Arbitrage- Hedging-Internal and External hedging- Derivative instruments for Risk Management -Forwards- Futures--Swaps- Options

References:

1. Cheol S. Eun ET. AL., International Finance (2012), McGraw Hill India.
2. Edition by IIBF, International Banking (2011), pan McMillan.

3. Hull John C, Options, Futures and other derivatives, Pearson Education, 2005.
4. Rajiv Srivastava, International Finance (2014) Oxford University Press, India.
5. S. AshokKumar, Global financial and Indian economy' New Century Publications, New Delhi.
6. V.A. Avadhani, International Finance, (2009), Himalaya Publishing House.

UNIVERSITY OF MUMBAI

No. UG/ 74 of 2018-19

CIRCULAR:-

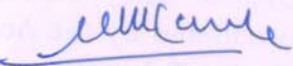
Attention of the Principals of the Affiliated Colleges and Directors of the recognized Institutions in Humanities Faculty is invited to this office circular No. UG/17 of 2005, dated 13th January, 2005 relating to syllabus of Bachelor of Arts.

They are hereby informed that the recommendations made by the Board of Studies in History and Archaeology at its meeting held on 25th May, 2018 have been accepted by the Academic Council at its meeting held on 14th June, 2018 vide item No. 4.1 and that in accordance therewith, the revised syllabus as per the (CBCS) for the T.Y.B.A. in History & Archaeology – Sem V & VI has been brought into force with effect from the academic year 2018-19, accordingly. (The same is available on the University's website www.mu.ac.in).

MUMBAI – 400 032

6th June, 2018

To


(Dr. Dinesh Kamble)
I/c REGISTRAR

The Principals of the affiliated Colleges and Directors of the recognized Institutions in Humanities Faculty. (Circular No. UG/334 of 2017-18 dated 9th January, 2018.)

A.C./4.1/14/06/2018


No. UG/ 74 -A of 2018

MUMBAI-400 032

6th June, 2018
July

Copy forwarded with Compliments for information to:-

- 1) The I/c Dean, Faculty of Humanities,
- 2) The Chairman, Board of Studies in History & Archaeology,
- 3) The Director, Board of Examinations and Evaluation,
- 4) The Director, Board of Students Development,
- 5) The Professor-cum-Director, Institute of Distance and Open Learning (IDOL),
- 6) The Co-Ordinator, University Computerization Centre,


(Dr. Dinesh Kamble)
I/c REGISTRAR

AC / /2018
Item no.

UNIVERSITY OF MUMBAI



Revised Syllabus for Sem V and Sem VI

Program: B. A.

Course: History and Archaeology

(Choice Based Credit System with effect from the
Academic year 2018-2019)

Revised Syllabus

Semester V and Semester VI

Programme: B.A.

Course: History and Archaeology

(Choice Based Credit System with effect from the Academic year 2018-2019)

As per University rules and guidelines for Faculty of Humanities

Faculty of Humanities

TYBA

(Choice Based Credit System, CBCS)

Semester V and Semester VI

Guidelines

With Effect From 2018-2019

Syllabus Structure:

1. In TYBA (CBCS) in Sem V and Sem VI, the Core Courses will be Core Courses IV, V, VII and VIII.
2. The Elective Courses will be Elective Courses VI and IX which will be partially Project Based Courses. The Boards of Studies may offer choices in the Elective Courses VI and IX.
3. In Sem V and Sem VI, each Course namely Core Courses IV, V, VII and VIII and Elective Courses VI and IX will carry 4 Credits per Course per Semester.

Evaluation:

1. **Core Courses:** The Core Courses IV, V, VII and VIII will be theory based Core Courses. The University of Mumbai will conduct the Sem V and Sem VI examinations of 100 marks per Core Course. In Sem V and Sem VI for all the above Core Courses, the student will have to secure a minimum of 40% marks in aggregate per Core Course.
2. **Elective Courses:** The Elective Courses VI and IX will be Electives and Choices of Electives may be offered by the various Board of Studies. The University of Mumbai will conduct the Sem V and Sem VI examination for Elective Courses VI and IX of 80 marks per Elective Course. The Elective Courses namely Elective Courses VI and IX will be partially Project Based Courses. In Sem V and VI, for Elective Course VI and for Elective Course IX, the Colleges will conduct the evaluation of a Project of 20 marks

each and will send the marks to the University of Mumbai as per University of Mumbai guidelines.

3. The total marks of the Elective Course VI and Elective Course IX will be 100 marks each that is 80 marks for Theory Examination conducted by University of Mumbai and 20 marks for Project evaluated by the concerned college Faculty in the subject.
4. In Sem V and Sem VI, the student will have to submit a Project for Elective Course VI and Elective Course IX in the College before appearing for the University Examination. The last date of submission of the Project will be officially declared by the College.
5. In Sem V and Sem VI, the Project topic will be based on the Syllabus of the respective Elective Courses that is Elective Course VI and Elective Course IX. The students will be given the choice of choosing the topic of the project in consultation with the Faculty Member teaching the respective Elective Course. The list of students along with the topics chosen by the students will be displayed by the College in the beginning of the Semester.
6. The Project work will be carried out by the student with the guidance of the concerned Faculty Member who will be allotted to the student as the Guide for the Project.
7. In Sem V and Sem VI, for Elective Courses VI and IX, the student will have to secure a minimum of 40% marks in aggregate and a minimum of 40% in each component of assessment i.e. 08 out of 20 marks in Internal Evaluation of Project in Elective Course VI and Elective Course IX and 32 out of 80 marks in University Examination of Elective Course VI and Elective Course IX.

Note: All other rules regarding Standard of Passing, ATKT, etc., will be as per those decided by the Faculty of Humanities passed by the Academic Council from time to time.

Faculty of Humanities
TYBA
(Choice Based Credit System, CBCS)
Semester V and Semester VI
Question Paper Pattern for T.Y.B.A (CBCS)
for Core Courses IV,V,VII and VIII
As per University rules and guidelines
With Effect From 2018-2019

(Time: 3 Hours)

Note: 1. Attempt **all** questions

(Total = 100 marks)

2. All questions carry **equal** marks

Q.1 (Based on Module I) (20 marks)

a.

or

b.

Q.2 (Based on Module II) (20 marks)

a.

or

b.

Q.3 (Based on Module III) (20 marks)

a.

or

b.

Q.4 (Based on Module IV) (20 marks)

a.

or

b.

Q.5 Attempt **any two** short notes. (Based on Module I, II, III and IV) (20 marks)

a.

b.

c.

d.

[The Question paper Pattern for the Revised Syallbus for Semester V and Semester VI, Programme: B.A; Course: History and Archaeology (Choice Based Credit System with effect from the Academic year 2018-2019) will be as per University rules and guidelines for the Faculty of Humanaities].

Faculty of Humanities
TYBA
(Choice Based Credit System, CBCS)
Semester V and Semester VI
Question Paper Pattern for T.Y.B.A (CBCS)
for Elective Courses VI and IX
As per University rules and guidelines
With Effect From 2018-2019

(Time: 2 & 1/2 Hours)

Note: 1. Attempt **all** questions
2. All questions carry **equal** marks

(Total = 80 marks)

Q.1 (Based on Module I) (20 marks)

a.

or

b.

Q.2 (Based on Module II) (20 marks)

a.

or

b.

Q.3 (Based on Module III) (20 marks)

a.

or

b.

Q.4 (Based on Module IV) (20 marks)

a.

or

b.

[The Question paper Pattern for the Revised Syallbus for Semester V and Semester VI, Programme: B.A; Course: History and Archaeology (Choice Based Credit System with effect from the Academic year 2018-2019) will be as per University rules and guidelines for the Faculty of Humanaities].

SYLLABUS

SEMESTER – V		
Course	Title of the Course	Credits
Core Course IV	History of Medieval India (1000 CE – 1526 CE)	4 Credits
Core Course V	History of Modern Maharashtra (1818 CE-1960 CE)	4 Credits
Elective Course VI. A (With Project)	Introduction to Archaeology	4 Credits
Elective Course VI B (With Project)	Media and Communication	4 Credits
Core Course VII	History of the Marathas (1630 CE -1707 CE)	4 Credits
Core Course VIII	History of Contemporary World (1945 CE -2000 CE)	4 Credits
Elective Course IX A (With Project)	Research Methodology and Sources of History	4 Credits
Elective Course IX B (With Project)	Introduction to Heritage Tourism	4 Credits
		Total 24 Credits

SEMESTER – VI		
Course	Title of the Course	Credits
Core Course IV	History of Medieval India (1526 CE – 1707 CE)	4 Credits
Core Course V	History of Contemporary India (1947 CE- 2000 CE)	4 Credits
Elective Course VI A (With Project)	Introduction to Museology and Archival Science	4 Credits
Elective Course VI B (With Project)	Media and Communication	4 Credits
Core Course VII	History of the Marathas (1707 CE - 1818 CE)	4 Credits
Core Course VIII	History of Asia (1945 CE -2000 CE)	4 Credits
Elective Course IX A (With Project)	Research Methodology and Sources of History	4 Credits
Elective Course IX B (With Project)	Heritage Tourism in Maharashtra	4 Credits
		Total 24 Credits

T.Y.B.A. History

SEMESTER -V

Core Course IV- History of Medieval India (1000 CE-1526CE)

Objectives:

1. To acquaint the students with the history of early Medieval India that laid the foundation of the Sultanate in India.
2. To study the contribution of Vijayanagar and Bahamani kingdoms to Medieval Indian History.
3. To examine the administrative, socio-economic and cultural aspects of Medieval India.

Module I: Foundation, Expansion and Decline of Delhi Sultanate

- (a) Socio-economic and political conditions on the eve of the Turkish Invasion
- (b) Rise and Decline of Slave dynasty, Khilji Dynasty
- (c) Tughlaq, Sayyid and Lodi Dynasty

Module II: Administrative Structure of the Sultanate

- (a) Central Administration and Iqta system
- (b) Administrative and Military Reforms of Ala-ud-din Khilji
- (c) Reforms of Firozshah Tughlaq and Mohammed bin Tughlaq

Module III: Emergence of Vijaynagar and Bahamani Kingdoms

- (a) Rise, Growth and Decline of Vijaynagar and Bahamani Kingdoms
- (b) Administration, Socio-Economic and Cultural conditions of Vijayanagar Empire
- (c) Administration, Socio-Economic and Cultural conditions of Bahamani Kingdom

Module IV: Society, Economy, Religion and Culture of Delhi Sultanate

- (a) Socio-economic and religious life
- (b) Education and Literature
- (c) Art and Architecture

References:

- Banerjee A. C. *New History of Medieval India*, S. Chand & Company, New Delhi, 1990.
- Bhattacharya N. N., *Medieval Bhakti Movement in India*, South Asia Books, Columbai, 1990.
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SEMESTER -V

Core Course V- History of Modern Maharashtra (1818 CE-1960 CE)

Objectives:

1. To acquaint students with regional history.
2. To understand political and socio-economic developments during the 19th and 20th centuries.
3. To create understanding of the movement that led to the formation of Maharashtra.

Module I: Beginning of the British Rule

- (a) Socio-Economic conditions of Maharashtra in 19th Century
- (b) Administration and Judiciary
- (c) Tribal and Peasant Uprisings

Module II: Socio- Economic Awakening

- (a) Mahatma Jotirao Phule - Satya Shodhak Samaj and Universal Humanism
- (b) Prarthana Samaj
- (c) Contribution of thinkers of Maharashtra to Economic Nationalism

Module III: Political Developments in Maharashtra (1885-1960)

- (a) Moderates, Extremists and Revolutionaries in Maharashtra
- (b) Response to Gandhian Movements in Maharashtra
- (c) Samyukta Maharashtra Movement

Module IV: Emergence of New Forces

- (a) Contribution of Reformers in Education
- (b) Contribution of Reformers towards Emancipation of Women
- (c) Contribution of Reformers towards Upliftment of Depressed Classes: V. R. Shinde, Rajarshi Shahu Maharaj and Dr. B.R. Ambedkar

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SEMESTER -V

Core Course VI A – Introduction to Archaeology

Objectives:

1. To understand the basic facets of Archaeology.
2. To evaluate the importance of Epigraphy.
3. To study the importance of Numismatics as an important source of history.

Module I: Aims and Methods of Archaeology

- (a) Definition, Aims and Development of Archaeology in India
- (b) Archaeology and History; Archaeology and Other Sciences
- (c) Field Archaeology: Methods of Exploration, Excavation and Dating Antiquities; Significance of Archaeology

Module II: Pre-Historic, Proto-Historic and Early Historical Periods

- (a) Palaeolithic and Mesolithic Periods
- (b) Neolithic and Chalcolithic Periods
- (c) Megalithic and Early Historical Periods

Module III: Epigraphy

- (a) Definition and History of Indian Epigraphy
- (b) Types of Inscriptions and their significance
- (c) Evolution of Brahmi and Kharosthi Scripts; Edicts of Ashoka

Module IV: Numismatics

- (a) Definition and History of Indian Numismatics
- (b) Ancient Indian Coinage: Punch-Marked, Satavahana, Western Kshatrapas, Kushana and Gupta Coins
- (c) Contribution of Numismatics to Indian History

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SEMESTER -V

Elective Course: Paper VI B –Media and Communication

Objectives:

1. To inform students about the Fundamentals of Communication.
2. To introduce students to Oral Traditions in Communication and the field of Journalism.
3. To familiarize students with the various types of Audio-Visual Media.

Module I: Fundamentals of Communication

- (a) Definition, Evolution and Significance of Communication
- (b) Process, Types, Importance and Need of Communication
- (c) Barriers to Communication

Module II: Oral Traditions in Communication

- (a) Folk Theatre – Importance, Marathi Theatre
- (b) Major Dance Forms – Folk and Classical
- (c) Folk Expression – Songs, Stories and Puppetry

Module III: Journalism

- (a) Definition, Evolution and Types of Journalism
- (b) Role and Functions of Reporters, Sub-Editor and Editor
- (c) Freedom of Press – Importance, Ethics and Current Trends

Module IV: Audio-Visual Media

- (a) Photography – Types, Scope and Limitations
- (b) Cinema – Growth, Development and Technical Aspects
- (c) Types of Films and Global Indian Cinema

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SEMESTER -V

Core Course VII- History of the Marathas (1630 CE – 1707CE)

Objectives:

1. To introduce the students to the regional history of Maharashtra.
2. To familiarize students with the literary sources of the history of the Marathas.
3. To help students to understand the forces leading to the establishment of Maratha power under Chhatrapati Shivaji Maharaj.

Module I: Introduction to Maratha History

- (a) Marathi, Persian and European Sources
- (b) Deccan in the 17th century – Geo-Political and Economic conditions
- (c) Socio-Cultural conditions; Maharashtra Dharma

Module II: Establishment of Swarajya

- (a) Shivaji's relations with Bijapur
- (b) Shivaji's relations with the Mughals
- (c) Shivaji's relations with the Europeans

Module III: Period of Consolidation and Crisis

- (a) Coronation and its significance; Shivaji's Karnatak Campaign
- (b) Sambhaji, Rajaram and Tarabai
- (c) Civil War : Tarabai and Shahu

Module IV: Administration during the Royal Period

- (a) Civil Administration
- (b) Revenue and Judicial Administration
- (c) Military Administration

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SEMESTER -V

Core Course VIII: History of Contemporary World (1945 CE – 2000 CE)

Objectives:

1. To trace some of the major events of post-World War II period.
2. To understand the significance of these events.
3. To comprehend the ways in which events of the latter half of the twentieth century have influenced the present.

Module I: Cold War (1945-1985)

- (a) Meaning, Causes of Cold War and Security Pacts
- (b) Conflicts in Cold War: Germany, Korea and Cuba
- (c) Economic Revival of Western Europe; Soviet Union's Relations with Eastern Europe

Module II: Europe, U.S.S.R and U.S.A. (1985-2000)

- (a) Disintegration of U.S.S.R
- (b) Re-drawing of political borders of Germany, Yugoslavia and Czechoslovakia;
Emergence of the European Union (EU) in Western Europe
- (c) U.S.A as the dominant world power

Module III: Movements for Equal Rights and Challenging the Bipolar World (1945-2000)

- (a) Campaigns within and outside South Africa against Apartheid
- (b) Civil Rights Movement in U.S.A
- (c) Non-Aligned Movement

Module IV: Major Trends

- (a) Globalisation
- (b) Sustainable Development
- (c) Women's Liberation Movement

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SEMESTER -V

Elective Course IX A - Research Methodology and Sources of History

Objectives:

1. To teach students basics of research methodology in history with a view to promote historical research.
2. To understand the various kinds of sources of history and its interpretation.
3. To acquaint students with the new trends and approaches in history writing.

Module I: History: Definition and Scope

- (a) History: Meaning, Scope and Nature
- (b) Importance of History
- (c) History and Auxiliary Sciences

Module II: Sources of History

- (a) Sources: Nature and Types
- (b) Authenticity and Credibility of Sources
- (c) Importance of Archival Sources

Module III: Research Methods in History

- (a) Methods of Data Collection
- (b) Interpretation and Generalisation of Sources
- (c) Footnotes and Bibliography

Module IV: Sources for Writing Indian History

- (a) Sources for Ancient Indian History
- (b) Sources for Medieval Indian and Maratha History
- (c) Sources for Modern and Contemporary Indian History

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SEMESTER -V

Elective Course IX B - Introduction to Heritage Tourism

Objectives:

1. To develop an understanding of Heritage Tourism amongst students.
2. To introduce the students to new trends in Heritage Tourism.
3. To prepare the students for careers in Tourism industry.

Module I -Understanding Heritage Tourism

- (a) Meaning and Historical Perspective of Tourism
- (b) Concept, Scope and Significance of Heritage Tourism
- (c) National Policies to promote Heritage Tourism and World Heritage Sites in India

Module II - Forms of Heritage Tourism in India

- (a) Natural: Beaches and Sanctuaries
- (b) Built Heritage: Forts, Monuments and Public Buildings
- (c) Cultural: Pilgrimage Sites, Fairs and Festivals

Module III - New Trends in Heritage Tourism

- (a) Entertainment: Performing Arts and Cinema
- (b) Eco-tourism and Adventure Tourism
- (c) Public Private Partnership in Heritage Tourism

Module IV - Heritage Management

- (a) Heritage Legislation
- (b) Role of Tourism Industry
- (c) Role of Museums and Heritage Conservation Societies

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SEMESTER -VI

Core Course: IV- History of Medieval India (1526 CE-1707CE)

Objectives:

1. To acquaint the students with the history of India since the emergence of the Mughal rule.
2. To understand administration of the Mughal Empire.
3. To study the rise of the Maratha Power.

Module I: Foundation, Expansion and Decline of the Mughal Rule

- (a) India on the eve of Mughal Rule; Invasion of Babur
- (b) Humayun, Shershah and Akbar
- (c) Jahangir, Shahjahan and Aurangzeb

Module II: Administrative Structure of the Mughals

- (a) Central and Provincial Administration
- (b) Mansabdari System
- (c) Revenue and Judicial system

Module III: Rise of the Maratha Power

- (a) Shivaji and Foundation of Swarajya
- (b) Administration of Shivaji
- (c) Sambhaji, Rajaram and Tarabai

Module IV: Society and Economy, Religion and Culture of the Mughal Rule

- (a) Society and Economy
- (b) Religion, Education and Literature
- (c) Art and Architecture

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SEMESTER -VI

Core Course V – History of Contemporary India (1947 CE- 2000 CE)

Objectives:

1. To understand the process of making the Constitution and the Integration and Reorganization of Indian States.
2. To acquaint the students with the political developments in India after Independence.
3. To comprehend the socio-economic changes and progress in science and technology in India.

Module I: The Nehru Era (1947 CE – 1964 CE)

- (a) Features of Indian Constitution
- (b) Integration and Reorganization of Indian States
- (c) Socio- Economic Reforms and Foreign Policy

Module II: Political, Social and Economic Developments (1964 CE – 1984 CE)

- (a) Political Developments after Nehru Era; Green Revolution.
- (b) Abolition of Privy Purses and Titles; Nationalization of Banks; The Emergency
- (c) Janata Government; Return of Congress to power ; Foreign Policy

Module III: Political, Social and Economic Developments (1984 CE – 2000 CE)

- (a) Political Developments
- (b) Relations with Neighboring Countries
- (c) Liberalization, Privatization and Globalization

Module IV: Emerging Trends

- (a) Communalism and Separatist Movements
- (b) Women Empowerment and Policy of Reservation
- (c) Science, Technology and Education

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SEMESTER -VI

Elective Course VI A - Introduction to Museology and Archival Science

Objectives:

1. To inform the students about the role of Museums in the preservation of Heritage.
2. To understand the importance of Archival Science in the study of History.
3. To encourage students to pursue careers in various Museums and Archives in India and abroad.

Module I: Museology

- (a) Definition of Museology, Museum Movement in India
- (b) Role of the Curator
- (c) Types of Museums

Module II: Museums

- (a) Methods of Collection and Conservation of Objects in Museums
- (b) Preservation Techniques and Types of Exhibitions
- (c) Changing Role of Museums: In-house and Out-reach activities of Museums

Module III: Archival Science

- (a) Meaning, Scope, Objectives and Classes of Archives
- (b) Importance of Archives: Value of Records as Sources of History
- (c) Classification of Records

Module IV: Management of Archives

- (a) Appraisal and Retention of Records
- (b) Conservation and Preservation of Records
- (c) Digital Archives

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SEMESTER -VI

Elective Course VI B - Media and Communication

Objectives:

1. To acquaint students with the various types of Media and Communication.
2. To inform students of the developments in Information Technology.
3. To understand the impact of Media on Society.

Module I: Radio and Television

- (a) Radio - History and Current Trends
- (b) Television - History and Current Trends
- (c) Careers in Radio and Television

Module II: Advertising and Public Relations

- (a) Definition, Functions and Responsibilities of Public Relations Officer
- (b) Advertising – Definitions and Types
- (c) Careers and Opportunities in Advertising and Public Relations

Module III: Revolution in Information Technology

- (a) Social Media
- (b) Electronic Gadgets – Uses and Misuses
- (c) Cyber Crimes and Cyber Laws

Module IV: Impact of Media

- (a) Impact on Society - Children, Women, Youth
- (b) Challenges – Privatization, Global Competition, Moral Issues, Public Censorship
- (c) Media and Global Issues – Human Rights, Environment

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SEMESTER -VI

Core Course VII: History of the Marathas (1707 CE – 1818 CE)

Objectives:

1. To enable the students to understand the processes that led to the expansion of the Maratha Power.
2. To appreciate the contribution of the Marathas in the national politics of the 18th century.
3. To develop an understanding of the society and culture in Maharashtra in the 18th century.

Module I: Expansion of the Maratha Power

- (a) Rise of the Peshwas: Balaji Vishwanath
- (b) Peshwa Bajirao I
- (c) Maratha Confederacy

Module II: Consolidation of the Maratha Power

- (a) Peshwa Balaji Bajirao (Nanasaheb)
- (b) Third Battle of Panipat: causes and consequences
- (c) Defeat of the Marathas and significance of the Third Battle of Panipat

Module III: Post Panipat Revival and Downfall

- (a) Peshwa Madhavrao I
- (b) Barbhai Council
- (c) Downfall of the Maratha Power

Module IV: Administrative and Socio-Cultural Developments

- (a) Peshwa Administration: Civil, Revenue and Military
- (b) Society under the Peshwas – Religion, Caste and Position of Women
- (c) Cultural Developments: Literature, Art and Architecture

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T.Y.B.A. History

SEMESTER -VI

Core Course VIII - History of Asia (1945 CE-2000 CE)

Objectives:

- 1.To acquaint the students with some of the major changes that occurred in Asia after World War II.
- 2.To understand the ways in which Asian nations resisted and defied the control of the West.
- 3.To comprehend some of the trends that emerged in Asia.

Module I: Transformation of China

- (a) Domestic Policy in People's Republic of China under Mao Zedong
- (b) Economic Progress in China under Deng Xiaoping
- (c) Foreign Policy of China with USSR

Module II: Reconstruction of Japan

- (a) American Occupation of Japan
- (b) Economic Miracle in Japan
- (c) Foreign Policy of Japan with USA

Module III: South East Asia

- (a) Cold War and Vietnam
- (b) Guided Democracy in Indonesia
- (c) Association of South East Asian Nations (ASEAN)

Module IV: Conflicts in West Asia

- (a) Arab- Israel Conflict (1948-2000)
- (b) Iranian Revolution of 1979
- (c) Oil Politics and OPEC

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T.Y.B.A. History

SEMESTER -VI

Elective Course IX A - Research Methodology and Sources of History

Objectives:

1. To teach students basics of research methodology in history with a view to promote historical research.
2. To understand the various kinds of sources of history and its interpretation.
3. To acquaint students with the new trends and approaches in history writing.

Module I: Historical Research: Methods and Presentation

- (a) Steps in Historical Research
- (b) Methods of Critical Enquiry
- (c) Presentation of Historical Research

Module II: New Trends in History

- (a) Local History
- (b) Oral History
- (c) Digital and E-Sources

Module III: Approaches to History

- (a) Subaltern
- (b) Feminist
- (c) Post-Modern

Module IV: Indian Historiography

- (a) Imperialist
- (b) Nationalist
- (c) Marxist

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T.Y.B.A. History

SEMESTER -VI

Elective Course IX B - Heritage Tourism in Maharashtra

Objectives:

1. To introduce students to the Cultural Heritage of Maharashtra
2. To understand various resources of Heritage Tourism in Maharashtra
3. To acquaint the students with the relevance and scope of Heritage Tourism

Module I: Understanding Heritage Tourism of Maharashtra

- (a) Government Policies and Role of Government Agencies
- (b) Heritage Sites and Precincts
- (c) Careers in Heritage Tourism

Module II: Natural Heritage

- (a) Biodiversity of Sahyadri Range
- (b) National Parks
- (c) Beaches and Hill Stations

Module III: Architectural Heritage

- (a) Caves
- (b) Forts
- (c) Monuments and Public Buildings

Module IV: Cultural Heritage

- (a) Pilgrimage Sites
- (b) Fairs and Festivals
- (c) Folk and Tribal Culture

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University of Mumbai




No. AAMS(UG)/ 34 of 2022-23

CIRCULAR:-

Attention of the Principals of the Affiliated Colleges, Directors of the Recognized Institutions in Faculty of Humanities is invited to this office circular No. UG/13 of 2018-19 dated 14th June, 2018 relating to T.Y.B.A. in Sociology – Sem V & VI.

They are hereby informed that the recommendations made by the Board of Studies in **Sociology** at its meeting held on 7th January, 2022 and subsequently passed in the Faculty and then by the Board of Deans at its meeting held on 23rd February, 2022 vide item No. 5.7(R) have been accepted by the Academic Council at its meeting held on 17th May, 2022 vide item No. 5.7(R) and that in accordance therewith, the revised syllabus of T.Y.B.A. (Sociology) – Sem V and VI (CBCS), has been brought into force with effect from the academic year 2022-23. (The same is available on the University's website www.mu.ac.in).

MUMBAI – 400 032
16th June, 2022


(Dr. Vinod Patil)
I/c Director

To

The Principals of the Affiliated Colleges, and Directors of the Recognized Institutions in Faculty of Humanities.


A.C/5.7/17/05/2022

No. AAMS(UG)/ 34 -A of 2022-23

16th June, 2022

Copy forwarded with Compliments for information to:-

- 1) The Dean, Faculty of Humanities,
- 2) The Chairman, Board of Studies Sociology,
- 3) The Director, Board of Examinations and Evaluation,
- 4) The Director, Board of Students Development,
- 5) The Director, Department of Information & Communication Technology,
- 6) The Co-ordinator, MKCL.


(Dr. Vinod Patil)
I/c Director

UNIVERSITY OF MUMBAI



Revised Syllabus for T.Y.B.A. (Sociology)
Semester - Sem V and VI
(Choice Based Credit System)

(with effect from the academic year 2022-23)

UNIVERSITY OF MUMBAI



Syllabus for Approval

Sr. No.	Heading	Particulars
1	Title of the Course	TYBA- SOCIOLOGY
2	Eligibility for Admission	Passed FYBA (Sociology) and SYBA (Sociology)
3	Passing Marks	40 Per cent
4	Ordinances / Regulations (if any)	----
5	No. of Years / Semesters	V and VI
6	Level	U.G.
7	Pattern	Semester
8	Status	Revised
9	To be implemented from Academic Year	From Academic Year =2022-23

Prof.Balaji Kendre, Board of Studies Chairperson

Prof.Rajesh Kharat, Dean:

UNIVERSITY OF MUMBAI
Revised Syllabus-2022
T.Y.B.A SOCIOLOGY SEMESTER- V

Paper IV	:	THEORETICAL SOCIOLOGY
Paper V- a	:	SOCIOLOGY OF WORK
Paper V- b	:	SOCIOLOGY OF AGRARIAN SOCIETY
Paper V- c	:	SOCIOLOGY AND COMMUNICATION
Paper VI	:	SOCIOLOGY OF GENDER
Paper VII	:	SOCIOLOGY OF HUMAN RESOURCE DEVELOPMENT
Paper VIII	:	SOCIOLOGY OF SOCIAL MOVEMENTS
Paper IX	:	QUANTITATIVE SOCIAL RESEARCH
Paper X	:	ENVIRONMENT AND SOCIETY: THEORY AND AWARENESS
Paper XI	:	URBAN SOCIOLOGY

Important Instructions:

Kindly Note

1. Three paper component (Double Major)
 - a. Paper 4 is compulsory
 - b. Paper 5- From 5a, **OR** 5b **OR** 5c - **Choose ONE**
 - c. Paper 6 – Applied Compulsory paper with project for 20 marks
2. Single major
 - a. Paper 4 is compulsory
 - b. Paper 5- From 5a, **OR** 5b **OR** 5c - **Choose ONE**
 - c. Paper 6 – Applied Compulsory paper with project for 20 marks
 - d. From Paper Number 7, 8, 10 and 11 **Choose TWO**
 - e. Paper 9 - Applied Compulsory paper with project for 20 marks
3. Question Paper Pattern

For 100 marks paper

Paper 4

Paper 5

Paper 7

All questions are 20 marks each

Attempt any 5 questions out 10

(Exam time 3hours)

Paper 8

Paper 10

Paper 11

For 80 marks paper

Paper 6

Paper 9

All questions are 20 marks each

Attempt 4 questions out 8

(2 ½ hours)

TYBA SOCIOLOGY
SEMESTER- V
PAPER -IV CREDIT -04
MARKS-100
THEORETICAL SOCIOLOGY

Course Learning Objectives:

1. To provide students of Sociology with an understanding of Sociological Theory.
2. To train students in the application of these theories to social situations.

Course Outcomes: The learner will be able to:

1. Students should be able to explain social problems and issues in lieu of their Understanding of sociological theory
2. Theoretical sociological knowledge will help students to critically evaluate.
3. Help students to make theoretically- informed recommendations to address social problems.

Unit I. Foundations of classical sociological theory (12 lectures)

- a. Historical background and emergence of sociology:
 - Social context and intellectual thought.
 - Emergence of Positivism and Social Evolution Theory
- b. Emile Durkheim:
 - Social Facts;
 - The Division of Labour,
 - Elementary Forms of religion,
 - Theory of Suicide
- c. Max Weber:
 - Methodology,
 - Theory of Social Action
 - Authority and rationality
 - Theory of Protestant Ethic and Spirit of Capitalism

Unit II. Functionalism (12 lectures)

- a. Talcott Parsons-
 - Voluntaristic Theory of Social Action,
 - Theory on social system (AGIL analysis)
- b. Merton's functionalism-
 - Definition of function,
 - Functional alternatives

Unit III. Emerging Conflict Perspectives (12 lectures)

- a. Karl Marx
 - Dialectical materialism,
 - Theory of Class Conflict
- b. Ralph Dahrendorf
 - Conflict Theory –
 - Power and Authority
- c. Antonio Gramsci:
 - Neo Marxism
 - Hegemony and the Ruling Ideas

Unit IV. Contemporary Theories (09 lectures)

- a. Harold Garfinkel :Ethnomethodology
- b. Erving Goffman: Dramaturgy
- c. Ritzer George : Post Modern Theory

Reading List

1. Adams, B. NandSydie, R.A,2001 Sociological Theory I&II,GreatBritian, Weidenfeld& Nicolson.
2. Coser Lewis, 1971, Masters of Sociological Thought (2nded), Harcourt Brace Jovanovich ,Inc.
3. Delaney Tim, 2005, Contemporary Social Theory –Investigation and Application, Delhi Pearson Education Inc.
4. Fletcher Ronald, 2000, The Making of Sociology –A Study of Sociological Theory Beginnings and Foundations, New Delhi, Rawat Publications.
5. Joseph Jonathan (ed) 2005. Social Theory, Edinburg, Edinburg University Press.
6. Ritzer George, 1988, Sociological Theory (2nd ed.), New York, Mc –Graw-Hill Publication. Ritzer George, 1996, Sociological Theory (4th ed.), New York, Mc-Graw-Hill Publication.-
7. Srivastsan R, History of Development Thought, a Critical Anthology,(ed) 2012,New Delhi, Routledge Taylor and Francis Group .
8. Turner Jonathan, 2001, The Structure of Sociological Theory (4th ed.), Jaipur, Rawat Publication.
9. Wallace Ruth .A, 2006, Contemporary Sociological Theory U.S.A., Prentice Hall.

T.Y. B.A SOCIOLOGY
SEMESTER- V
CREDIT- 04 MARKS 100
PAPER V- a
SOCIOLOGY OF WORK

Course Learning Objectives:

1. To introduce students to the area of Industrial Sociology and Sociology of Work.
2. The paper will introduce the students to key sociological concepts, which have been extensively used in “Sociology of work”.
3. To help the students to develop sociological understanding of Work and the changes taking place in the work scenario due to Technological developments, Automation, Digitization and Phenomenon of Globalization.

Course Outcome:

1. The Course will help the students to get proper jobs for themselves and keep in pace with recent developments like automation.
2. The students will also understand the values of work ethics, work culture, decent work etc.
3. The course further helps the students to respect decent work Agenda and assist the seniors in implementing the same in their organizations.
4. The course will finally help the students to comprehend the growth and issues concerning labour in the informal sector thereby help them to develop a positive attitude to work and adjust with demanding roles in any kind of job setups.

Unit I. Work, Industry and Industrialization

12 Lectures

- a. Basic Concepts: Work, Work behaviour, Work environment, Work ethics and Work culture.
- b. Origin, Nature and Scope of Sociology of Work
- c. Industry: Evolution and characteristics, Industrialization: Pre-conditions, Consequences, Impact of industrialization on women and work.

Unit II. Organization of Work

12 Lectures

- a. Fordism
- b. Post Fordism
- c. Post Industrialism

Unit III. Emerging Trends in Industry

12 Lectures

- a. Theorizing Work and Technology: Harry Braverman- Deskilling Thesis (Labour and Monopoly Capital: The Degradation of Work in 20th Century)
Shoshana Zuboff - Theory of Computerization and Automation (In the Age of Smart Machines: The Future of Work and Power)
- b. Automation in the Artificial Intelligence Era and Its Impact on Employment
- c. Industrial Relations-Pre and Post Liberalization Era (Case study of Bombay Textile Workers' Strike of 1982)

Unit IV. GLOBALIZATION AND WORK

9 Lectures

- a. Impacts of Globalization, Liberalization and Privatization on work, Rise of Network Society with specific reference to Manuel Castells.
- b. Fair and Inclusive Globalization, Work efficiency and Development
- c. Emergence of KPOs and BPOs in India.

References List:

1. Agarwal, Nandini, 2012. Sociology of Work. Third Year BA: Sheth Publishers
2. AIMA and PWC Report, 2018. How Artificial Intelligence is Shaping Jobs in India?
3. Bhowmik, Sharit K. (2012). Industry, Labour and Society, New Delhi. Orient Black Swan
4. Braverman, Harry, 1998. Labour and Monopoly Capital: The Degradation of Work in 20th Century. <http://digamo.free.fr/braverman.pdf>
5. Dutt and Sundaram, 2007. "Indian Economy": S. Chand Publications
6. Edgell. S. 2006. The Sociology of work. Sage Publications, United Kingdom
7. Giddens. A. 2009. Sociology, 6th Edition, Polity Press
8. Grint, Keith (2000). Work and society, Reader: Wiley Publications, US
9. Hopkins, John, Women, writing and the industrial revolution
10. JSTOR. Women and industrialization in Asia by V Lovel 1996
<http://www.jstor.org/stable>
11. JSTOR. Women, Children and Industrialization in the early Republic: Evidence from the manufacturing census. Claudia. Goldin and Kenneth, Sokoloff
12. Krishan, Kumar, 2005. From post-industrial to post modern society: Blackwell publishing.
13. Lakha, Salim, 1988. Organised Labor and Militant Unionism: The Bombay Textile Workers' Strike of 1982, Bulletin of Concerned Asian Scholars
14. Macionis, P, Plummer, K. 2008. Sociology a global introduction-4th edition: Pearson Education Ltd.
15. Ramaswamy, E. A. and Ramaswamy, U. 1981. Industry and Labour. Delhi: Oxford University Press.
16. Rao, Subba, 2011. Essentials of Human Resource Management and Industrial Relations: Himalaya Publications
17. Tonkiss, Fran. 2008. Contemporary Economic Sociology, London and New York: Routledge.
18. Tschang, F Ted and Almirall, Esteve, 2020. Artificial Intelligence as Augmenting Automation: Implications for Employment, Academy of Management Perspectives, Research Collection Lee Kong Chian School of Business.
19. Women workers in the industrial revolution, Ivy pinchveck. Paperback. Also available in Kindle
20. Zuboff, Shoshana, 1981. Psychological and Organizational Implication of Computer-Mediated Work, CISR No 71, Sloan WP No. 1224-81
21. Zuboff, Shoshana, 1988. In the Age of Smart Machines: The Future of Work and Power, Oxford: Heinemann Professional Publishing Ltd.

**T.Y.B.A SOCIOLOGY
SEMESTER- V
CREDIT- 4 MARKS -100
PAPER V- b
SOCIOLOGY OF AGRARIAN SOCIETY**

Course Learning Objectives:

1. To introduce students to the dynamics of traditional & contemporary agrarian society.
2. To understand the dynamics of agrarian formations and assess the development measures since 1947.

Course Outcomes: The learner will be able to:

1. Gives knowledge about the dynamics of agrarian society
2. Demonstrates the basic knowledge and understanding of the concepts and content in the field of agrarian sociology
3. Describes the social structure of rural society

Unit I. Introduction to agrarian studies (12 lectures)

- a. Definition, origin, scope & importance
- b. Village Studies in India
- c. Rural-Urban Continuum

Unit II. Occupational changes in agrarian society (12 lectures)

- a. Rural Non Farm Employment (RNFE)
- b. Contract farming
- c. Agricultural labour – issues & problems

Unit III. – Agrarian social structure (12 lectures)

- a. Agrarian Caste
- b. Agrarian Class
- c. Inter relationship & debate – Caste & class

Unit IV– Agrarian development & its transformation (09 lectures)

- a. Land reforms
- b. Panchayat raj & 73rd amendment.
- c. Green revolution and CDP's.

Readings List:

1. Newby, Howard. (1980): Trend report: Rural sociology, Current Sociology, Sage Pub.
2. Breman, J. (1997): The Village in Focus, in The Village in India Revisited. Edited by J. Breman, P. Kloos, and A. Saith. Delhi, Oxford University Press.
3. Gupta, Dipankar. (2011): How rural is rural India – RNFE, Oxford Handbook of Agriculture.
4. Rao, Shankar C N (2004): Sociology of Indian Society, S Chand Pub., Delhi
5. Thorner, Daniel & Dhanagare, D. N. (1991): Social Stratification: readings in sociology and social anthropology, Oxford University Press.
6. Doshi, S.L. & Jain, P.C. (2010): Rural sociology, Rawat Pub.
7. Desai, A. R. (2005): Rural Sociology in India, Popular Prakashan.
8. Sagar S (2017): Present position of agricultural labour in India, Contemporary Research in India, 3 Sept.
9. Jodhka, S. (2016): Revisiting the rural in 21st C India, EPW, June 25.
10. Jodhka, S. (2012): Caste, Oxford University Press.
11. Beteille, Andre. (1969): Caste Class & Power: changing patterns of stratification in a Tanjore village, University of California Press.
12. Omvedt Gail. (1982): land, caste & politics in Indian states, Guild Publishers, Delhi.
13. Joshi PC (1975): Land Reforms in India, Allied Publishers, Delhi.
14. Dhanagare D. N. (198): Green Revolution and Social Inequalities in Rural India, Economic and Political Weekly Vol XXII Nos. 19, 20 and 21.
15. Dhanagare D.N., (1983): Peasant Movements in India 1920-1950, Oxford University Press, Delhi.
16. Singh, Y. (1973): Modernization of Indian tradition, Thomas Press (India) Limited.
17. Daniel and Alice Thorner. (2005): Land and Labour in India. New Delhi, Chronical Books.

Marathi Reference books

भारतीयग्रामाणीसमाजशास्त्र-ए.आर.दासाई-

रावतपाठकशेखर

1. ग्रामीणसमाजशास्त्रवसामुदायिकविकास - प्रा. रा. ना. घाटोळ - श्री. मंगलप्रकाशन-नागपूर
2. ग्रामीणविकासास- यसदत्तातंत्र, नयतया, एवंप्रबंध - कटारयसाह-साजप्रकाशन

T.Y.B.A SOCIOLOGY
SEMESTER- V PAPER- V-c
CREDIT -04 MARKS100
SOCIOLOGY AND COMMUNICATION

Course Learning Objectives:

3. To introduce to the students the basic concepts in Sociology of Communication and role of Mass Communication through new technology in contemporary societies.
4. To focus on 'old' and new media coalesce in initiating social change in present-day interconnected and globalized world.
5. To encourage critical evaluation of the impact of Mass communication on culture and Society.

Course Outcomes: The learner will be able to:

1. Identify the links between mass media, social media and socio-cultural transformation.
2. Analyze how technological change is deeply connected with cultural transformation.

Unit.I. Basic Concepts-I **(12 Lectures)**

- a. Media, Communication and Social Change
- b. Types of Communication
- c. Folk Media and Mass Media

Unit.II. Basic Concepts-II **(12Lectures)**

- a. Internet: Nature and Function
- b. Interactions between 'Old' and New Media
- c. Old Media, New Media and Politics

Unit .III. Perspectives on Mass communication **(12 Lectures)**

- a. Functionalist Perspective
- b. Critical Perspective
- c. Political Economy of Communication

Unit.IV. Contemporary Issues **(09Lectures)**

- a. Development Communication
- b. Hacktivism and Hacker Culture
- c. Individual Empowerment through Face book, Twitter and Blogosphere

Readings List

1. Chomsky Noam (1994) Manufacturing Consent: The political Economy of the Mass Media. Vintage Publisher .London

2. Denis McQuail(2010). McQuail's Mass Communication Theory. New Delhi: Sage Publications, 2010, (6th Ed.). ISBN 978-81-321-0579-4.
3. Daniel Lerner (1958) *The Passing of Traditional Society: Modernizing the Middle East*. New York: Free Press.
4. Daniel Lerner. (1972) *Communication for Development Administration in Southeast Asia*. Asia Society—SEADAG.
5. Quebral, Nora C. (1972–1973). "What Do We Mean by 'Development Communication'?". *International Development Review*. **15** (2): 25–28.
6. Schramm, Wilbur., & Lerner, David. (Eds.). (1976). *Communication and change: The last ten years and the next*. Honolulu, HI: University of Hawaii Press.
7. Wright, C. R. (1979). Sociology of Mass Communications. *Annual Review of Sociology*, 5 193- 217. Retrieved from https://repository.upenn.edu/asc_papers/94.
8. Uma Joshi (2002): *The text book of Mass Communication and media*. Amol Publications
9. Lievrouw, L. A. (2009). New media, mediation, and communication study. *Information, Communication & Society*, 12(3), 303-325.
10. Wajcman, J. (2008). Life in the fast lane? Towards a sociology of technology and time. *The British journal of sociology*, 59(1), 59-77.
11. Jenkins, H. (2006). *Convergence culture: Where old and new media collide*. NYU press, pp. 1-24.
12. Gurevitch, M., Coleman, S., & Blumler, J. G. (2009). Political communication—Old and new media relationships. *The ANNALS of the American Academy of Political and Social Science*, 625(1), 164-181.
13. Barnard, S. R. (2016). Spectacles of self (ie) empowerment? Networked individualism and the logic of the (post) feminist selfie. In *Communication and Information Technologies Annual: [New] Media Cultures* (pp. 63-88).
14. Huyssen, A. (2000). Present pasts: Media, politics, amnesia. *Public culture*, 12(1), 21-38.
15. Merck, M. (2015). Masked men: hacktivism, celebrity and anonymity. *Celebrity studies*, 6(3), 272-287.

T.Y.B.A SOCIOLOGY
SEMESTER -V CREDITS -4
PAPER- VI (Elective)
(80 + 20 Marks)
SOCIOLOGY OF GENDER

Course Learning Objectives:

1. To trace the evolution of Gender as a category of social analysis.
2. To understand classical western and Indian theoretical perspectives

Course Outcomes: The learner will be able to:

1. An understanding of the debates that have shaped the discourse on gender
2. An enhanced understanding of perspectives both global and local

Unit I. Basic Concepts **(12 Lectures)**

- a. Sex, gender and the heteronormative regime
- b. Gender beyond the binary
- c. Many women, many feminisms and intersectionality

Unit II. Feminist perspectives: Selected Readings **(12 Lectures)**

- a. Liberal- Mary Wollstonecraft
- b. Radical- Kate Millet
- c. Socialist- Juliet Mitchell

Unit III. New Challenges **(12 Lectures)**

- a. Dalit feminism: Urmila Pawar
- b. Disability Studies
- c. Masculinity Studies

Unit IV. Contribution of Thinkers from Maharashtra **(12 Lectures)**

- a. Pre-independence: Tarabai Shinde and R D Karve
- b. Post-independence: Vidyut Bhagwat and Raziya Patel

Project: 20 mark project to be submitted by students preferably empirical in nature.

Project Work: (20 Marks)

Readings List:

3. MahurkarVaishnavi, (2018), Locating UrmilaPawar's Work in the Dalit Feminist Canon, Literature and Languages in Overview, 26th April 2018
4. MuniraSalim, (2016), UrmilaPawar on empowerment of Dalit Women and the Aesthetics of Dalit Feminist Identity: A Personal Interview, BharatiyaPragna: An Interdisciplinary Journal of Indian Studies (E-ISSN 2456-1347) Vol. 1, No. 3, 2016
6. O'Hanlon Rosalin, (1994), A Comparison between Women and Men: TarabaiShinde and the Critique of Gender Relations in Colonial India, Madras/ New York: OUP
7. Pilcher, Jane and Whelahan, Imelda. 2005. Fifty key concepts in gender studies. Sage publications: New Delhi
8. PawarUrmila, (2009), The Weave of My Life: A Dalit Woman's Memoirs, Columbia Press University
9. Saxena Mini, Chronicles of Dalit Women's Lives - Indian Women in History, Feminism in India, 15th March 2018
10. Shah, Chayanika, R. Merchant, S. Mahajan and S. Nevatia. 2015. No outlaws in the Gender galaxy. New Delhi: Zubaan.
11. Tong, R. (1998). Feminist Thought. A Comprehensive Introduction. Routledge.
12. <https://www.talukadapoli.com/> History, Places, People. RaghunathDhondoKeshavKarve, May 17, 2018
13. Patel Raziya (2009), Indian Muslim Women, Politics of Muslim Personal Law and Struggle for Life with Dignity and Justice, Economic and Political Weekly, Vol XLIV No 44, pp 44-49
14. VidyutBhagwat, (1995), Marathi Literature as a source for contemporary Feminism, Economic and Political Weekly, Vol. 30, Issue 17, April 29, 1995
15. VidyutBhagwat, (2012), Women's Studies: Interdisciplinary Themes and Perspectives, Pune: Diamond Publications
16. Pawar Urmila, 2003, Aydaan, (Autobiography), Mumbai: Granthali Prakashan. Translated in English- The Weave of My Life- A Dalit Woman's Memoirs, 2008, by Maya Pandit, Katha Publishers.Phadke, Y. D., 1981, Ra. Dho. Karve
17. Deshmukh, Anant, Samajswasthyakar- A Biography of R. D. Karve
18. Marathi Film on the life of R. D. Karve, 2001, Dhyasaparwa Directed by AmolPalekar

Films

1. Marathi Film on R. D. Karve- 'Dhyasaparva' Directed by AmolPalekar

Note: Readings in Marathi as suggested by course teachers

T.Y.B.A SOCIOLOGY
SEMESTER -V Paper-VII
CREDIT-4 MARKS 100
SOCIOLOGY OF HUMAN RESOURCE DEVELOPMENT

Course Learning Objectives:

1. To familiarize the student with the meaning, importance and scope of human resource development at the micro and macro levels.
2. To create an understanding of the diverse strategies useful in developing human resources and the place of human resources planning to social development.

Course Outcomes: The learner will be able to:

1. To create an awareness of the various issues involved in the development of human resources with particular emphasis on social and cultural factors.
2. To familiarise students and the recruitment and selection process
3. To understand the importance of network and building an image of the company

Unit I. Overview of Human Resource Development (12 lectures)

- a. Evolution of HR
- b. Essentials of HRD (Nature, Scope, functions and goals)
- c. Roles, goals and effectiveness of HR manager

Unit II. Recruitment, Selection and Performance Appraisal (12 lectures)

- a. Recruitment: Relevance , Factors , Process and Programmes
- b. Selection: Selection Procedure, Barriers to effective selection
- c. Performance Appraisal: Purpose, Methods, Process &Design

Unit III. Management Services and Operations (12 lectures)

- a. Communication skills and networking
- b. Project and Talent Management: Need, Importance and Benefits
- c. Image Building: Features, Need and Benefits

Unit IV. Human resource behaviour and organizations (09 lectures)

- a. Ergonomics and human factors at work
- b. Corporate Social Responsibility
- c. Total Quality Management

Reading List:

1. Ashwatthapa, K. 2005. Human Resource and Personnel Management, Text and cases, The McGraw Hill Companies. New Delhi
2. Ghanekar A. 2000. Human Resource Management Managing Personnel the HRD Way, Everest Publishing House. Mumbai
3. Lane, H.(ed). 2005. The Blackwell handbook of Global Management: A guide to managing complexity, Blackwell Publishing. United Kingdom
4. Mamoria C, Gankar, S.V. 2007, Personnel Management, Himalaya Publishing House, Mumbai.
5. Nair N, Latha Nair. 2004. Personal Management and Industrial Relations, S Chand 2 Company Ltd. New Delhi.
6. P.Subba Rao. 2005. Human Resource Management and Industrial Relations, Himalaya Publishing House. Mumbai
7. Rao T.V. 1999. Reading in Human Resource Development, Oxford and IBH publishing Co. Pvt. Ltd, New Delhi.
8. Rao V.S.P. 2007. Personnel and Human Resource Management- Text and Cases, Himalaya Publishing House, Mumbai.
9. Rao T.V. 1996. Human Resource Development: Experiences, Interventions, Strategies, Sage Publications, New Delhi.
10. Sarma A.M. 2005. Personnel and Human Resource Management, Himalaya Publishing House, Mumbai.
11. Silvera D.M. 1990, Human Resource Development, New India Publications. New Delhi.
12. Michael, V.P. 2002. Human Resources Management and Human Relations, Himalaya Publishing House. Mumbai.

T.Y.B.A SOCIOLOGY
SEMESTER- V Paper -VIII
CREDIT- 4 MARKS 100
SOCIOLOGY OF SOCIAL MOVEMENTS

Course Learning Objectives:

1. To develop an understanding of Social Movement in terms of various concepts and theories of Social Movement
2. To trace the shift in the Social Movements
3. To explain the emergence of new people's movement in the Neo liberal era.

Course Outcomes: The learner will be able to:

1. Learn about important historical and contemporary social movements
2. Understand the diverse motivations and goals that activists bring to movements
3. Examine social movements and how they impact change in societies, both locally and globally.

Unit I. Introduction to social movement (12 lectures)

- a. Concept, Definition and Characteristics of Social Movement
- b. Types of Social Movements
- c. Forms of collective action

Unit II. Approaches to study of Social Movement (12 lectures)

- a. Structural functional and Conflict
- b. Relative Deprivation and Resource Mobilization
- c. Subaltern studies And New Social Movement

Unit III. Social Movement in the post-independence era (12 lectures)

- a. Peasant and agrarian Struggle
- b. Dalit Panther Movement
- c. Naxalite Movement

Unit IV. New Social Movement in India (12 lectures)

- a. Environment Movement
- b. Student Movement
- c. Consumer right movement

Reading List:

1. Oomen, T.K. 2004. Nation, Civil society and Social Movements: Essays in Political Sociology. Sage Publications. New Delhi
2. Rajender Singh. 2001. Social Movements Old and New: A Post Modernist Critique. Sage publications. New Delhi.
3. Ray, Raka; Katzenstein, Mary, FainsodKatzenstein. 2005 (Eds). Social Movements in India. Poverty, Power and Politics. OUP: New Delhi.
4. Shah, Ghanshyam. 2004. Social Movements in India: A review of the literature. Sage Publications: New Delhi
5. Dalit panthers an authoritative history by J.V. Pawar (Author, Introduction), Rakshit Snawane Forward Press e-book www.forwardpress.in
6. Sundar, Nandini. 2016. The Burning Forests: India's war in Bastar. Juggernaut Publishers.

Journals

1. Ajay, G and Vijay, G. (2000).Civil Society, State and Social Movements. EPW 35(12).
2. Banarjee, S. (2011). Anna Hazare, Civil Society and the State. XLVI(36).
3. ChandhokeNeera.(2012). Whatever has happened to civil society. EPW XLVII (23)
4. Dubhashi. P. 2002. People's Movement against Global Capitalism. EPW 37 (6)
5. Judge, Paramit (2011). An ambiguous actor: People in people's movements. EPW XLVI (46).
6. Maoist movement in India. Economic and political Weekly, Vol XLI, 29. (July, 2006).
7. Nelson A. Pichardo. New Social Movements: A Critical Review. Annual Review of Sociology, Vol. 23. (1997), pp. 411-430.
8. Paul D'Anieri; Claire Ernst; Elizabeth Kier. New Social Movements in Historical Perspective. Comparative Politics, Vol. 22, No. 4. (Jul., 1990), pp. 445-458.
9. Sanghvi. S. 2007. The New People's Movements in India. EPW 42 (50).
10. Jogdand. 2000. New Economic Policy and Dalits Jaipur: Rawat
11. Jogdand P.C (1991) Dalit Movement in Maharashtra New Delhi: Kanak Publication
- 12.Dhanagare D N(1993) "Themes and Perspectives in Indian Sociology",Rawat Publication, Delhi.
- 13.ShahaGhanshyam,(2004)"Social Movements in India: A review of the literature, Sage Publication, New Delhi.

Note: Relevant readings in Marathi as suggested by course teacher

T.Y.B.A SOCIOLOGY
SEMESTER- V CREDITS- 4
PAPER- IX (Elective)
(80 + 20 Marks)
QUANTITATIVE SOCIAL RESEARCH

Course Learning Objectives:

1. To provide students with an orientation to social research
2. To acquaint students with the important concepts, techniques and processes in quantitative research
3. To enable students to apply theoretical knowledge of social research to field study. Students are required to submit a project based on original data collection.

Course Outcomes: This course will help learners –

1. To appreciate the nature and significance of social research
2. To learn about the basic tools and techniques in social research
3. To equip themselves to conduct and analyse simple research projects

Unit I. Quantitative Research (7 Lectures)

- a. Quantitative Research – Nature, characteristics, significance, critique
- b. Types of data – Primary and Secondary, Small and Big
- c. Theoretical considerations - Positivism

Unit II. Process of Quantitative Research (9 Lectures)

- a. Writing research proposal
- b. Main steps in quantitative research
- c. Writing research report

Unit III. Aspects of Quantitative Research (9 Lectures)

- a. Survey Method,
- b. Technique of Questionnaire
- c. Sampling

Unit IV. Quantitative Data Analysis (Univariate Analysis) (9 Lectures)

- a. Measures of Central Tendency
- b. Measures of Dispersion
- c. Measures of Correlation: Meaning, Types, significance and limitations (Sums NOT to be included)

Project Work: (20 Marks) Predominantly a minor data collection project (The teacher should provide a brief orientation into the following: Formulation of research problem, Literature search, statement of the problem, Conceptualization, data collection, interpretation and report writing.

Reading List

1. Bryman, A. (2008). Social Research Methods. Oxford University Press
2. Elhance, D. N. (1984). Fundamentals of Statistics. Delhi: KitabMahal
3. Elhance, D. N. (2002). Practical Problems in Statistics. Delhi: KitabMahal
4. Matt, H., Weinstein, M., Foard N.(2006) A Short Introduction to Social Research. New Delhi: Vistaar Publications
5. Tucker, Veena (2020). Research Methods in Social Sciences. Pearsons India Education Services

Additional readings:

1. Best, J., Kahn, J. (2008) Research in Education(10th ed.). Prentice Hall. Pearson Education
2. Bryman, A. (1988). Quantity and Quality in Social Research. London : Routledge
3. Goode, W., Hatt, P. (1981). Methods in Social Research. McGraw-Hill Book Company
4. Somekh, B., Lewin, C. (ed) (2005). Research Methods in the Social Sciences. New Delhi: Vistaar Publications

**T.Y.B.A SOCIOLOGY
SEMESTER- V
CREDIT- 04
PAPER- X
(100 Marks)**

ENVIRONMENT AND SOCIETY: THEORY AND AWARENESS

Course Learning Objectives:

1. To introduce various concepts and theories relating to environment and society.
2. To understand the social origins of environmental problems.
3. To explore society and environment interactions from a global perspective.

Course Outcomes: The learner will be able to:

1. Reference environmental concepts in understanding environmental issues.
2. Increase awareness of the interrelationship and interdependence of human society and the natural world.
3. Enhance analytical skills by using multiple viewpoints and perspectives.
4. Evaluate environmental issues through a broad local-global lens.

Unit I : Environmental Sociology- Introduction (12 lectures)

- a. Environmental Sociology – Origin and Development
- b. Environment; Ecology, Social Ecology
- c. Natural Capitalism, Eco-Socialism, Eco Spiritualism

Unit II : Environmental Theories (09 lectures)

- a. Environmental Theories- Classical and Contemporary
- b. Human Exemptionalism Paradigm (HEP)
- c. New Ecological Paradigm (NEP)

Unit III: Environment and Development (12 lectures)

- a. Analysis of Risk – Beck and Giddens
- b. Environment Conferences- Stockholm to (Rio+20)
- c. (SDGs – Zero Hunger, Affordable and Clean Energy)

Unit IV: Environmental Politics (12 lectures)

- a. North-South Debate
- b. International environmental politics- Green parties, environmental groups
- c. Privatization of Water: Issues and Challenges

Reading List in English

1. Clean Energy -<https://www.un.org/sustainabledevelopment/energy/>
2. Hannigan, J. (2006): Environmental Sociology, Second Edition, Routledge, New York
3. History of environmental movements- www.britannica.com

4. http://aggglossary.org/human exemptionalism_paradigm
5. <https://intranet.kes.hants.sch.uk/resource.aspx?id=145038>
6. <https://sdgs.un.org/goals>
7. <https://www.eolss.net/sample-chapters/C13/E1-24-02-08.pdf>
8. India - Sustainable Development - the United Nations - Voluntary National Review Report on Implementation of Sustainable Development Goals - <https://sustainabledevelopment.un.org/content/documents/15836India.pdf>
9. Kruger, L.: 'North-North, North South, and South-South Relations' in Global Transformations and World Futures – Vol 1 available on:
10. Ollie Tait (2016): The North-South Divide, available at:
11. Rangrajan, Mahesh (ed) (2007) 'Environmental issues in India: A reader'. Pearson.
12. Reusswig, F. 2010. The new climate change discourse: a challenge for environmental sociology- <http://link.springer.com>
13. Social ecology- <https://www.communalsim.org/Arcchive/wiseprint.html>.
14. Sociology of Environment: <https://www.jstor.org/stable/2945955>
15. Zero Hunger - <https://www.un.org/sustainabledevelopment/hunger/>

Reading List in Marathi

१. रोकडा तऱ्हाळशीदऱ्हास(सऱ्हांपऱ्हा), पयऱ्हावरणआयणसमऱ्हाज, दऱ्हाूरवमऱ्हाळ क्तअध्ययनसऱ्हांसऱ्हाथऱ्हा, मऱ्हाळऱ्हां बई, यवऱ्हापऱ्हाीठ, नऱ्हाळऱ्हां बई.

२. दऱ्हा

ऊळगऱ्हावकरअतऱ्हाळ, (२०१२), यवश्वाचा आत, मनोयवकाऱ्हासप्रकऱ्हाशन, पऱ्हाळणऱ्हा.

३. घोरपडा तऱ्हाळ षऱ्हार, पयऱ्हावरण, परबलसऱ्हाथयतकाऱ्हाी, दयऱ्हाळ यनकअकाऱ्हा डऱ्हा मऱ्हा, पऱ्हाळणऱ्हा.

४. गऱ्हाोडबाऱ्हाोलऱ्हा अच्यऱ्हाळ त, अनथयवकाऱ्हासनीतऱ्हाी- सवनऱ्हाशऱ्हाच्यऱ्हाउऱ्हां बरठ्यऱ्हावर, मनोयवकासप्रकऱ्हाशन, पऱ्हाळणऱ्हा.

५. खऱ्हाऱ्हाऱ्हां दऱ्हा वऱ्हालऱ्हा

श्रीयनवास, प्रचलतआयथकयवकासाचा पयऱ्हावरणीयधऱ्हाोकऱ्हा, समऱ्हाजप्रबऱ्हाोधनपयऱ्हािऱ्हाकऱ्हा, जऱ्हाळलऱ्हा - सप्टेंबर २००७.

६. गऱ्हावस्कर

महऱ्हाश, (सऱ्हांपऱ्हा), सऱ्हामऱ्हायकनऱ्हासयगकसऱ्हांसऱ्हााधनऱ्हा, समऱ्हाजप्रबऱ्हाोधनपयऱ्हािऱ्हाकऱ्हा, जऱ्हानऱ्हावऱ्हारी- मऱ्हाच २००८.

७. गऱ्हावस्कर

महाराष्ट्र, (संघटना), पर्यावरण आयुक्त संघटना, संघटना जातीय धन परियोजना
कांता, ऑक्टोबर- दिसंबर २००९.

८. संघटना गंगा शालजा आयात टांक यन्त्र
(२०११), पर्यावरण आयुक्त संघटना, डायमंड डेक्लरेशन, पाना.

**T.Y. B.A SOCIOLOGY
SEM- V PAPER- XI
CREDIT- 04, MARKS-100
URBAN SOCIOLOGY**

Course Learning Objectives:

1. To introduce students to the basic concepts, theories, nature & dynamics of urbanization in India
2. To understand the trends of India's contemporary urban culture.

Course Outcome: The learner will be able to:

1. Students will be able to explain the various concepts nature and dynamics of urbanization in India.
2. Students will be able to reflect on theoretical perspectives in urban Sociology.

UNIT. I. Basic Concepts

(12 lectures)

- a. Classification of Cities: Pre-industrial, Post-industrial, Millionaire city & Mega city, World / Global cities, Capital city, Primate city, Dual city, Metropolis.
- b. Rural Town, Towns and Cities,
- c. Urban, Urbanism, Urbanization, Rural –Urban Continuum

UNIT.II. Traditional Theories

(12 lectures)

- a. Louis Wirth & George Simmel
- b. Ernest Burgess & Homer Hoyt
- c. Robert Ezra Park

UNIT.III. Contemporary Theories

(12 lectures)

- a. From Chicago School of Modern Urbanism to Los Angeles School of Post- Modern Urbanism
- b. Manuel Castells
- c. David Harvey

UNIT-IV. Urban Culture

(09 lectures)

- a. New Emerging Trends of Urban Culture
- b. Mumbai's Public Culture
- c. Traditional urban neighbourhood- "Pols" in Ahmedabad

References List:

1. Bergill, E.E. [1995] – Urban Sociology New Delhi: McGraw Hill Book Co.
2. Fisher, C. S. (c 1984). "Theories of Urbanism," from The Urban Experience, second edition, Fischer (ed.)

- 3.Flanagan, G.M, (1999). Urban Sociology (Images and Structure), Printed in the United States of America: Allyn and Bacon company.
4. Gaston, J.K. (2010). Urban Ecology, New York. : Cambridge University Press
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7. Harvey, David. (1985). The urbanization of capital: Studies in the history and theory of Capitalist urbanization: Johns Hopkins University Press.
8. Patel, Sujata & Deb Kushal. (2006). Urban Studies New Delhi: Oxford University Press.
9. Patel, Sujata & Thorne Alice: Bombay Metaphor for Modern India. New Delhi: Oxford University Press.
10. Ramachandran, R. 1994: Urbanization & Urban systems in India, New Delhi: Oxford University press.
11. Rao, MSA. 1991: A Reader in Urban Sociology, New Delhi. Published by Orient Longman Ltd.
12. Sandhu Ravinder Singh – Urbanization in India: Sociological Contributions New Delhi: Sage Publications.
13. Stevenson, D. (2009 and 2003). Cities and Urban Cultures, Mumbai: Rawat Publication.

1. Environment Urbanization Vol 15 No 1 April 2003
2. Eric Denis and Marie - H       Z       (2014), Rural-Urban Linkages: India Case Study. Working Paper Series N  124. Working Group: Development with Territorial Cohesion. Territorial Cohesion for Development Program. Rimisp, Santiago, Chile.
(Unit IV A)
3. Mehta,Niti (2021) Rural Economic Growth and Emerging Pattern of Rural Towns, EPW, Vol.56, Issue No. 5, 30 Jan, 2021 (Unit I. B)
4. Ray, C, N (2015) The Traditional Neighbourhoods in a Walled City: Pols in Ahmedabad
https://www.researchgate.net/publication/286440009_Changing_Pattern_of_urban_neighbourhood_Pols_in_Ahmedabad
5. Rumi Aijaz, "India's Peri-Urban Regions: The Need for Policy and the Challenges of Governance", ORF Issue Brief No. 285, March 2019, Observer Research Foundation.
(Unit IV B)

1. <https://blogs.lse.ac.uk/southasia/2020/05/26/one-foot-in-the-city-one-in-the-village-indias-urban-poor-and-their-rural-bonds/> (Unit IV. A)
2. <https://blogs.lse.ac.uk/southasia/2020/05/26/one-foot-in-the-city-one-in-the-village-indias-urban-poor-and-their-rural-bonds/>
3. <https://www.epw.in/journal/2021/5/special-articles/rural-economic-growth-and-emerging-pattern-rural.html>
4. <https://www.sciencedirect.com/science/article/pii/S235198941930143X>

UNIVERSITY OF MUMBAI

Revised Syllabus

T.Y.B.A SOCIOLOGY SEMESTER -VI

Paper- IV : ANTHROPOLOGICAL THOUGHT

Paper -V- a : SOCIOLOGY OF LABOUR

Paper -V- b : DEVELOPMENT AND CHANGE IN AGRARIAN SOCIETY

Paper -V- c : CULTURE, MEDIAAND SOCIETY

Paper- VI : GENDER AND SOCIETY: EMERGING ISSUES AND CONTEMPORARY DEBATES

Paper- VII : SOCIOLOGY OF ORGANIZATIONS

Paper -VIII: SOCIOLOGY OF MARGINALIZED GROUPS

Paper -IX : QUALITATIVE SOCIAL RESEARCH

Paper- X : ENVIRONMENTAL CONCERNS IN INDIA

Paper -XI : URBANISATION IN INDIA: ISSUES AND CONCERNS

Important Instructions:

Kindly Note

4. Three paper component (Double Major)
 - d. Paper 4 is compulsory
 - e. Paper 5- From 5a, **OR** 5b **OR** 5c - **Choose ONE**
 - f. Paper 6 – Applied Compulsory paper with project for 20 marks
5. Single major
 - f. Paper 4 is Compulsory
 - g. Paper 5- From 5a, **OR** 5b **OR** 5c - **Choose ONE**
 - h. Paper 6 – Applied Compulsory paper with project for 20 marks
 - i. From Paper Number 7, 8, 10 and 11 **Choose TWO**
 - j. Paper 9 - Applied Compulsory paper with project for 20 marks
6. Question Paper Pattern

For 100 marks paper

Paper 4	
Paper 5	All questions are 20 marks each
Paper 7	Attempt any 5 questions out 10
Paper 8 (time 3 hours)	
Paper 10	
Paper 11	

For 80 marks paper

Paper 6	All questions are 20 marks each	
Paper 9	Attempt 4 questions out 8	
2 ½ hours		

T.Y.B.A SOCIOLOGY
SEMESTER - VI
CREDIT 04 (100 Marks)
PAPER- IV- ANTHROPOLOGICAL THOUGHT

Course Learning Objectives:

1. To provide the student with the understanding of Theoretical Anthropology.
2. To train students in the application of these theories to social situations.
3. To introduce students to writings of Indian Anthropologist

Course Outcome:

1. Students will have a grounded understanding of the basics of Anthropology, its different branches and scope.
2. They will develop the ability to use the knowledge of Anthropology in tackling Anthropology related problems like ethnocentrism
3. The course will help students to have generic skills of qualitative research used in Anthropology

Unit I: Introduction to Anthropology

(12 lectures)

- a. Nature and scope of Anthropology
- b. Sub-disciplines within anthropology: Physical, Cultural, Archaeology, Linguistic,
- c. Relation with sociology as a discipline
- d. Field methods in Anthropology

Unit II: Early Thoughts

(12 lectures)

- a. Evolution – Edward Tylor, L.H. Morgan
- b. Historical Particularism - Franz Boas
- c. Functionalism- Malinowski's Theory of Need
- d. Colonial anthropology-Verrier Elvin's Methods of a Freelance Anthropologist

Unit III: Later Development

(12 lectures)

1. Culture and Personality- Margaret Mead's Coming of Age in Samoa
2. Patterns of Culture – Ruth Benedict
3. Marxian Feminism- Eleanor Burke Leacocke
4. Interpretative Anthropology – Clifford Geertz' Thick Description
“Deep Play: Notes on the Balinese Cockfight”

Unit IV: Contemporary Indian Thinkers- (Selected Readings)

(09 lectures)

- a. Alpa Shah- “Tribe, Egalitarian Values, Autonomy and the State”
- b. Nandini Sunder- “Divining Evil: The State and Witchcraft in Bastar”
- c. Patricia Uberio- “Scripting Romance? Tribulation of Courtship in Popular Fiction”

Reading List :

1. Barnard, Alan. 2000. History and Theory in Anthropology. United Kingdom. The Press Syndicate of the University of Cambridge.
2. Guha Ramachandra. 2007. 'Between Anthropology and Literature: The Ethnographies of Verrier Elwin' in Uberoi Patricia; Sundar Nandini and Satish Deshpande (ed.): *Anthropology in the East*. 330- 359, Ranikhet: Permanent Black.
3. Harris, Marvin, 2001. The Rise of Anthropological Theory : A History of Theories of Culture, Jaipur, Rawat Publication.
4. Kottak Conrad Phillip, 1997. Anthropology, The Exploration of Human Diversity. New York The McGraw-Hill Companies Inc.
5. MacGee R Jonand Warm Richard L Anthropological Theory and Introductory History (4THed) 2008, McGrawHill New York.
6. Mair Lucy, 1965. An Introduction to Social Anthropology (2nded), 1965, New Delhi, India.
7. Moore Jerry, 2009. Visions of Culture an introduction to Anthropological Theories and Theorists (3rded) United Kingdom . Rowen and Little Publishers.
8. Shah Alpa .2019. 'Tribe, Egalitarian Values, Autonomy and State' in Srivastava, Arif and Abraham (ed): *Critical Themes in Indian Sociology*, 225-239, Sage Publication.
9. Sundar Nandini. 2010. "Divining Evil: The State and Witchcraft in Bastar" in Gender, Technology and Development. 425-448. Sage Publication. <http://gtd.sagepub.com>
10. Thomas Hylland Eriksen, 1988. What is Anthropology, Jaipur, Rawat Publications.
11. Thomas Hylland Eriksen and Finn Sivert Nielsen, A History of Anthropology, 2008, Jaipur, Rawat Publications.
12. Uberoi Patricia. 2006. Freedom and Destiny: Gender Family and Popular Culture in India, New Delhi. Oxford University Press

T.Y .B. A. SOCIOLOGY
SEMESTER- VI
CREDIT- 04
PAPER- V-a. SOCIOLOGY OF LABOUR

Course Learning Objectives:

1. To familiarize students with the concept of labour and development of Labour Studies in India.
2. To develop sociological understanding of the issues related to the informal sector.

Course Outcomes

1. To create awareness on the issues of Informal sector, Informalization of labour and nature of Labour force in India.
2. To sensitize the students towards the sociological understanding of issues of migration and the problems of Informal sector.
3. To Familiarise the students with concept of Decent Work and it's relation with Sustainable Development goals.
4. To introduce the students with Labour Law Reforms in India

Unit 1: Labour in India:

12 Lectures

- a. Meaning of labour, characteristics of labour, classification of labour, Origin and development of Labour studies in India
- b. Nature of Labour Force: Formal and Informal, Theoretical Perspectives: Dualist, Structuralism and Legalist
- c. Informalization of labour

Unit II: Informal Labour Market

12 Lectures

- a. Migration as a livelihood
 - i. Covid Pandemic and Migration
 - ii. Gender Dimensions in Migration
- b. Workers in Informal sector**
 - i) Contract workers
 - ii) Agricultural workers
- c. Conditions of work and wages**
 - i) Home based worker
 - ii) Leather workers.
 - iii) Sanitation Workers.

Unit III. Decent work and Social Security

12 Lectures

- a . Decent work and the Sustainable Development Goals, International Labour Organisation (ILO)
- b . Social Security: Meaning, historical background and development
- c . Organising the unorganised: Role of SEWA, MNREGA (2005), Micro Finance and Cooperatives

Unit IV: Overview of Labour Law Reforms in India

9 Lectures

- a. Origin and development of labour laws
- b. Labour Flexibility Debate
- c. The Labour Law Codes: Key Issues and Concerns

Suggested Readings:

1. 'Gender and Migration: Negotiating Rights - A Women's Movement Perspective), Centre for Women's Development Studies, March 2012, available on <https://www.cwds.ac.in/wp-content/uploads/2016/09/GenderMigrationNegotiatingRights.pdf>
2. "Gender Dimensions in Rural-Urban Migration in India: Policy Imperatives' available on:
Analysis', Lap Lambert Academic Publishing, Ag & Co. Kg, Saarbrücken,.
3. Bapat, R.B. et al. (2020): 'The COVID-19, Migration and Livelihood in India' available on:
4. Bhagat, R.B. (): 'Migration, Gender and Right to the City-The Indian Context' – Economic and Political Weekly, August 12, 2017, Vol LII, No.32
5. Bhosale, B.V, 2010, Informal. Sector in India: Challenges and Consequences: Field
6. Bhowmik, Sharit K, 2009, India: Labour Sociology Searching for a Direction, Work and Occupation, Vol. 36 (2), Sage Publications.
7. Bhowmik, Sharit K, 2012, Industry, Labour and Society. New Delhi: Orient Black
8. Breman, Jan, 2003, Informal Sector in The Oxford Companion to Sociology and
9. COVID-19 Crisis Through a Migration Lens: Migration and Development Brief 32, April 2020, available at <https://openknowledge.worldbank.org/handle/10986/33634>
10. Dandekar, A and Ghai R. (2020): 'Migration and Reverse Migration in the Age of COVID-19' in Economic and Political Weekly, May 9, 2020, Vol. LV No. 19.
11. De Neve, Geert, 2019, The Sociology of Labour in India, in Srivastava, Sanjay, Arif Yasmeen and Abraham Janaki (eds.) Critical Themes in Indian Sociology, Sage Publication.
12. EPW editorial . 2020. New Labour Codes and Their Loopholes, Economic & Political Weekly October 3, 2020 vol IV no 40.
13. EPW editorial 2002 - LABOUR REFORMS On the Anvil- Economic and Political Weekly July 6, 2002 pp 2268
Exploitation or accumulation, Journal of South Asian Development 5:1, Sage Germany.
14. Ghai, Dharam.Ed.(2007). Decent work:Objectives and Strategies, New Delhi: Bookwell.
15. <http://www.shram.org/uploadFiles/pdf>
16. https://www.researchgate.net/publication/341756913_The_COVID-19_Migration_and_Livelihood_in_India_A_Background_Paper_for_Policy_Makers_International_Institute_for_Population_Sciences_Mumbai_The_COVID-19_Migration_and_Livelihood_in_India
17. https://www.researchgate.net/publication/356729082_Internal_Migration_and_the_Covid-19_Pandemic_in_India/link/61a8fe6b50e22929cd3ee658/download

18. Jayaram, Nivedita . 2019. Protection of Workers' Wages in India: An Analysis of the Labour Code on Wages, 2019 . Economic and Political weekly Vol. 54, Issue No. 49, 14 Dec, 2019.
19. Jha, Praveen. 2016. Labour in Contemporary India. Oxford University Press.
20. Jha, Praveen. 2017. Labour in neo-liberal India. Seminar #689 January 2017
available https://www.india-seminar.com/2017/689/689_praveen_jha.htm
21. Jhabvala, Renane.(1998). "Social security for Unorganised sector", Economic and Political Weekly, 30th May
22. K R Shyam Sundar. 2005. Labour Flexibility Debate in India A Comprehensive Review and Some Suggestions, Economic and Political Weekly May 28-June 4, 2005 .
23. K R Shyam Sundar. 2020. Critiquing the Industrial Relations Code Bill, 2019. Economic & Political Weekly EPW august 8, 2020 vol IVnos 32 & 33 pp 45-48.
24. K R Shyam Sundar. 2020. Critiquing the Industrial Relations Code Bill, 2019. Economic & Political Weekly EPW august 8, 2020 vol IVnos 32 & 33 pp 45-48.
25. K R Shyam Sundar. Industrial Conflict in India in the Post-Reform Period Who Said All Is Quiet on the Industrial Front? Economic & Political Weekly EPW JANUARY 17, 2015 vol I no 3 pp 43 -53.
26. .Kundu A, and Sharma A.N, 2001, Informal sector in India : Perspective and policies
27. Maiti, Dibyendu. Sen, Kunal, 2010, The Informal Sector in India: A means of Manohar Publication
28. Martha Alter Chen, 2008, Informalization of Labour Markets: Is Formalization the Answer? ,inRazavi. S (ed) The Gendered Impacts of Liberalization, First Edition, Routledge, New York.
29. Mary Lou de Leon Siantz (2013): 'Feminization of Migration: A Global Health Challenge', Volume 2, Number 5, September 2013, available at www.gahmj.com
30. Mary Lou de Leon Siantz (2013): 'Feminization of Migration: A Global Health Challenge', Volume 2, Number 5, September 2013, available at www.gahmj.com
31. Misra and Puri, 2008, Indian Economy, Himalaya Publishing House, 26th Edition-pg 149-159.
32. NCEUS.(2006), Social Security for Unorganised workers. Government of India.
33. NCEUS.(2007), Report on the conditions of work and promotions of livelihoods in the unorganised sector. Government of India.
Publication.
34. Roychowdhury, Anamitra Sarkar, Kingshuk . 2021. Labour Reforms in a Neo-liberal Setting: Lessons from India in Global Labour Journal 12(1), . January 2021
35. Sarkar, Kingshuk; Santosh Mehrotra. Social Security Code, 2020 and Rules A Critique, Economic & Political Weekly March 20, 2021 vol LVI no 12.
36. Sharma, A. K. 2006. Labour Economics. Anmol Publications Pvt. Ltd. Delhi.
Social Anthropology edited by Veena Das. New Delhi

T.Y.B.A.SOCIOLOGY
SEMESTER- VI
CREDIT- 4
MARKS- 100
PAPER –V-b

DEVELOPMENT AND CHANGES IN AGRARIAN SOCIETY

Course Learning Objectives:

- 1) To analyze attempts at social & financial inclusion of agrarian community.
- 2) To evaluate present alternative development initiatives and analyse the role of globalization in agriculture.

Course Outcomes:

1. Helps to think critically about issues and topics affecting agrarian society
2. Enlightens the students about the different problems and possible solutions to agrarian issues.
3. Analyses the transformations in agrarian society

Unit I. Contemporary Development Programmes

12 lectures

- a) Poverty alleviation programmes
- b) Rural Credit
- c) MNREGA

Unit II. Role of Agrarian Institutions

12 lectures

- a) Co-operatives
- b) Non Government Organizations (NGOs)
- c) Non Party Political Formations (NPPFs)

Unit III. Agrarian Crisis

12 lectures

- a) Problems of the agrarian sector due to globalization
- b) Land and livelihood issues
- c) GM crops

Unit IV. Impact and Consequences of Crisis

9 lectures

- a) Mega projects
- b) Agrarian unrest
- c) Farmer suicides

Readings List:

1. Dev, S. Mahendra (2006): Financial Inclusion: Issues and Challenges, Economic & Political Weekly, Oct. 14.
2. Baviskar, B. S. (2007): Cooperatives in Maharashtra: Challenges Ahead, Economic & Political Weekly, Oct. 20.
3. Baviskar, B. S. (1980): The Politics of Development: Sugar Co-operatives in Rural Maharashtra, Oxford University Press.
4. Biswas, N (2006): On Funding and the NGO Sector, Economic & Political Weekly, October 21.

5. Sheth, D L. (1984): Grass-roots Initiatives in India, Economic and Political Weekly, Feb.11.
6. Shiva, V (2003): The Role of Patents in the Rise of Globalization, Motion magazine.
7. Agarwal, A (2006): Special Economic Zones, Economic & Political Weekly, November 4.
8. Banerjee, S (2008): Space Relations of Capital and Significance of New Economic Enclaves, Economic & Political Weekly, November 22.
9. Mitra, S & Shroff, S. (2007): Farmer Suicides in Maharashtra, Economic & Political Weekly, Dec. 8.
10. Suri, K.C. (2006): Political Economy of Agrarian Distress, Economic & Political Weekly, April 22.
11. Ratna Reddy, V. (2006): Looking beyond the Debt Trap, Economic & Political Weekly, May 13.
12. Munshi, I. (ed) (2012): The Adivasi question: issues of land, forest & livelihood, Orient Blackswan.
13. Dias, A. (2012): Development & its human cost, Rawat Pub.
14. Nathan, D. (2009): Social security, Compensation and livelihood issues, Economic & Political Weekly, July 25.
15. Mohanty B B (2013) : Farmer Suicides in India: Durkheim's Types, EPW, May 25
16. Niti.gov.in/planning commission.gov.in: poverty alleviation programmes
17. Ministry of Rural Development, G.O.I. (2012): MNREGA Sameeksha: An anthology of Research studies on MNREGA, Orient Blackswan

Marathi Reference books

1. ग्रामीणसमाजशास्त्र - डा. गणेशनाथनाथन
ठाडगाड
2. ग्रामीणसमाजव्यवकास - संभाजीदसाई - प्रशांतपाब्लक शन
3. भारतमेंग्रामीणसमाज - डा. डी. एस. बघल - कलाशपुस्तकसदन, भोपाल.

T.Y.B.A SOCIOLOGY, SEMESTER- VI
Paper V-c
CREDIT-04 MARKS 100
CULTURE MEDIA AND SOCIETY

Course Learning Objectives:

1. To Make learner understand basic concept of media communication and society relations
2. To orient students to the development of society and role of Media and Communication
3. To assess the impact of new media on communication process and social development

Course Outcomes:

1. To assess the understanding of the learners about media and its relations with society
2. To enable learner to understand the role of media in social development
3. To develop understanding of impact of media on overall development of Society

Unit-I Conceptual Understanding (12 Lectures)

- a. Folk society and Folk Media
- b. Mass Media
- c. Network society
- d. Communication and Development

Unit –II: Theoretical Understanding (12 lectures)

- a. Culture and Communication
- b. Mass Media and Social Media
- c. Social Construction theory
- d. Advertisement and media

Unit –III. Contemporary Debates in Media Studies (12 lectures)

- a. Folk culture and Media
- b. Popular culture and Media
- c. Culture industry
- d. Critical theory

Unit-IV. Media and society (09 lectures)

- a. Media and Democracy
- b. Media and Marginalized groups : Caste class and Gender
- c. Media and Children
- d. Media and Socialization

Field visit to media organization

Essential Readings:

1. Daniel Lerner.1958. The Passing of Traditional Society: Modernizing the Middle East
2. McQuail, Denis (2010), *McQuail's Mass Communication Theory* (sixth edition)
3. Keval J. Kumar.1994.Mass Communication in India, Fifth Edition
4. Robert Redfield. 1947. The Folk Society. American Journal of Sociology.
5. Uma Joshi(2002) Textbook of Mass Communication and Media. Anmol Publications
Pvt. Limited

Any further suggested reading by the teacher

**T.Y.B.A SOCIOLOGY SEMESTER- VI
PAPER- VI**

CREDITS – 4

MARKS 100

**GENDER AND SOCIETY IN INDIA: CONTEMPORARY DEBATES AND
EMERGING ISSUES (APPLIED COMPONENT)**

Course Learning Objectives:

1. To understand new and emerging issues in the Indian context
2. To understand newer methods of protest and resistance

Course outcomes:

1. Enable an understanding of violence as a structural issue deeply located within caste, class and ethnic hierarchies
2. An understanding of laws for those in gender marginal locations and their implementation

Unit I. Gender Based Violence (12 lectures)

- a. Domestic Violence: Violence against women and transpersons
- b. Violence in situations of conflict: caste and communal
- c. Violence in virtual spaces: Twitter and facebook misogyny and trolling

Unit II. Gender and Law (12 Lectures)

- a. Protection of Women from Domestic Violence Act (PWDVA 2005)
- b. The Sexual Harassment of Women (Prevention, Prohibition and Redressal) at Workplace Act (POSH ACT, 2013)
- c. Transgender Persons Act, 2019

Unit III. Protests and Resistance (12 lectures)

- a. Reproductive Health: Debates on surrogacy
- b. Livelihood struggles: Water, land and forests
- c. Anti-arrack struggles

Unit IV. Digital Campaigns (09 lectures)

- a. Why loiter
- b. Pinjra Tod
- c. #Me too

Project: 20 mark project to be submitted by students preferably empirical in nature using feminist research principles

Readings List:

1. Agarwal, Anuja. (1997). Gendered Bodies: The case of the 'third gender' in India. Contributions to Indian Sociology, Vol 31- (2), 273-297
2. Gupta. Alok (2006). Section 377 and the dignity of Indian homosexuals. EPW Vol- XLI (40).
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4. Kancha Illiah, (1992) Andhra Pradesh's Anti Liquor Movement, Vol. 27, Issue 45, Nov. 1992
5. Kannabiran, K. (ed). The violence of normal times: Essays on women's lived realities. Kali for women: New Delhi.
6. Menon, Nivedita. 2013. Seeing Like a Feminist. Zubaan: New Delhi
7. Omvedt, G. 1990. Violence against women: New movements and new theories in India. Kali for women: New Delhi.
8. Patnaik & D. Narsimha Reddy, (1993), Anti arrack agitation of women in Andhra Pradesh, Economic and Political Weekly, Vol. 28, Issue 20-21, May 22, 1993
9. Patel, V. Gender in Workplace policies: A focus on Sexual Harassment, EPW, Vol XXXIX No 41
10. Revathi, A. 2013. The Truth About Me: A Hijra Life Story. Penguin Books India.
11. Shah, Chayanika; Merchant, R. Mahajan, S. & Nevatia, S. (2015). No outlaws in the Gender galaxy. New Delhi: Zubaan
12. Sharma, Kalpana. (2002) Surviving Violence, Making Peace: Women in communal conflict in Mumbai in Kapadia, K. (ed) The Violence of Development: The Politics of Identity, Gender and Social Inequalities in India. New Delhi: Kali for Women
13. <https://ruralindiaonline.org/en/library/resource/the-transgender-persons-protection-of-rights-act-2019>
14. <https://prsindia.org/billtrack/the-transgender-persons-protection-of-rights-bill-2019>

Any other relevant reading suggested by the course teacher

T.Y.B.A SOCIOLOGY
SEMESTER- VI -PAPER- VII -
CREDIT- 4 -MARKS-100

SOCIOLOGY OF ORGANIZATIONS

Course Learning Objectives:

13. To familiarize students with dynamics of organizations and diverse strategies useful in developing human resources.
2. To create an understanding of human resource planning to social development and comprehend the challenges faced by organizations in a global context.

Course Outcomes:

1. To provide a comprehensive framework for the development of human resources in the organization and understand the vision of organisational development
2. To create and understanding on group dynamics and organisational socialisation
3. To create leadership qualities and handle group dynamics

Unit I. Organizational Structure (12 Lectures)

- a. Organization : Characteristics and principles of organization
- b. Formal organizations: Relevance, types of structures, tall and flat organization and functional organization
- c. Informal organization : Significance and impact on formal organizations

Unit II. Organizational Socialization, leadership and Group Dynamics (12 Lectures)

- a. Organizational socialization: Individual and organizational perspectives on Socialization; Stages of organizational socialization, Induction/Indoctrination procedure
- b. Leadership- roles, goals and effectiveness
- c. Group and team dynamics: Teams vs. Groups, Group development, team building in organisations

Unit III . Organizational Planning, Training and Development, Conflict resolution (12 Lectures)

- a. Organizational Planning: Importance, Internal & External factors, Downsizing in context to labour market
- b. Organizational Training & Development: Types, Characteristics & Process, Intervention & Training methods & Benefits
- c. Conflict resolution: Types of conflict situations; Causes, effects; and effective management.

Unit IV. Organizational Culture and Change (09 Lectures)

- a. Organizational Culture: Features , Cultural Dimensions, Sustaining the Culture, Managing multiculturalism
- b. Creativity in Organizations: Characteristics, Creativity Inducing factors
- c. Innovation process and change

Reading list:

1. Ashwatthapa K. 2007. Organizational Behaviour, Himalaya Publishing House, Mumbai.
2. Champoux Joseph E. 2011. Organizational Behavior: Integrating individuals, groups and organizations. New York: Routledge
3. Chaturvedi, Abha and Anil, (ed). 1995. The Sociology of Formal Organizations, Oxford University Press. New Delhi
4. Chandan, J.S. 1987. Management: Theory and Practice. New Delhi: Vikas Publishing House.
5. Luthans Fred 2005(10thed) Organisational Behaviour Publication. McGraw Hill Company. Boston.
6. Mamoria C, Gankar, S.V. 2007, Personnel Management, Himalaya Publishing House, Mumbai.
7. Miller and Form, 1979, Industrial Sociology, Harper Publishers, New York.
8. Miner, John B.1992. Industrial - Organizational Psychology. New York: McGraw – Hill, Inc.
9. Mullins, Laurie J. 2002. Management and organizational behavior. Essex CM20 2JE: Pearson Education Ltd.
10. Robbins, S.2001. Organizational Behaviour, Prentice Hall, New Delhi
11. Scott S, George B, Veena V.2010.Human Resources Management, Cengage Learning India Pvt Ltd

T.Y.B.A.SOCIOLOGY
PAPER- VIII
SEMESTER -VI
CREDIT- 4 , MARKS-100
SOCIOLOGY OF MARGINALIZED GROUPS

Course Learning Objectives

1. To sensitize students to the sociological significance of the study of Marginalized Groups
2. To create awareness of historically dis privileged groups in Indian society

Course Outcomes: The learner will be able to:

1. Understand the dynamics and motivations of individuals and groups participating in social movements and identify reasons for success (or failure) of social movements.
2. Develop and improve critical thinking, writing, and presentation skills

Unit I. Understanding Marginalized Groups (12 lectures)

- a. Basic Concepts: Margin, Marginality and marginalization
- b. Social exclusion, concept features and dimensions

Unit II. Marginalized Groups (12 lectures)

- A.Scheduled Caste (S/C)
- b.Scheduled Tribes (S/T)
- c. De-notified and notified tribes (DT and NT)
- D.Other Backward class (OBC)

Unit.III. New Marginalized groups (12 lectures)

- a.LGBTQ
- B.Differently-able groups (Divyang)
- c. Displaced (Narmada Bachao Andolan)

Unit IV. Marginalized Groups: Role of State and civil Society (12 lectures)

- a. Constitutional Provisions and State policies
- b.Role of NGO'S and Social Movement (SEARCH- Abhay Bang, Muktangan- Anil Avachat)
- c.Maharashtra Andhshradha Nirmulan Samiti (ANIS)

Reading List:

1. Books Chatterjee, C and Sheoran, G. (2007). Vulnerable groups in India. The Centre for Enquiry into Health and Allied Themes (CEHAT), Mumbai.
2. Dhanagare D N (1993) "Themes and Perspectives in Indian Sociology", Rawat Publication, Delhi.
3. Fraser, N. Social Justice in the age of Identity Politics. New Delhi: Critical Quest
4. Jogdand P.C 2000. New Economic Policy and Dalits Jaipur: Rawat
5. Jogdand P.C (1991) Dalit Movement in Maharashtra New Delhi: Kanak Publication
6. Kasi Eswarappa; Ziyauddin K.M (Ed), 2009. Dimensions of Social Exclusion: Ethnographic Explorations. Cambridge Scholars Publishing
7. Mander, Harsh. 2012. A fractured freedom: Chronicles of India's margins. New Delhi: Three Essays Collective
8. Omvedt, Gali (1999): Dalits and the Democratic Revolution. New Delhi: Sage
9. Shaha Ghanshyam, (2004) "Social Movements in India: A review of the literature, Sage Publication, New Delhi
10. Thorat, S. 2013. Caste, Social exclusion and Poverty. New Delhi: Critical quest
- Kabeer, N; Haan, A. 2008.

Journals

1. Guha, R. Guha. 2007. Adivasis, Naxalites and Indian Democracy. EPW XLII (32).
2. Gang, Sen and Yun. 2011. Was the Mandal commission right: Differences in living standards between social groups. EPW Vol XLVI No 39
3. Kumar, A. 2011. Inequality and Exclusion: As If the System Mattered. EPW XLVI (44-45)
4. Mondal, S. 2003. Social structure, OBC's and Muslims. EPW 38(46)
5. Nandy, A. 2012. Theories of oppression and another dialogue of culture. EPW XLVII (30)
6. Nayar, D. (2011). Discrimination and Justice: Beyond Affirmative Action. EPW XLVI (42).
7. Robinson Rowena. 2007. Indian Muslims: The varied dimensions of marginality, EPW XLII (10).
8. Verma, V. 2011. Conceptualising Social Exclusion: New Rhetoric or Transformative Politics? EPW XLVI (50)

Any other relevant reading suggested by the course teacher

T.Y.B.A SOCIOLOGY
SEMESTER- VI-CREDITS 04
PAPER IX (Applied Component)
(80 + 20 Marks)
QUALITATIVE SOCIAL RESEARCH

Course Learning Objectives:

1. To provide students with an orientation to Qualitative Social Research
2. To acquaint students with the important concepts, techniques and processes in qualitative research
3. To enable students to apply theoretical knowledge of social research to field study. Students are required to submit a project based on original data collection.

Course Outcomes -This course will help learners -

4. To appreciate the nature and operations of qualitative social research
5. To learn about the basic tools and techniques in qualitative social research
6. To equip themselves to conduct and interpret simple research projects

Unit I. Qualitative Research (7 Lectures)

- a. Qualitative Research – Nature, characteristics, significance, critique
- b. Preoccupations of qualitative researchers
- c. Theoretical considerations - Interpretivism

Unit II. Process of Qualitative Research (9 Lectures)

- a. Distinction between qualitative and quantitative research
- b. Main steps in qualitative research
- c. Reliability and Validity in Qualitative research

Unit III. Qualitative approaches to enquiry (9 Lectures)

- a. Ethnography
- b. Case study
- c. Feminist approach

Unit IV. Methods and Techniques of data collection (9 Lectures)

- a. Interview: Unstructured, Semi structured, In-depth
- b. Focus Group discussion
- c. Conversation and Discourse analysis

Project Work: (20 Marks) Predominantly a minor data collection project (The teacher should provide a brief orientation into the following: Formulation of research problem,

Literature search, statement of the problem, Conceptualization, data collection, interpretation and report writing.

Reading List:

1. Bryman Alan (2001) 'Social Research Methods', Oxford University Press.
2. Cresswell, J.W, (2007) 'Qualitative Inquiry and Research Design- Choosing among five approaches' Sage Publication: New Delhi
3. Cresswell, J.W, (2002), Research Design -Qualitative Quantitative and Mixed Methods Approaches, Sage Publication: New Delhi
4. Gibbs Graham (2007), 'Analyzing Qualitative Research', The Sage Qualitative Research Kit, Sage Publications.
5. Somekh Bridget & Lewin Cathy (ed), (2005) 'Research Methods in Social Science'
6. Tucker, Veena (2020). Research Methods in Social Sciences. Pearsons India Education Services
7. Uwe Flick (2007), 'Designing Qualitative Research', The Sage Qualitative Research Kit, Sage Publications.

T.Y.B.A SOCIOLOGY
SEMESTER -VI
CREDIT -04
PAPER –X (100 Marks)
ENVIRONMENTAL CONCERNS IN INDIA

Course Learning Objectives

1. To introduce environmental problems from the Indian context.
2. To provide a critical insight into issues relating to environment and development.
3. To examine the synergy between gender and environment.

COURSE OUTCOMES: The Learner will be able to:

1. Apply theoretical models to comprehend workable solutions to Indian environmental situations.
2. Use sociological imagination to understand natural resource issues.
3. Seek and synthesize information and work on its adaptation to Indian context.
4. Appreciate the contribution of women and grassroots workers to the environment.

Unit I.Environmental Thought in Indian context (12 lectures)

- a. Various development models and environmental problems
- b. Critique of development: Gandhi (Hind Swaraj)
- c. Selective readings in environmental sociology in India: R.K. Mukherji, Indra Munshi, Rita Brara

Unit II .Contemporary Environmental Practices In India
lectures)

(12

- a. Towards Environmental Protection – Vanarai NGO, Western Ghats Ecology Expert Panel Report (Eco-Sensitive Zones)
- b. Local Strategies and Innovation in Environmental Protection: Johads, Indigenous Technologies
- c. Eco-Friendly Technologies

Unit III .Gender and Environment (12 lectures)

- a .Eco-feminism and Feminist environmentalism- Bina Agarwal
- b.New Environmental Movements: Narmada Bachao Andolan, Chipko Movement
- c. Case Study: Seed Mother (Rahibai Popre) - Ahmednagar

Unit IV .Protests against Infrastructural Development (09 lectures)

- a. Jaitapur Nuclear Energy Project
- b Coastal Road Project
- c. New Airport at Navi Mumbai

Readings in English

1. Munshi, I. (2000): '*Environment*' in *Sociological Theory* in Sociological Bulletin, Vol. 49, No. 2 (September 2000), pp. 253-266, Sage Publication
2. 'Seed Mother' Rahibai Soma Popere awarded Padma Shri": available at:
3. <https://www.opindia.com/2021/11/rahibai-soma-pompere-seed-mother-padma-shri-brief-profile/>
4. <https://dst.gov.in/sites/default/files/SEED%20Mother%20Rahibai%20gets%20Padmshree.pdf>
5. <https://www.unnatisilks.com/blog/rahibai-soma-popere-the-seed-mother-for-her-farming-community/>
6. Case study on Johads of Rajasthan- <http://www.downtoearth.org.in/node/13315>
7. www.environment-ecology.com/environemnt-writings/114-environemntal-sociology.html
8. Local strategies and i Local strategies and innovations in environmental protection - <https://egyankosh.ac.in/handle/123456789/60169/1/Local%20Strategies%20and%20Innovations%20in%20Environmental%20Protection%2C%20Part%201%20%26%202.pdf>
9. <https://egyankosh.ac.in/bitstream/123456789/60169/1/Local%20Strategies%20and%20Innovations%20in%20Environmental%20Protection%2C%20Part%201%20%26%202.pdf>
10. *Dr. G. Indira priyadarsini IOSR Journal Of Humanities And Social Science (IOSR-JHSS) Volume 21, Issue 1, Ver. I (Jan. 2016) PP 56-60 e-ISSN: 2279-0837, p-ISSN: 2279-0845. www.iosrjournals.org DOI: 10.9790/0837-21115660 www.iosrjournals.org 56 | Page
Environmental Policies in India towards Achieving Sustainable Development
11. <http://www.iosrjournals.org/iosr-jhss/papers/Vol.%2021%20Issue1/Version-1/J021115660.pdf>
12. Environment Friendly Technologies: Concept and Need- <https://egyankosh.ac.in/bitstream/123456789/60153/1/Environment%20Friendly%20Technologies-%20Concept%20and%20Need.pdf>
13. What Is Eco-Friendly Technology?-<https://www.treehugger.com/what-is-eco-friendly-technology-4864056>
14. REVISED DRAFT DEVELOPMENT PLAN 2034 FOR MUMBAI: www.peataindia.org/Unlock_Seminar_ppts/GD_CHIPLUNKAR.pdf
15. Forest Rights Act: rightsandresources.org/wp-content/uploads/CommunityForest_July-20.pdf
16. Ahluwalia, S.K. (2005) *Environment Problems in India*, ABD Publishers Jaipur.
17. Baviskar, Anita (1995) "In the belly of the river: tribal conflicts over development in the Narmada Valley" Oxford University press, Delhi.
18. Dreze, JMS and Singh, S. (ed), (1997) "The dam and the Nation: Displacement and resettlement in the Narmada Valley, Oxford University press, Delhi.
19. Merchant, C (2003) "Ecology: Key concepts in critical theory" Rawat Publication, Jaipur
20. Pawar, S.N. (2006), 'Environmental Movements in India', Rawat Publication, Jaipur

21. Pawar, S.N. and Patil (ed) (1998) "Sociology of Environment", Rawat publication. Jaipur
22. Rangrajan, Mahesh (ed) (2007) 'Environmental issues in India: A reader'. Pearson.
23. Western Ghats Ecology Expert Panel Report (Eco-Sensitive Zones) (pp. 16-41) <http://www.moef.nic.in/downloads/public-information/wg-23052012.pdf>
24. Dixit Nikhil S; Navi Mumbai airport: 'How can development risk such damage to people, economy and ecology?' <https://scroll.in/article/941075/navi-mumbai-airport-how-can-development-risk-widespread-damage-to-people-economy-and-ecology>
25. Coastal Road Projects Don't Just Damage the Environment – They Are Also Outdated- <https://thewire.in/environment/coastal-road-project-damage-environment-outdated>
26. UNIT 16 GANDHI'S VIEWS ON NATURE AND ENVIRONMENT
27. <http://dcac.du.ac.in> > E-Resource
Mahatma Gandhi - An Environmentalist With A Difference
28. <https://www.mkgandhi.org/environment/jha.htm>

Readings in Marathi

१. गांधी एम क', यहंद स्वराज,
२. बापापट राम, महात्मा गांधी चिंतनीचा
- एवचार, क्रांतीचा चाला वारसा व पर्यावरण, राज्यासंस्था
- भाषांतर डवलशाहारी आयण पर्यावरण, लोकवाङ्मय
- गृह, मातृकां बई, २०१३.
३. क्रांती लकणाी यदलीप, वागळ्याचा एवकासाचा व वाटाटाडा
- , राजाजहांस परकाशासन पाणव, २००८.
३. मत व कयवता, पर्यावरणीय शांतीवाद, महाराष्ट्र राजा मराठाी
- एवशां व कांश एनमतारी मांडळ, मातृकां बई.
४. सां जय सवां गई, नमदाा खोर्याात: प्रश्न व सां घष, साप्तायहक
- साधनाा, ३० ऑक्टोबर २०१० पृ क्रमांकांक ७ ता १७.
५. धमायधकाारी शांतीपाद, नमदाा बचाव
- आां दाोलनताची २५ वर्ष, जाधव तांकुकाराम (सांपाा)
- महाराष्ट्र वाषकाी, यांयनक अक डमी, पुण, २०११.
६. पाटकर मधाा, सरदार सरोवर:
- पां नवसनाबरोबरच पां नमलां यााां कनाचा
- आव्हान, साप्तायहक साधनाा, ३१ आगस्ट २०१३, पृ
- क्रमांकांक ११ ता १६.

७.गोहाहा रामचां दर,यवकासा काी यवध्वां स?,साप्तायहक
साधना,१४ सप्टांबर २०१३,पृ क्रमांकांक१२ त
१४.

८.पाठणकर राहाल,नमदाा बचाओ आां दालन: नागरीहक,यवकासा
आयणयवकासाचा नव

चचाायवश्व,काां भार नागोराव(सांपाा) समकाालाीन

साामायजक चळवळी,डायमंड पब्लिक

शन,पुण,२०१८,पृ क्रमांकांक२३३ त २४५.

९.शहा घनश्याम,भारतातील सामायजक चळवळी,डायमंड पब्लिक शन,पुण,२०१०.

१०..भारत सरकार,(NPCIL),जातापाार अणाऊजाा प्रकला
प,मायहताी पाब्लिकाा,नाोव्हाबर २००९.

११खान यबलाल,यकनारी माग प्रकला पााला घर बचाओ-घर बनाओ

आां दालनााचाा यवरोध,आां दालन शााश्वत

यवकासासााठी,सप्टांबर २०१५,पृ क्रमांकांक३२.

१२.कड रणुका,कोस्टल रोडमुळ मियमारांच्या उपजीवीक चा प्रश्न गंभीर,द वायर मराठी२१ नोव्हेंबर २०२१.

T.Y. B.A SOCIOLOGY
CREDIT 04 SEM- VI
APER- XI
(Marks-100)
URBANISATION IN INDIA: ISSUES AND CONCERNS

Course Learning Objectives:

1. To understand urban development in the pre liberal and post liberal era in India.
2. To comprehend newly emerging issues and concerns in the changing scenario.

Course Outcome:

1. Students will reflect on India's experience on urbanization.
2. Students will be in a position to analyze the urban problems and discuss various solutions.

UNIT. I. History of Urbanization in India (12 lectures)

- a. The Colonial Period
- b. The Post- Independence Period
- c. Recent trends of Urbanization in India

UNIT.II .Sustainable Development goals and the role of cities (12 lectures)

- a. Meaning of SDGs, Relation between SDGs and the Cities, Relevance of SDGs
- b. Government initiatives in Urban Development-Atal Mission For Rejuvenation and Urban Transformation (AMRUT), Deendayal Antyodaya Yojana-National Urban Livelihoods Mission(DAY-NULM) , Swachch Bharat Urban Mission
- c. SRA:Case Study of Ahmedabad River Front Project, Pune Shelter Associates

UNIT.III. It parks in the Indian urban landscape (12 lectures)

- a. Technourbs as new industrial complexes, representative of suburban & peri-urban geo-type.
- b. IT Parks of India- HITECH City (Telangana),Techno Park (Kerala)
- c. The International Technology Park & Electronic city of Bangalore

UNIT.IV. Future cities of the twenty-first century (9 lectures)

- a. Ecological Challenges and need for Sustainable Development
- b. Ten scenarios probable in the cities of the twenty-first century
- c. Future cities – typologies, design & plans & problems (Zoo polis, Gentrification and Gated community)

References List:

1. Asian development bank - Urban Poverty in India.
2. Aijaz Rumi (2015), India's Urbanization Experiences, Global Policy and Observer research Foundation
3. Banerjee-guha s. [ed], [2010] – Accumulation by Dispossession: Transformative Cities in the New Global Order – New Delhi, SAGE
4. Baud, Iisa&Wit, j. de [2008], New Forms of Urban Governance in India, SAGE.
5. Bruggmannjeb, [2009], Welcome to the Urban Revolution – How cities are changing the world, Bloomsbury press.
6. Douglas Webster (2002), On the Edge: Shaping the Future of Peri-Urban East Asia, A/PARC
7. Desai A R. &DevidasPillai s – Slum & Urbanization – Mumbai: Popular Prakashan.
8. Murugaiah, V. and Shashidhar, R. and Ramakrishna, V., Smart Cities Mission and AMRUT Scheme: Analysis in the Context of Sustainable Development (October 30, 2018). OIDA International Journal of Sustainable Development, Vol. 11, No. 10, pp. 49-60, 2018, Available at SSRN: <https://ssrn.com/abstract=3290270>
9. Joshi, Aparna, Reconnecting the City with its River Sabarmati Riverfront Development Project in Ahmedabad
10. Suparna Majumdar Kar, 2016, Locating Bengaluru as Indian's Silicon Valley, Artha J Soc Sci, 15, 2 (2016), 49-68 ISSN 0975-329X|doi.org/10.12724/ajss.37. 3
11. Narain V et al (2013), PeriUrbanization in India: A review of literature and evidence, SaciWATERS
12. Parker, Simon,(2015), Urban Theory and Urban Experience: Encountering the City, London: Routledge
13. Ramachandran, R. Urbanization & Urban Systems in India. New Delhi: Oxford University Press.
14. Kundu A, Singh, B etal (2007). Handbook of urbanization in India 2e. OUP Volume3,No.2, Apr.-June,2015 www.researchfront.in
15. Rao, M.S.A., Bhatt, C. and L.N. Kadekar (1991), A Reader in Urban Sociology, New Delhi: Orient Longman
16. Sahoo Dipshikha (2020), Urbanization in India During the British Period (1857-1947), Routledge Publication
17. Sujata Patel and Kushal Deb (2009), Urban Studies, Oxford India, ISBN: 978019806252
18. Gupta RC (2006) Environmental and infrastructural sustainability: major challenges facing Indian metropolitan cities. In: Singh RB (ed) Sustainable urban development. Concept, New Delhi
19. H.S.Kumara, Rapid Urbanization and Environmental Challenges in Metropolitan Cities in India, 66th NTCP Congress Hyderabad Telangana
20. Jain AK (2008) A sustainable vision for urban India. Kalpaz, Delhi
21. Oriol Nel. Lo and Renata Mele (Ed), 2016, Cities in the 21st century, Routledge, Newyork, <https://www.taylorfrancis.com/books/edit/10.4324/9781315652221/cities-21st-century-oriol-nel-lo-renata-mele>
22. Eugenie L. Birch et al (2011), Global Urbanization: The City in the 21st Century, University of Pennsylvania Press; Illustrated edition, ISBN-10: 081224284X

Webliography:

1. https://www.researchgate.net/publication/279310884_URBANIZATION_PROCESS_TREND_PATTERN_AND_ITS_CONSEQUENCES_IN_INDIA

2. <https://www.local2030.org/library/296/A-short-guide-to-Human-Settlements-Indicators-Goal-11.pdf>
3. <https://www.local2030.org/library/232/ICLEI-Briefing-Sheets-02-Cities-and-the-Sustainable-Development-Goals.pdf>
4. <https://www.local2030.org/library/234/ICLEI-SDGs-Briefing-Sheets-04-The-importance-of-all-Sustainable-Development-Goals-SDGs-for-cities-and-communities.pdf>
5. http://igis.cstep.in/Upload_files/NULM%20as%20a%20lever.pdf
6. <https://darpg.gov.in/sites/default/files/Swachh%20Bharat%20Mission%20%28Urban%29.pdf>
7. <https://www.epw.in/engage/article/swachh-bharat-hiding-caste-discrimination>
8. <https://www.epw.in/journal/2020/48/commentary/swachh-bharat-mission-and-vulnerable-populations.html>
9. http://aigppa.mp.gov.in/uploads/project/Study_of_leading_IT_Parks_in_India.pdf
10. <https://www.insightsonindia.com/wp-content/uploads/2013/09/urban-environmental-challenges-yojana-june-2013.pdf>

Thank You.

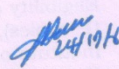
UNIVERSITY OF MUMBAI

No. UG/105 of 2016-17

CIRCULAR:-

A reference is invited to the Syllabi relating to the B.Com. degree programme vide this office Circular No. UG/144 of 2011 dated 14th June, 2011 the Principals of affiliated Colleges in Commerce are hereby informed that the approved by the Academic Council at its meeting held on 24th June, 2016 vide item No. 4.76 and that in accordance therewith, the revised syllabus as per Choice Based Credit System for B.Com. Program – Course Structure (Sem. I to VI), which is available on the University's web site (www.mu.ac.in) and that the same has been brought into force with effect from the academic year 2016-17.

MUMBAI – 400 032
October, 2016


(Dr.M.A. Khan)
REGISTRAR

To,

The Principals of affiliated Colleges in Commerce and the Heads of
recognized Institutions concerned.

A.C/4.76 /24/06/2016

No. UG/105-A of 2016-17 MUMBAI-400 032 25 October, 2016

Copy forwarded with compliments for information to:-

- 1) The Dean, Faculty of Commerce,
- 2) The Director, Board of College and University Development,
- 3) The Controller of Examinations,
- 4) The Professor-cum- Director, Institute of Distance and
Open Learning (IDOL),
- 5) The Co-Ordinator, University Computerization Centre.


(Dr.M.A. Khan)
REGISTRAR

PTO..

University of Mumbai



Bachelor of Commerce (B.Com) Programme Three Year Integrated Programme- Six Semesters *Course Structure*

Under Choice Based Credit System

**To be implemented from Academic Year- 2016-2017
Progressively**

Faculty of Commerce

B.Com Programme

Under Choice Based Credit, Grading and Semester System

Course Structure

F.Y.B.Com

(To be implemented from Academic Year- 2016-2017)

No. of Courses	Semester I	Credits	No. of Courses	Semester II	Credits
1	Elective Courses (EC)		1	Elective Courses (EC)	
1A	Discipline Specific Elective(DSE) Courses		1A	Discipline Specific Elective(DSE) Courses	
1	Accountancy and Financial Management - I	03	1	Accountancy and Financial Management - II	03
1B	Discipline Related Elective(DRE) Courses		1B	Discipline Related Elective(DRE) Courses	
2	Commerce - I	03	2	Commerce - II	03
3	Business Economics - I	03	3	Business Economics - II	03
2	Ability Enhancement Courses (AEC)		2	Ability Enhancement Courses (AEC)	
2A	Ability Enhancement Compulsory Courses (AECC)		2A	Ability Enhancement Compulsory Courses (AECC)	
4	Business Communication - I	03	4	Business Communication II	03
5	Environmental Studies I	03	5	Environmental Studies II	03
2B	*Skill Enhancement Courses (SEC)		2B	**Skill Enhancement Courses (SEC)	
6	Any one course from the following list of the courses	02	6	Any one course from the following list of the courses	02
3	Core Courses (CC)		3	Core Courses (CC)	
7	Mathematical and Statistical Techniques - I	03	7	Mathematical and Statistical Techniques - II	03
Total Credits		20	Total Credits		20

*List of Skill Enhancement Courses (SEC) for Semester I (Any One)		**List of Skill Enhancement Courses (SEC) for Semester II (Any One)	
1	Foundation Course - I	1	Foundation Course - II
2	Foundation Course in NSS - I	2	Foundation Course in NSS - II
3	Foundation Course in NCC - I	3	Foundation Course in NCC - II
4	Foundation Course in Physical Education - I	4	Foundation Course in Physical Education - II
Note: Course selected in Semester I will continue in Semester II			

S.Y.B.Com

(To be implemented from Academic Year- 2017-2018)

No. of Courses	Semester III	Credits	No. of Courses	Semester IV	Credits
1	Elective Courses (EC)		1	Elective Courses (EC)	
1A	Discipline Specific Elective(DSE) Courses		1A	Discipline Specific Elective(DSE) Courses	
1	Accountancy and Financial Management III	03	1	Accountancy and Financial Management IV	03
2	Financial Accounting and Auditing V - Introduction to Management Accounting	03	2	Financial Accounting and Auditing VI - Auditing	03
1B	Discipline Related Elective(DRE) Courses		1B	Discipline Related Elective(DRE) Courses	
3	Commerce III	03	3	Commerce IV	03
4	Business Economics III	03	4	Business Economics IV	03
2	Ability Enhancement Courses (AEC)		2	Ability Enhancement Courses (AEC)	
2A	*Skill Enhancement Courses (SEC) Group A		2A	**Skill Enhancement Courses (SEC) Group A	
5	*Any one course from the following list of the courses	03	5	*Any one course from the following list of the courses	03
2B	*Skill Enhancement Courses (SEC) Group B		2B	**Skill Enhancement Courses (SEC) Group B	
6	Any one course from the following list of the courses	02	6	Any one course from the following list of the courses	02
3	Core Courses (CC)		3	Core Courses (CC)	
7	Business Law I	03	7	Business Law II	03
Total Credits		20	Total Credits		20

*List of Skill Enhancement Courses (SEC) Group A for Semester III (Any One)		*List of Skill Enhancement Courses (SEC) Group A for Semester IV (Any One)	
1	Advertising I	1	Advertising II
2	Field Sales Management I	2	Field Sales Management II
3	Public Relations I	3	Public Relations II
4	Mass Communication I	4	Mass Communication II
5	Travel & Tourism Management Paper I	5	Travel & Tourism Management II
6	Journalism I	6	Journalism II
7	Company Secretarial Practice I	7	Company Secretarial Practice II
8	Rural Development I	8	Rural Development II
9	Co-operation I	9	Co-operation II
10	Mercantile Shipping I	10	Mercantile Shipping II
11	Indian Economic Problem I	11	Indian Economic Problem II
12	Computer Programming I	12	Computer Programming II
13	Logistic and Supply Chain Management I	13	Logistic and Supply Chain Management II
14	Direct & Indirect Taxation I	14	Direct & Indirect Taxation II
Note: Course selected in Semester III will continue in Semester IV			

*List of Skill Enhancement Courses (SEC) Group B for Semester III (Any One)		** List of Skill Enhancement Courses (SEC) Group B for Semester IV (Any One)	
1	Foundation Course - III	1	Foundation Course - IV
2	Foundation Course in NSS - III	2	Foundation Course in NSS - IV
3	Foundation Course in NCC - III	3	Foundation Course in NCC - IV
4	Foundation Course in Physical Education - III	4	Foundation Course in Physical Education - IV
Note: Course selected in Semester III will continue in Semester IV			

T.Y.B.Com

(To be implemented from Academic Year- 2018-2019)

No. of Courses	Semester V	Credits	No. of Courses	Semester VI	Credits
1	Elective Courses (EC)		1	Elective Courses (EC)	
1A	Discipline Specific Elective(DSE) Courses		1A	Discipline Specific Elective(DSE) Courses	
1 & 2	*Any one group of courses from the following list of the Groups (A/B/C/D/E/F)	04+04	1 & 2	*Any one group of courses from the following list of the Groups (A/B/C/D/E/F)	04+04
1B	Discipline Related Elective(DRE) Courses		1B	Discipline Related Elective(DRE) Courses	
3	Commerce V	03	3	Commerce VI	03
4	**Any one course from the following list of the courses	03	4	**Any one course from the following list of the courses	03
5	Business Economics V	03	5	Business Economics VI	03
2	*Project Work		2	*Project Work	
6	Project Work I	03	6	Project Work II	03
Total Credits		20	Total Credits		20

Note: Project work is considered as a special course involving application of knowledge in solving/analyzing/exploring a real life situation/ difficult problem. Project work would be of 03 credits. A project work may be undertaken in any area of discipline specific courses/ discipline related elective courses

<i>*List of groups of Discipline Specific Elective(DSE) Courses for Semester V (Any One Group)</i>		<i>*List of groups of Discipline Specific Elective(DSE) Courses for Semester VI (Any One Group)</i>	
<i>Group A: Advanced Accountancy</i>			
1	Financial Accounting and Auditing VII - Financial Accounting	1	Financial Accounting and Auditing IX - Financial Accounting
2	Financial Accounting and Auditing VIII - Cost Accounting	2	Financial Accounting and Auditing X - Cost Accounting
<i>Group B:Business Management</i>			
1	Business Studies Paper I	1	Business Studies Paper III
2	Business Studies Paper II	2	Business Studies Paper IV
<i>Group C: Banking and Finance</i>			
1	Banking and Finance Paper I	1	Banking and Finance Paper III
2	Banking and Finance Paper II	2	Banking and Finance Paper IV
<i>Group D: Commerce</i>			
1	Commerce Paper I	1	Commerce Paper III
2	Commerce Paper II	2	Commerce Paper IV
<i>Group E: Quantitative Techniques</i>			
1	Quantitative Techniques Paper I	1	Quantitative Techniques Paper III
2	Quantitative Techniques Paper II	2	Quantitative Techniques Paper IV
<i>Group F: Economics</i>			
1	Economics Paper I	1	Economics Paper III
2	Economics Paper II	2	Economics Paper IV
<i>Note: Group selected in Semester V will continue in Semester VI</i>			

**List of Discipline Related Elective(DRE) Courses for Semester V (Any One)		**List of Discipline Related Elective(DRE) Courses for Semester VI (Any One)	
1	Trade Unionism and Industrial Relations Paper I	1	Trade Unionism and Industrial Relations. Paper II
2	Computer system & Applications Paper I	2	Computer system & Applications Paper II
3	Export Marketing Paper I	3	Export Marketing Paper II
4	Marketing Research Paper I	4	Marketing Research Paper II
5	Investment Analysis Portfolio Paper I	5	Investment Analysis Portfolio Paper II
6	Transport Management Paper I	6	Transport Management Paper II
7	Entrepreneurship& M.S.S.I. Paper I	7	Entrepreneurship& M.S.S.I. Paper II
8	International Marketing Paper I	8	International Marketing Paper II
9	Merchant Banking Paper I	9	Merchant Banking Paper II
10	Direct & Indirect Taxation Paper I	10	Direct & Indirect Taxation Paper II
11	Labour Welfare & Practice Paper I	11	Labour Welfare & Practice Paper II
12	Purchasing & Store keeping Paper I	12	Purchasing & Store keeping Paper II
13	Inventory Management & Cost Reduction Paper I	13	Inventory Management & Cost Reduction Paper II
14	Insurance Paper I	14	Insurance Paper II
15	Banking Law & Practice Paper I	15	Banking Law & Practice Paper II
16	Regional Planning Paper I	16	Regional Planning Paper II
17	Rural Marketing Paper I	17	Rural Marketing Paper II
18	Elements of Operational Research Paper I	18	Elements of Operational Research Paper II
19	Psychology of Human Behaviour at work Paper I	19	Psychology of Human Behaviour at work Paper II
Note: Course selected in Semester V will continue in Semester VI			

University of Mumbai



Revised Syllabus and Question Paper Pattern of Courses of B.Com. Programme First Year *Semester I and II*

**Under Choice Based Credit, Grading
and Semester System**

(To be implemented from Academic Year- 2016-2017)

Faculty of Commerce

B.Com. Programme

Under Choice Based Credit, Grading and Semester System

Course Structure

F.Y.B.Com.

(To be implemented from Academic Year- 2016-2017)

No. of Courses	Semester I	Credits	No. of Courses	Semester II	Credits
1	Elective Courses (EC)		1	Elective Courses (EC)	
1A	Discipline Specific Elective(DSE)Courses		1A	Discipline Specific Elective(DSE)Courses	
1	Accountancy and Financial Management I	03	1	Accountancy and Financial Management II	03
1B	Discipline Related Elective(DRE)Courses		1B	Discipline Related Elective(DRE)Courses	
2	Commerce I	03	2	Commerce II	03
3	Business Economics I	03	3	Business Economics II	03
2	Ability Enhancement Courses (AEC)		2	Ability Enhancement Courses (AEC)	
2A	Ability Enhancement Compulsory Courses (AECC)		2A	Ability Enhancement Compulsory Courses (AECC)	
4	Business Communication I	03	4	Business Communication II	03
5	Environmental Studies I	03	5	Environmental Studies II	03
2B	*Skill Enhancement Courses (SEC)		2B	**Skill Enhancement Courses (SEC)	
6	Any one course from the following list of the courses	02	6	Any one course from the following list of the courses	02
3	Core Courses (CC)		3	Core Courses (CC)	
7	Mathematical and Statistical Techniques I	03	7	Mathematical and Statistical Techniques II	03
Total Credits		20	Total Credits		20

*List of Skill Enhancement Courses (SEC) for Semester I (Any One)		**List of Skill Enhancement Courses (SEC) for Semester II (Any One)	
1	Foundation Course - I	1	Foundation Course - II
2	Foundation Course in NSS - I	2	Foundation Course in NSS - II
3	Foundation Course in NCC - I	3	Foundation Course in NCC - II
4	Foundation Course in Physical Education - I	4	Foundation Course in Physical Education - II
Note: Course selected in Semester I will continue in Semester II			

B.Com. Programme
Under Choice Based Credit, Grading and Semester System
Course Structure

(To be implemented from Academic Year- 2016-2017)

Semester I

No. of Courses	Semester I	Credits
1	<i>Elective Courses (EC)</i>	
1A	<i>Discipline Specific Elective(DSE)Courses</i>	
1	Accountancy and Financial Management I	03
1B	<i>Discipline Related Elective(DRE)Courses</i>	
2	Commerce I	03
3	Business Economics I	03
2	<i>Ability Enhancement Courses (AEC)</i>	
2A	<i>Ability Enhancement Compulsory Courses (AECC)</i>	
4	Business Communication I	03
5	Environmental Studies I	03
2B	<i>*Skill Enhancement Courses (SEC)</i>	
6	Any one course from the following list of the courses	02
3	<i>Core Courses (CC)</i>	
7	Mathematical and Statistical Techniques I	03
Total Credits		20

<i>*List of Skill Enhancement Courses (SEC) for Semester I (Any One)</i>	
1	Foundation Course - I
2	Foundation Course in NSS - I
3	Foundation Course in NCC - I
4	Foundation Course in Physical Education - I

***Revised Syllabus of Courses of B.Com. Programme at Semester I
with Effect from the Academic Year 2016-2017***

Elective Courses (EC)

Discipline Specific Elective(DSE) Courses

1.Accountancy and Financial Management I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Accounting standards issued by ICAI and Inventory valuation	15
2	Final Accounts	15
3	Departmental Accounts	15
4	Accounting for Hire Purchase	15
Total		60

Sr. No.	Modules / Units
1	Accounting standards issued by ICAI and Inventory valuation
	<ul style="list-style-type: none"> Accounting standards: Concepts, benefits, procedures for issue of accounting standards Various AS : AS – 1: Disclosure of Accounting Policies Purpose, Areas of Policies, Disclosure of Policies, Disclosure of Change in Policies, Illustrations AS–2: Valuation of Inventories (Stock) Meaning, Definition, Applicability, Measurement of Inventory, Disclosure in Final Account, Explanation with Illustrations. AS – 9: Revenue Recognition Meaning and Scope, Transaction excluded, Sale of Goods, Rendering of Services, Effects of Uncertainties, Disclosure, Illustrations. Inventory Valuation Meaning of inventories Cost for inventory valuation Inventory systems : Periodic Inventory system and Perpetual Inventory System Valuation: Meaning and importance Methods of Stock Valuation as per AS – 2 : FIFO and Weighted Average Method Computation of valuation of inventory as on balance sheet date: If inventory is taken on a date after the balance sheet or before the balance sheet
2	Final Accounts
	Expenditure: Capital, Revenue Receipts: Capital, Revenue Adjustment and Closing Entries Final accounts of Manufacturing concerns (Proprietary Firm)
3	Departmental Accounts
	Meaning Basis of Allocation of Expenses and Incomes/Receipts Inter Departmental Transfer : at Cost Price and Invoice Price Stock Reserve Departmental Trading and Profit & Loss Account and Balance Sheet
4	Accounting for Hire Purchase
	Meaning Calculation of interest Accounting for hire purchase transactions by asset purchase method based on full cash price Journal entries, ledger accounts and disclosure in balance sheet for hirer and vendor (excluding default, repossession and calculation of cash price)

***Revised Syllabus of Courses of B.Com. Programme at Semester I
with Effect from the Academic Year 2016-2017***

***Elective Courses (EC)-
Discipline Related Elective (DRE) Courses***

2.Commerce I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Business	12
2	Business Environment	11
3	Project Planning	12
4	Entrepreneurship	10
Total		45

Sr. No.	Modules / Units
1	Business
	<p>Introduction: Concept, Functions, Scope and Significance of business. Traditional and Modern Concept of business.</p> <p>Objectives of Business: Steps in setting business objectives, classification of business objectives, Reconciliation of Economic and Social Objectives.</p> <p>New Trends in Business: Impact of Liberalization, Privatization and Globalization, Strategy alternatives in the changing scenario, Restructuring and turnaround strategies</p>
2	Business Environment
	<p>Introduction: Concept and Importance of business environment, Inter-relationship between Business and Environment</p> <p>Constituents of Business Environment: Internal and External Environment, Educational Environment and its impact, International Environment – Current Trends in the World, International Trading Environment – WTO and Trading Blocs and their impact on Indian Business.</p>
3	Project Planning
	<p>Introduction: Business Planning Process; Concept and importance of Project Planning; Project Report; feasibility Study types and its importance</p> <p>Business Unit Promotion: Concept and Stages of Business Unit Promotion, Location – Factors determining location, and Role of Government in Promotion.</p> <p>Statutory Requirements in Promoting Business Unit: Licensing and Registration procedure, Filing returns and other documents, Other important legal provisions</p>
4	Entrepreneurship
	<p>Introduction: Concept and importance of entrepreneurship, factors Contributing to Growth of Entrepreneurship, Entrepreneur and Manager, Entrepreneur and Intrapreneur</p> <p>The Entrepreneurs: Types of Entrepreneurs, Competencies of an Entrepreneur, Entrepreneurship Training and Development centers in India. Incentives to Entrepreneurs in India.</p> <p>Women Entrepreneurs: Problems and Promotion.</p>

***Revised Syllabus of Courses of B.Com. Programme at Semester I
with Effect from the Academic Year 2016-2017***

***Elective Courses (EC)-
Discipline Related Elective (DRE) Courses***

3.Business Economics I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction	10
2	Demand Analysis	15
3	Supply and Production Decisions	10
4	Cost of Production	10
Total		45

Sr. No.	Modules / Units
1	Introduction
	<p>Scope and Importance of Business Economics - basic tools- Opportunity Cost principle- Incremental and Marginal Concepts. Basic economic relations - functional relations: equations- Total, Average and Marginal relations- use of Marginal analysis in decision making,</p> <p>The basics of market demand, market supply and equilibrium price- shifts in the demand and supply curves and equilibrium</p>
2	Demand Analysis
	<p>Demand Function - nature of demand curve under different markets Meaning, significance, types and measurement of elasticity of demand (Price, income cross and promotional)- relationship between elasticity of demand and revenue concepts</p> <p>Demand estimation and forecasting: Meaning and significance - methods of demand estimation : survey and statistical methods (numerical illustrations on trend analysis and simple linear regression)</p>
3	Supply and Production Decisions
	<p>Production function: short run analysis with Law of Variable Proportions- Production function with two variable inputs- isoquants, ridge lines and least cost combination of inputs- Long run production function and Laws of Returns to Scale - expansion path - Economies and diseconomies of Scale and economies of scope</p>
4	Cost of Production
	<p>Cost concepts: Accounting cost and economic cost, implicit and explicit cost, social and private cost, historical cost and replacement cost, sunk cost and incremental cost -fixed and variable cost - total, average and marginal cost - Cost Output Relationship in the Short Run and Long Run (hypothetical numerical problems to be discussed)</p> <p>Extensions of cost analysis: cost reduction through experience - LAC and Learning curve - Break even analysis (with business applications)</p>

***Revised Syllabus of Courses of B.Com. Programme at Semester I
with Effect from the Academic Year 2016-2017***

Ability Enhancement Courses (AEC)

4. Business Communication I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Theory of Communication	10
2	Obstacles to Communication in Business World	10
3	Business Correspondence	12
4	Language and Writing Skills	13
Total		45

Note:

*One tutorial per batch per week in addition to number of lectures stated above
(Batch size as per the University norms)*

Sr. No.	Modules / Units
1	Theory of Communication Concept of Communication: Meaning, Definition, Process, Need, Feedback Emergence of Communication as a key concept in the Corporate and Global world Impact of technological advancements on Communication Channels and Objectives of Communication: Channels- Formal and Informal- Vertical, Horizontal, Diagonal, Grapevine Objectives of Communication: Information, Advice, Order and Instruction, Persuasion, Motivation, Education, Warning, and Boosting the Morale of Employees (A brief introduction to these objectives to be given) Methods and Modes of Communication: Methods: Verbal and Nonverbal, Characteristics of Verbal Communication Characteristics of Non-verbal Communication, Business Etiquette Modes: Telephone and SMS Communication 3 (General introduction to Telegram to be given) Facsimile Communication [Fax] Computers and E- communication Video and Satellite Conferencing
2	Obstacles to Communication in Business World Problems in Communication /Barriers to Communication: Physical/ Semantic/Language / Socio-Cultural / Psychological / Barriers, Ways to Overcome these Barriers Listening: Importance of Listening Skills, Cultivating good Listening Skills – 4 Introduction to Business Ethics: Concept and Interpretation, Importance of Business Ethics, Personal Integrity at the workplace, Business Ethics and media, Computer Ethics, Corporate Social Responsibility Teachers can adopt a case study approach and address issues such as the following so as to orient and sensitize the student community to actual business practices: Surrogate Advertising, Patents and Intellectual Property Rights, Dumping of Medical/E-waste, Human Rights Violations and Discrimination on the basis of gender, race, caste, religion, appearance and sexual orientation at the workplace Piracy, Insurance, Child Labour
3	Business Correspondence Theory of Business Letter Writing: Parts, Structure, Layouts—Full Block, Modified Block, Semi - Block Principles of Effective Letter Writing, Principles of effective Email Writing, Personnel Correspondence: Statement of Purpose, Job Application Letter and Resume, Letter of Acceptance of Job Offer, Letter of Resignation [Letter of Appointment, Promotion and Termination, Letter of Recommendation (to be taught but not to be tested in the examination)]

Sr. No.	Modules / Units
4	Language and Writing Skills
	<p>Commercial Terms used in Business Communication</p> <p>Paragraph Writing: Developing an idea, using appropriate linking devices, etc Cohesion and Coherence, self-editing, etc [Interpretation of technical data, Composition on a given situation, a short informal report etc.]</p> <p>Activities</p> <ul style="list-style-type: none"> ▪ Listening Comprehension ▪ Remedial Teaching ▪ Speaking Skills: Presenting a News Item, Dialogue and Speeches ▪ Paragraph Writing: Preparation of the first draft, Revision and Self – Editing, Rules of spelling. ▪ Reading Comprehension: Analysis of texts from the fields of Commerce and Management

***Revised Syllabus of Courses of B.Com. Programme at Semester I
with Effect from the Academic Year 2016-2017***

Ability Enhancement Courses (AEC)

5.Environmental Studies I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Environment and Ecosystem	13
2	Natural Resources and Sustainable Development	13
3	Populations and Emerging Issues of Development	13
4	Urbanisation and Environment	13
5	Reading of Thematic Maps and Map Filling	08
Total		60

Sr. No.	Modules / Units
1	Environment and Ecosystem
	Environment: Meaning, definition, scope and its components; concept of an ecosystem : definition, Characteristics, components and types, functioning and structure; Food Chain and Food Web- Ecological Pyramids - Man and environment relationship; Importance and scope of Environmental Studies.
2	Natural Resources and Sustainable Development
	Meaning and definitions ; Classification and types of resources, factors influencing resource; Resource conservation- meaning and methods- I and non-conventional resources, problems associated with and management of water, forest and energy resources- resource utilization and sustainable development
3	Populations and Emerging Issues of Development
	Population explosion in the world and in India and arising concerns- Demographic Transition Theory - pattern of population growth in the world and in India and associated problems - Measures taken to control population growth in India; Human population and environment- Environment and Human Health – Human Development Index – The World Happiness Index
4	Urbanisation and Environment
	Concept of Urbanisation– Problems of migration and urban environment- changing land use, crowding and stress on urban resources, degradation of air and water, loss of soil cover impact on biodiversity, Urban heat islands – Emerging Smart Cities and safe cities in India - Sustainable Cities
5	Reading of Thematic Maps and Map Filling
	Reading of Thematic Maps(4 Lectures) Located bars, Circles, Pie charts, Isopleths, Choropleth and Flow map, Pictograms - Only reading and interpretation. Map Filling: (4 Lectures) Map filling of World (Environmentally significant features) using point, line and polygon segment. Concept and Calculation of Ecological Footprint

***Revised Syllabus of Courses of B.Com. Programme at Semester I
with Effect from the Academic Year 2016-2017***

Skill Enhancement Courses (SEC)

6. Foundation Course - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Overview of Indian Society	05
2	Concept of Disparity- 1	10
3	Concept of Disparity-2	10
4	The Indian Constitution	10
5	Significant Aspects of Political Processes	10
Total		45

Sr. No.	Modules / Units
1	Overview of Indian Society
	Understand the multi-cultural diversity of Indian society through its demographic composition: population distribution according to religion, caste, and gender; Appreciate the concept of linguistic diversity in relation to the Indian situation; Understand regional variations according to rural, urban and tribal characteristics; Understanding the concept of diversity as difference
2	Concept of Disparity- 1
	Understand the concept of disparity as arising out of stratification and inequality; Explore the disparities arising out of gender with special reference to violence against women, female foeticide (declining sex ratio), and portrayal of women in media; Appreciate the inequalities faced by people with disabilities and understand the issues of people with physical and mental disabilities
3	Concept of Disparity-2
	Examine inequalities manifested due to the caste system and inter-group conflicts arising thereof; Understand inter-group conflicts arising out of communalism; Examine the causes and effects of conflicts arising out of regionalism and linguistic differences
4	The Indian Constitution
	Philosophy of the Constitution as set out in the Preamble; The structure of the Constitution-the Preamble, Main Body and Schedules; Fundamental Duties of the Indian Citizen; tolerance, peace and communal harmony as crucial values in strengthening the social fabric of Indian society; Basic features of the Constitution
5	Significant Aspects of Political Processes
	The party system in Indian politics; Local self-government in urban and rural areas; the 73rd and 74th Amendments and their implications for inclusive politics; Role and significance of women in politics

Topics for Project Guidance: Growing Social Problems in India:

- Substance abuse- impact on youth & challenges for the future
- HIV/AIDS- awareness, prevention, treatment and services
- Problems of the elderly- causes, implications and response
- Issue of child labour- magnitude, causes, effects and response
- Child abuse- effects and ways to prevent
- Trafficking of women- causes, effects and response

Note:

Out of the 45 lectures allotted for 5 units for Semester I, about 15 lectures may be allotted for project guidance

***Revised Syllabus of Courses of B.Com. Programme at Semester I
with Effect from the Academic Year 2016-2017***

Skill Enhancement Courses (SEC)

6.Foundation Course in NSS - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to NSS	10
2	Concept of Society and Social Issues in India	15
3	Indian Constitution and Social Justice	10
4	Human Personality and National Integration	10
Total		45

Sr. No.	Modules / Units
1	Introduction to NSS Introduction to National Service Scheme(NSS) Orientation and structure of National Service Scheme(NSS) National Service Scheme(NSS)- its objectives The historical perspective of National Service Scheme(NSS) National Service Scheme(NSS)- Symbol and its meaning National Service Scheme(NSS)- its hierarchy from national to college level National Service Scheme(NSS) Regular activities Distribution of working hours- Association between issues and programs- community project- urban rural activities, Association- modes of activity evaluation
2	Concept of Society and Social Issues in India History and philosophy of social sciences in India Concept of society- Development of Indian society - Features of Indian Society- Division of labour and cast system in India Basic social issues in India Degeneration of value system, Family system, Gender issues, Regional imbalance
3	Indian Constitution and Social Justice Indian Constitution Features of Indian Constitution - Provisions related to social integrity and development Social Justice Social Justice- the concept and its features Inclusive growth- the concept and its features
4	Human Personality and National Integration Dimensions of human personality Social Dimension of Human personality- Understanding of the society Physical Dimension of Human personality- Physical Exercise, Yoga, etc. National integration & Communal Harmony National Integration- its meaning, importance and practice Communal Harmony- its meaning, importance and practice

***Revised Syllabus of Courses of B.Com.Programme at Semester I
with Effect from the Academic Year 2016-2017***

Skill Enhancement Courses (SEC)

6.Foundation Course in NCC - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to NCC, National Integration & Awareness	10
2	Drill: Foot Drill	10
3	Adventure Training, Environment Awareness and Conservation	10
4	Personality Development and Leadership	10
5	Specialized Subject: Army/ Navy/ Air	05
Total		45

Sr. No.	Modules / Units
1	Introduction to NCC, National Integration & Awareness
	<p>Desired outcome: The students will display sense of patriotism, secular values and shall be transformed into motivated youth who will contribute towards nation building through national unity and social cohesion.</p> <ul style="list-style-type: none"> • Genesis, Aims, Objectives of NCC & NCC Song • Organisation & Training • Incentives & Benefits • Religions, Culture, Traditions and Customs of India • National Integration: Importance and Necessity • Freedom Struggle
2	Drill: Foot Drill
	<p>Desired outcome: The students will demonstrate the sense of discipline, improve bearing, smartness, turnout, develop the quality of immediate and implicit obedience of orders, with good reflexes.</p> <ul style="list-style-type: none"> • General and Words of Command • Attention, Stand at Ease and Stand Easy, Turning and Inclining at the Halt • Sizing, Forming Up in Three Ranks and Numbering, Open and Close Order March and Dressing • Saluting at the Halt, Getting On Parade, Dismissing and Falling Out • Marching, Length of Pace and Time of Marching in Quick Time and Halt, Slow March and Halt • Turning on the March and Wheeling. • Saluting on the March. • Formation of squad and Squad Drill.
3	Adventure Training, Environment Awareness and Conservation
	<p>Adventure Training</p> <p>Desired outcome: The students will overcome fear & inculcate within them the sense of adventure , sportsmanship , esprit-d-corp and develop confidence , courage , determination, diligence and quest for excellence.</p> <ul style="list-style-type: none"> • Any Two such as – Obstacle course, Slithering, Trekking, Cycling, Rock Climbing, Para Sailing, Sailing, Scuba Diving etc <p>Environment Awareness and Conservation</p> <p>Desired outcome: The student will be aware of the conservation of natural resources and protection of environment.</p> <ul style="list-style-type: none"> • Natural Resources – Conservation and Management • Water Conservation and Rainwater Harvesting

Sr. No.	Modules / Units
4	Personality Development and Leadership Desired outcome: The student will develop an all-round personality with adequate leadership traits to deal / contribute effectively in life. <ul style="list-style-type: none"> • Introduction to Personality Development • Factors Influencing /Shaping Personality: Physical, Social, Physiological, Philosophical and Psychological • Self Awareness Know yourself/ Insight • Change Your Mind Set • Communication Skills: Group Discussion / Lecturettes (Public Speaking) • Leadership Traits • Types of Leadership
5	Specialized Subject: Army Or Navy Or Air <u>Army</u> Desired outcome: The training shall instill patriotism, commitment and passion to serve the nation motivating the youth to join the defence forces. It will also acquaint, expose & provide basic knowledge about armed, naval and air-force subjects A. Armed Force <ul style="list-style-type: none"> • Basic organisation of Armed Forces • Organisation of Army • Badges and Ranks B. Introduction to Infantry and weapons and equipments <ul style="list-style-type: none"> • Characteristics of 7.62mm SLR Rifle, Ammunition, Fire power, Stripping, Assembling and Cleaning C. Military history <ul style="list-style-type: none"> • Biographies of renowned Generals (Carriapa / Sam Manekshaw) • Indian Army War Heroes- PVCs D. Communication <ul style="list-style-type: none"> • Types of Communications • Characteristics of Wireless Technologies (Mobile, Wi-Fi etc.) <p style="text-align: center;">OR</p> <u>Navy</u> A. Naval orientation and service subjects <ul style="list-style-type: none"> • History of the Indian Navy-Pre and Post Independence, Gallantry award winners • Organization of Navy- NHQ, Commands, Fleets, Ships and shore establishments • Types of Warships and their role • Organization of Army and Air Force- Operational and Training commands • Ranks of Officers and Sailors, Equivalent Ranks in the Three Services B. Ship and Boat Modelling <ul style="list-style-type: none"> • Principles of Ship Modelling • Maintenance and Care of tools

Sr. No.	Modules / Units
	<p>C. Search and Rescue</p> <ul style="list-style-type: none"> • SAR Organization in the Indian ocean <p>D. Swimming</p> <p>Floating for three minutes and Free style swimming for 50 meters</p> <p style="text-align: center;">OR</p> <p><u>AIR</u></p> <p>A. General Service Knowledge</p> <ul style="list-style-type: none"> • Development of Aviation • History of IAF <p>B. Principles of Flight</p> <ul style="list-style-type: none"> • Introduction • Laws of Motion • Glossary of Terms. <p>C. Airmanship</p> <ul style="list-style-type: none"> • Introduction • Airfield Layout • Rules of the Air • Circuit Procedure • ATC/RT Procedures • Aviation Medicine <p>D. Aero- Engines</p> <ul style="list-style-type: none"> • Introduction to Aero-engines

***Revised Syllabus of Courses of B.Com. Programme at Semester I
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Skill Enhancement Courses (SEC)

6.Foundation Course in Physical Education-I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Basic Relevant concepts in Physical Education	10
2	Components of Physical Fitness	15
3	Testing Physical Fitness	10
4	Effect of Exercise on various Body System	10
Total		45

Sr. No.	Modules / Units
1	Introduction to Basic Relevant concepts in Physical Education
	<ul style="list-style-type: none"> • Dimensions and determinants of Health, Fitness & Wellness • Concept of Physical Education and its importance • Concept of Physical Fitness and its types • Concept of Physical Activity, exercise and its types & benefits
2	Components of Physical Fitness
	<ul style="list-style-type: none"> • Concept of components of Physical Fitness • Concept and components of HRPF • Concept and components of SRPF • Importance of Physical Education in developing physical fitness components.
3	Testing Physical Fitness
	<ul style="list-style-type: none"> • Tests for measuring Cardiovascular Endurance • Tests for measuring Muscular Strength& Endurance • Tests for measuring Flexibility • Tests for measuring Body Composition
4	Effect of Exercise on various Body System
	<ul style="list-style-type: none"> • Effect of exercises on Musculoskeletal system • Effect of exercises on Circulatory System • Effect of exercises on Respiratory System • Effect of exercises on Glandular System

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Core Courses (CC)

7.Mathematical and Statistical Techniques I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Shares and Mutual Funds	15
2	Permutation, Combination and Linear Programming Problems	15
3	Summarization Measures	15
4	Elementary Probability Theory	15
5	Decision Theory	15
Total		75

Note:

*One tutorial per batch per week in addition to number of lectures stated above
(Batch size as per the University norms)*

Sr. No.	Modules / Units
1	Shares and Mutual Funds
	<ul style="list-style-type: none"> • Shares: Concept of share, face value, market value, dividend, equity shares, preferential shares, bonus shares. Simple examples. • Mutual Funds: Simple problems on calculation of Net income after considering entry load, dividend, change in Net Asset Value (N.A.V.) and exit load. Averaging of price under the Systematic Investment Plan (S.I.P.)
2	Permutation, Combination and Linear Programming Problems
	<ul style="list-style-type: none"> • Permutation and Combination: Factorial Notation, Fundamental principle of counting, Permutation as arrangement, Simple examples, combination as selection, Simple examples, Relation between nC_r and nP_r Examples on commercial application of permutation and combination • Linear Programming Problem: Sketching of graphs of (i) linear equation $Ax + By + C = 0$ (ii) linear inequalities. Mathematical Formulation of Linear Programming Problems upto 3 variables. Solution of Linear Programming Problems using graphical method up to two variables.
3	Summarization Measures
	<ul style="list-style-type: none"> • Measures of Central Tendencies: Definition of Average, Types of Averages: Arithmetic Mean, Median, and Mode for grouped as well as ungrouped data. Quartiles, Deciles and Percentiles. Using Ogive locate median and Quartiles. Using Histogram locate mode. Combined and Weighted mean. • Measures of Dispersions: Concept and idea of dispersion. Various measures Range, Quartile Deviation, Mean Deviation, Standard Deviation, Variance, Combined Variance.
4	Elementary Probability Theory
	<ul style="list-style-type: none"> • Probability Theory: Concept of random experiment/trial and possible outcomes; Sample Space and Discrete Sample Space; Events their types, Algebra of Events, Mutually Exclusive and Exhaustive Events, Complimentary events. Classical definition of Probability, Addition theorem (without proof), conditional probability. Independence of Events: $P(A \cap B) = P(A)P(B)$. Simple examples. • Random Variable: Probability distribution of a discrete random variable; Expectation and Variance of random variable, simple examples on probability distributions.
5	Decision Theory
	Decision making situation, Decision maker, Courses of Action, States of Nature, Pay-off and Pay-off matrix; Decision making under uncertainty, Maximin, Maximax, Minimax regret and Laplace criteria; simple examples to find optimum decision. Formulation of Payoff Matrix. Decision making under Risk, Expected Monetary Value (EMV); Decision Tree; Simple Examples based on EMV. Expected Opportunity Loss (EOL), simple examples based on EOL.

B.Com. Programme
Under Choice Based Credit, Grading and Semester System
Course Structure

(To be implemented from Academic Year- 2016-2017)

Semester II

No. of Courses	Semester II	Credits
1	Elective Courses (EC)	
1A	Discipline Specific Elective(DSE)Courses	
1	Accountancy and Financial Management II	03
1B	Discipline Related Elective(DRE)Courses	
2	Commerce II	03
3	Business Economics II	03
2	Ability Enhancement Courses (AEC)	
2A	Ability Enhancement Compulsory Courses (AECC)	
4	Business Communication II	03
5	Environmental Studies II	03
2B	**Skill Enhancement Courses (SEC)	
6	Any one course from the following list of the courses	02
3	Core Courses (CC)	
7	Mathematical and Statistical Techniques II	03
Total Credits		20

*List of Skill Enhancement Courses (SEC) for Semester II (Any One)	
1	Foundation Course - II
2	Foundation Course in NSS - II
3	Foundation Course in NCC - II
4	Foundation Course in Physical Education - II

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***Elective Courses (EC)-
Discipline Specific Elective(DSE) Courses***

1.Accountancy and Financial Management II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Accounting from Incomplete Records	15
2	Consignment Accounts	15
3	Branch Accounts	15
4	Fire Insurance Claim	15
Total		60

Sr. No.	Modules / Units
1	Accounting from Incomplete Records
	Introduction Problems on preparation of final accounts of Proprietary Trading Concern (conversion method)
2	Consignment Accounts
	Accounting for consignment transactions Valuation of stock Invoicing of goods at higher price(excluding overriding commission, normal/abnormal losses)
3	Branch Accounts
	Meaning/ Classification of branch Accounting for Dependent Branch not maintaining full books: Debtors method Stock and debtors method
4	Fire Insurance Claim
	Computation of Loss of Stock by Fire Ascertainment of Claim as per the Insurance Policy Exclude: Loss of Profit and Consequential Loss

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***Elective Courses (EC)-
Discipline Related Elective(DRE) Courses***

2. Commerce II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Concept of Services	12
2	Retailing	12
3	Recent Trends in Service Sector	10
4	E-Commerce	11
Total		45

Sr. No.	Modules / Units
1	Concept of Services
	<p>Introduction:Meaning, Characteristics, Scope and Classification of Services – Importance of service sector in the Indian</p> <p>Marketing Mix Services: Consumer expectations, Services Mix, - Product, Place, Price, Promotion, Process of Services delivery, Physical evidence and people</p> <p>Service Strategies:Market research and Service development cycle, Managing demand and capacity, opportunities and challenges in service sector.</p>
2	Retailing
	<p>Introduction:Concept of organized and unorganized retailing , Trends in retailing, growth of organized retailing in India, Survival strategies for unorganized Retailers</p> <p>Retail Format: Store format, Non – Store format, Store Planning, design and layout</p> <p>Retail Scenario: Retail Scenario in India and Global context – Prospects and Challenges in India.Mall Management – RetailFranchising. FDI in Retailing, Careers in Retailing</p>
3	Recent Trends in Service Sector
	<p>ITES Sector: Concept and scope of BPO, KPO, LPO and ERP.</p> <p>Banking and Insurance Sector: ATM, Debit & Credit Cards, Internet Banking – Opening of Insurance sector for private players, FDI and its impact on Banking and Insurance Sector in India</p> <p>Logistics: Net working – Importance – Challenges</p>
4	E-Commerce
	<p>Introduction: Meaning, Features, Functions andScope of E-Commerce-Importance andLimitations of E-Commerce</p> <p>Types of E-Commerce:Basic ideas and Major activities of B2C,B2B, C2C.</p> <p>Present status of E-Commerce in India:Transition to E-Commerce in India, E-Transition Challenges for Indian Corporates; on-line Marketing Research.</p>

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***Elective Courses (EC)-
Discipline Related Elective(DRE) Courses***

3. Business Economics II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Market structure: Perfect competition and Monopoly	10
2	Pricing and Output Decisions under Imperfect Competition	15
3	Pricing Practices	10
4	Evaluating Capital Projects	10
Total		45

Sr. No.	Modules / Units
1	Market structure: Perfect competition and Monopoly
	Perfect competition and Monopoly models as two extreme cases - profit maximisation and the competitive firm's supply curve - Short run and long run equilibrium of a firm and of industry - monopoly - Sources of monopoly power – short run and long- run equilibrium of a firm under Monopoly
2	Pricing and Output Decisions under Imperfect Competition
	Monopolistic competition: competitive and monopolistic elements of monopolistic competition - equilibrium of a firm under monopolistic competition, monopolistic competition verses perfect competition- excess capacity and inefficiency - debate over role of advertising (topics to be taught using case studies from real life examples) Oligopolistic markets: key attributes of oligopoly - Collusive and non collusive oligopoly market - Price rigidity - Cartels and price leadership models (with practical examples)
3	Pricing Practices
	Cost oriented pricing methods: cost – plus (full cost) pricing, marginal cost pricing, Mark up pricing, discriminating pricing, multiple – product pricing - transfer pricing (case studies on how pricing methods are used in business world)
4	Evaluating Capital Projects
	Meaning and importance of capital budgeting- steps in capital budgeting - +Techniques of Investment appraisal: Payback Period Method, Net Present Value Method, and Internal Rate of Return Method (with numerical examples)

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Ability Enhancement Courses (AEC)

4.Business Communication II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Presentation Skills	10
2	Group Communication	15
3	Business Correspondence	10
4	Language and Writing Skills	10
Total		45

Note:

*One tutorial per batch per week in addition to number of lectures stated above
(Batch size as per the University norms)*

Sr. No.	Modules / Units
1	Presentation Skills
	Presentations: (to be tested in tutorials only) 4 Principles of Effective Presentation Effective use of OHP Effective use of Transparencies How to make a Power-Point Presentation
2	Group Communication
	Interviews: Group Discussion Preparing for an Interview, Types of Interviews – Selection, Appraisal, Grievance, Exit Meetings: Need and Importance of Meetings, Conduct of Meeting and Group Dynamics Role of the Chairperson, Role of the Participants, Drafting of Notice, Agenda and Resolutions Conference: Meaning and Importance of Conference Organizing a Conference Modern Methods: Video and Tele – Conferencing Public Relations: Meaning, Functions of PR Department, External and Internal Measures of PR
3	Business Correspondence
	Trade Letters: Order, Credit and Status Enquiry, Collection (just a brief introduction to be given) Only following to be taught in detail:- Letters of Inquiry, Letters of Complaints, Claims, Adjustments Sales Letters, promotional leaflets and fliers Consumer Grievance Letters, Letters under Right to Information (RTI) Act [Teachers must provide the students with theoretical constructs wherever necessary in order to create awareness. However students should not be tested on the theory.]
4	Language and Writing Skills
	Reports: Parts, Types, Feasibility Reports, Investigative Reports Summarisation: Identification of main and supporting/sub points Presenting these in a cohesive manner

Tutorial Activities:

Presentations, Group Discussion, Mock Interviews, Mock Meetings / Conferences, Book Reviews/Summarization, Reading Comprehension: Analysis of texts from the field of Literature

[Suggested Books for Book Reviews: Books from the fields of Management, Finance, and Literature Like – Sun Tzu :The Art of War, Eliyahu M. Goldratt : The Goal , Eliyahu M. Goldratt: It's Not Luck , Spencer Johnson: Who Moved My Cheese, Stephen Lundin, Ph.D, Harry Paul, John Christen: Fish, ChetanBhagat One Night At A Call Center, ChetanBhagat My Three Mistakes , ArindamChoudhary: Count Your Chickens Before They Hatch ,Stephen Covey :Seven Habits of Successful People, George Orwell: Animal Farm, Dr. Abdul Kalam: Wings of Fire]

[N.B.: The above list is only indicative and not prescriptive.]

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Ability Enhancement Courses (AEC)

4.Environmental Studies II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Solid Waste Management for Sustainable Society	
2	Agriculture and Industrial Development	
3	Tourism and Environment	
4	Environmental Movements and Management	
5	Map Filling	
Total		60

Sr. No.	Modules / Units
1	Solid Waste Management for Sustainable Society
	Classification of solid wastes – Types and Sources of Solid Waste ; Effects of Solid Waste Pollution- Health hazards, Environmental Impacts; Solid Waste Management – solid waste management in Mumbai- Schemes and initiatives run by MCGM – role of citizens in waste management in Mumbai
2	Agriculture and Industrial Development
	Environmental Problems Associated with Agriculture: Loss of Productivity, Land Degradation ,desertification - Uneven Food Production – Hunger, Malnutrition and Food Security – Sustainable Agricultural practices Environmental Problems Associated with Industries – pollution -Global warming, Ozone Layer Depletion , Acid rain, - Sustainable Industrial practices – Green Business and Green Consumerism, Corporate Social Responsibility
3	Tourism and Environment
	Tourism: Meaning, Nature, Scope and importance –Typology of tourism-classification; Tourism potentials in India and challenges before India; New Tourism Policy of India; Consequences of tourism : Positive and Negative Impacts on Economy, Culture and environment- Ecotourism
4	Environmental Movements and Management
	Environmental movements in India: Save Narmada Movement, Chipko Movement, Appiko Movement, Save Western Ghat and Save Jaitapur; Environmental Management: Concept, need and relevance; Concept of ISO 14000 and 16000; Concept of Carbon Bank and Carbon Credit.EIA - Environment Protection Acts – Concept and components of Geospatial Technology- Applications of GST in Environmental Management.
5	Map Filling
	Map filling of Konkan and Mumbai (Environmentally significant features and GST centers) using point, line and polygon segment. Concept and Calculation of Environmental Performance Index (EPI)

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Skill Enhancement Courses (SEC)

6. Foundation Course - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Globalisation and Indian Society	07
2	Human Rights	10
3	Ecology	10
4	Understanding Stress and Conflict	10
5	Managing Stress and Conflict in Contemporary Society	08
Total		45

Sr. No	Modules /Units
1	Globalisation and Indian Society
	Understanding the concepts of liberalization, privatization and globalization;Growth of information technology and communication and its impact manifested in everyday life; Impact of globalization on industry: changes in employment and increasing migration; Changes in agrarian sector due to globalization; rise in corporate farming and increase in farmers' suicides.
2	Human Rights
	Concept of Human Rights; origin and evolution of the concept; The Universal Declaration of Human Rights;Human Rights constituents with special reference to Fundamental Rights stated in the Constitution
3	Ecology
	Importance of Environment Studies in the current developmental context; Understanding concepts of Environment, Ecology and their interconnectedness; Environment as natural capital and connection to quality of human life; Environmental Degradation- causes and impact on human life;Sustainable development- concept and components; poverty and environment
4	Understanding Stress and Conflict
	Causes of stress and conflict in individuals and society; Agents of socialization and the role played by them in developing the individual; Significance of values, ethics and prejudices in developing the individual; Stereotyping and prejudice as significant factors in causing conflicts in society. Aggression and violence as the public expression of conflict
5	Managing Stress and Conflict in Contemporary Society
	Types of conflicts and use of coping mechanisms for managing individual stress; Maslow's theory of self-actualisation;Different methods of responding to conflicts in society; Conflict-resolution and efforts towards building peace and harmony in society

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Skill Enhancement Courses (SEC)

6. Foundation Course in NSS - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Socio-economic Survey and Special Camp	10
2	Orientation of the College Unit and Communication Skills	15
3	Rapport with Community and Programme Planning	10
4	Government Organisations /Non-Government Organisations	10
Total		45

Sr. No.	Modules / Units
1	Socio-economic Survey and Special Camp
	<p>Socio economic survey Socio-economic survey- its meaning and need, Process of Socio-economic survey- design of questionnaire; data collection, data analysis and report writing</p> <p>Special camping activity Concept of camp- Identification of community problems- Importance of group living- Team building- Adoption of village- Planning for camp- pre camping, during the course of camp and post camping activities</p>
2	Orientation of the College Unit and Communication Skills
	<p>Training and orientation of the program unit in the college Leadership training – formation of need based programmes- Concept of campus to community(C to C) activities</p> <p>Communication skills and Documentation Communication skills- the concept, Verbal, Non-Verbal communication The documentation- Activity Report Writing – basics of NSS accounting – Annual Report – Press note and preparation</p>
3	Rapport with Community and Programme Planning
	<p>Working with individual group and community Ice breaking- interaction games – conflict resolution</p> <p>Program planning Programme planning- the concept and its features, requirements for successful implementation of program- program flow charting- feedback</p>
4	Government Organisations /Non-Government Organisations
	<p>Structure of Government Organisations and Non-Government Organisations Government organisations (GO)- its meaning -Legal set up, functioning, Sources of funding Non-Government organisations (NGO)- its meaning -Legal set up, functioning, Sources of funding National Service Scheme(NSS)- Government organisations (GO) and Non-Government organisations (NGO)</p> <p>Government schemes for community development Schemes of Government welfare departments for community development- provisions & examples</p>

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Skill Enhancement Courses (SEC)

6.Foundation Course in NCC - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Disaster Management, Social Awareness and Community Development	05
2	Health and Hygiene	10
3	Drill with Arms	10
4	Weapon Training	10
5	Specialized Subject: Army Or Navy Or Air	10
Total		45

Sr. No.	Modules / Units
1	Disaster Management, Social Awareness and Community Development
	<p>Disaster Management: Desired outcome: The student shall gain basic information about civil defence organisation / NDMA & shall provide assistance to civil administration in various types of emergencies during natural / manmade disasters</p> <ul style="list-style-type: none"> • Civil Defence Organisation and Its Duties/ NDMA • Types of Emergencies/ Natural Disaster • Assistance during Natural / Other Calamities: Flood / Cyclone/ Earth Quake/ Accident etc. • 'Avan' model of NCC <p>Social Awareness and Community Development: Desired outcome: The student shall have an understanding about social service and its need, about NGOs and shall participate in community action programmes for betterment of the community.</p> <ul style="list-style-type: none"> • Basics of Social Service, Weaker Sections of Our Society and Their Needs • Social/ Rural Development Project: MNREGA, SGSY, NSAP etc. • Contribution of Youth towards Social Welfare • Civic Responsibilities • Causes & Prevention of HIV/AIDS; Role of Youth
2	Health and Hygiene
	<p>Desired outcome: The student shall be fully aware about personal health and hygiene lead a healthy life style and foster habits of restraint and self awareness.</p> <ul style="list-style-type: none"> • Structure and Functioning of the Human Body • Hygiene and Sanitation (Personal and Food Hygiene) • Infectious & Contagious Diseases & Their Prevention
3	Drill with Arms
	<p>Desired outcome: The students will demonstrate the sense of discipline, improve bearing, smartness, turnout, develop the quality of immediate and implicit obedience of orders, with good reflexes.</p> <ul style="list-style-type: none"> • Attention, Stand at Ease and Stand Easy • Getting on Parade with Rifle and Dressing at the Order • Dismissing and Falling Out • Ground / Take Up Arms • Present From the Order and Vice-versa • General Salute, Salami Shastra
4	Weapon Training
	<p>Desired outcome: The student shall have basic knowledge of weapons and their use and handling.</p> <ul style="list-style-type: none"> • Characteristics of a Rifle / Rifle Ammunition and its Fire Power • Stripping, Assembling, Care and Cleaning and Sight Setting of .22 rifle • Stripping, Assembling, Care and Cleaning of 7.62mm SLR • Loading, Cocking and Unloading • The lying position, Holding and Aiming- I • Trigger control and firing a shot • Range procedure and safety precautions • Short range firing, Aiming- II -Alteration of sight

Sr. No.	Modules / Units
5	Specialized Subject: Army Or Navy Or Air
	<p>Army Desired outcome: The training shall instill patriotism, commitment and passion to serve the nation motivating the youth to join the defence forces. It will also acquaint, expose & provide basic knowledge about armed, naval and air-force subjects</p> <p>A. Map reading</p> <ul style="list-style-type: none"> • Introduction to types of Maps and Conventional signs • Scales and Grid system • Topographical forms and technical terms • Relief, contours and Gradients • Cardinal points and Types of North • Types of bearings and use of Service Protractor • Prismatic compass and its use and GPS <p>B. Field Craft and Battle Craft</p> <ul style="list-style-type: none"> • Introduction • Judging distance • Description of ground • Recognition, Description and Indication of landmarks and targets <p style="text-align: center;">OR</p> <p>Navy A. Naval Communication</p> <ul style="list-style-type: none"> • Introduction to Naval Modern Communication, Purpose and Principles <ul style="list-style-type: none"> ▪ Introduction of Naval communication ▪ Duties of various communication sub-departments • Semaphore <ul style="list-style-type: none"> ▪ Introduction of position of letters and prosigns ▪ Reading of messages ▪ Transmission of messages <p>B. Seamanship</p> <ul style="list-style-type: none"> • Anchor work <ul style="list-style-type: none"> ▪ Parts of Anchor and Cable, their identification • Rigging <ul style="list-style-type: none"> ▪ Types of ropes and breaking strength- stowing, maintenance and securing of ropes ▪ Practical Bends and Hitches: Reef Knot, Half hitch, Clove Hitch, Rolling Hitch, Timber Hitch, Bow Line, Round Turn and Two half hitch and Bow line on the Bight and its basic elements and uses. ▪ Introduction to Shackles, Hooks, Blocks and Derricks, Coiling Down and Splicing of rope <p>C. Boat work</p> <ul style="list-style-type: none"> • Parts of Boat and Parts of an Oar • Instruction on boat Pulling- Pulling orders • Steering of boat under oars, Practical instruction on Boat Pulling, Precautions while pulling

Sr. No.	Modules / Units
	<p style="text-align: center;">OR</p> <p>Air</p> <p>A. Air frames</p> <ul style="list-style-type: none"> • Aircraft Controls • Landing Gear <p>B. Instruments</p> <ul style="list-style-type: none"> • Basic Flight Instruments <p>C. Aircraft Particulars</p> <ul style="list-style-type: none"> • Aircraft Particulars (Type specific) <p>D. Aero modelling</p> <ul style="list-style-type: none"> • History of Aero modelling • Materials used in Aero modelling • Type of Aero models • Flying/ Building of Aero models

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Skill Enhancement Courses (SEC)

6.Foundation Course in Physical Education- II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Development of Fitness	10
2	Health, Fitness and Diseases	15
3	Yoga Education	10
4	Daily Schedule of Achieving Quality of Life and Wellness	10
Total		60

Sr. No.	Modules / Units
1	Development of Fitness
	<ul style="list-style-type: none"> • Benefits of physical fitness and exercise and principles of physical fitness • Calculation of fitness index level 1-4 • Waist-hip ratio Target Heart Rate, BMI and types and principles of exercise (FITT) • Methods of training – continues, Interval, circuit, Fartlek and Plyometric
2	Health, Fitness and Diseases
	<ul style="list-style-type: none"> • Definition of obesity and its management • Communicable diseases, their preventive and therapeutic aspects • Factors responsible for communicable diseases • Preventive and therapeutic aspect of Communicable and non- communicable diseases
3	Yoga Education
	<ul style="list-style-type: none"> • Meaning and history of yoga • Ashtang yoga and types of yoga • Types of Suryanamaskar and Technique of Pranayam • Benefits of Yoga
4	Daily Schedule of Achieving Quality of Life and Wellness
	<ul style="list-style-type: none"> • Daily schedule based upon one's attitude, gender, age & occupation. • Basic – module: - Time split for rest, sleep, diet, activity & recreation. • Principles to achieve quality of life:- positive attitude, daily regular exercise, control over food habits & healthy hygienic practices.

***Revised Syllabus of Courses of B.Com. Programme at Semester II
with Effect from the Academic Year 2016-2017***

Core Courses (CC)

7.Mathematical and Statistical Techniques II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Functions, Derivatives and Their Applications	15
2	Interest and Annuity	15
3	Bivariate Linear Correlation and Regression	15
4	Time series and Index Numbers	15
5	Elementary Probability Distributions	15
Total		75

Note:

*One tutorial per batch per week in addition to number of lectures stated above
(Batch size as per the University norms)*

Sr. No.	Modules / Units
1	Functions, Derivatives and Their Applications Concept of real functions: Constant function, linear function, x^n , e^x , a^x , $\log x$. Demand, Supply, Total Revenue, Average Revenue, Total cost, Average cost and Profit function. Equilibrium Point, Break-even point. Derivative of functions: <ul style="list-style-type: none"> Derivative as rate measure, Derivative of x^n, e^x, a^x, $\log x$. Rules of derivatives: Scalar multiplication, sum, difference, product, quotient (Statements only), Simple problems. Second order derivatives. Applications: Marginal Cost, Marginal Revenue, Elasticity of Demand. Maxima and Minima for functions in Economics and Commerce. (Examination Questions on this unit should be application oriented only.)
2	Interest and Annuity Interest: Simple Interest, Compound Interest (Nominal & Effective Rate of Interest), Calculations involving upto 4 time periods. Annuity: Annuity Immediate and its Present value, Future value. Equated Monthly Installments (EMI) using reducing balance method & amortization of loans. Stated Annual Rate & Effective Annual Rate Perpetuity and its present value. Simple problems involving up to 4 time periods.
3	Bivariate Linear Correlation and Regression Correlation Analysis: Meaning, Types of Correlation, Determination of Correlation: Scatter diagram, Karl Pearson's method of Correlation Coefficient (excluding Bivariate Frequency Distribution Table) and Spearman's Rank Correlation Coefficient. Regression Analysis: Meaning, Concept of Regression equations, Slope of the Regression Line and its interpretation. Regression Coefficients (excluding Bivariate Frequency Distribution Table), Relationship between Coefficient of Correlation and Regression Coefficients, Finding the equations of Regression lines by method of Least Squares.
4	Time series and Index Numbers Time series: Concepts and components of a time series. Representation of trend by Freehand Curve Method, Estimation of Trend using Moving Average Method and Least Squares Method (Linear Trend only). Estimation of Seasonal Component using Simple Arithmetic Mean for Additive Model only (For Trend free data only). Concept of Forecasting using Least Squares Method. Index Numbers: Concept and usage of Index numbers, Types of Index numbers, Aggregate and Relative Index Numbers, Laspeyres's, Paasche's, Drobisch-Bowley's, Marshall-Edgeworth and Fisher's ideal index numbers, Test of Consistency: Time Reversal Test and Factor Reversal Test. Chain Base Index Nos. Shifting of Base year. Cost of Living Index Numbers, Concept of Real Income, Concept of Wholesale Price Index Number. (Examples on missing values should not be taken)

5	Elementary Probability Distributions
	<p>Probability Distributions:</p> <ul style="list-style-type: none"> ▪ Discrete Probability Distribution: Binomial, Poisson (Properties and applications only, no derivations are expected) ▪ Continuous Probability distribution: Normal Distribution. (Properties and applications only, no derivations are expected)

Tutorial:

Two tutorials to be conducted on each unit i.e. 10 tutorials per semester. At the end of each semester one Tutorial assignment of 10 marks should be given.

**Revised Syllabus of Courses of B.Com.Programme at
Semester I and II
with effect from the Academic Year 2016-2017**

Reference Books

Reference Books
Accountancy and Financial Management
<ul style="list-style-type: none"> • <i>Introduction to Accountancy</i> by T. S. Grewal, S. Chand and Company (P) Ltd., New Delhi • <i>Advance Accounts</i> by Shukla & Grewal, S. Chand and Company (P) Ltd., New Delhi • <i>Advanced Accountancy</i> by R. L Gupta and M Radhaswamy, S. Chand and Company (P) Ltd., New Delhi • <i>Modern Accountancy</i> by Mukherjee and Hanif, Tata Mc. Grow Hill & Co. Ltd., Mumbai • <i>Financial Accounting</i> by Lesile Chandwickh, Pentice Hall of India Adin Bakley (P) Ltd. • <i>Financial Accounting for Management</i> by Dr. Dinesh Harsalekar, Multi-Tech. Publishing Co. Ltd., Mumbai. • <i>Financial Accounting</i> by P. C. Tulsian, Pearson Publications, New Delhi • <i>Accounting Principles</i> by Anthony, R.N. and Reece J.S., Richard Irwin Inc. • <i>Financial Accounting</i> by Monga, J.R. Ahuja, Girish Ahuja and Shehgal Ashok, Mayur Paper Back • <i>Compendium of Statement & Standard of Accounting</i>, ICAI. • <i>Indian Accounting Standards</i>, Ashish Bhattacharya, Tata Mc. Grow Hill & Co. Ltd., Mumbai • <i>Financial Accounting</i> by Williams, Tata Mc. Grow Hill & Co. Ltd., Mumbai • <i>Company Accounting Standards</i> by Shrinivasan Anand, Taxman. • <i>Financial Accounting</i> by V. Rajasekaran, Pearson Publications, New Delhi. • <i>Introduction to Financial Accounting</i> by Horngren, Pearson Publications. • <i>Financial Accounting</i> by M. Mukherjee, M. Hanif. Tata McGraw Hill Education Private Ltd; New Delhi
Commerce
<ul style="list-style-type: none"> • <i>Business Organisation Management</i> Maheshwari, Rajendra P, Mahajan, J.P., International Book House • <i>Business Organisation</i>, Maheshwari, Rajendra P, Mahajan, J.P., International Book House • <i>Introduction To Commerce</i>, Vikram, Amit, Atlantic Pub • <i>A Course Book On Business Environment</i>, Cherunilam, Francis, Himalaya Pub • <i>Business Environment</i>, Cherunilam, Francis, Himalaya Pub • <i>Essentials Of Business Environment</i>, Aswathappa, K., Himalaya Pub • <i>Essentials Of Business Environment</i>, Aswathappa, Himalaya Pub • <i>Strategic Management</i>, Kapoor, Veekkas, Taxmann • <i>Strategic Management</i>, David, Fred R., Phi Leraning • <i>Strategic Management</i>, Bhutani, Kapil, Mark Pub. • <i>Strategic Management</i>, Bhutani, Kapil, Mark Pub. • <i>Entrepreneurship</i>, Hisrich, Robert D, Mc Graw Hill • <i>Entrepreneurship Development</i>, Sharma, K.C., Reegal Book Depot • <i>Service Marketing</i>, Temani, V.K., Prism Pub • <i>Service Marketing</i>, Temani, V.K., Prism Pub • <i>Management Of Service Sector</i>, Bhatia, B S, V P Pub • <i>Introduction To E – Commerce</i>, Dhawan, Nidhi, International Book House • <i>Introduction To Retailing</i>, Lusch, Robert F., Dunne, Patrick M., Carver, James R., Cengage Learning • <i>Retailing Management</i>, Levy Michael., Weitz Barton A, Tata McGraw Hill

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Business Economics

- Mehta, P.L.: *Managerial Economics – Analysis, Problem and Cases* (S. Chand & Sons, N. Delhi, 2000)
- Hirschey .M., *Managerial Economics*, Thomson South western (2003)
- Salvatore, D.: *Managerial Economics in a global economy* (Thomson South Western Singapore, 2001)
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- *Indian Society and Culture*, Vinita Padey, Rawat Pub (2016)
- *Social Problems in India*, Ram Ahuja, Rawat Pub (2014)
- *Faces of Feminine in Ancient, medieval and Modern India*, Mandakranta Bose Oxford University Press
- *National Human rights commission- disability Manual*
- *Rural, Urban Migration : Trends, challenges & Strategies*, S Rajagopalan, ICFAI- 2012
- *Regional Inequities in India* Bhat L SSSRD- New Delhi
- *Urbanisation in India: Challenges, Opportunities & the way forward*, I J Ahluwalia, Ravi Kanbur, P K Mohanty, SAGE Pub (2014)
- *The Constitution of India*, P M Bakshi 2011
- *The Problems of Linguistic States in India*, Krishna Kodesia Sterling Pub
- *Politics in India: structure, Process and Policy* Subrata Mitra, Routledge Pub
- *Politics in India*, Rajani Kothari, Orient Blackswan
- *Problems of Communalism in India*, Ravindra Kumar Mittal Pub
- *Combating communalism in India: Key to National Integration*, Kawal Kishor Bhardwaj, Mittal Pub

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Foundation Course in NSS

- *National Service Scheme Manual (Revised) 2006*, Government of India, Ministry of Youth Affairs and Sports, New Delhi.
- *University of Mumbai National Service Scheme Manual 2009*.
- *Avhan Chancellor's Brigade - NSS Wing, Training camp on Disaster Preparedness Guidelines*, March 2012
- *RashtriyaSevaYojanaSankalpana* - Prof.Dr.SankayChakane, Dr.Pramod\Pabrekar, Diamond Publication, Pune
- *National Service Scheme Manual for NSS District Coordinators*, National Service Scheme Cell, Dept. of Higher and Technical Education, Mantralaya,
- *Annual report of National Service Scheme (NSS)* published by Dept. of Higher and Technical Education, Mantralaya,
- *NSS Cell, Dept. of Higher and Technical Education, Mantralaya, UTKARSHA- Socio and cultural guidelines*
- *Case material as a Training Aid for Field Workers*, Gurmeet Hans.
- *Social service opportunities in hospitals*, Kapil K. Krishnan, TISS
- *New Trends in NSS*, Research papers published by University of Pune
- *ANOOGUNJ Research Journal*, published by NSS Unit C. K. Thakur college
- *Training Manual for Field Work* published by RGNIYD, Chreeperumbudur
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Foundation Course in NCC

- *Cadet's Hand book – Common subject..all wings*, BY DG NCC, New Delhi.
- *Cadet's Hand book – Specialised Subjects, Army, Navy, Air-force*, BY DG NCC, New Delhi.
- *NCC OTA Precise*, BY DG NCC, New Delhi.
- *"AVAN" Model of Disaster Mang.*, VinayakDalvie, *Proceedings of Int. Conf. on Urban Plan. and EnvStrat& Challenges*, Elphinstone College, Jan 2007.
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- *Social psychology*, Baron & Byrne, Pearson Publication, 12th Edition *self awareness know yourself / insight (110) Group & Individuals (374) Group discussion*
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- *SahaSoneri Pane*, Vinayak D. Savarkar
- *Environmental Biology and Toxicology*, P.D. Sharma., Rastogi Publication
- *Environmental Science*, S.C. Santra, New Central Book Agency

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- *National Cadet Corps (India)*, Lambert M. Surhone, Mariam T. Tennoe, Susan F. Henssonow, Betascript Publishing, 2011
- *National Cadet Corps, Youth in Action (Google eBook)*, National Cadet Corps (India), Lancer Publishers, 2003
- *Youth in Step: History of the National Cadet Corps*, V. Longer, Lancer international, 1983Original from the University of Michigan
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Mathematical and Statistical Techniques

- *Mathematics for Economics and Finance Methods and Modelling* by Martin Anthony and Norman Biggs, Cambridge University Press, Cambridge low-priced edition, 2000, Chapters 1, 2, 4, 6 to 9 & 10.
- *Applied Calculus: By Stephen Waner and Steven Constenoble*, Brooks/Cole Thomson Learning, second edition, Chapter 1 to 5.
- *Business Mathematics By D. C. Sancheti and V. K. Kapoor*, Sultan Chand & Sons, 2006, Chapter 1, 5, 7, 9 &10.
- *Mathematics for Business Economics: By J. D. Gupta, P. K. Gupta and Man Mohan*, Tata Mc- Graw Hill Publishing Co. Ltd., 1987, Chapters 9 to 11 & 16.
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- *STATISTICS by Schaum Series*.
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- *Fundamentals of Statistics - D. N. Elhance*.
- *Statistical Methods - S.G. Gupta (S. Chand & Co.*
- *Statistics for Management - Lovin R. Rubin D.S. (Prentice Hall of India)*
- *Statistics - Theory, Method & Applications D.S.Sancheti& V. K. Kapoor*.
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- *Business Mathematics & Statistics: B Aggarwal*, Ane Book Pvt. Limited
- *Business Mathematics: D C Sancheti& V K Kapoor*, Sultan Chand & Sons
- *Business Mathematics: A P Verma*, Asian Books Pvt. :Limited.

Question Paper Pattern (Practical Courses)

Maximum Marks: 100

Questions to be set: 06

Duration: 03 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions A) Sub Questions to be asked 12 and to be answered any 10 B) Sub Questions to be asked 12 and to be answered any 10 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	20 Marks
Q-2	Full Length Practical Question OR	15 Marks
Q-2	Full Length Practical Question	15 Marks
Q-3	Full Length Practical Question OR	15 Marks
Q-3	Full Length Practical Question	15 Marks
Q-4	Full Length Practical Question OR	15 Marks
Q-4	Full Length Practical Question	15 Marks
Q-5	Full Length Practical Question OR	15 Marks
Q-5	Full Length Practical Question	15 Marks
Q-6	A) Theory questions B) Theory questions OR	10 Marks 10 Marks
Q-6	Short Notes To be asked 06 To be answered 04	20 Marks

Note:

Practical question of 15 marks may be divided into two sub questions of 7/8 and 10/5Marks.

Question Paper Pattern (Theoretical Courses)

Maximum Marks: 100

Questions to be set: 06

Duration: 03 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions A) Sub Questions to be asked 12 and to be answered any 10 B) Sub Questions to be asked 12 and to be answered any 10 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	20 Marks
Q-2	Full Length Question OR	15 Marks
Q-2	Full Length Question	15 Marks
Q-3	Full Length Question OR	15 Marks
Q-3	Full Length Question	15 Marks
Q-4	Full Length Question OR	15 Marks
Q-4	Full Length Question	15 Marks
Q-5	Full Length Question OR	15 Marks
Q-5	Full Length Question	15 Marks
Q-6	A) Theory questions B) Theory questions OR	10 Marks 10 Marks
Q-6	Short Notes To be asked 06 To be answered 04	20 Marks

Note:

Theory question of 15 marks may be divided into two sub questions of 7/8 and 10/5Marks.

University of Mumbai



**Revised Syllabus
and
Question Paper Pattern
of Courses of
Bachelor of Commerce Programme
Second Year
Semester III and IV**

**Under Choice Based Credit, Grading and
Semester System**

To be implemented from Academic Year 2017-2018

Faculty of Commerce

S.Y.B.Com

(To be implemented from Academic Year- 2017-2018)

No. of Courses	Semester III	Credits	No. of Courses	Semester IV	Credits
1	Elective Courses (EC)		1	Elective Courses (EC)	
1A	Discipline Specific Elective(DSE) Courses		1A	Discipline Specific Elective(DSE) Courses	
1Aa	Discipline Specific Elective(DSE) Courses		1Aa	Discipline Specific Elective(DSE) Courses	
1	Accountancy and Financial Management III	03	1	Accountancy and Financial Management IV	03
1Ab	Discipline Specific Elective(DSE) Courses		1Ab	Discipline Specific Elective(DSE) Courses	
2	*Any one course from the following list of the courses	03	2	*Any one course from the following list of the courses	03
1B	Discipline Related Elective(DRE) Courses		1B	Discipline Related Elective(DRE) Courses	
3	Commerce III	03	3	Commerce IV	03
4	Business Economics III	03	4	Business Economics IV	03
2	Ability Enhancement Courses (AEC)		2	Ability Enhancement Courses (AEC)	
2A	*Skill Enhancement Courses (SEC) Group A		2A	**Skill Enhancement Courses (SEC) Group A	
5	*Any one course from the following list of the courses	03	5	*Any one course from the following list of the courses	03
2B	*Skill Enhancement Courses (SEC) Group B		2B	**Skill Enhancement Courses (SEC) Group B	
6	Any one course from the following list of the courses	02	6	Any one course from the following list of the courses	02
3	Core Courses (CC)		3	Core Courses (CC)	
7	Business Law I	03	7	Business Law II	03
Total Credits		20	Total Credits		20

1Ab *List of Discipline Specific Elective (DSE) Courses for Semester III (Any One)		1Ab *List of Discipline Specific Elective(DSE) Courses for Semester IV (Any One)	
1	Financial Accounting and Auditing - Introduction to Management Accounting	1	Financial Accounting and Auditing - Auditing
2	Business Management - Marketing Management	2	Business Management- Marketing Management
3	Banking & Finance- Introduction to Banking in India	3	Banking & Finance- Introduction to Banking in India
4	Commerce- International Business Relations	4	Commerce- International Business Relations

*List of Skill Enhancement Courses (SEC) Group A for Semester III (Any One)		*List of Skill Enhancement Courses (SEC) Group A for Semester IV (Any One)	
1	Advertising I	1	Advertising II
2	Field Sales Management I	2	Field Sales Management II
3	Public Relations I	3	Public Relations II
4	Mass Communication I	4	Mass Communication II
5	Travel & Tourism Management Paper I	5	Travel & Tourism Management II
6	Journalism I	6	Journalism II
7	Company Secretarial Practice I	7	Company Secretarial Practice II
8	Rural Development I	8	Rural Development II
9	Co-operation I	9	Co-operation II
10	Mercantile Shipping I	10	Mercantile Shipping II
11	Indian Economic Problem I	11	Indian Economic Problem II
12	Computer Programming I	12	Computer Programming II
13	Logistic and Supply Chain Management I	13	Logistic and Supply Chain Management I
14	Economic System I	14	Economic System II
Note: Course selected in Semester III will continue in Semester IV			

*List of Skill Enhancement Courses (SEC) Group B for Semester III (Any One)		** List of Skill Enhancement Courses (SEC) Group B for Semester IV (Any One)	
1	Foundation Course- Contemporary Issues - III	1	Foundation Course- Contemporary Issues - IV
2	Foundation Course in NSS - III	2	Foundation Course in NSS - IV
3	Foundation Course in NCC - III	3	Foundation Course in NCC - IV
4	Foundation Course in Physical Education - III	4	Foundation Course in Physical Education - IV
Note: Course selected in Semester III will continue in Semester IV			

B.Com. Programme
Under Choice Based Credit, Grading and Semester System
Course Structure

(To be implemented from Academic Year- 2017-2018)

Semester III

No. of Courses	Semester III	Credits
1	Elective Courses (EC)	
1A	Discipline Specific Elective(DSE) Courses	
1Aa	Discipline Specific Elective(DSE) Courses	
1	Accountancy and Financial Management III	03
1Ab	Discipline Specific Elective(DSE) Courses	
2	*Any one course from the following list of the courses	03
1B	Discipline Related Elective(DRE) Courses	
3	Commerce III	03
4	Business Economics III	03
2	Ability Enhancement Courses (AEC)	
2A	*Skill Enhancement Courses (SEC) Group A	
5	*Any one course from the following list of the courses	03
2B	*Skill Enhancement Courses (SEC) Group B	
6	Any one course from the following list of the courses	02
3	Core Courses (CC)	
7	Business Law I	03
Total Credits		20

1Ab *List of Discipline Specific Elective (DSE) Courses for Semester III (Any One)	
1	Financial Accounting and Auditing - Introduction to Management Accounting
2	Business Management - Marketing Management
3	Banking & Finance- Introduction to Banking in India
4	Commerce- International Business Relations

<i>*List of Skill Enhancement Courses (SEC) Group A for Semester III (Any One)</i>	
1	Advertising I
2	Field Sales Management I
3	Public Relations I
4	Mass Communication I
5	Travel & Tourism Management Paper I
6	Journalism I
7	Company Secretarial Practice I
8	Rural Development I
9	Co-operation I
10	Mercantile Shipping I
11	Indian Economic Problem I
12	Computer Programming I
13	Logistic and Supply Chain Management I
14	Economic System I
<i>Note: Course selected in Semester III will continue in Semester IV</i>	

<i>** List of Skill Enhancement Courses (SEC) Group B</i>	
1	Foundation Course – Contemporary Issues- III
2	Foundation Course in NSS - III
3	Foundation Course in NCC - III
4	Foundation Course in Physical Education - III
<i>Note: Course selected in Semester III will continue in Semester IV</i>	

***Revised Syllabus of Courses of B.Com. Programme at Semester III
with Effect from the Academic Year 2017-2018***

Elective Courses (EC)

Discipline Specific Elective (DSE) Courses

1Aa. Accountancy and Financial Management III

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Partnership Final Accounts based on Adjustment of Admission or Retirement/Death of a Partner during the year	15
2	Piecemeal Distribution of Cash	15
3	Amalgamation of Firms	15
4	Conversion / Sale of a Partnership Firm into a Ltd. Company	15
Total		60

Sr. No.	Modules / Units
1	Partnership Final Accounts based on Adjustment of Admission or Retirement/Death of a Partner during the year
	i) Simple final accounts questions to demonstrate the effect on final Accounts when a partner is admitted during the year or when partner Retires / dies during the year. ii) Allocation of gross profit prior to and after admission / retirement / death when stock on the date of admission / retirement is not given and apportionment of other expenses based on time / Sales/other given basis. iii) Ascertainment of gross profit prior to and after admission/retirement/death when stock on the date of admission/retirement is given and apportionment of other expenses based on time / Sales / other given basis Excluding Questions where admission / retirement / death takes place in the same year.
2	Piecemeal Distribution of Cash
	i) Excess Capital Method only ii) Asset taken over by a partner iii) Treatment of past profits or past losses in the Balance sheet iv) Contingent liabilities / Realization expenses / amount kept aside for expenses and adjustment of actual v) Treatment of secured liabilities vi) Treatment of preferential liabilities like Govt. dues / labour dues etc. Excluding : Insolvency of partner and Maximum Loss Method
3	Amalgamation of Firms
	i) Realization method only ii) Calculation of purchase consideration iii) Journal / ledger accounts of old firms iv) Preparing Balance sheet of new firm v) Adjustment of goodwill in the new firm vi) Realignment of capitals in the new firm by current accounts / cash or a combination thereof Excluding Common transactions between the amalgamating firms
4	Conversion / Sale of a Partnership Firm into a Ltd. Company
	(i) Realisation method only (ii) Calculation of New Purchase consideration, Journal / Ledger Accounts of old firms. Preparing Balance sheet of new company

Reference Text :

1. Ashish K. Bhattacharyya – “Financial Accounting for Business Managers”, Prentice Hall of India Pvt. Ltd.
2. Shashi K. Gupta – “Contemporary Issues in Accounting”, Kalyani Publishers.
3. R. Narayanaswamy – “Financial Accounting”, Prentice Hall of India, New Delhi
4. Ashok Sehgal – “Fundamentals of Financial Accounting”, Taxmann’s Publishers

Question Paper Pattern (Theoretical Courses)

Maximum Marks: 100

Questions to be set: 06

Duration: 03 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions A) Sub Questions to be asked 12 and to be answered any 10 B) Sub Questions to be asked 12 and to be answered any 10 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	20 Marks
Q-2	Full Length Question OR	15 Marks
Q-2	Full Length Question	15 Marks
Q-3	Full Length Question OR	15 Marks
Q-3	Full Length Question	15 Marks
Q-4	Full Length Question OR	15 Marks
Q-4	Full Length Question	15 Marks
Q-5	Full Length Question OR	15 Marks
Q-5	Full Length Question	15 Marks
Q-6	A) Theory questions B) Theory questions OR	10 Marks 10 Marks
Q-6	Short Notes To be asked 06 To be answered 04	20 Marks

Note:

Theory question of 15 marks may be divided into two sub questions of 7/8 and 10/5Marks.

***Revised Syllabus of Courses of B.Com. Programme at Semester III
with Effect from the Academic Year 2017-2018***

Elective Courses (EC)

Discipline Specific Elective (DSE) Courses

**1Ab. Financial Accounting and Auditing – Introduction
to Management Accounting**

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Management Accounting	10
2	Ratio Analysis and Interpretation	15
3	Working Capital Management	10
4	Capital Budgeting	10
Total		45

Sr. No.	Modules / Units
1	Introduction to Management Accounting
	<p>A. Introduction to Management Accounting – Meaning, Nature, Scope, Functions, Decision Making Process, Financial Accounting V/s Management Accounting</p> <p>B. Analysis and Interpretation of Financial Statements</p> <p>i) Study of Balance sheet and Income statement / Revenue statements in vertical form suitable for analysis</p> <p>ii) Relationship between items in Balance Sheet and Revenue statement</p> <p>iii) Tools of analysis of Financial Statements (i) Trend analysis (ii) Comparative Statement (iii) Common Size Statement</p> <p>Note : (i) Problems based on trend analysis (ii) Short Problems on Comparative and Common sized statements</p>
2	Ratio Analysis and Interpretation
	<p>(Based on Vertical Form of Financial statements) – Meaning, classification, Du Point Chart, advantages and Limitations)</p> <p>A. Balance Sheet Ratios :</p> <p>i) Current Ratio</p> <p>ii) Liquid Ratio</p> <p>iii) Stock Working Capital Ratio</p> <p>iv) Proprietary Ratio</p> <p>v) Debt Equity Ratio</p> <p>vi) Capital Gearing Ratio</p> <p>B. Revenue Statement Ratio:</p> <p>i) Gross Profit Ratio</p> <p>ii) Expenses Ratio</p> <p>iii) Operating Ratio</p> <p>iv) Net Profit Ratio</p> <p>v) Net Operating Profit Ratio</p> <p>vi) Stock Turnover Ratio</p> <p>A. Combined Ratio :</p> <p>i) Return on capital employed (Including Long Term Borrowings)</p> <p>ii) Return on proprietor's Fund (Shareholders Fund and Preference Capital)</p> <p>iii) Return on Equity Capital</p> <p>iv) Dividend Payout Ratio</p> <p>v) Debt Service Ratio</p> <p>vi) Debtors Turnover</p> <p>vii) Creditors Turnover</p> <p>(Practical Question on Ratio Analysis)</p>
3	Working Capital Management : (Practical Questions)
	<p>A. Concept, Nature of Working Capital , Planning of Working Capital</p> <p>B. Estimation / Projection of Working Capital Requirement in case of Trading and Manufacturing Organization</p> <p>C. Operating Cycle</p>

Sr. No.	Modules / Units
4	Capital Budgeting
	A. Introduction: B. The classification of capital budgeting projects C. Capital budgeting process D. Capital budgeting techniques - Payback Period, Accounting Rate of Return, Net Present Value, The Profitability Index, Discounted Payback. (Excluding calculation of cash flow)

Reference Text :

1. Cost and Management Accounting - Colinn Dury 7th Edition
2. Cost and Management Accounting- Dbarshi Bhattacharyya pearson Publications 2013 edition
3. Management Accounting - M.Y.Khan
4. Management Accounting - I.M.pandey

Question Paper Pattern (Theoretical Courses)

Maximum Marks: 100

Questions to be set: 06

Duration: 03 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions C) Sub Questions to be asked 12 and to be answered any 10 D) Sub Questions to be asked 12 and to be answered any 10 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	20 Marks
Q-2	Full Length Question OR	15 Marks
Q-2	Full Length Question	15 Marks
Q-3	Full Length Question OR	15 Marks
Q-3	Full Length Question	15 Marks
Q-4	Full Length Question OR	15 Marks
Q-4	Full Length Question	15 Marks
Q-5	Full Length Question OR	15 Marks
Q-5	Full Length Question	15 Marks
Q-6	C) Theory questions D) Theory questions OR	10 Marks 10 Marks
Q-6	Short Notes To be asked 06 To be answered 04	20 Marks

Note:

Theory question of 15 marks may be divided into two sub questions of 7/8 and 10/5Marks.

***Revised Syllabus of Courses of B.Com. Programme at Semester III
with Effect from the Academic Year 2017-2018***

Elective Courses (EC)

Discipline Specific Elective (DSE) Courses

1Ab. Business Management-Marketing Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Marketing Management and Marketing Environment	10
2	Understanding Competition and Strategic Marketing	15
3	Product	10
4	Pricing	10
Total		45

Sr. No.	Modules / Units
1	Marketing Management and Marketing Environment
	<ul style="list-style-type: none"> Marketing management : Definition, need and importance of marketing management Functions of Marketing Management Micro and Macro Environment with specific reference to India Emerging Marketing opportunities in India – Marketing at the bottom of the pyramid, growing middle class International marketing environment
2	Understanding Competition and Strategic Marketing
	<ul style="list-style-type: none"> Marketing strategy : Definition and Features Steps in strategic marketing planning process SWOT Analysis Michael Porter's Five Forces Model Analyzing competition
3	Product
	<ul style="list-style-type: none"> Definition, Product Levels – Customer Value Hierarchy Product Classification : Based on durability and tangibility, consumer goods classification and industrial goods classification Product Life Cycle : Stages and features of each stage Product Positioning : Meaning and Importance Steps in Product Positioning
4	Pricing
	<ul style="list-style-type: none"> Meaning and objective of Pricing Factors affecting pricing decisions Methods of pricing : Mark-up pricing, Target-return Pricing, Perceived-value Pricing, Value Pricing, Going-Rate Pricing and Auction Pricing Steps in Pricing

Reference Books:

1. Philip Kotler (2003). Marketing Management : Eleventh Edition. New Delhi : Pearson Education
2. V. S. Ramaswani and S Namakumari (2002). Marketing : Planning, Implementation and Control (3rd Edition) New Delhi, Macmillan India
3. Michael Porter – Competitive Advantage
4. Theodore Levitt – Marketing Management
5. Fundamentals of Marketing – William Stanton
6. Customer Driven Services Management (1999) Response Books

Question Paper Pattern (Theoretical Courses)

Maximum Marks: 100

Questions to be set: 06

Duration: 03 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions E) Sub Questions to be asked 12 and to be answered any 10 F) Sub Questions to be asked 12 and to be answered any 10 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	20 Marks
Q-2	Full Length Question OR	15 Marks
Q-2	Full Length Question	15 Marks
Q-3	Full Length Question OR	15 Marks
Q-3	Full Length Question	15 Marks
Q-4	Full Length Question OR	15 Marks
Q-4	Full Length Question	15 Marks
Q-5	Full Length Question OR	15 Marks
Q-5	Full Length Question	15 Marks
Q-6	E) Theory questions F) Theory questions OR	10 Marks 10 Marks
Q-6	Short Notes To be asked 06 To be answered 04	20 Marks

Note:

Theory question of 15 marks may be divided into two sub questions of 7/8 and 10/5Marks.

***Revised Syllabus of Courses of B.Com. Programme at Semester III
with Effect from the Academic Year 2017-2018***

***Elective Courses (EC)-
1B Discipline Related Elective (DRE) Courses***

3. Commerce –II

(Management: Functions and Challenges)

Course Objectives:

- To make the learners aware about conceptual knowledge and evolution of Management.
- To familiarize the learners with the functions in Management.

Sr. No.	Modules	No. of Lectures
1	Introduction To Management	11
2	Planning & Decision Making	10
3	Organising	12
4	Directing And Controlling	12
Total		45

Sr. No.	Modules
1	Introduction To Management (11)
	<ul style="list-style-type: none"> • Management- Concept, Nature, Functions, Managerial Skills & Competencies • Evolution of Management Thoughts Classical Approach: Scientific Management – F.W.Taylor’s Contribution Classical Organisation Theory: Henri Fayol’s Principles Neo Classical: Human Relations Approach – Elton Mayo’s Hawthorne experiments • Modern Management Approach- Peter Drucker’s Dimensions of Management, Indian Management Thoughts: Origin & Significance of Indian Ethos to Management.
2	Planning & Decision Making (10)
	<ul style="list-style-type: none"> • Planning - Steps, Importance, Components, Coordination – Importance • M.B.O -Process, Advantages, Management By Exception- Advantages; Management Information System- Concept, Components • Decision Making - Techniques, Essentials of a Sound Decision Making, Impact of Technology on Decision Making.
3	Organising (12)
	<ul style="list-style-type: none"> • Organising-Steps, Organisation Structures – Features of Line & Staff Organisation, Matrix Organisation , Virtual Organisation, Formal v/s Informal Organisation. • Departmentation -Meaning -Bases, Span of Management- Factors Influencing Span of Management, Tall and Flat Organisation. • Delegation of Authority- Process, Barriers to Delegation, Principles of Effective Delegation. Decentralisation: Factors Influencing Decentralisation, Centralization v/s Decentralisation
4	Directing And Controlling (12)
	<ul style="list-style-type: none"> • Motivation – Concept, Importance, Influencing factors. Importance of Communication, Barriers to effective Communication • Leadership- Concept, Functions, Styles, Qualities of a good leader. • Controlling – Concept, Steps, Essentials of good control system, Techniques of Controlling -PERT, CPM, Budgetary Control, Management Audit.

SEMESTER – III REFERENCE BOOKS:

REFERENCES

1. Management Today Principles& Practice- Gene Burton, ManabThakur, Tata McGraw-Hill,Publishing Co.Ltd.
2. Management – JamesA.F.Stoner, Prentice Hall, Inc .U.S.A.
3. Management : Global Prospective –Heinz Weihrich& Harold Koontz, Tata McGraw- Hill, Publishing Co.Ltd.
4. Essential of Database Management Systems -AlexisLeon ,MathewsLeon
Vijay Nicole, Imprints Pvt Ltd.
5. Management –Task ,Resp, Practices – PetaDruche “willian Heinemann LTD.

PAPER PATTERN
COMMERCE PAPER I & II
SEMESTER - III & IV
W.E.F. 2017-2018

Q.1 Multiple Choice Questions

(A) Select the most appropriate answer from the option given below 10
(Any Ten out of Twelve)

(B) State whether the following statements are True or False 10
(Any Ten out of Twelve)

Q.2 Answer Any Two of the following Out of Three questions - Module - I 15

a.

b.

c.

Q.3 Answer Any Two of the following Out of Three questions - Module - II 15

a.

b.

c.

Q.4 Answer Any Two of the following Out of Three questions - Module - III 15

a.

b.

c.

Q.5 Answer Any Two of the following Out of Three questions - Module - IV 15

a.

b.

c.

Q.6 Write notes on Any Four out of Six

***Revised Syllabus of Courses of B.Com. Programme at Semester III
with Effect from the Academic Year 2017-2018***

***Elective Courses (EC)-
1B Discipline Related Elective (DRE) Courses***

4.Business Economics III

Modules at a Glance

Sr. No.	Modules	No.of Lectures
1	Overview of Macroeconomics	10
2	Basic concepts of Keynesian Economics	10
3	Post Keynesian developments in Macro economics	10
4	Money, prices and Inflation	15
Total		45

BUSINESS ECONOMICS III

ELEMENTS OF MACROECONOMICS

Preamble

An overall approach to macroeconomics is to examine the economy as a whole. This course is an introduction to the basic analytical tools of macro economics to evaluate macro economic conditions such as inflation, unemployment and growth. It is designed to make system of overall economy understandable and relevant. The aim is to provide a clear explanation of many aspects of aggregate economic variables to inspire a consistent way of thinking about key macroeconomic phenomena. It intends to familiarize the commerce students with basic concepts of macroeconomics and with certain common features of economic occurrence in the real world.

Sr. No.	Modules / Units
1	INTRODUCTION
	<ul style="list-style-type: none"> • Macroeconomics: Meaning, Scope and Importance. • Circular flow of aggregate income and expenditure and its Importance- closed and open economy models • The Measurement of National Product: Meaning and Importance of National Income Accounting- conventional and Green GNP and NNP concepts -National Income and Economic Welfare. • Trade Cycles: Features and Phases • Classical Macro economics : Say's law of Markets - Features, Implications and Criticism
2	BASIC CONCEPTS OF KEYNESIAN ECONOMICS
	<ul style="list-style-type: none"> • The Principle of Effective Demand: Aggregate Demand and Aggregate Supply • Consumption Function: Properties, Assumptions and Implications • Investment function and Marginal Efficiency of capital • Investment Multiplier effect on Income and Output: Assumptions, Working, Leakages, Criticism and Importance - paradox of thrift • Relevance of Keynesian theory tools to the developing countries • Liquidity Preference Theory of Interest
3	POST KEYNESIAN DEVELOPMENTS IN MACRO ECONOMICS
	<ul style="list-style-type: none"> • The IS-LM model of integration of commodity and money markets • Inflation and unemployment : Philips curve • Stagflation : meaning, causes, and consequences • Supply side economics
4	MONEY, PRICES AND INFLATION
	<ul style="list-style-type: none"> • Money Supply: Determinants of Money Supply - Factors influencing Velocity of Circulation of Money • Demand for Money : Classical and Keynesian approaches and Keynes' liquidity preference theory of interest - Friedman's restatement of Demand for money • Money and prices : Quantity theory of money - Fisher's equation of exchange - Cambridge cash balance approach • Inflation : Demand Pull Inflation and Cost Push Inflation - Effects of Inflation- Nature of inflation in a developing economy - policy measures to curb inflation- monetary policy and inflation targeting

Reference Books

Ackley.G (1976), Macro Economic Theory and Policy, Macmillan Publishing Co. New York
Ahuja. H.L., Modern Economics — S.Chand Company Ltd. New Delhi.
Blanchard Olivier (2000), Macro Economics, Englewood Elitt, Prentice Hall
Bouman John, Principles of Macro Economics
Dornbush , Rudiger, Fisher Stanley and Startz, Richards Macroeconomics, Nineth edition 2004 Tata-Mac Graw Hill, New Delhi.
Dwivedi, D.N. (2001), Macro Economics: Theory and Policy, Tata-Mac Graw Hill, New Delhi.
Friedman Hilton (1953) Essays in Positive Economics, University of Chicago Press, London.
Gregory .N. Mankiw, Macroeconomics, Fifth Edition (2002) New York:Worth Publishers
Jhingan, M.L., Principles of Economics — Vrinda Publications (P) Ltd.
Shapiro, E (1996), Macro-Economic Analysis , Galgotia Publication, New Delhi.
Vaish .M.C. (2010) Macro Economic Theory 14th edition, Vikas Publishing House(P)Ltd

QUESTION PAPER PATTERN
Business Economics Semester III

Maximum Marks: 100 Marks

Time: 3 Hours

Note: 1) Attempt all Questions

2) All Questions carry equal marks

3) Attempt any two questions out of three in each of question 2, 3, 4 & 5

Question No	Particulars	Marks
Q-1	Objective Questions: A) Conceptual questions (Any Five out of Eight) (Two from each module) B) Multiple Choice Questions (10 questions at least two from each Module)	20Marks 10 Marks 10 Marks
Q-2 (from Module I)	A) Full Length Question B) Full Length Question C) Full Length Question	20Marks
Q-3 (from Module II)	A) Full Length Question B) Full Length Question C) Full Length Question	20Marks
Q-4 (from Module III)	A) Full Length Question B) Full Length Question C) Full Length Question	20Marks
Q-5 (from Module IV)	A) Full Length Question B) Full Length Question C) Full Length Question	20Marks

***Revised Syllabus of Courses of B.Com. Programme at Semester III
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***2 Ability Enhancement Courses (AEC)
2A * Skill Enhancement Courses (SEC) Group A***

5. Advertising - I

Course Objective:

1. To highlight the role of advertising for the success of brands and its importance within the marketing function of a company.
2. It aims to orient learners towards the practical aspects and techniques of advertising.
3. It is expected that this course will prepare learners to lay down a foundation for advanced post-graduate courses in advertising

Sr. No.	Modules	No. of Lectures
1	Introduction to Advertising	12
2	Advertising Agency	11
3	Economic & Social Aspects of Advertising	11
4	Brand Building and Spécial Purpose Advertising	11
Total		45

Sr. No.	Modules
1	Introduction to Advertising
	<ul style="list-style-type: none"> • Integrated Marketing Communications (IMC)- Concept, Features, Elements, Role of advertising in IMC • Advertising: Concept, Features, Evolution of Advertising, Active Participants, Benefits of advertising to Business firms and consumers. • Classification of advertising: Geographic, Media, Target audience and Functions.
2	Advertising Agency
	<ul style="list-style-type: none"> • Ad Agency: Features, Structure and services offered, Types of advertising agencies , Agency selection criteria • Agency and Client: Maintaining Agency–Client relationship, Reasons and ways of avoiding Client Turnover, Creative Pitch, Agency compensation • Careers in advertising: Skills required for a career in advertising, Various Career Options, Freelancing Career Options - Graphics, Animation, Modeling, Dubbing.
3	Economic & Social Aspects of Advertising
	<ul style="list-style-type: none"> • Economic Aspects: Effect of advertising on consumer demand, monopoly and competition, Price. • Social aspects: Ethical and social issues in advertising, positive and negative influence of advertising on Indian values and culture. • Pro Bono/Social advertising: Pro Bono Advertising, Social Advertising by Indian Government through Directorate of Advertising and Visual Publicity (DAVP), Self-Regulatory body- Role of ASCI (Advertising Standard Council of India)
4	Brand Building and Special Purpose Advertising
	<ul style="list-style-type: none"> • Brand Building: The Communication Process, AIDA Model, Role of advertising in developing Brand Image and Brand Equity, and managing Brand Crises. • Special purpose advertising: Rural advertising, Political advertising-, Advocacy advertising, Corporate Image advertising, Green Advertising – Features of all the above special purpose advertising. • Trends in Advertising: Media, Ad spends, Ad Agencies, Execution of advertisements

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Reference Books	
Advertising	
1.	Advertising and Promotion : An Integrated Marketing Communications Perspective George Belch and Michael Belch, 2015, 10 th Edition, McGraw Hill Education
2.	Contemporary Advertising, 2017, 15th Edition, William Arens, Michael Weigold and Christian Arens, Hill Higher Education
3.	Strategic Brand Management – Kevin Lane Keller, 4th Edition, 2013 – Pearson Education Limited
4.	Kleppner's Advertising Procedure – Ron Lane and Karen King, 18th edition, 2011 – Pearson Education Limited
5.	Advertising: Planning and Implementation, 2006 – Raghuvir Singh, Sangeeta Sharma –Prentice Hall
6.	Advertising Management, 5th Edition, 2002 – Batra, Myers and Aaker – Pearson Education
7.	Advertising Principles and Practice, 2012 - Ruchi Gupta – S.Chand Publishing
8.	Brand Equity & Advertising- Advertising's role in building strong brands, 2013- David A. Aker, Alexander L. Biel, Psychology Press
9.	Brand Positioning – Strategies for Competitive Advantage, Subroto Sengupta, 2005, Tata McGraw Hill Publication.
10.	The Advertising Association Handbook - J. J. D. Bullmore, M. J. Waterson, 1983 - Holt Rinehart & Winston
11.	Integrated Advertising, Promotion, and Marketing Communications, Kenneth E. Clow and Donald E. Baack, 5th Edition, 2012 – Pearson Education Limited
12.	Kotler Philip and Eduardo Roberto, Social Marketing, Strategies for Changing Public Behaviour, 1989, The Free Press, New York.
13.	Confessions of an Advertising Man, David Ogilvy, 2012, Southbank Publishing
14.	Advertising, 10 th Edition, 2010 - Sandra Moriarty, Nancy D Mitchell, William D. Wells, Pearson

PAPER PATTERN
ADVERTISING PAPER I & II
SEMESTER - III & IV
W.E.F. 2017-2018

Q.1 Multiple Choice Questions

(A) Select the most appropriate answer from the option given below 10

(Any Ten out of Twelve)

(B) State whether the following statements are True or False 10

(Any Ten out of Twelve)

Q.2 Answer Any Two of the following Out of Three questions - Module - I 15

a.

b.

c.

Q.3 Answer Any Two of the following Out of Three questions - Module - II 15

a.

b.

c.

Q.4 Answer Any Two of the following Out of Three questions - Module - III 15

a.

b.

c.

Q.5 Answer Any Two of the following Out of Three questions - Module - IV 15

a.

b.

c.

Q.6 Write notes on Any Four out of Six 20

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***2 Ability Enhancement Courses (AEC)
2A * Skill Enhancement Courses (SEC) Group A***

5. Field Sales Management – I

Course Objective:

1. To understand the concept of field sales management.
2. To Make Learners aware about practical applications of sales management.

Sr. No.	Modules	No. of Lectures
1	Field Sales Management	11
2	Sales Organisation	11
3	Sales Policies	11
4	Sales Force Management	12
Total		45

Sr. No.	Modules
1	Field Sales Management
	<ul style="list-style-type: none"> • Introduction to Sales Management – Meaning & Concept – Nature, Objectives of Salesmanship, Function of Sales Management, Sales Management as a career option. • Field Sales Management – Introduction, Concept of Personal Selling & Advertising, Difference between selling and Marketing, Difference between Advertising & Personal Selling , Changing face of Personal Selling. • Sales Manager – Qualities & Qualification of Sales Manager – Essentials for a Successful Sales Manager – Duties & Responsibilities of a Sales Manager.
2	Sales Organisation
	<ul style="list-style-type: none"> • Meaning, Nature, Characteristics of a Sales Organization, Need & Objectives of Sales Organization. • Structure of Sales Organization, Types of Sales Organizations and factors affecting structure of Sales Organization. • Centralization & Decentralization of Sales Organization, Merits and Demerits.
3	Sales Policies
	<ul style="list-style-type: none"> • Product Policies – Branding , Promotional Policies – Promotional Measure • Pricing Policies – Methods of Pricing, Factors, Strategies • Place / Distribution Policies – Channels of Distribution-Types (Consumer & Industrial Goods) , Factors affecting selection of channel of distribution
4	Sales Force Management
	<ul style="list-style-type: none"> • Recruitment and Selection of Salesforce – Concept, Sources of Recruitment Steps in selection process, Training of Salesforce -Methods • Compensating & Motivating the Sales Team -Methods of Compensation, Monetary and Non-Monetary tools of Motivation. • Evaluating Sales Force Performance, Functions, Sales records, Reporting, Performance Appraisal of Sales Force.

Reference Books	
Field Sales Management	
1.	Philip Kotler – Marketing Management, 11 th ed. Pearson Publication.
2.	Porter, Michel E. Competitive Strategy, New York: The Free Press, 1980.
3.	Tirodkar, Field Sales Management, Vani Publication, Pune.
4.	Richard R Still, Edward W. Candiff, Sales Management.
5.	M.D.Pestonjee, Motivation & Job Satisfaction.
6.	Tom Reilly, Value Added Selling
7.	Helen Woodruffe, Services Marketing, Macmillan Publication.
8.	V.S.Ramaswamy, S.Namakumari, Marketing Management, Global Prospective – Indian Concept, Macmillan Publication

PAPER PATTERN
FIELD SALES MANAGEMENT PAPER I & II
SEMESTER - III & IV
W.E.F. 2017-2018

Q.1 Multiple Choice Questions

(A) Select the most appropriate answer from the option given below 10
(Any Ten out of Twelve)

(B) State whether the following statements are True or False 10
(Any Ten out of Twelve)

Q.2 Answer Any Two of the following Out of Three questions - Module - I 15

a.

b.

c.

Q.3 Answer Any Two of the following Out of Three questions - Module - II 15

a.

b.

c.

Q.4 Answer Any Two of the following Out of Three questions - Module - III 15

a.

b.

c.

Q.5 Answer Any Two of the following Out of Three questions - Module - IV 15

a.

b.

c.

Q.6 Write notes on Any Four out of Six 20

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***2 Ability Enhancement Courses (AEC)
2A * Skill Enhancement Courses (SEC) Group A***

5. Company Secretarial Practice - I

Course Objective:

- To provide the learners an insight about Company Secretarial Practices.
- To make the learners understand the role of Company Secretary towards Company's statutory provisions, rules and regulations.
- To make the learners understand the various aspects of Company Management, meetings and reports.

Sr. No.	Modules	No. of Lectures
1	Introduction to Company	12
2	Company Secretary Practices	12
3	Company Documentation and Formation	12
4	Secretarial Correspondence	10
Total		45

Sr. No.	Modules
1	Introduction to Company
	<ul style="list-style-type: none"> • Introduction to Company – Features, Types -As per Company's Act, 2013. • Company Secretary – Qualities, Qualifications, Appointment procedure, Resignation & Removal. • Role of Company Secretary–Rights, Responsibilities, Liabilities of Company Secretary, Career options of Company Secretary.
2	Company Secretary Services
	<ul style="list-style-type: none"> • Advisory Services – Role of Company Secretary as an advisor to Chairman, Secretary as an liaison officer between the (a) Company and Stock Exchange (b) Company and Depository Participants (c) Company and Register of Companies (ROC). • Representation Services of Company Secretary at different forums- Company Law Board, Consumer Forum, SEBI, Arbitration & conciliation services, Cyber Law compliance, Secretarial Standards – Advantages, Secretarial Standards by ICSI, Secretarial Standards -1- 10. • Secretarial Audit – Procedure and Stages, Need and Importance, Scope.
3	Company Documentation and Formation
	<ul style="list-style-type: none"> • Memorandum of Association (MOA) - Clauses, Alteration of MOA, Ultra Vires. Articles of Association (AOA) – Contents, Prospectus – Statement in Lieu of Prospectus, Contents, Misleading Prospectus. • Company Formation –Stages,Secretarial Duties at each stage in public company and private company. • Conversion & Reconversion of Private and Public Company – Secretarial Procedure.
4	Secretarial Correspondence
	<ul style="list-style-type: none"> • Correspondence– Shareholders, Debenture Holders, Registrar of Companies, Stock Exchange & penalties thereon • Correspondence with SEBI, Company Law Board and penalties thereon, Role of technology in Secretarial Correspondence • Specimens– Letter to shareholders - Rights Issue, Bonus Issue, Letter to ROC-Alteration of MOA/AoA, Letter to Stock Exchange –Listing of shares, Letters to Government- Reconversion/Conversion, Letter to Bank – Overdraft Facility

COMPANY SECRETARIAL PRACTICE

REFERENCES

Readings:

- | | | |
|-------------------------------------|---|---|
| 1. M. C.Bhandari | : | Guide to Company Law Procedure;
Wadhwa& Company, Agra&Nagpur |
| 2. K. V.Shanbhogue | : | Company Law Practice;
BharatLaw House, New Delhi – 34 |
| 3. M. L.Sharma | : | Company Procedures and Register of
Companies , Tax Publishers, Delhi |
| 4. A. M.Chakborti,
B. P.Bhargava | : | Company Notices, Meetings and
Resolutions, Taxmann, New Delhi |
| 5. A.Ramaiya | : | Guide to the Companies Act,
Wadhwa& Company, Nagpur |
| 6. R.Suryanarayanan | : | Company Notices, Meetings and
Resolutions, Kamal Law House, Kolkatta |
| 7. D. K. Jain | : | E- Filling of Forms & returns |
| 8. Taxmann | : | E-Company forms |
| 9. V.K.Gaba | : | Depository Participants (Law & Practice) |
| 10. ICSI Publications | : | Meetings |
| 11. B. K.Sengupta | : | Company Law |
| 12. D. K. Jain | : | Company Law Procedures |

References:

- | | | |
|----------------------------------|---|---|
| 1. M. C.Bhandari
R.D.Makheeja | : | Guide to Memorandum, Articles and
Incorporation of Companies ;
Wadhwa& Company, Agra&Nagpur |
| 2. Taxman | : | Company Law, Digest |

Journals:

- | | | |
|------------------------------|---|---|
| 1. Chartered Secretary | : | ICSI Publication |
| 2. Student Company Secretary | : | ICSI Publication |
| 3. Company Law Journal | : | L.M.Sharma, Post Box No. 2693,
New Delhi – 110005. |
| 4. Corporate Law Adviser | : | Corporate Law Advisers, Post Bag
No. 3, VasantVihar, New Delhi |

PAPER PATTERN

COMPANY SECRETARIAL PRACTICE - PAPER I & II

SEMESTER - III & IV

W.E.F. 2017-2018

Q.1 Multiple Choice Questions

(A) Select the most appropriate answer from the option given below 10

(Any Ten out of Twelve)

(B) State whether the following statements are True or False 10

(Any Ten out of Twelve)

Q.2 Answer Any Two of the following Out of Three questions - Module - I 15

a.

b.

c.

Q.3 Answer Any Two of the following Out of Three questions - Module - II 15

a.

b.

c.

Q.4 Answer Any Two of the following Out of Three questions - Module - III 15

a.

b.

c.

Q.5 Answer Any Two of the following Out of Three questions - Module - IV 15

a.

b.

c.

Q.6 Write notes on Any Four out of Six 20

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***2 Ability Enhancement Courses (AEC)
2A * Skill Enhancement Courses (SEC) Group A***

5. Computer Programming Paper I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Hardware	15
2	Software	15
3	Introduction To C Programming	15
4	C – Decision / Loop Statements	15
5	Laboratory Training	15
Total		75

Sr. No.	Modules / Units
1	UNIT – I : HARDWARE
	Evolution of Computers – Generations, Types of Computers, Computer System, Characteristics, Basic Components of a Digital Computer – Control Unit, ALU, Input / Output, Functions and Memory, Memory Addressing Capability of a CPU, Binary number system, Binary addition (1's complement, 2's Complement), Binary to decimal and Decimal to Binary Conversion, Octal Number, Hexadecimal System, World length of a computer, processing speed of a computer.
2	UNIT – II : SOFTWARE
	Software and its Need, Types of Software – System Software, Application software, System Software – Operating System, Utility Program, Algorithms, Flow Charts – Symbols, Rules for making Flow chart, Programming languages, Assemblers, Compilers and Interpreter, Computer Applications in Business.
3	UNIT – III : INTRODUCTION TO C PROGRAMMING
	Structure of C program, Keywords, identifies, constants, variables, data types, type modifier, type conversion, types of operator and expressions, Input and Output functions in C (print(), scanf(), getchar(), putchar(), gets(), puts()). Storage class specifiers Header files(stdio.h, math.h, conio.h)
4	UNIT – IV : C – DECISION / LOOP STATEMENTS
	Decision Statement – if-else statement, break, continue, goto, switch() case and nested if statement. Loop control statements – for(), while(), do-while loop() and nested loops.
5	LABORATORY TRAINING
	Lab 1 : Writing algorithms and drawing flowcharts (Input-process-output). Lab 2 : Writing algorithms and drawing flowcharts (Input-decision-process-output). Lab 3 : Writing algorithms and drawing flowcharts (Simple Loops). Lab 4 : Loading a C editor program-Entering and compiling a simple C-program. Lab 5 : C-program to input name-and sales & then print name and commission. Lab 6 : C-program to compute commission, discount etc using if() condition. Lab 7 : Computing income tax based on given criterion. Lab 8 : Printing numbers and summing number using loops. Lab 9 : Printing interest and depreciation tables.

QUESTION PAPER PATTERN

Maximum Marks : 75

Questions to be set : 05

Duration : $2\frac{1}{2}$ Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particulars	Marks
Q. 1.	Objective Questions A. Sub Questions to be asked 10 and to be solved any 08 B. Sub Questions to be asked 10 and to be solved any 07 (* Multiple choice / True or False / Match the columns)	15 Marks
Q. 2.	Full Length Question OR	15 Marks
Q. 2.	Full Length Question	15 Marks
Q. 3.	Full Length Question OR	15 Marks
Q.3.	Full Length Question	15 Marks
Q. 4.	Full Length Question OR	15 Marks
Q. 4.	Full Length Question	15 Marks
Q. 5.	Full Length Question OR	15 Marks
Q. 5.	Short Notes To be asked 05 To be answered 03	15 Marks

Note : Full length question of 15 marks may be divided into two sub questions of 08 and 07 marks.

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***2 Ability Enhancement Courses (AEC)
2B * Skill Enhancement Courses (SEC) Group B***

6. Foundation Course- Contemporary Issues- III

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Human Rights Provisions, Violations and Redressal	12
2	Dealing With Environmental Concerns	11
3	Science and Technology I	11
4	Soft Skills for Effective Interpersonal Communication	11
Total		45

Sr. No.	Modules / Units
1	Human Rights Violations and Redressal
	<p>A. Scheduled Castes- Constitutional and legal rights, Forms of violations, Redressal mechanisms. (2 Lectures)</p> <p>B. Scheduled tribes- Constitutional and legal rights, Forms of violations, Redressal mechanisms. (2 Lectures)</p> <p>C. Women- Constitutional and legal rights, Forms of violations, Redressal mechanisms. (2 Lectures)</p> <p>D. Children- Constitutional and legal rights, Forms of violations, Redressal mechanisms. (2 Lectures)</p> <p>E. People with Disabilities, Minorities, and the Elderly population- Constitutional and legal rights, Forms of violations, Redressal mechanisms. (4 Lectures)</p>
2	Dealing With Environmental Concerns
	<p>A. Concept of Disaster and general effects of Disasters on human life- physical, psychological, economic and social effects. (3 Lectures)</p> <p>B. Some locally relevant case studies of environmental disasters. (2 Lectures)</p> <p>C. Dealing with Disasters - Factors to be considered in Prevention, Mitigation (Relief and Rehabilitation) and disaster Preparedness. (3 Lectures)</p> <p>D. Human Rights issues in addressing disasters- issues related to compensation, equitable and fair distribution of relief and humanitarian approach to resettlement and rehabilitation. (3 Lectures)</p>
3	Science and Technology – I
	<p>A. Development of Science- the ancient cultures, the Classical era, the Middle Ages, the Renaissance, the Age of Reason and Enlightenment. (3 Lectures)</p> <p>B. Nature of science- its principles and characteristics; Science as empirical, practical, theoretical, validated knowledge. (2 Lectures)</p> <p>C. Science and Superstition- the role of science in exploding myths, blind beliefs and prejudices; Science and scientific temper- scientific temper as a fundamental duty of the Indian citizen. (3 Lectures)</p> <p>D. Science in everyday life- technology, its meaning and role in development; Interrelation and distinction between science and technology. (3 Lectures)</p>
4	Soft Skills for Effective Interpersonal Communication
	<p>Part A (4 Lectures)</p> <p>I) Effective Listening - Importance and Features.</p> <p>II) Verbal and Non-Verbal Communication; Public-Speaking and Presentation Skills.</p> <p>III) Barriers to Effective Communication; Importance of Self-Awareness and Body Language.</p> <p>Part B (4 Lectures)</p> <p>I) Formal and Informal Communication - Purpose and Types.</p> <p>II) Writing Formal Applications, Statement of Purpose (SOP) and Resume.</p> <p>III) Preparing for Group Discussions, Interviews and Presentations.</p> <p>Part C (3 Lectures)</p> <p>I) Leadership Skills and Self-Improvement - Characteristics of Effective Leadership.</p> <p>II) Styles of Leadership and Team-Building.</p>

References

1. Asthana, D. K., and Asthana, Meera, *Environmental Problems and Solutions*, S. Chand, New Delhi, 2012.
2. Bajpai, Asha, *Child Rights in India*, Oxford University Press, New Delhi, 2010.
3. Bhatnagar Mamta and Bhatnagar Nitin, *Effective Communication and Soft Skills*, Pearson India, New Delhi, 2011.
4. G Subba Rao, *Writing Skills for Civil Services Examination*, Access Publishing, New Delhi, 2014
5. Kaushal, Rachana, *Women and Human Rights in India*, Kaveri Books, New Delhi, 2000.
6. Mohapatra, Gaur Krishna Das, *Environmental Ecology*, Vikas, Noida, 2008.
7. Motilal, Shashi, and Nanda, Bijoy Lakshmi, *Human Rights: Gender and Environment*, Allied Publishers, New Delhi, 2007.
8. Murthy, D. B. N., *Disaster Management: Text and Case Studies*, Deep and Deep Publications, New Delhi, 2013.
9. Parsuraman, S., and Unnikrishnan, ed., *India Disasters Report II*, Oxford, New Delhi, 2013
10. Reza, B. K., *Disaster Management*, Global Publications, New Delhi, 2010.
11. Sathe, Satyaranjan P., *Judicial Activism in India*, Oxford University Press, New Delhi, 2003.
12. Singh, Ashok Kumar, *Science and Technology for Civil Service Examination*, Tata McGraw Hill, New Delhi, 2012.
13. Thorpe, Edgar, *General Studies Paper I Volume V*, Pearson, New Delhi, 2017.

Projects / Assignments (for Internal Assessment)

- i. Projects/Assignments should be drawn for the component on Internal Assessment from the topics in **Module 1 to Module 4**.
- ii. Students should be given a list of possible topics - at least 3 from each Module at the beginning of the semester.
- iii. The Project/Assignment can take the form of Street-Plays / Power-Point Presentations / Poster Exhibitions and similar other modes of presentation appropriate to the topic.
- iv. Students can work in groups of not more than 8 per topic.
- v. Students must submit a hard / soft copy of the Project / Assignment before appearing for the semester end examination.

QUESTION PAPER PATTERN (Semester III)

The Question Paper Pattern for Semester End Examination shall be as follows:

TOTAL MARKS: 75

DURATION: 150 MINUTES

QUESTION NUMBER	DESCRIPTION	MARKS ASSIGNED
1	i. Question 1 A will be asked on the meaning / definition of concepts / terms from all Modules. ii. Question 1 B will be asked on the topic of the Project / Assignment done by the student during the Semester iii. In all 8 Questions will be asked out of which 5 have to be attempted.	a) Total marks: 15 b) For 1 A, there will be 3 marks for each sub-question. c) For 1 B there will be 15 marks without any break-up.
2	Descriptive Question with internal option (A or B) on Module 1	15
3	Descriptive Question with internal option (A or B) on Module 2	15
4	Descriptive Question with internal option (A or B) on Module 3	15
5	Descriptive Question with internal option (A or B) on Module 4	15

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***2. Ability Enhancement Courses (AEC)
2B. Skill Enhancement Courses (SEC)***

6. Foundation Course in NSS - III

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Value System & Gender sensitivity	12
2	Disaster preparedness & Disaster management	10
3	Health, hygiene & Diseases	13
4	Environment & Energy conservation	10
Total		45

Sr. No.	Modules / Units
1	Value System & Gender sensitivity
	UNIT - I – Value System Meaning of value, Types of values- human values and social responsibilities- Indian value system- the concepts and its features UNIT - II - Gender sensitivity and woman empowerment Concept of gender- causes behind gender related problems- measures Meaning of woman empowerment- schemes for woman empowerment in India
2	Disaster preparedness & Disaster management
	UNIT - I - Basics of Disaster preparedness Disaster- its meaning and types Disaster preparedness- its meaning and methods UNIT - II - Disaster management Disaster management- concept- disaster cycle - role of technology in disaster response- role of as first responder – the study of 'Avhan' Model
3	Health, hygiene & Diseases
	UNIT - I - Health and hygiene Concept of complete health and maintenance of hygiene UNIT - II - Diseases and disorders- preventive campaigning Diseases and disorders- preventive campaigning in Malaria, Tuberculosis, Dengue, Cancer, HIV/AIDS, Diabetes
4	Environment & Energy conservation
	UNIT - I Environment and Environment enrichment program Environment- meaning, features , issues, conservation of natural resources and sustainability in environment UNIT - II Energy and Energy conservation program Energy- the concept, features- conventional and non- conventional energy Energy conservation- the meaning and importance

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2. Ability Enhancement Courses (AEC)

2B. Skill Enhancement Courses (SEC)

6. Foundation Course in NCC - III

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	National Integration & Awareness	10
2	Drill: Foot Drill	10
3	Adventure Training and Environment Awareness and Conservation	05
4	Personality Development and Leadership	10
5	Specialized subject (ARMY)	10
Total		45

Sr. No.	Modules / Units
1	National Integration & Awareness
	<p>Desired outcome: The students will display sense of patriotism, secular values and shall be transformed into motivated youth who will contribute towards nation building through national unity and social cohesion.</p> <p>The students shall enrich themselves about the history of our beloved country and will look forward for the solutions based on strengths to the challenges to the country for its development.</p> <ul style="list-style-type: none"> • Freedom Struggle and nationalist movement in India. • National interests, Objectives, Threats and Opportunities. • Problems/ Challenges of National Integration. • Unity in Diversity
2	Drill: Foot Drill
	<p>Desired outcome: The students will demonstrate the sense of discipline, improve bearing, smartness, turnout, develop the quality of immediate and implicit obedience of orders, with good reflexes.</p> <ul style="list-style-type: none"> • Side pace, pace forward and to the rear • Turning on the march and whiling • Saluting on the march • Marking time, forward march and halt in quick time • Changing step • Formation of squad and squad drill
3	Adventure Training, Environment Awareness and Conservation
3A	Adventure Training
	<p>Desired outcome: The students will overcome fear & inculcate within them the sense of adventure, sportsmanship, esprit-d-corp and develop confidence, courage, determination, diligence and quest for excellence.</p> <ul style="list-style-type: none"> • Any Two such as – Obstacle course, Slithering, Trekking, Cycling, Rock Climbing, Para Sailing, Sailing, Scuba Diving etc.
3B	Environment Awareness and Conservation
	<p>Desired outcome: The student will be made aware of the modern techniques of waste management and pollution control.</p> <ul style="list-style-type: none"> • Waste management • Pollution control, water, Air, Noise and Soil
4	Personality Development and Leadership
	<p>Desired outcome: The student will inculcate officer like qualities with desired ability to take right decisions.</p> <ul style="list-style-type: none"> • Time management • Effect of Leadership with historical examples • Interview Skills • Conflict Motives- Resolution

Sr. No.	Modules / Units
5	Specialized Subject: Army Or Navy Or Air
	<p><u>Army</u> Desired outcome: It will acquaint, expose & provide knowledge about Army/ Navy/ Air force and to acquire information about expanse of Armed Forces ,service subjects and important battles</p> <p>A. Armed Force</p> <ul style="list-style-type: none"> • Task and Role of Fighting Arms • Modes of Entry to Army • Honors and Awards <p>B. Introduction to Infantry and weapons and equipments</p> <ul style="list-style-type: none"> • Characteristics of 5.56mm INSAS Rifle, Ammunition, Fire power, Stripping, Assembling and Cleaning • Organization of Infantry Battalion. <p>C. Military history</p> <ul style="list-style-type: none"> • Study of battles of Indo-Pak War 1965,1971 and Kargil • War Movies <p>D. Communication</p> <ul style="list-style-type: none"> • Characteristics of Walkie-Talkies • Basic RT Procedure • Latest trends and Development (Multi Media, Video Conferencing, IT) <p style="text-align: center;">OR</p> <p><u>Navy</u></p> <p>A. Naval orientation and service subjects</p> <ul style="list-style-type: none"> • Organization of Ship- Introduction on Onboard Organization • Naval Customs and Traditions • Mode of Entry into Indian Navy • Branches of the Navy and their functions • Naval Campaign (Battle of Atlantic, Pearl Harbour, Falkland War/Fleet Review/ PFR/ IFR)s <p>B. Ship and Boat Modelling</p> <ul style="list-style-type: none"> • Types of Models • Introduction of Ship Model- Competition Types of Model Prepare in NSC and RDC • Care and handling of power-tools used- maintenance and purpose of tools

Sr. No.	Modules / Units
	<p>C. Search and Rescue</p> <ul style="list-style-type: none"> • Role of Indian Coast Guard related to SAR <p>D. Swimming</p> <ul style="list-style-type: none"> • Floating and Breathing Techniques- Precautions while Swimming <p style="text-align: center;">OR</p> <p><u>AIR</u></p> <p>A. General Service Knowledge</p> <ul style="list-style-type: none"> • Organization Of Air Force • Branches of the IAF. <p>B. Principles of Flight</p> <ul style="list-style-type: none"> • Venturi Effect • Aerofoil • Forces on an Aircraft • Lift and Drag <p>C. Airmanship</p> <ul style="list-style-type: none"> • ATC/RT Procedures • Aviation Medicine <p>D. Aero- Engines</p> <ul style="list-style-type: none"> • Types of Engines • Piston Engines • Jet Engines • Turboprop Engines

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***2 Ability Enhancement Courses (AEC)
2B * Skill Enhancement Courses (SEC) Group B***

6.Foundation Course in Physical Education Paper-III

Modules at a Glance

Sr. No.	Modules	No of Lectures
1	Overview of Nutrition	10
2	Evaluation of Health, Fitness and Wellness	10
3	Prevention and Care of Exercise Injuries	10
4	Sports Training	15
Total		45

Sr. No.	Modules / Units
1	Overview of Nutrition
	<ul style="list-style-type: none"> • Introduction to nutrition & its principles • Role of Nutrition in promotion of health • Dietary Guidelines for Good Health • Regulation of water in body and factors influencing body temperature.
2	Evaluation of Health, Fitness and Wellness
	<ul style="list-style-type: none"> • Meaning & Concept of holistic health • Evaluating Personal health-basic parameters • Evaluating Fitness Activities – Walking & Jogging • Myths & mis-conceptions of Personal fitness
3	Prevention and Care of Exercise Injuries
	<ul style="list-style-type: none"> • Types of Exercise Injuries • First Aid- Importance & application in Exercise Injuries • Management of Soft tissues injuries • Management of bone injuries
4	Sports Training
	<ul style="list-style-type: none"> • Definition, aims & objectives of Sports training • Importance of Sports training • Principles of Sports training • Drug abuse & its effects

R. _____: The Scheme of Examination:

The performance of the learners shall be evaluated in two components: Internal Assessment with 25% marks by way of continuous evaluation and by Semester End Examination with 75% marks by conducting the theory examination.

INTERNAL ASSESSMENT:- It is defined as the assessment of the learners on the basis of continuous evaluation as envisaged in the credit based system by way of participation of learners in various academic and correlated activities in the given semester of the programme.

A) Internal Assessment – 25%

25 Marks

Sr. No.	Particulars		Marks
1	A project to be prepared by an individual learner or a group of learners in not more than five learners in a group. It is to be evaluated by the teacher concerned.		20 Marks
	Hard Copy of the project*	10 Marks	
	Presentation	05 Marks	
	Viva/Interaction	05 Marks	
2	Active participation in routine class instructional deliveries and overall conduct as a responsible learner, mannerism and articulation and exhibit of leadership qualities in organizing related academic activities.		05 Marks

The marks of the internal assessment should not be disclosed to the students till the results of the corresponding semester is declared.

SEMESTER END EXAMINATION:- It is defined as the examination of the learners on the basis of performance in the semester end theory / written examinations.

B) Semester End Examinations – 75%

75 Marks

The assessment of **Part 'A' i.e. Internal Assessment** and **Part 'B' i.e. Semester End Examination** as mentioned above for the Semesters I to IV shall be processed by the Colleges / Institutions of their learners and issue the grade cards to them after the conversion of marks into grade as per the procedure.

INTERNAL ASSESSMENT (PRACTICUM) **(25 Marks)**

SEMESTER –III

(Continuous Evaluation during practical sessions conducted for 27 hours)

- a. A learner willing to participate in inter-collegiate/ inter university competitions of any game and sports conducted by the University of Mumbai will be evaluated for 15 marks on the basis of his attendance, sincerity and performance during the training / practice / coaching sessions / camps conducted by the college/University for at least 10 days. It is expected that the colleges should organize training / practice / coaching sessions / camps of various games and sports as per the choice of the learner. However, due to unavailability of the same in his / her college if a learner participates in the training / practice / coaching sessions / camps organized by other organizations or clubs of sports and games, may be considered for evaluation for 15 marks on the basis of the proofs of attendance and participation submitted by a learner.
- b. A learner will be taught the following yogic practices by conducting practicals for at least 10 sessions (one hour each) and will be assessed by the concern teacher for marks out of **10** on the basis of his attendance, sincerity and performance.
- **Yogic Practices** :- Shirshasana, Sarvangasana, Matsyasana, Halasana, Bhujangasana, Shalabhasana, Dhanurasana, Ardhamatsendrasana, Pashchimotanasana, Mayurasana, Shavasana, Yoga Mudra & Uddiyan Bandh, Nauli, Kapalbhati, Ujjayyi Pranayam, Bhastrika, Omkar and Dhyana.

(Note:- The above yoga practical sessions should be conducted in a such way that every learner must realize its effects as well as should make it as a part of his/her life style).

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with Effect from the Academic Year 2017-2018***

***2 Ability Enhancement Courses (AEC)
2B * Skill Enhancement Courses (SEC) Group B***

7. Business Law - I

Course Objective:

- To provide a conceptual study about the framework of Indian Business Laws.
- To orient students about the legal aspects of business
- To familiarize the students with case law studies related to Business Laws of Semester III and IV.

Sr. No.	Modules	No. of Lectures
1	Indian Contract Act – 1872 Part -I	12
2	Indian Contract Act – 1872 Part -II	12
3	Special Contracts	12
4	The Sale Of Goods Act - 1930	12
5	The Negotiable Instruments (Ammended) Act 2015	12
Total		60

Sr. No.	Modules
1	Indian Contract Act – 1872 Part –I
	<ul style="list-style-type: none"> • Contract – Definition of Contract and Agreement, Essentials of Valid Contract, Classification of Contracts. • Offer and Acceptance – Rules of valid offer and acceptance, Counter offer, standing or open offer, distinguish between offer and invitation to offer. Concept of Communication and Revocation of offer and acceptance (sec. 3,5) • Capacity to Contract (S. 10-12) – Minor, Unsound Mind, Disqualified Persons. • Consideration (S. 2 & 25) – Concept and Importance of consideration, Legal rules of Consideration, Exceptions to the Rule, ‘No Consideration No Contract’(Ss. 25) Unlawful Consideration (S 23)
2	Indian Contract Act – 1872 Part –II
	<ul style="list-style-type: none"> • Consent (Ss.13, 14-18, 39.53, 55, 66)-Agreements in which consent is not free - Coercion, Undue Influence, Misrepresentation Fraud, Mistake. • Void Agreements (S. 24-30) – Concept, Void Agreements under Indian Contract Act. • Contingent Contract (S. 31), Quasi Contract (S.68-72), Concept of E-Contract& Legal Issues in formation and discharge of E- Contract. Concept of Performance of Contract (S 37) • Modes of Discharge of Contract, Remedies on breach of Contract.(73-75)
3	Special Contracts
	<ul style="list-style-type: none"> • Law of Indemnity & Guarantee (Ss. 124-125, Ss. 126-129, 132-147) – Concept, Essentials elements of Indemnity and Guarantee, Contract of Indemnity vs. Guarantee, Modes of Discharge of Surety. • Law of Bailment (S. 148, 152-154, 162, 172, 178, 178A, 179) – Concept, Essentials of Bailment, Kinds of Bailment, Rights and Duties of Bailor and Bailee • Law of Pledge – Concept, Essentials of valid Pledge, Lien - concept, Difference between Pledge and Lien, Rights of Pawnor & Pawnee.(Ss.173, 174, 177) • Law of Agency (Ss. 182-185, 201-209) – Concept, Modes of creation of Agency, Modes of termination of Agency, Rights& Duties of Principal and Agent.

4	The Sale Of Goods Act - 1930
	<ul style="list-style-type: none"> • Contract of Sale (S.2) – Concept, Essentials elements of contract of sale, Distinction between Sale and Agreement to sell (S.4) Distinguish between Sale and Hire Purchase Agreement, Types of Goods. Effects of destruction of Goods (Ss. 6,7.8), • Conditions & Warranties (Ss. 11-25 & 62, 63) – Concept, Distinguish between Conditions and Warranties, Implied Conditions & Warranties, Concept of Doctrine of Caveat Emptor –Exceptions. • Property – Concept , Rules of transfer of property (Ss. 18-26) • Unpaid Seller (Ss. 45-54, 55 & 56)- Concept, Rights of an unpaid seller, Remedies for Breach of contract of Sale (Ss. 55-61), Auction sale – Concept, Legal Provisions. (S. 64)
5	The Negotiable Instruments (Ammended) Act 2015
	<ul style="list-style-type: none"> • Negotiable Instruments – Concept (S13), Characteristics, Classification of Negotiable Instruments (Ss. 11, 12, 17-20, 42, 43, 104,134,135) Maturity of Instruments. • Promissory Note and Bill of Exchange (Ss. 4,5, 108-116)- Concept, Essentials of Promissory Note, Bill of Exchange (Ss. 4,5), Essential features of promissory note and Bill of exchange, Kinds Promissory note and Bill of exchange, Cheque (S.6)– Concept, Types & Crossing of Cheque, Distinguish between Bill of Exchange & Cheque, Dishonour of Cheque – Concept & Penalties (Ss. 138, 139,142) • Miscellaneous Provisions (S. 8-10, 22, 99-102, 118-122, 134-137) –Parties to Negotiable instruments Holder, Holder in due course, Rights & Privileges of Holder in due course, Payment in due course, Noting & Protest (99-104A)

SEMESTER – III REFERENCE BOOKS:

REFERENCES

1. Law of Contract: Avatar Singh, Eastern Book Company.
2. Merchantile Law: by M.C.Kucchal.
3. Business Law : N.D.Kapoor
4. The Law of Contract: An Outline by Dr. Nilima Chandiramani, Avinash Publications.
5. Law of Sale of Goods and Partnership: A Concise Study by Dr. Nilima Chandiramani, Shroff Publishers.
6. The Sale of Goods Act: P. Ramanatha Aiyar, University Book Agency.
7. The Negotiable Instruments Act: Bhashyam &Adiga, Bharat Law House.
8. The Negotiable Instruments Act: Avatar Singh, Eastern Book Company
9. Khergamvala on the Negotiable Instruments (Amendment)Act,2015, Lexis Nexis

PAPER PATTERN

S.Y.B.COM

SEMESTER III & IV

BUSINESS LAW PAPER I & II

(100 Marks Paper Per Semester)

- 1. Question paper to have Five Questions
(One from Each Module) 20 Marks Each**
- 2. All Questions to be Compulsory.**
- 3. Each Question to have Four Sub Questions of Ten Marks Each
(Students to answer any Two out of Four)**

Question Paper Pattern (Practical Courses)

Maximum Marks: 100

Questions to be set: 06

Duration: 03 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions A) Sub Questions to be asked 12 and to be answered any 10 B) Sub Questions to be asked 12 and to be answered any 10 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	20 Marks
Q-2	Full Length Practical Question OR	15 Marks
Q-2	Full Length Practical Question	15 Marks
Q-3	Full Length Practical Question OR	15 Marks
Q-3	Full Length Practical Question	15 Marks
Q-4	Full Length Practical Question OR	15 Marks
Q-4	Full Length Practical Question	15 Marks
Q-5	Full Length Practical Question OR	15 Marks
Q-5	Full Length Practical Question	15 Marks
Q-6	A) Theory questions B) Theory questions OR	10 Marks 10 Marks
Q-6	Short Notes To be asked 06 To be answered 04	20 Marks

Note:

Practical question of 15 marks may be divided into two sub questions of 7/8 and 10/5Marks.

Question Paper Pattern (Theoretical Courses)

Maximum Marks: 100

Questions to be set: 06

Duration: 03 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions G) Sub Questions to be asked 12 and to be answered any 10 H) Sub Questions to be asked 12 and to be answered any 10 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	20 Marks
Q-2	Full Length Question OR	15 Marks
Q-2	Full Length Question	15 Marks
Q-3	Full Length Question OR	15 Marks
Q-3	Full Length Question	15 Marks
Q-4	Full Length Question OR	15 Marks
Q-4	Full Length Question	15 Marks
Q-5	Full Length Question OR	15 Marks
Q-5	Full Length Question	15 Marks
Q-6	G) Theory questions H) Theory questions OR	10 Marks 10 Marks
Q-6	Short Notes To be asked 06 To be answered 04	20 Marks

Note:

Theory question of 15 marks may be divided into two sub questions of 7/8 and 10/5Marks.

B.Com. Programme
Under Choice Based Credit, Grading and Semester System
Course Structure

(To be implemented from Academic Year- 2017-2018)

Semester IV

No. of Courses	Semester IV	Credits
1	Elective Courses (EC)	
1A	Discipline Specific Elective(DSE) Courses	
1Aa	Discipline Specific Elective(DSE) Courses	
1	Accountancy and Financial Management IV	03
1Ab	Discipline Specific Elective(DSE) Courses	
2	*Any one course from the following list of the courses	03
1B	Discipline Related Elective(DRE) Courses	
3	Commerce IV	03
4	Business Economics IV	03
2	Ability Enhancement Courses (AEC)	
2A	*Skill Enhancement Courses (SEC) Group A	
5	*Any one course from the following list of the courses	03
2B	*Skill Enhancement Courses (SEC) Group B	
6	Any one course from the following list of the courses	02
3	Core Courses (CC)	
7	Business Law II	03
Total Credits		20

1Ab *List of Discipline Specific Elective (DSE) Courses for Semester IV (Any One)	
1	Financial Accounting and Auditing - Auditing
2	Business Management- Marketing Management
3	Banking & Finance- Introduction to Banking in India
4	Commerce- International Business Relations

<i>*List of Skill Enhancement Courses (SEC) Group A for Semester IV (Any One)</i>	
1	Advertising II
2	Field Sales Management II
3	Public Relations II
4	Mass Communication II
5	Travel & Tourism Management II
6	Journalism II
7	Company Secretarial Practice II
8	Rural Development II
9	Co-operation II
10	Mercantile Shipping II
11	Indian Economic Problem II
12	Computer Programming II
13	Logistic and Supply Chain Management I
14	Economic System II
<i>Note: Course selected in Semester III will continue in Semester IV</i>	

<i>** List of Skill Enhancement Courses (SEC) Group B</i>	
1	Foundation Course- Contemporary Issues - IV
2	Foundation Course in NSS - IV
3	Foundation Course in NCC - IV
4	Foundation Course in Physical Education - IV
<i>Note: Course selected in Semester III will continue in Semester IV</i>	

***Revised Syllabus of Courses of B.Com. Programme at Semester IV
with Effect from the Academic Year 2017-2018***

Elective Courses (EC)

Discipline Specific Elective (DSE) Courses

1Aa. Accountancy and Financial Management IV

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Company Accounts	15
2	Redemption of Preference Shares	15
3	Redemption of Debentures	15
4	Ascertainment and Treatment of Profit Prior to Incorporation	15
Total		60

Sr. No.	Modules / Units
1	Introduction to Company Accounts
	<p>Introduction of basic terms: Types of companies, nature and formation of companies, Shares, Debentures, Share Capital, Reserves and surplus, types of assets and liabilities, dividend, format of Balance Sheet (Only theory)</p> <p>Issue of shares: Different modes IPO, Private Placements, Preferential, Rights, ESO, SWEAT and ESCROW account, Issue of shares at par, premium and discount, Under subscription and Over subscription of shares, forfeiture and reissue of forfeited shares, issue of shares for consideration other than cash. (Only theory)</p> <p>Issue of Debentures: types of Debentures, Issue of debentures at par, premium and discount, Issue of Debentures with consideration of Redemption, Issue of debentures for cash receivable in instalments or at a time Issue of debentures for consideration other than cash. (Only theory)</p>
2	Redemption of Preference Shares
	<p>Provision of the Companies Act for redemption of Preference Shares (Sec 55 of the Companies Act, 2013), Companies (Share and Debentures) Rules.</p> <p>Methods of Redemption of fully paid up Preference Shares as per Companies Act, 2013: The proceed of a fresh issue of shares, the capitalisation of undistributed profits and a combination of both, calculation of minimum fresh issue to provide the fund for redemption,</p> <p>(Question on entries and/or Balance Sheet)</p> <p>Note: Companies governed by Section 133 of the Companies Act, 2013 and comply with the accounting standards prescribed for them. Hence, the balance in security premium account not to be utilised for premium payable on redemption of preference shares.</p>
3	Redemption of Debentures
	<p>Introduction : Provisions of Section 71 (1) and (4) of the Companies Act, 2013, Creation and investment of DRR including The Companies (Share Capital and Debentures) Rules, 2014, the methods of writing-off discount/loss on issue of debentures; Terms of issue of debentures</p> <p>Methods of redemption of debentures: By payment in lumpsum and by payment in instalments (excluding from by purchase in open market), Conversion.</p> <p>(Question on entries. ledgers and/or Balance Sheet and /or redemption of preference shares)</p>
4	Ascertainment and Treatment of Profit Prior to Incorporation
	<p>(i) Principles for ascertainment</p> <p>Preparation of separate combined, columnar Profit and Loss A/c including different basis of allocation of expenses and income</p>

Note: The Law and Standards in force on 1st April immediately preceding the commencement of Academic year will be applicable for ensuing Examinations

Reference Text :

1. Introduction to Accountancy T.S. Grewal S. Chand and Co. (P) Ltd., New Delhi
2. Advanced Accounts Shukla and Grewal S. Chand and Co. (P) Ltd., New Delhi
3. Advanced accountancy R.L. Gupta and M. Radhaswamy S. Chand and Co. (P) Ltd., New Delhi
4. Modern Accountancy Mukerjee and Hanif Tata Mc. Grow Hill and Co. Ltd., Mumbai
5. Financial Accountancy LesileChandWichkPretice Hall of India AdinBakley (P) Ltd.

Question Paper Pattern (Theoretical Courses)

Maximum Marks: 100

Questions to be set: 06

Duration: 03 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions I) Sub Questions to be asked 12 and to be answered any 10 J) Sub Questions to be asked 12 and to be answered any 10 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	20 Marks
Q-2	Full Length Question OR	15 Marks
Q-2	Full Length Question	15 Marks
Q-3	Full Length Question OR	15 Marks
Q-3	Full Length Question	15 Marks
Q-4	Full Length Question OR	15 Marks
Q-4	Full Length Question	15 Marks
Q-5	Full Length Question OR	15 Marks
Q-5	Full Length Question	15 Marks
Q-6	I) Theory questions J) Theory questions OR	10 Marks 10 Marks
Q-6	Short Notes To be asked 06 To be answered 04	20 Marks

Note:

Theory question of 15 marks may be divided into two sub questions of 7/8 and 10/5Marks.

***Revised Syllabus of Courses of B.Com. Programme at Semester III
with Effect from the Academic Year 2017-2018***

Elective Courses (EC)

Discipline Specific Elective (DSE) Courses

1Ab. Financial Accounting and Auditing VI – Auditing

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Auditing	10
2	Audit Planning, Procedures and Documentation	10
3	Auditing Techniques and Internal Audit Introduction	15
4	Auditing Techniques : Vouching & Verification	10
Total		45

Sr. No.	Modules / Units
1	Introduction to Auditing
	<p>A. Basics – Financial Statements, Users of Information, Definition of Auditing, Objectives of Auditing, Inherent limitations of Audit, Difference between Accounting and Auditing, Investigation and Auditing.</p> <p>B. Errors & Frauds – Definitions, Reasons and Circumstances, Types of Error, Types of frauds, Risk of fraud and Error in Audit, Auditors Duties and Responsibilities in case of fraud.</p> <p>C. Principles of Audit, Materiality, True and Fair view</p> <p>D. Types of Audit – Meaning, Advantages, Disadvantages of Balance sheet Audit, Interim Audit, Continuous Audit, Concurrent Audit and Annual Audit, Statutory Audit</p>
2	Audit Planning, Procedures and Documentation
	<p>A. Audit Planning – Meaning, Objectives, Factors to be considered, Sources of obtaining information, Discussion with Client, Overall Audit Approach</p> <p>B. Audit Program – Meaning, Factors, Advantages and Disadvantages, Overcoming Disadvantages, Methods of Work, Instruction before commencing Work, Overall Audit Approach.</p> <p>C. Audit Working Papers – Meaning, importance, Factors determining Form and Contents, Main Functions / Importance, Features, Contents of Permanent Audit File, Temporary Audit File, Ownership, Custody, Access of Other Parties to Audit Working Papers, Auditors Lien on Working Papers, Auditors Lien on Client's Books.</p>
3	Auditing Techniques and Internal Audit Introduction
	<p>A. Test Check – Test Checking Vs Routing Checking, test Check meaning, features, factors to be considered, when Test Checks can be used, advantages, disadvantages, precautions.</p> <p>B. Audit Sampling – Audit Sampling, meaning, purpose, factors in determining sample size – Sampling Risk, Tolerable Error and expected error, methods of selecting Sample Items Evaluation of Sample Results auditors Liability in conducting audit based on Sample</p> <p>C. Internal Control – Meaning and purpose, review of internal control, advantages, auditors duties, review of internal control, Inherent Limitations of Internal control, internal control samples for sales and debtors, purchases and creditors, wages and salaries. Internal Checks Vs Internal Control, Internal Checks Vs Test Checks.</p> <p>D. Internal Audit : Meaning, basic principles of establishing Internal audit, objectives, evaluation of internal Audit by statutory auditor, usefulness of Internal Audit, Internal Audit Vs External Audit, Internal Checks Vs Internal Audit</p>

Sr. No.	Modules / Units
4	Auditing Techniques : Vouching & Verification
	<p>A. Audit of Income : Cash Sales, Sales on Approval, Consignment Sales, Sales Returns Recovery of Bad Debts written off, Rental Receipts, Interest and Dividends Received Royalties Received</p> <p>B. Audit of Expenditure : Purchases, Purchase Returns, Salaries and Wages, Rent, Insurance Premium, Telephone expense Postage and Courier, Petty Cash Expenses, Travelling Commission Advertisement, Interest Expense</p> <p>C. Audit of Assets Book Debts / Debtors, Stocks – Auditors General Duties; Patterns, Dies and Loose Tools, Spare Parts, Empties and Containers Quoted Investments and Unquoted Investment Trade Marks / Copyrights Patents Know-How Plant and Machinery Land and Buildings Furniture and Fixtures</p> <p>D. Audit of Liabilities : Outstanding Expenses, Bills Payable Secured loans Unsecured Loans, Contingent Liabilities</p>

Note: The Law and Standards in force on 1st April immediately preceding the commencement of Academic year will be applicable for ensuing Examinations

Question Paper Pattern (Theoretical Courses)

Maximum Marks: 100

Questions to be set: 06

Duration: 03 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions K) Sub Questions to be asked 12 and to be answered any 10 L) Sub Questions to be asked 12 and to be answered any 10 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	20 Marks
Q-2	Full Length Question OR	15 Marks
Q-2	Full Length Question	15 Marks
Q-3	Full Length Question OR	15 Marks
Q-3	Full Length Question	15 Marks
Q-4	Full Length Question OR	15 Marks
Q-4	Full Length Question	15 Marks
Q-5	Full Length Question OR	15 Marks
Q-5	Full Length Question	15 Marks
Q-6	K) Theory questions L) Theory questions OR	10 Marks 10 Marks
Q-6	Short Notes To be asked 06 To be answered 04	20 Marks

Note:

Theory question of 15 marks may be divided into two sub questions of 7/8 and 10/5Marks.

***Revised Syllabus of Courses of B.Com. Programme at Semester IV
with Effect from the Academic Year 2017-2018***

Elective Courses (EC)

Discipline Specific Elective (DSE) Courses

1Ab. Business Management-Marketing Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Distribution	10
2	Promotion	15
3	Understanding Buyer Behaviour	10
4	Marketing of services and Rural Marketing	10
Total		45

Sr. No.	Modules / Units
1	Distribution
	<ul style="list-style-type: none"> • Types of middlemen • Factors affecting channel by middlemen • Functions performed by middlemen • Logistics : Meaning and components • E-marketing : Meaning, merits and demerits of e-marketing • Online retailing – successful online retailers in India and abroad
2	Promotion
	<ul style="list-style-type: none"> • Elements of promotion mix • Objectives of promotion and marketing communication • Factors affecting promotion mix decisions • Steps in designing a marketing communication program • Role of Social Media in marketing communication
3	Understanding Buyer Behaviour
	<ul style="list-style-type: none"> • Comparing consumer markets (individuals and households) with organizational buyers (Industrial / Business houses) • Factors affecting consumer behaviour • Steps in consumer purchase decision process (with respect to high involvement and low involvement products) • Factors affecting organizational buyer behaviour • Steps in the organizational purchase decision process (with respect to different buying situations)
4	Marketing of services and Rural Marketing
	<ul style="list-style-type: none"> • Services : definition and features • Marketing mix for services marketing • Managing service quality and productivity • Rural market scenario in India • Factors contributing to the growth of rural markets in India • Challenge of Rural Marketing • Strategies to cope with the challenges of rural marketing.

Reference Books:

1. Philip Kotler (2003). Marketing Management : Eleventh Edition. New Delhi : Pearson Education
2. V. S. Ramaswani and S Namakumari (2002). Marketing : Planning, Implementation and Control (3rd Edition) New Delhi, Macmillan India
3. Michael Porter – Competitive Advantage
4. Theodore Levitt – Marketing Management
5. Fundamentals of Marketing – William Stanton
6. Customer Driven Services Management (1999) Response Books

Question Paper Pattern (Theoretical Courses)

Maximum Marks: 100

Questions to be set: 06

Duration: 03 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions M) Sub Questions to be asked 12 and to be answered any 10 N) Sub Questions to be asked 12 and to be answered any 10 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	20 Marks
Q-2	Full Length Question OR	15 Marks
Q-2	Full Length Question	15 Marks
Q-3	Full Length Question OR	15 Marks
Q-3	Full Length Question	15 Marks
Q-4	Full Length Question OR	15 Marks
Q-4	Full Length Question	15 Marks
Q-5	Full Length Question OR	15 Marks
Q-5	Full Length Question	15 Marks
Q-6	M) Theory questions N) Theory questions OR	10 Marks 10 Marks
Q-6	Short Notes To be asked 06 To be answered 04	20 Marks

Note:

Theory question of 15 marks may be divided into two sub questions of 7/8 and 10/5Marks.

***Revised Syllabus of Courses of B.Com. Programme at Semester IV
with Effect from the Academic Year 2017-2018***

***Elective Courses (EC)-
1B Discipline Related Elective (DRE) Courses***

**3. Commerce – IV
(Management: Production & Finance)**

Course Objectives: -

1. To acquaint the learners with the basic concepts of Production Management, Inventory Management & Quality Management.
2. To provide basic knowledge about Indian Financial Systems.
3. To update the learners with the recent trends in Finance.

Sr. No.	Modules	No. of Lectures
1	Production & Inventory Management	11
2	Quality Management	10
3	Indian Financial System	12
4	Recent Trends In Finance	12
Total		45

Sr. No.	Modules
1	Production & Inventory Management
	<ul style="list-style-type: none"> • Production Management: Objectives, Scope Production Planning & Control : Steps, Importance • Production Systems: Concept, Types - Continuous and Intermittent. Productivity: Concept, Factors Influencing Productivity, Measures for improving Productivity. • Inventory Management- Objectives, Inventory Control- Techniques. Scientific Inventory Control System - Importance
2	Quality Management
	<ul style="list-style-type: none"> • Introduction to Quality: Dimensions of Quality, Cost of Quality: Types – Internal Failure Cost, External Failure Cost, Appraisal Cost, Prevention Cost, Quality Circle: Features. • Quality Management Tools: TQM – Importance, Six Sigma – Process, ISO 9000 – Certification Procedure, Kaizen – Process • Service Quality Management: Importance, SERVQUAL Model, Measures to improve service quality.
3	Indian Financial System
	<ul style="list-style-type: none"> • Indian Financial Market: Structure, Primary Market – IPO Procedure Dematerialisation: Process, Role of Depositories : NSDL and CDSL • SEBI: Functions of SEBI, Investors protection measures of SEBI. Stock Exchange – Functions, Speculators. • Credit Rating: Advantages, Credit Rating Agencies in India - CRISIL, CARE, and ICRA.
4	Recent Trends In Finance
	<ul style="list-style-type: none"> • Mutual Funds- Advantages and Limitations, Types, Factors responsible for growth of mutual funds – Systematic Investment Plan. • Commodity Market: Categories, Derivatives Market: Types, Participants, Types of Derivative Instruments. • Start-up Ventures – Concept, Sources of Funding, Micro Finance – Importance, Role of Self Help Groups.

SEMESTER – IV REFERENCE BOOKS:

REFERENCES

1. Production and Operations Management –Prof.L.C.Jhamb, Event Publishing House.
2. Production Planning & Control- Prof.L.C.Jhamb, Event Publishing House
3. Production & Operation Management (Text & Cases)- K.Ashwathappa&G.Sudeshana Reddy, Himalaya Publication.
4. Launching New Ventues : An EnterpreneurialApproach-KathleenR.Allen, Cengage Learning
5. Essentials of Inventory Management-MaxMuller,Amacon Publishes
6. Indian Financial System—BharathiPathiak, Pearson Publication
7. Financial Institutions and Markets : Structure Growth& Innovations – L.M.Bhole , Jitendra Mahakad, Tata McGraw Hill.
- 8.The IndianFinancial System and Financial Market Operator-VasantDesai, Himalaya Publishing
9. Indian Financial System – M.Y.Khan, Tata McGraw –Hill
- 10.Production and Operations Management –Anandkumar Sharma, Anmol Publication
11. Mutual Funds in India: Emerging Issues-NaliniPravaTripathy, Excel Books New Delhi.
12. Start up Stand up: A step by stepguide to Growing your Business,NandiniVaidyanathan, Jaico Publishing House,Mumbai
13. A Trades Guide to Indian Commodities Market-Vijay L. Bhambwani, Network 18 Publication Ltd.

PAPER PATTERN
COMMERCE PAPER I & II
SEMESTER - III & IV
W.E.F. 2017-2018

Q.1 Multiple Choice Questions

(A) Select the most appropriate answer from the option given below 10
(Any Ten out of Twelve)

(B) State whether the following statements are True or False 10
(Any Ten out of Twelve)

Q.2 Answer Any Two of the following Out of Three questions - Module - I 15

a.

b.

c.

Q.3 Answer Any Two of the following Out of Three questions - Module - II 15

a.

b.

c.

Q.4 Answer Any Two of the following Out of Three questions - Module - III 15

a.

b.

c.

Q.5 Answer Any Two of the following Out of Three questions - Module - IV 15

a.

b.

c.

Q.6 Write notes on Any Four out of Six

***Revised Syllabus of Courses of B.Com. Programme at Semester IV
with Effect from the Academic Year 2017-2018***

***Elective Courses (EC)-
1B Discipline Related Elective (DRE) Courses***

**4. Business Economics IV
Foundation of Public Finance**

Modules at a Glance

Sr. No.	Modules	No.of Lectures
1	Introduction to Public Finance	10
2	Public revenue	10
3	Public Expenditure and Debt	10
4	Fiscal Management and Financial Administration	15
Total		45

Business Economics IV

Foundation of Public Finance

Preamble

Public Finance Issues are central to economic and Political discourse worldwide, as one of the primary functions of government is to generate resources from its people to spend money for improving the lives of its people. The primary objective of this course is to provide students with the tools to understand the underlying concepts and practical tradeoffs entailed in Public finance policy alternatives.

It is strongly recommended to analyze Union budget of ongoing financial year in the class room.

Sr. no	Modules / Units
1	The Role Of Government In An Economy
	<ul style="list-style-type: none"> • Meaning and Scope of Public finance. • Major fiscal functions : allocation function, distribution function & stabilization function • Principle of Maximum Social Advantage: Dalton and Musgrave Views - the Principle in Practice, Limitations. • Relation between Efficiency, Markets and Governments • The concept of Public Goods and the role of Government
2	Public Revenue
	<ul style="list-style-type: none"> • Sources of Public Revenue :tax and non-tax revenues • Objectives of taxation - Canons of taxation - Types of taxes : direct and indirect - Tax Base and Rates of taxation : proportional, progressive and regressive taxation • Shifting of tax burden: Impact and incidence of taxation - Processes- factors influencing incidence of taxation • Economic Effects of taxation: on Income and Wealth, Consumption, Savings, Investments and Production. • Redistributive and Anti – Inflationary nature of taxation and their implications •
3	Public Expenditure And Public Debt
	<ul style="list-style-type: none"> • Public Expenditure: Canons - classification - economic effects of public spending - on production, consumption, distribution, employment and stabilization - Theories of Public Expenditure: Wagner's Hypothesis and Wiseman Peacock Hypothesis - Causes for Public Expenditure Growth. • Significance of Public Expenditure: Social security contributions- Low Income Support and Social Insurance Programmes. • Public Debt :Classification - Burden of Debt Finance : Internal and External- Public Debt and Fiscal Solvency
4	Fiscal Management and Financial Administration
	<ul style="list-style-type: none"> • Fiscal Policy: Meaning, Objectives, constituents and Limitations. • Contra cyclical Fiscal Policy and Discretionary Fiscal Policy :Principles of Sound and Functional Finance • Budget- Meaning objectives and types - Structure of Union budget - Deficit concepts-Fiscal Responsibility and Budget Management Act. • Intergovernmental Fiscal Relations: fiscal federalism and fiscal decentralization - central-state financial relations - 14th Finance Commission recommendations

	Reference Books
	Ahuja H.L. : Modern Economics, 19th edition, 2015, S.Chand&co Pvt Ltd, New Delhi
	Bhatia H.L.: Public Finance. Vikas Publishing House Pvt. Ltd.
	David N. Hyman : Public Finance A Contemporary Application of theory of policy, Krishna Offset, Delhi
	Hoiughton E.W.(1998) : Public Finance, Penguin, Baltimore
	Hajela T.N: Public Finance – Ane Books Pvt.Ltd
	Jha, R (1998) : Modern Public Economics, Route Ledge, London
	Musgrave, R.A and P.B. Musgrave (1976) : Public Finance in Theory and Practice, Tata McGraw Hill, Kogakusha, Tokyo
	Mithani, D.M (1998) : Modern Public Finance, Himalaya Publishing House, Mumbai

QUESTION PAPER PATTERN

Business Economics Semester IV

Maximum Marks: 100 Marks

Time: 3 Hours

Note: 1) Attempt all Questions

2) Attempt any two out of three questions from each of question no. 2, 3, 4 & 5

Question No	Particulars	Marks
Q-1	Objective Questions: A) Conceptual questions (Any Five out of Eight) (Two from each module) B) Multiple Choice questions (10 questions - at least two from each Module)	20Marks 10 Marks 10 Marks
Q-2 (from Module I)	A) Full Length Question B) Full Length Question C) Full Length Question	20Marks
Q-3 (from Module II)	A) Full Length Question B) Full Length Question C) Full Length Question	20Marks
Q-4 (from Module III)	A) Full Length Question B) Full Length Question C) Full Length Question	20Marks
Q-5 (from Module IV)	A) Full Length Question B) Full Length Question C) Full Length Question	20Marks

***Revised Syllabus of Courses of B.Com. Programme at Semester IV
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***2 Ability Enhancement Courses (AEC)
2A * Skill Enhancement Courses (SEC) Group A***

5. Advertising - II

Course Objective:

1. To highlight the role of advertising for the success of brands and its importance within the marketing function of a company.
2. It aims to orient learners towards the practical aspects and techniques of advertising.
3. It is expected that this course will prepare learners to lay down a foundation for advanced post-graduate courses in advertising

Sr. No.	Modules	No. of Lectures
1	Media in Advertising	11
2	Planning Advertising Campaign	11
3	Execution and Evaluation of Advertising	11
4	Fundamentals of Creativity in Advertising	12
Total		45

Sr. No.	Modules
1	Media in Advertising
	<ul style="list-style-type: none"> • Traditional Media: Print, Broadcasting, Out-Of-Home advertising and films - advantages and limitations of all the above traditional media • New Age Media: Digital Media / Internet Advertising – Forms, Significance and Limitations • Media Research: Concept, Importance, Tool for regulation - ABC and Doordarshan Code
2	Planning Advertising Campaigns
	<ul style="list-style-type: none"> • Advertising Campaign: Concept, Advertising Campaign Planning -Steps Determining advertising objectives - DAGMAR model • Advertising Budgets: Factors determining advertising budgets, methods of setting advertising budgets, Media Objectives - Reach, Frequency and GRPs • Media Planning: Concept, Process, Factors considered while selecting media, Media Scheduling Strategies
3	Fundamentals of Creativity in Advertising
	<ul style="list-style-type: none"> • Creativity: Concept and Importance, Creative Process, Concept of Creative Brief, Techniques of Visualization • Creative aspects: Buying Motives - Types, Selling Points- Features, Appeals – Types, Concept of Unique Selling Proposition (USP) • Creativity through Endorsements: Endorsers – Types, Celebrity Endorsements – Advantages and Limitations, High Involvement and Low Involvement Products
4	Execution and Evaluation of Advertising
	<ul style="list-style-type: none"> • Preparing print ads: Essentials of Copywriting, Copy – Elements, Types, Layout- Principles, Illustration - Importance. • Creating broadcast ads: Execution Styles, Jingles and Music – Importance, Concept of Storyboard • Evaluation: Advertising copy, Pre-testing and Post-testing of Advertisements – Methods and Objectives

Revised Syllabus of Courses of SYB. Com
Programme at Semester III & IV
with effect from the Academic Year 2017-2018

Reference Books	
Advertising	
15. Advertising and Promotion : An Integrated Marketing Communications Perspective George Belch and Michael Belch, 2015, 10 th Edition, McGraw Hill Education	
16. Contemporary Advertising, 2017, 15th Edition, William Arens, Michael Weigold and Christian Arens, Hill Higher Education	
17. Strategic Brand Management – Kevin Lane Keller, 4th Edition, 2013 – Pearson Education Limited	
18. Kleppner's Advertising Procedure – Ron Lane and Karen King, 18th edition, 2011 – Pearson Education Limited	
19. Advertising: Planning and Implementation, 2006 – Raghuvir Singh, Sangeeta Sharma –Prentice Hall	
20. Advertising Management, 5th Edition, 2002 – Batra, Myers and Aaker – Pearson Education	
21. Advertising Principles and Practice, 2012 - Ruchi Gupta – S.Chand Publishing	
22. Brand Equity & Advertising- Advertising's role in building strong brands, 2013- David A. Aker, Alexander L. Biel, Psychology Press	
23. Brand Positioning – Strategies for Competitive Advantage, Subroto Sengupta, 2005, Tata McGraw Hill Publication.	
24. The Advertising Association Handbook - J. J. D. Bullmore, M. J. Waterson, 1983 - Holt Rinehart & Winston	
25. Integrated Advertising, Promotion, and Marketing Communications, Kenneth E. Clow and Donald E. Baack, 5th Edition, 2012 – Pearson Education Limited	
26. Kotler Philip and Eduardo Roberto, Social Marketing, Strategies for Changing Public Behaviour, 1989, The Free Press, New York.	
27. Confessions of an Advertising Man, David Ogilvy, 2012, Southbank Publishing	
28. Advertising, 10 th Edition, 2010 - Sandra Moriarty, Nancy D Mitchell, William D. Wells, Pearson	

PAPER PATTERN

ADVERTISING PAPER I & II

SEMESTER - III & IV

W.E.F. 2017-2018

Q.1 Multiple Choice Questions

(A) Select the most appropriate answer from the option given below 10

(Any Ten out of Twelve)

(B) State whether the following statements are True or False 10

(Any Ten out of Twelve)

Q.2 Answer Any Two of the following Out of Three questions - Module - I 15

a.

b.

c.

Q.3 Answer Any Two of the following Out of Three questions - Module - II 15

a.

b.

c.

Q.4 Answer Any Two of the following Out of Three questions - Module - III 15

a.

b.

c.

Q.5 Answer Any Two of the following Out of Three questions - Module - IV 15

a.

b.

c.

Q.6 Write notes on Any Four out of Six 20

***Revised Syllabus of Courses of B.Com. Programme at Semester IV
with Effect from the Academic Year 2017-2018***

***2 Ability Enhancement Courses (AEC)
2A * Skill Enhancement Courses (SEC) Group A***

5. Field Sales Management - II

Course Objective:

4. This course will prepare learners to understand the concept of Field Sales Management and Sales Organization.
5. To make learners understand various sales policies and learn the various aspects of sales force management

Sr. No.	Modules	No. of Lectures
1	Sales Planning & Forecasting I	11
2	Sales Planning & Forecasting II	11
3	Sales Budget & Control	11
4	Recent Issues In Sales Management	12
Total		45

Sr. No.	Modules
1	SALES PLANNING & FORECASTING I 11
	<ul style="list-style-type: none"> • Sales Plan – Steps in developing an effective Sales Plan. • Planning Function of Sales Management – Sales Call Planning, Setting Quantitative Performance Standards. • Sales Forecasting – Meaning, Objectives & Factors affecting Sales Forecasting. • Sales Forecasting Techniques (Qualitative & Quantitative)
2	SALES PLANNING & FORECASTING II 11
	<ul style="list-style-type: none"> • Concept of Sales Territory, Reasons for establishing sales territories • Salesman's Report & its types • Concept of Quotas & Targets, Reasons for fixing targets. • Methods of fixing Quotas & Targets
3	SALES BUDGET & CONTROL 11
	<ul style="list-style-type: none"> • Meaning of Sales Budget, Objectives of Sales Budget, Procedure to prepare Sales Budget. • Sales Control – Concept and steps in Control Process • Sales Analysis & Marketing Cost Analysis • Sales Audit - Concept, Importance of Sales Audit, • Procedure of Conducting Sales Audit
4	RECENT ISSUES IN SALES MANAGEMENT 12
	<ul style="list-style-type: none"> • Ethical & Legal issues in Sales Management • Use of Technology in Sales Management (Telemarketing, E-Marketing, M-Marketing, Digitalization) • Relationship Selling Process & Consumer Education (Value Added Selling) • Challenges in Sales Management.

***Revised Syllabus of Courses of SYB. Com
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Reference Books	
Field Sales Management - II	
1.	Philip Kotler – Marketing Management, 11 th ed. Pearson Publication.
2.	Porter, Michel E. Competitive Strategy, New York: The Free Press, 1980.
3.	Richard R Still, Edward W. Candiff, Sales Management.
4.	M.D.Pestonjee, Motivation & Job Satisfaction.
5.	Tom Reilly, Value Added Selling
6.	Helen Woodruffe, Services Marketing, Macmillan Publication.
7.	V.S.Ramaswamy, S.Namakumari, Marketing Management, Global Prospective –Indian Concept, Macmillan Publication

PAPER PATTERN
FIELD SALES MANAGEMENT PAPER I & II
SEMESTER - III & IV
W.E.F. 2017-2018

Q.1 Multiple Choice Questions

(A) Select the most appropriate answer from the option given below 10
(Any Ten out of Twelve)

(B) State whether the following statements are True or False 10
(Any Ten out of Twelve)

Q.2 Answer Any Two of the following Out of Three questions - Module - I 15

a.

b.

c.

Q.3 Answer Any Two of the following Out of Three questions - Module - II 15

a.

b.

c.

Q.4 Answer Any Two of the following Out of Three questions - Module - III 15

a.

b.

c.

Q.5 Answer Any Two of the following Out of Three questions - Module - IV 15

a.

b.

c.

Q.6 Write notes on Any Four out of Six 20

***Revised Syllabus of Courses of B.Com.Programme at Semester IV
with Effect from the Academic Year 2017-2018***

***2 Ability Enhancement Courses (AEC)
2A * Skill Enhancement Courses (SEC) Group A***

5. Company Secretarial Practice - II

Sr. No.	Modules	No. of Lectures
1	Management of Companies	11
2	Company Meetings	11
3	Dematerialisation and Online Trading	11
4	Reports and Winding Up	12
Total		45

Sr. No.	Modules
1	Management of Companies
	<ul style="list-style-type: none"> • Directors – Appointment, Duties, Role, Directors Report, Director Identification Number (DIN). • Types of Directors , Role of CEO, Non- Executive Directors, Independent Director • Auditor- Appointment, Duties, Rights & Powers, Audit report.
2	Company Meetings
	<ul style="list-style-type: none"> • Types of Company meeting, Secretarial Duties – Before, During and after company meeting – Annual General Meeting, Extra-Ordinary General Meeting, Board Meeting. • Notices, agenda, Chairman, Quorum& Proxy – Concept and Statutory Provisions • Motion, Resolution, Minutes – Concept, Types Voting, Minutes – Concept, Methods.
3	Dematerialisation and Online Trading
	<ul style="list-style-type: none"> • Dematerialisation – Need and Importance, Secretarial Duties, Procedures, Participants. • Online Trading – Concept, Advantages & Disadvantages, Bombay Stock Exchange Online Trading (BOLT), BOSS. • Listing of securities – Procedure, Advantages, Secretarial Duties, Scrips – Types.
4	Reports and Winding Up
	<ul style="list-style-type: none"> • Company Reports – Types, Secretarial Duties with regard to payment of dividend, Interest, Charges & penalties. • Winding up of a Company – Procedure,& Statutory Provisions, Secretarial role in winding up. • Specimen – Notice & Agenda of Annual General Meeting, Notice & Agenda of Board Meeting prior to Annual General Meeting, Resolution for appointment of Company Secretary, Special Resolution for alteration of Memorandum of Association, Minutes of Board Meeting prior to Annual General Meeting, Minutes of Annual General Meeting.

COMPANY SECRETARIAL PRACTICE

REFERENCES

Readings:

- | | | |
|--------------------------------------|---|---|
| 13. M. C.Bhandari | : | Guide to Company Law Procedure;
Wadhwa& Company, Agra&Nagpur |
| 14. K. V.Shanbhogue | : | Company Law Practice;
BharatLaw House, New Delhi – 34 |
| 15. M. L.Sharma | : | Company Procedures and Register of
Companies , Tax Publishers, Delhi |
| 16. A. M.Chakborti,
B. P.Bhargava | : | Company Notices, Meetings and
Resolutions, Taxmann, New Delhi |
| 17. A.Ramaiya | : | Guide to the Companies Act,
Wadhwa & Company, Nagpur |
| 18. R.Suryanarayanan | : | Company Notices, Meetings and
Resolutions, Kamal Law House, Kolkatta |
| 19. D. K. Jain | : | E- Filling of Forms & returns |
| 20. Taxmann | : | E-Company forms |
| 21. V.K.Gaba | : | Depository Participants (Law & Practice) |
| 22. ICSI Publications | : | Meetings |
| 23. B. K.Sengupta | : | Company Law |
| 24. D. K. Jain | : | Company Law Procedures |

References:

- | | | |
|----------------------------------|---|---|
| 3. M. C.Bhandari
R.D.Makheeja | : | Guide to Memorandum, Articles and
Incorporation of Companies ;
Wadhwa& Company, Agra&Nagpur |
| 4. Taxman | : | Company Law, Digest |

Journals:

- | | | |
|------------------------------|---|---|
| 5. Chartered Secretary | : | ICSI Publication |
| 6. Student Company Secretary | : | ICSI Publication |
| 7. Company Law Journal | : | L.M.Sharma, Post Box No. 2693,
New Delhi – 110005. |
| 8. Corporate Law Adviser | : | Corporate Law Advisers, Post Bag
No. 3, VasantVihar, New Delhi |

PAPER PATTERN

COMPANY SECRETARIAL PRACTICE - PAPER I & II

SEMESTER - III & IV

W.E.F. 2017-2018

Q.1 Multiple Choice Questions

(A) Select the most appropriate answer from the option given below 10

(Any Ten out of Twelve)

(B) State whether the following statements are True or False 10

(Any Ten out of Twelve)

Q.2 Answer Any Two of the following Out of Three questions - Module - I 15

a.

b.

c.

Q.3 Answer Any Two of the following Out of Three questions - Module - II 15

a.

b.

c.

Q.4 Answer Any Two of the following Out of Three questions - Module - III 15

a.

b.

c.

Q.5 Answer Any Two of the following Out of Three questions - Module - IV 15

a.

b.

c.

Q.6 Write notes on Any Four out of Six 20

***Revised Syllabus of Courses of B.Com. Programme at Semester IV
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***2 Ability Enhancement Courses (AEC)
2A * Skill Enhancement Courses (SEC) Group A***

5. Computer Programming Paper II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Computer Communication Systems	15
2	Principles Of DBMS	15
3	Case Study Of DBMS Using MS-ACCESS	15
4	MS-ACCESS QUERIES	15
5	Laboratory Training	15
Total		75

Sr. No.	Modules / Units
1	UNIT – I :Computer Communication Systems
	The Internet, internet connections, ISO's Open system interconnection reference model, The TCP/IP stack, E-mail, Internet addresses, Internet Protocol, SMTP, MIME POP, IMAP, Domain Name system, Telnet, FTP, WWW, Browsers, HTML, http, JAVA,. Intranet, Intranet Services and their advantages. Extranets. Search Engine and Web Crawlers
2	UNIT – II :Principles Of DBMS
	What is a database, Relational databases (Relation, Attribute, Instance, Relationship, Join), Database capabilities (Data definition, data manipulation, Access as an RDBMs)
3	UNIT – III : CASE STUDY OF DBMS USING MS-ACCESS
	MS-Office workspace basics, Exploring the Office menu, Working with ribbon, Opening an access database Exploring database objects, Creating database, Changing views. Printing database objects. Saving and closing database file. Working with datasheets, Moving among records, Updating records, adding records to a table, Finding records, sorting records, Filtering records, Using the PIVOT chart View, Saving and closing tables. Adding a table to a database, Adding fields to a table, adding a Lookup field, setting a Primary key, Using the input mask wizard. Saving design changes, Importing data (From Excel).
4	UNIT – IV : MS-ACCESS QUERIES
	What is a Query, Creating a query, working with queries, saving and running a query, creating calculated fields, using aggregate functions, Understanding query properties, Joining Tables. What is a Form, Using the form tool, Creating a form with form wizard, Working in design view, Changing the form layout, Using calculated controls, Working with records on a Form. What is a report tool, Printing report, saving a report, designing a report, changing report layout, creating mailing labels.

QUESTION PAPER PATTERN

Maximum Marks : 75

Questions to be set : 05

Duration : $2\frac{1}{2}$ Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particulars	Marks
Q. 1.	Objective Questions A. Attempt any eight sub-questions from the following : (True / False) any 08 B. Attempt any seven sub-questions from the following : (Multiple Choice)any 07	15 Marks
Q. 2.	A. Attempt any one sub-question from a, b (Unit – I) B. Attempt any one sub-question from c, d (Unit – I)	16 Marks
Q. 3.	A. Attempt any one sub-question from a, b (Unit – II) B. Attempt any one sub-question from c, d (Unit – II)	14 Marks
Q. 4.	A. Attempt any one sub-question from a, b (Unit – III) B. Attempt any one sub-question from c, d (Unit – III)	16 Marks
Q. 5.	A. Attempt any one sub-question from a, b (Unit – IV) B. Attempt any one sub-question from c, d (unit IV)	14 Marks

***Revised Syllabus of Courses of B.Com. Programme at Semester IV
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***2 Ability Enhancement Courses (AEC)
2B * Skill Enhancement Courses (SEC) Group B***

6. Foundation Course- Contemporary Issues- IV

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Significant, Contemporary Rights of Citizens	12
2	Approaches to understanding Ecology	11
3	Science and Technology –II	11
4	Introduction to Competitive Exams	11
Total		45

Sr. No.	Modules / Units
1	Significant, Contemporary Rights of Citizens
	<p>A. Rights of Consumers-Violations of consumer rights and important provisions of the Consumer Protection Act, 2016; Other important laws to protect consumers; Consumer courts and consumer movements. (3 Lectures)</p> <p>B. Right to Information- Genesis and relation with transparency and accountability; important provisions of the Right to Information Act, 2005; some success stories. (3 Lectures)</p> <p>C. Protection of Citizens'/Public Interest-Public Interest Litigation, need and procedure to file a PIL; some landmark cases. (3 Lectures)</p> <p>D. Citizens' Charters, Public Service Guarantee Acts. (3 Lectures)</p>
2	Approaches to understanding Ecology
	<p>A. Understanding approaches to ecology- Anthropocentrism, Biocentrism and Eco centrism, Ecofeminism and Deep Ecology. (3 Lectures)</p> <p>B. Environmental Principles-1: the sustainability principle; the polluter pays principle; the precautionary principle. (4 Lectures)</p> <p>C. Environmental Principles-2: the equity principle; human rights principles; the participation principle. (4 Lectures)</p>
3	Science and Technology –II
	<p>Part A:Some Significant Modern Technologies, Features and Applications (7 Lectures)</p> <p>i. Laser Technology- Light Amplification by Stimulated Emission of Radiation; use of laser in remote sensing, GIS/GPS mapping, medical use.</p> <p>ii. Satellite Technology- various uses in satellite navigation systems, GPS, and imprecise climate and weather analyses.</p> <p>iii. Information and Communication Technology- convergence of various technologies like satellite, computer and digital in the information revolution of today's society.</p> <p>iv. Biotechnology and Genetic engineering- applied biology and uses in medicine, pharmaceuticals and agriculture; genetically modified plant, animal and human life.</p> <p>v. Nanotechnology- definition: the study, control and application of phenomena and materials at length scales below 100 nm; uses in medicine, military intelligence and consumer products.</p> <p>Part B:Issues of Control, Access and Misuse of Technology. (4 Lectures)</p>

Sr. No.	Modules / Units
4	Introduction to Competitive Exams
	<p>Part A. Basic information on Competitive Examinations- the pattern, eligibility criteria and local centres:</p> <ul style="list-style-type: none"> i. Examinations conducted for entry into professional courses - Graduate Record Examinations (GRE), Graduate Management Admission Test (GMAT), Common Admission Test (CAT) and Scholastic Aptitude Test (SAT). ii. Examinations conducted for entry into jobs by Union Public Service Commission, Staff Selection Commission (SSC), State Public Service Commissions, Banking and Insurance sectors, and the National and State Eligibility Tests (NET / SET) for entry into teaching profession. <p>Part B. Soft skills required for competitive examinations- (7 Lectures)</p> <ul style="list-style-type: none"> i. Information on areas tested: Quantitative Ability, Data Interpretation, Verbal Ability and Logical Reasoning, Creativity and Lateral Thinking ii. Motivation: Concept, Theories and Types of Motivation iii. Goal-Setting: Types of Goals, SMART Goals, Stephen Covey's concept of human endowment iv. Time Management: Effective Strategies for Time Management v. Writing Skills: Paragraph Writing, Report Writing, Filing an application under the RTI Act, Consumer Grievance Letter.

References

1. Asthana, D. K., and Asthana, Meera, *Environmental Problems and Solutions*, S. Chand, New Delhi, 2012.
2. Bajpai, Asha, *Child Rights in India*, Oxford University Press, New Delhi, 2010.
3. Bhatnagar Mamta and Bhatnagar Nitin, *Effective Communication and Soft Skills*, Pearson India, New Delhi, 2011.
4. G Subba Rao, *Writing Skills for Civil Services Examination*, Access Publishing, New Delhi, 2014
5. Kaushal, Rachana, *Women and Human Rights in India*, Kaveri Books, New Delhi, 2000.
6. Mohapatra, Gaur Krishna Das, *Environmental Ecology*, Vikas, Noida, 2008.
7. Motilal, Shashi, and Nanda, Bijoy Lakshmi, *Human Rights: Gender and Environment*, Allied Publishers, New Delhi, 2007.
8. Murthy, D. B. N., *Disaster Management: Text and Case Studies*, Deep and Deep Publications, New Delhi, 2013.
9. Parsuraman, S., and Unnikrishnan, ed., *India Disasters Report II*, Oxford, New Delhi, 2013
10. Reza, B. K., *Disaster Management*, Global Publications, New Delhi, 2010.
11. Sathe, Satyaranjan P., *Judicial Activism in India*, Oxford University Press, New Delhi, 2003.
12. Singh, Ashok Kumar, *Science and Technology for Civil Service Examination*, Tata McGraw Hill, New Delhi, 2012.
13. Thorpe, Edgar, *General Studies Paper I Volume V*, Pearson, New Delhi, 2017.

Projects / Assignments (for Internal Assessment)

- i. Projects/Assignments should be drawn for the component on Internal Assessment from the topics in **Module 1 to Module 4**.
- ii. Students should be given a list of possible topics - at least 3 from each Module at the beginning of the semester.
- iii. The Project/Assignment can take the form of Street-Plays / Power-Point Presentations / Poster Exhibitions and similar other modes of presentation appropriate to the topic.
- iv. Students can work in groups of not more than 8 per topic.
- v. Students must submit a hard / soft copy of the Project / Assignment before appearing for the semester end examination.

QUESTION PAPER PATTERN (Semester III)

The Question Paper Pattern for Semester End Examination shall be as follows:

TOTAL MARKS: 75

DURATION: 150 MINUTES

QUESTION NUMBER	DESCRIPTION	MARKS ASSIGNED
1	i. Question 1 A will be asked on the meaning / definition of concepts / terms from all Modules. ii. Question 1 B will be asked on the topic of the Project / Assignment done by the student during the Semester iii. In all 8 Questions will be asked out of which 5 have to be attempted.	a) Total marks: 15 b) For 1 A, there will be 3 marks for each sub-question. c) For 1 B there will be 15 marks without any break-up.
2	Descriptive Question with internal option (A or B) on Module 1	15
3	Descriptive Question with internal option (A or B) on Module 2	15
4	Descriptive Question with internal option (A or B) on Module 3	15
5	Descriptive Question with internal option (A or B) on Module 4	15

***Revised Syllabus of Courses of B.Com Programme at Semester IV
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***2. Ability Enhancement Courses (AEC)
2B. Skill Enhancement Courses (SEC)***

6. Foundation Course in NSS - IV

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Entrepreneurship Development	10
2	Rural Resource Mobilization	10
3	Ideal village & stake of GOS and NGO	13
4	Institutional Social Responsibility and modes of Awareness	12
Total		45

Sr. No.	Modules / Units
1	Entrepreneurship Development
	UNIT - I Entrepreneurship development Entrepreneurship development- its meaning and schemes Government and self-employment schemes for Entrepreneurship development UNIT - II - Cottage Industry Cottage Industry- its meaning, its role in development process Marketing of cottage products and outlets
2	Rural Resource Mobilization
	UNIT - I - Rural resource mobilization- A case study of eco-village, eco-tourism, agro-tourism UNIT - II - Micro financing with special reference to self-help groups
3	Ideal village & stake of GOS and NGO
	UNIT - I - Ideal village Ideal village- the concept Gandhian Concept of Ideal village Case studies on Ideal village UNIT - II - Government Organisations(GOs) and Non-Government Organisations (NGOs) The concept and functioning
4	Institutional Social Responsibility and modes of Awareness
	UNIT - I - Institutional Social Responsibilities Concept and functioning- case study of adapted village UNIT - II - Modes of awareness through fine Arts Skills Basics of performing Arts as tool for social awareness, street play, creative dance, patriotic song, folk songs and folk dance. Rangoli, posters, flip charts, placards, etc.

***Revised Syllabus of Courses OF B.Com Programme at Semester IV
with Effect from the Academic Year 2017-2018***

2. Ability Enhancement Courses (AEC)

2B. Skill Enhancement Courses (SEC)

6. Foundation Course in NCC - IV

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Disaster Management, Social Awareness and Community Development	10
2	Health and Hygiene	10
3	Drill with Arms	05
4	Weapon Training	10
5	Specialized Subject: Army Or Navy Or Air	10
Total		45

Sr. No.	Modules / Units
1	Disaster Management, Social Awareness and Community Development Disaster Management: Desired outcome: The student shall gain basic information about civil defence organisation / NDMA & shall provide assistance to civil administration in various types of emergencies during natural / manmade disasters <ul style="list-style-type: none"> • Fire Services & Fire fighting • Assistance during Natural / Other Calamities: Flood / Cyclone/ Earth Quake/ Accident etc. Social Awareness and Community Development: Desired outcome: The student shall have an understanding about social evils and shall inculcate sense of whistle blowing against such evils and ways to eradicate such evils. <ul style="list-style-type: none"> • NGOs: Role & Contribution • Drug Abuse & Trafficking • Corruption • Social Evil viz. Dowry/ Female Foeticide/Child Abuse & trafficking etc. • Traffic Control Org. & Anti drunken Driving
2	Health and Hygiene Desired outcome: The student shall be fully aware about personal health and hygiene lead a healthy life style and foster habits of restraint and self awareness. <ul style="list-style-type: none"> • Hygiene and Sanitation (Personal and Food Hygiene) • Basics of Home Nursing & First-Aid in common medical emergencies • Wound & Fractures
3	Drill with Arms Desired outcome: The students will demonstrate the sense of discipline, improve bearing, smartness, and turnout, and develop the quality of immediate and implicit obedience of orders, with good reflexes. <ul style="list-style-type: none"> • Getting on Parade with Rifle and Dressing at the Order • Dismissing and Falling Out • General Salute, Salami Shastra • Squad Drill • Short/Long tail from the order and vice-versa • Examine Arms
4	Weapon Training Desired outcome: The student shall have basic knowledge of weapons and their use and handling. <ul style="list-style-type: none"> • The lying position, Holding and Aiming- I • Trigger control and firing a shot • Range procedure and safety precautions • Theory of Group and Snap Shooting • Short range firing, Aiming- II -Alteration of sight

Sr. No.	Modules / Units
5	Specialized Subject: Army Or Navy Or Air
	<p>Army</p> <p>Desired outcome: The training shall instill patriotism, commitment and passion to serve the nation motivating the youth to join the defence forces. It will also acquaint, expose & provide basic knowledge about armed, naval and air-force subjects</p> <p>A. Map reading</p> <ul style="list-style-type: none"> • Setting a Map, finding North and own position • Map to ground, Ground to Map • Point to Point March <p>B. Field Craft and Battle Craft</p> <ul style="list-style-type: none"> • Observation, Camouflage and Concealment • Field Signals • Types of Knots and Lashing <p>C. Introduction to advanced weapons and role of technology (To be covered by the guest lecturers)</p> <p style="text-align: center;">OR</p> <p>Navy</p> <p>A. Naval Communication</p> <ul style="list-style-type: none"> • Semaphore <ul style="list-style-type: none"> ▪ Phonetic Alphabets ▪ Radio Telephony Procedure ▪ Wearing of National Flag, Ensign and Admiral's Flag. <p>B. Seamanship</p> <ul style="list-style-type: none"> • Anchor work <ul style="list-style-type: none"> ▪ Types of Anchor, Purpose and Holding ground • Boat work <ul style="list-style-type: none"> ▪ Demonstrate Rigging a whaler and enterprise boat- Parts of Sail and Sailing Terms ▪ Instructions in Enterprise Class Board including theory of Sailing, Elementary Sailing Tools ▪ Types of Power Boats Used in the Navy and their uses, Knowledge of Anchoring, Securing and Towing a Boat <p>C. Introduction to advanced weapons and role of technology (To be covered by the guest lecturers)</p>

Sr. No.	Modules / Units
	<p style="text-align: center;"><i>OR</i></p> <p>Air</p> <p>A. Air frames</p> <ul style="list-style-type: none"> • Fuselage • Main and Tail Plain <p>B. Instruments</p> <ul style="list-style-type: none"> • Introduction to RADAR <p>C. Aero modelling</p> <ul style="list-style-type: none"> • Flying/ Building of Aero models <p>D. Introduction to advanced weapons and role of technology (To be covered by the guest lecturers)</p>

***Revised Syllabus of Courses of B.Com.Programme at Semester IV
with Effect from the Academic Year 2017-2018***

***2 Ability Enhancement Courses (AEC)
2B * Skill Enhancement Courses (SEC) Group B***

6.Foundation Course in Physical Education Paper-IV

Modules at a Glance

Sr. No.	Modules	No of Lectures
1	Stress Management	10
2	Awards, Scholarship & Government Schemes	10
3	Yoga Education	10
4	Exercise Scheduling/Prescription	15
Total		45

Sr. No.	Modules / Units
1	Stress Management
	<ul style="list-style-type: none"> • Meaning & concept of Stress • Causes of Stress • Managing Stress • Coping Strategies
2	Awards, Scholarship & Government Schemes
	<ul style="list-style-type: none"> • State & National level Sports Awards • State Sports Policy & Scholarship Schemes • National Sports Policy & Scholarship Schemes • Prominent Sports Personalities
3	Yoga Education
	<ul style="list-style-type: none"> • Differences between Yogic Exercises & non- Yogic exercises • Contribution of Yoga to Sports • Principles of Asanas&Bandha • Misconceptions about Yoga
4	Exercise Scheduling/Prescription
	<ul style="list-style-type: none"> • Daily Routine Prescription. • Understanding Activity level & Calorie requirement. • Adherence & Motivation for exercise. • Impact of Lifestyle on Health

R. _____: The Scheme of Examination:

The performance of the learners shall be evaluated in two components: Internal Assessment with 25% marks by way of continuous evaluation and by Semester End Examination with 75% marks by conducting the theory examination.

INTERNAL ASSESSMENT:- It is defined as the assessment of the learners on the basis of continuous evaluation as envisaged in the credit based system by way of participation of learners in various academic and correlated activities in the given semester of the programme.

A) Internal Assessment – 25%

25 Marks

Sr. No.	Particulars		Marks
1	A project to be prepared by an individual learner or a group of learners in not more than five learners in a group. It is to be evaluated by the teacher concerned.		20 Marks
	Hard Copy of the project*	10 Marks	
	Presentation	05 Marks	
	Viva/Interaction	05 Marks	
2	Active participation in routine class instructional deliveries and overall conduct as a responsible learner, mannerism and articulation and exhibit of leadership qualities in organizing related academic activities.		05 Marks

The marks of the internal assessment should not be disclosed to the students till the results of the corresponding semester is declared.

SEMESTER END EXAMINATION:- It is defined as the examination of the learners on the basis of performance in the semester end theory / written examinations.

B) Semester End Examinations – 75%

75 Marks

The assessment of **Part 'A' i.e. Internal Assessment** and **Part 'B' i.e. Semester End Examination** as mentioned above for the Semesters I to IV shall be processed by the Colleges / Institutions of their learners and issue the grade cards to them after the conversion of marks into grade as per the procedure.

INTERNAL ASSESSMENT (PRACTICUM) **(25 Marks)**

SEMESTER -III

(Continuous Evaluation during practical sessions conducted for 27 hours)

- a) A learner willing to participate in inter-collegiate/ inter university competitions of any game and sports conducted by the University of Mumbai will be evaluated for 15 marks on the basis of his attendance, sincerity and performance during the training / practice / coaching sessions / camps conducted by the college/University for at least 10 days. It is expected that the colleges should organize training / practice / coaching sessions / camps of various games and sports as per the choice of the learner. However, due to unavailability of the same in his / her college if a learner participates in the training / practice / coaching sessions / camps organized by other organizations or clubs of sports and games, may be considered for evaluation for 15 marks on the basis of the proofs of attendance and participation submitted by a learner.

- b) A learner will be practically taught different exercises including Suryanamaskara for developing their Motor Performance Components by conducting practical sessions for at least 10 hours (one hour each) and will be assessed by the concern teacher for **marks out of 10** on the basis of his attendance, sincerity and performance.

Question Paper Pattern

Maximum Marks: 75

Questions to be Set: 05

Duration: 2 ½ Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions A) Sub Questions to be asked 10 and to be answered any 08 B) Sub Questions to be asked 10 and to be answered any 07 (*Multiple choice / True or False / Match the columns/ fill in the blanks)	15 Marks
Q-2	Full Length Question	15 Marks
Q-2	OR Full Length Question	15 Marks
Q-3	Full Length Question	15 Marks
Q-3	OR Full Length Question	15 Marks
Q-4	Full Length Question	15 Marks
Q-4	OR Full Length Question	15 Marks
Q-5	Full Length Question	15 Marks
Q-5	OR Short Notes To be asked 05 To be answered 03	15 Marks

Note: Full length question of 15 marks may be divided into two sub questions of 08 and 07 marks.

➤ **Standard of Passing the Examination**

- A learner shall have to obtain a minimum of 40 % marks in aggregate to qualify the each course where the course consists of internal assessment and semester end examination.
- A learner shall obtain a minimum of 40 % marks(i.e. **10** out of **25**) in the internal assessment and obtain a minimum of 40 % marks (i.e. **30** out of **75**) in semester end

Reference Books

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21. Muller, J. P.(2000). Health, Exercise and Fitness. Delhi : Sports.
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***Revised Syllabus of Courses of B.Com. Programme at Semester IV
with Effect from the Academic Year 2017-2018***

Core Courses (CC)

7. Business Law II

Sr. No.	Modules	No. of Lectures
1	Indian Companies Act – 2013 Par T –I	12
2	Indian Companies Act – 2013, Par T –II	12
3	Indian Partnership Act – 1932	12
4	Consumer Protection Act, 1986 & Competition Act 2002	12
5	Intellectual Property Rights	12
Total		60

Sr. No.	Modules
1	Indian Companies Act – 2013 Par T –I
	<ul style="list-style-type: none"> Company –Concept, Features, Role of Promoters (S. 2(69) S. 92), Duties and liabilities of the Promoter Effects of Pre-Incorporation contracts, Consequences of non-registration, and Lifting of Corporate Veil. Classification of Companies Distinction between Private Company and Public Company, Advantages and disadvantages of Private company and Public Company. –Common Procedure for Incorporation of Company, Memorandum of Association (MOA) & Article of Association(AOA) – Concept , Clauses of MOA, AOA- Contents, Doctrine of constructive notice, Doctrine of Ultra Vires, Doctrine of Indoor Management. Prospectus – Concept, Kinds, Contents, Private Placement
2	Indian Companies Act – 2013, Par T –II
	<ul style="list-style-type: none"> Member of a Company –Concept, Who can become a member, Modes of acquiring membership, Cessation of membership, Right & Liabilities of Members. Director – Qualifications& Disqualification, Classification, Director Identification Number (DIN), Legal Position of Directors. Meetings – Types, Legal Provisions of Statutory Meeting, Annual General Meeting, Extra-Ordinary Meeting, Board Meeting.
3	Indian Partnership Act – 1932
	<ul style="list-style-type: none"> Partnership – Concept, Essentials, True Test of Partnership, Partnership Deed, Types of Partnership, Rights and Duties of Partners, Distinguish between Partnership & Hindu Undivided Family (HUF). Dissolution – Concept, Modes of Dissolution, Consequences of Dissolution. Limited Liability Partnership (LLP) 2008 – Concept, Characteristics, Advantages & Disadvantages, Procedure for Incorporation. Extent of L.L.P.- Conversion of LLP, Mutual rights & duties of partners, Winding up of LLP, Distinction between LLP and Partnership.
4	Consumer Protection Act, 1986 & Competition Act 2002
	<ul style="list-style-type: none"> Consumer Protection Act – Concept , Objects, Reasons for enacting the Consumer Protection Act, Definition of Consumer, Consumer Dispute, Complaint, Complainant, Defect, Deficiency, Consumer Dispute, Unfair Trade Practices, Goods and Services. Consumer Protection Councils & Redressal Agencies – District, State & National. Competition Act 2002 – Concept, Salient Features, Objectives & Advantages. Abuse of Dominant Position, Competition Commission of India, Anti-Competition Agreements,

Sr. No.	Modules
5	INTELLECTUAL PROPERTY RIGHTS 12
	<ul style="list-style-type: none"> • Intellectual Property Right (IPR) – Concept, Nature, Introduction & background of IPR in India. • IPR relating to Patents – Concepts of Invention and discovery, Comparison (S2 (j)), Concept of Patents, General principles applicable to working of patented inventions, Term of Patent. Infringement of Patent Rights & Remedies. (Ss. 104-115) • IPR relating to Copyrights- Concept of Copyright (Ss. 14, 16, 54,) Concept of author and authorised acts, (S.2) Ownership of Copy right (S.17) Duration or term of Copy right. (S. 22-27), Original work and fair use, Rights of Copyright holder, Infringement of Copyrights & Remedies. (Ss. 51, 52) • IPR relating to Trademarks –Concept, Functions of Trade Mark, types, trademarks that cannot be registered, Registration of Trade Marks and rights of the proprietor of Trade Marks. Procedure for registration of Trade Marks., Infringement of Trademarks & Remedies.

SEMESTER – IV REFERENCE BOOKS:

REFERENCES

1. Guide to the Companies Act,2013 by A Ramaiya , Lexis Nexis.
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3. Company Law by N.D.Kapoor.
4. Company Law by P.C. Tulsian.
5. Law and practice of Intellectual Property in India by Dr.Vikas Vashishth,Bharat Law House.
6. Law of Partnership along with Limited Liability Partnership by Avatar Singh , Eastern Book Company.
7. Laws Relating to Intellectual Property, Universal Law Publishing Co. Dr. B.L.Wadhera
8. Consumer Protection Law and Practice by Dr.V.K.Agarwal, Bharat Law House.
9. Competition Law by Avatar Singh, Eastern Book Company
10. Competition Law in India by T. Ramappa, Oxford University Press.
11. Intellectual Property Rights by Narayan.
12. Laws Relating to Intellectual Property, Universal Law Publishing Co. Dr. B.L.Wadhera

**PAPER PATTERN
S.Y.B.COM
SEMESTER III &IV**

BUSINESS LAW PAPER I & II

(100 Marks Paper Per Semester)

- 1. Question paper to have Five Questions
(One from Each Module) 20 Marks Each**
- 2. All Questions to be Compulsory.**
- 3. Each Question to have Four Sub Questions of Ten Marks Each
(Students to answer any Two out of Four)**

Question Paper Pattern (Practical Courses)

Maximum Marks: 100

Questions to be set: 06

Duration: 03 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions C) Sub Questions to be asked 12 and to be answered any 10 D) Sub Questions to be asked 12 and to be answered any 10 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	20 Marks
Q-2	Full Length Practical Question OR	15 Marks
Q-2	Full Length Practical Question	15 Marks
Q-3	Full Length Practical Question OR	15 Marks
Q-3	Full Length Practical Question	15 Marks
Q-4	Full Length Practical Question OR	15 Marks
Q-4	Full Length Practical Question	15 Marks
Q-5	Full Length Practical Question OR	15 Marks
Q-5	Full Length Practical Question	15 Marks
Q-6	C) Theory questions D) Theory questions OR	10 Marks 10 Marks
Q-6	Short Notes To be asked 06 To be answered 04	20 Marks

Note:

Practical question of 15 marks may be divided into two sub questions of 7/8 and 10/5Marks.

Question Paper Pattern (Theoretical Courses)

Maximum Marks: 100

Questions to be set: 06

Duration: 03 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions O) Sub Questions to be asked 12 and to be answered any 10 P) Sub Questions to be asked 12 and to be answered any 10 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	20 Marks
Q-2	Full Length Question OR	15 Marks
Q-2	Full Length Question	15 Marks
Q-3	Full Length Question OR	15 Marks
Q-3	Full Length Question	15 Marks
Q-4	Full Length Question OR	15 Marks
Q-4	Full Length Question	15 Marks
Q-5	Full Length Question OR	15 Marks
Q-5	Full Length Question	15 Marks
Q-6	O) Theory questions P) Theory questions OR	10 Marks 10 Marks
Q-6	Short Notes To be asked 06 To be answered 04	20 Marks

Note:

Theory question of 15 marks may be divided into two sub questions of 7/8 and 10/5Marks.

University of Mumbai



**Revised Syllabus
and
Question Paper Pattern
of Courses of
Bachelor of Commerce Programme
at
Third Year
Semester V and VI
Under Choice Based Credit, Grading and
Semester System**

To be implemented from Academic Year 2018-2019

Faculty of Commerce

Bachelor of Commerce (B.Com) Programme

Under Choice Based Credit, Grading and Semester System

T.Y.B.Com

(To be implemented from Academic Year- 2018-2019)

No. of Courses	Semester V	Credits	No. of Courses	Semester VI	Credits
1	Elective Courses (EC)		1	Elective Courses (EC)	
1A	Discipline Specific Elective(DSE) Courses		1A	Discipline Specific Elective(DSE) Courses	
1 & 2	*Any one group of courses from the following list of the Groups (A/B/C/D/E/F)	04+04	1 & 2	*Any one group of courses from the following list of the Groups (A/B/C/D/E/F)	04+04
1B	Discipline Related Elective(DRE) Courses		1B	Discipline Related Elective(DRE) Courses	
3	Commerce V	03	3	Commerce VI	03
4	Business Economics V	03	4	Business Economics VI	03
2	Ability Enhancement Courses (AEC)		2	Ability Enhancement Courses (AEC)	
5 & 6	**Any two courses from the following list of the courses	03+03	5 & 6	**Any two courses from the following list of the courses	03+03
Total Credits		20	Total Credits		20

<i>*List of groups of Discipline Specific Elective(DSE) Courses for Semester V (Any One Group)</i>		<i>*List of groups of Discipline Specific Elective(DSE) Courses for Semester VI (Any One Group)</i>	
<i>Group A: Advanced Accountancy</i>			
1	Financial Accounting and Auditing VII - Financial Accounting	1	Financial Accounting and Auditing IX - Financial Accounting
2	Financial Accounting and Auditing VIII - Cost Accounting	2	Financial Accounting and Auditing X - Cost Accounting
<i>Group B: Business Management</i>			
1	Business Management Paper - I	1	Business Management Paper - III
2	Business Management Paper - II	2	Business Management Paper - IV
<i>Group C: Banking and Finance</i>			
1	Banking and Finance Paper - I	1	Banking and Finance Paper - III
2	Banking and Finance Paper - II	2	Banking and Finance Paper - IV
<i>Group D: Commerce</i>			
1	Commerce Paper - I	1	Commerce Paper - III
2	Commerce Paper - II	2	Commerce Paper - IV
<i>Group E: Quantitative Techniques</i>			
1	Quantitative Techniques Paper - I	1	Quantitative Techniques Paper - III
2	Quantitative Techniques Paper - II	2	Quantitative Techniques Paper - IV
<i>Group F: Economics</i>			
1	Economics Paper - I	1	Economics Paper - III
2	Economics Paper - II	2	Economics Paper - IV
<i>Note: Group selected in Semester V will continue in Semester VI</i>			

**List of Ability Enhancement Courses (AEC) for Semester V (Any Two)		**List of Ability Enhancement Courses (AEC) for Semester VI (Any Two)	
1	Trade Unionism and Industrial Relations Paper - I	1	Trade Unionism and Industrial Relations. Paper - II
2	Computer systems & Applications Paper -I	2	Computer systems & Applications Paper - II
3	Export Marketing Paper - I	3	Export Marketing Paper - II
4	Marketing Research Paper - I	4	Marketing Research Paper - II
5	Investment Analysis and Portfolio Management Paper - I	5	Investment Analysis and Portfolio Management Paper - II
6	Transport Management Paper - I	6	Transport Management Paper - II
7	Entrepreneurship& M.S.S.I. Paper - I	7	Entrepreneurship& M.S.S.I. Paper - II
8	International Marketing Paper - I	8	International Marketing Paper - II
9	Merchant Banking Paper - I	9	Merchant Banking Paper - II
10	Direct & Indirect Taxation Paper - I	10	Direct & Indirect Taxation Paper - II
11	Labour Welfare & Practice Paper - I	11	Labour Welfare & Practice Paper - II
12	Purchasing & Store keeping Paper - I	12	Purchasing & Store keeping Paper - II
13	Insurance Paper - I	13	Insurance Paper - II
14	Banking Law & Practice Paper - I	14	Banking Law & Practice Paper - II
15	Regional Planning Paper - I	15	Regional Planning Paper - II
16	Rural Marketing Paper - I	16	Rural Marketing Paper - II
17	Elements of Operational Research Paper- I	17	Elements of Operational Research Paper - II
18	Psychology of Human Behaviour at work Paper - I	18	Psychology of Human Behaviour at work Paper - II
Note: Course selected in Semester V will continue in Semester VI			

B.Com. Programme
Under Choice Based Credit, Grading and Semester System
Course Structure

(To be implemented from Academic Year- 2018-2019)

Semester V

No. of Courses	Semester V	Credits
1	<i>Elective Courses (EC)</i>	
1A	<i>Discipline Specific Elective(DSE) Courses</i>	
1 & 2	*Any one group of courses from the following list of the Groups (A/B/C/D/E/F)	04+04
1B	<i>Discipline Related Elective(DRE) Courses</i>	
3	Commerce V	03
4	Business Economics V	03
2	<i>Ability Enhancement Courses (AEC)</i>	
5 & 6	**Any two courses from the following list of the courses	03+03
Total Credits		20

*List of groups of Discipline Specific Elective(DSE) Courses for Semester V (Any One Group)	
Group A: Advanced Accountancy	
1	Financial Accounting and Auditing VII - Financial Accounting
2	Financial Accounting and Auditing VIII - Cost Accounting
Group B: Business Management	
1	Business Management Paper - I
2	Business Management Paper - II
Group C: Banking and Finance	
1	Banking and Finance Paper - I
2	Banking and Finance Paper - II
Group D: Commerce	
1	Commerce Paper - I
2	Commerce Paper - II
Group E: Quantitative Techniques	
1	Quantitative Techniques Paper - I
2	Quantitative Techniques Paper - II
Group F: Economics	
1	Economics Paper - I
2	Economics Paper - II

**List of Ability Enhancement Courses (AEC) for Semester V (Any Two)	
1	Trade Unionism and Industrial Relations Paper - I
2	Computer systems & Applications Paper -I
3	Export Marketing Paper - I
4	Marketing Research Paper - I
5	Investment Analysis and Portfolio Management Paper - I
6	Transport Management Paper - I
7	Entrepreneurship& M.S.S.I. Paper - I
8	International Marketing Paper - I
9	Merchant Banking Paper - I
10	Direct & Indirect Taxation Paper - I
11	Labour Welfare & Practice Paper - I
12	Purchasing & Store keeping Paper - I
13	Insurance Paper - I
14	Banking Law & Practice Paper - I
15	Regional Planning Paper - I
16	Rural Marketing Paper - I
17	Elements of Operational Research Paper- I
18	Psychology of Human Behaviour at work Paper - I

***Revised Syllabus of Courses of B.Com. Programme at Semester V
with Effect from the Academic Year 2018-2019***

Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group A: Advanced Accountancy

**1. Financial Accounting and Auditing VII -
Financial Accounting
*Modules at a Glance***

Sr. No.	Modules	No. of Lectures
1	Preparation of Final Accounts of Companies	15
2	Internal Reconstruction	15
3	Buy Back of Shares	10
4	Investment Accounting (w.r.t. Accounting Standard- 13)	12
5	Ethical Behaviour and Implications for Accountants	08
Total		60

Sr. No.	Modules / Units
1	Preparation of Final Accounts of Companies
	<p>Relevant provisions of Companies Act related to preparation of Final Account (excluding cash flow statement)</p> <p>Preparation of financial statements as per Companies Act. (excluding cash flow statement)</p> <p>AS 1 in relation to final accounts of companies (disclosure of accounting policies)</p> <p>Adjustment for –</p> <ol style="list-style-type: none"> 1. Closing Stock 2. Depreciation 3. Outstanding expenses and income 4. Prepaid expenses and Pre received income 5. Proposed Dividend and Unclaimed Dividend 6. Provision for Tax and Advance Tax 7. Bill of exchange (Endorsement, Honour, Dishonour) 8. Capital Expenditure included in Revenue expenditure and vice versa eg- purchase of furniture included in purchases 9. Unrecorded Sales and Purchases 10. Good sold on sale or return basis 11. Managerial remuneration on Net Profit before tax 12. Transfer to Reserves 13. Bad debt and Provision for bad debts 14. Calls in Arrears 15. Loss by fire (Partly and fully insured goods) 16. Goods distributed as free samples. 17. Any other adjustments as per the prevailing accounting standard.
2	Internal Reconstruction
	<p>Need for reconstruction and company law provisions</p> <p>Distinction between internal and external reconstructions.</p> <p>Methods including alteration of share capital, variation of shareholder rights, sub division, consolidation, surrender and reissue / cancellation, reduction of share capital with relevant legal provisions and accounting treatment for same.</p>
3	Buy Back of Shares
	<p>Company Law / Legal provisions (including related restrictions, power, transfer to capital redemption reserve account and prohibitions)</p> <p>Compliance of conditions including sources, maximum limits and debt equity ratio. Cancellation of Shares Bought back(Excluding Buy Back of minority shareholding)</p>

Sr. No.	Modules / Units
4	Investment Accounting (w.r.t. Accounting Standard- 13)
	<p>For shares (variable income bearing securities)</p> <p>For debentures/Preference. shares (fixed income bearing securities)</p> <p>Accounting for transactions of purchase and sale of investments with ex and cum interest prices and finding cost of investment sold and carrying cost as per weighted average method (Excl. brokerage).</p> <p>Columnar format for investment account.</p>
5	Ethical Behaviour and Implications for Accountants
	<p>Introduction, Meaning of ethical behavior</p> <p>Financial Reports – What is the link between law, corporate governance, corporate social responsibility and ethics?</p> <p>What does the accounting profession mean by the ethical behavior?</p> <p>Implications of ethical values for the principles versus rule based approaches to accounting standards</p> <p>The principal based approach and ethics</p> <p>The accounting standard setting process and ethics</p> <p>The IFAC Code of Ethics for Professional Accountants</p> <p>Ethics in the accounting work environment – A research report</p> <p>Implications of unethical behavior for financial reports</p> <p>Company Codes of Ethics</p> <p>The increasing role of whistle – Blowing</p> <p>Why should student learn ethics?</p>

***Revised Syllabus of Courses of B.Com. Programme at Semester V
with Effect from the Academic Year 2018-2019***

Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group A: Advanced Accountancy

2. Financial Accounting and Auditing Paper-VIII:

Cost Accounting

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Cost Accounting	10
2	Material Cost	10
3	Labour Cost	10
4	Overheads	10
5	Classification of Costs and Cost Sheet	10
6	Reconciliation of cost and financial accounts	10
Total		60

Sr. No.	Modules / Units
1	Introduction to Cost Accounting
	(a) Objectives and scope of Cost Accounting (b) Cost centres and Cost units (c) Cost classification for stock valuation, Profit measurement, Decision making and control (d) Coding systems (e) Elements of Cost (f) Cost behaviour pattern, Separating the components of semi- variable costs
2	Material Cost
	(i) Procurement procedures—Store procedures and documentation in respect of receipts and issue of stock, Stock verification (ii) Inventory control —Techniques of fixing of minimum, maximum and reorder levels, Economic Order Quantity, ABC classification; Stocktaking and perpetual inventory (iii) Inventory accounting Note- Simple practical problems based on Calculation of EOQ, Raw Material Turnover ratio, Preparation of stock ledger and Valuation of Inventories, based on FIFO and Weighted average cost.
3	Labour Cost
	(i) Attendance and payroll procedures, Overview of statutory requirements, Overtime, Idle time and Incentives (ii) Labour turnover (iii) Utilisation of labour, Direct and indirect labour, Charging of labour cost, Identifying labour hours with work orders or batches or capital jobs (iv) Efficiency rating procedures (v) Remuneration systems and incentive schemes. Note- Simple practical problems based on Preparation of labour cost statement Remuneration and incentive systems based on Piece work plan, Haley Premium Plan, Rowan system, Gantt's Task
4	Overheads
	Functional analysis — Factory, Administration, Selling and Distribution Behavioural analysis — Fixed, Variable, Semi-variable cost Note-Simple practical problems on Departmentalization and apportionment of primary overheads, Computation of overhead rates including Machine overhead rates Basic concepts of treatment of over/under absorption of overheads- Direct Labour method and Prime Cost method
5	Classification of Costs and Cost Sheet
	Classification of costs, Cost of Sales, Cost Centre, Cost Unit, Profit Centre and Investment Centre Cost Sheet, Total Costs and Unit Costs, Different Costs for different purpose Note- Simple practical problems on preparation of cost sheet
6	Reconciliation of cost and financial accounts
	Practical problems based on Reconciliation of cost and Financial accounts.

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Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group B: Business Management

**1. Business Management Paper-III:
Management and Organization Development**

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction	15
2	Planning	15
3	Organizing as a Managerial Function	15
4	Staffing	15
Total		60

Sr. No.	Modules / Units
1	Introduction
	<ul style="list-style-type: none"> • Management – Definition and Characteristics • Management – as Science, art and profession – Levels of management and management skills • Development of Management Thought – Scientific Approach Administrative School, Behaviour School, Systems Approach and Contingency Approach. Evolution of Indian management thoughts and their relevance in the current era. • Functions of Management in a typical business organisation
2	Planning
	<ul style="list-style-type: none"> • Planning, forecasting, decision making and problem solving • Nature, characteristics, merits and limitations of planning. • Classification and components of plans • Essentials of a good plan and planning process • Management by objectives (MBO) – Importance and relevance
3	Organizing as a Managerial Function
	<ul style="list-style-type: none"> • Definition and Principles • Departmentalisation • Formal organisations – Functional, SBU, Matrix, Committees • Informal organisations – Relevance and Importance • Authority, responsibility, accountability and span of control • Organizational hierarchy – charts • Delegation of authority and decentralization • Emergence of virtual organisation – merits and limitations
4	Staffing
	<ul style="list-style-type: none"> • Importance of human resource in organisations • Estimation of human resource requirements • Human Asset Accounting • Job Analysis • Recruitment and selection • Training and Development • Performance Appraisal

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Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group B: Business Management

**2. Business Management Paper-V:
Financial Management**

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Financial Management	11
2	Study of Financial Statements	11
3	Ratio Analysis	12
4	Sources of Finance and Cash Flow Analysis	11
Total		45

Sr. No.	Modules / Units
1	Introduction to Financial Management
	<ul style="list-style-type: none"> • Definition, nature and functions of financial management • Objectives of financial management • Importance of financial management and limitations. • Preparation of financial Statements adhering to current statutory requirements.
2	Study of Financial Statements
	<ul style="list-style-type: none"> • Objectives of financial statement analysis and interpretation • Steps involved in the analysis of financial statements • Comparative Statements • Common Size Statements • Trend Analysis
3	Ratio Analysis
	<ul style="list-style-type: none"> • Ratio Analysis – Meaning and objectives and Classification of Ratios- Traditional classification, functional classification and classification from the point of view of users • Balance Sheet Ratios- Current Ratio, Liquid Ratio, Proprietary Ratio, Stock-Working Capital Ratio, Capital Gearing Ratio, Debt Equity Ratio • Revenue Statement Ratios - Gross Profit Ratio, Operating Ratio, Expense Ratios, Net Profit Ratio, Stock Turnover Ratio. • Combined Ratios - Return on Capital Employed, Return on Proprietors' Funds, Return on Equity Share Capital, Debtors' Turnover Ratio (Debtors' Velocity), Earning Per Share, Dividend Payout Ratio, Price Earning Ratio • Importance and limitations of Accounting Ratios
4	Sources of Finance and Cash Flow Analysis
	<ul style="list-style-type: none"> • Classification of sources of finance with reference to period , ownership and source of generation • Internal and external financing including choice of financial instruments • Cash Flow Statement – Meaning and Classification • Uses of Cash Flow statement • Preparation of Cash Flow Statement – Direct and Indirect

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Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group C: Banking and Finance

**1. Banking and Finance Paper - I:
Central Banking**

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Indian Financial System	15
2	Financial Markets in India	15
3	Commodity Market	15
4	Derivatives Market	15
Total		60

Sr. No.	Modules / Units
1	Indian Financial System
	<p>A) Introduction, Meaning, Functions of financial system, Indian financial system from financial neutrality to financial activism and from financial volatility to financial stability, Role of Government in financial development, Overview of Phases of Indian financial system since independence (State Domination – 1947-1990, Financial sector reforms 1991 till Financial Sector Legislative Reforms Commission 2013), Monitoring framework for financial conglomerates.</p> <p>B) Structure of Indian Financial System – Banking & Non-Banking Financial Institutions, Organized and Unorganized Financial Markets, Financial Assets/Instruments, Fund based & Fee Based Financial Services.</p>
2	Financial Markets in India
	<p>A) Indian Money Market – Meaning, Features, Functions, Importance, Defects, Participants, Components of Organized and Unorganized markets and Reforms</p> <p>B) Indian Capital Market - Meaning, Features, Functions, Importance, Participants, Instruments, Reforms in Primary and Secondary Market.</p> <p>C) Indian Stock Market - Meaning and functions of Stock Exchange- NSE and BSE.</p> <p>D) Equity Market – Primary Market, IPO, Book Building, Role of Merchant Bankers, ASBA , Green Shoe Option, Issue of Bonus shares, Right Shares, Sweat Equity shares, ESOP.</p> <p>E) Indian Debt Market –Market Instruments, Listing, Primary and Secondary Segments</p>
3	Commodity Market
	<ul style="list-style-type: none"> • Introduction to commodities market - Meaning History & origin, Types of commodities traded, • Structure of commodities market in India, • Participants in commodities market, Trading in commodities in India(cash & derivative segment), • Commodity exchanges in India & abroad • Reasons for investing in commodities.
4	Derivatives Market
	<ul style="list-style-type: none"> • Introduction to Derivatives market- Meaning, History & origin, • Elements of a derivative contract, • Factors driving growth of derivatives market, • Types of derivatives, Types of underlying assets, Participants in derivatives market, Advantages & disadvantages of trading in derivatives market, • Current volumes of derivative trade in India, • Difference between Forwards & Futures

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Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group C: Banking and Finance

**2. Banking and Finance Paper - II:
Financial Reporting Analysis**

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Final Accounts of Banking Company	16
2	Final Accounts of Insurance Company	12
3	Preparation of Final Accounts of Companies	12
4	Cash Flow Analysis & Ethical Behavior and implications for accountants	12
5	Introduction to IFRS	08
Total		60

Sr. No.	Modules / Units
1	Final Accounts of Banking Company
	<p>Legal provision in Banking Regulation Act, 1949 relating to Accounts. Statutory reserves including Cash Reserve and Statutory Liquidity Ratio. Bill purchase and discounted, rebate of bill discounted.</p> <p>Final Accounts in prescribed form</p> <p>Non – performing assets and Income from non – performing assets. Classification of Advances, standard, sub – standard, doubtful and provisioning requirement.</p>
2	Final Accounts of Insurance Company
	<p>(a) Preparation and presentation of Corporate Final Accounts for Insurance Companies</p> <p>(b) Final Accounts in accordance with Insurance Legislation.</p> <p>(c) Study of Accounting Policies from Annual Reports of Listed Insurance Companies</p>
3	Preparation of Final Accounts of Companies
	<p>Relevant provisions of Companies Act related to preparation of Final Account (excluding cash flow statement)</p> <p>Preparation of financial statements as per Companies Act. (excluding cash flow statement)</p> <p>AS 1 in relation to final accounts of companies (disclosure of accounting policies)</p> <p>Adjustment for –</p> <ol style="list-style-type: none"> 1. Closing Stock 2. Depreciation 3. Outstanding expenses and income 4. Prepaid expenses and Pre received income 5. Proposed Dividend and Unclaimed Dividend 6. Provision for Tax and Advance Tax 7. Bill of exchange (Endorsement, Honour, Dishonour) 8. Capital Expenditure included in Revenue expenditure and vice versa eg- purchase of furniture included in purchases 9. Unrecorded Sales and Purchases 10. Good sold on sale or return basis 11. Managerial remuneration on Net Profit before tax 12. Transfer to Reserves 13. Bad debt and Provision for bad debts 14. Calls in Arrears 15. Loss by fire (Partly and fully insured goods) 16. Goods distributed as free samples. <p>Any other adjustments as per the prevailing accounting standard.</p>

Sr. No.	Modules / Units
4	Cash Flow Analysis as per AS 3 (Indirect Method Only) Ethical Behaviour and implications for accountants
	<p>Introduction, Meaning of ethical behavior</p> <p>Financial Reports – What is the link between law, corporate governance, corporate social responsibility and ethics?</p> <p>What does the accounting profession mean by the ethical behavior?</p> <p>Implications of ethical values for the principles versus rule based approaches to accounting standards</p> <p>The principal based approach and ethics</p> <p>The accounting standard setting process and ethics</p> <p>The IFAC Code of Ethics for Professional Accountants</p> <p>Ethics in the accounting work environment – A research report</p> <p>Implications of unethical behavior for financial reports</p> <p>Company Codes of Ethics</p> <p>The increasing role of whistle – Blowing</p> <p>Why should student learn ethics?</p>
5	Introduction to IFRS
	<p>IFRS 1- First time Adoption of International Financial Reporting Statements</p> <p>Objective, Scope, Definitions, First IFRS financial statements, Recognition and measurement, Comparative information, Explanation of transition to IFRS, Reconciliations, Interim financial reports, Designation of financial assets or financial liabilities, Use of fair value as deemed cost, Use of deemed cost, Exceptions to retrospective application of other IFRS, Exemptions for business combination, Exemptions from other IFRS and Presentation and Disclosure.</p> <p>IFRS2- Share Based Payment – Objective, Scope, Definitions, Recognition, Equity settled share based payment transactions, Transactions in which services are received, Treatment of vesting conditions, Expected Vesting Period, Determining the fair value of equity instruments granted, Modifications of terms and conditions, Cancellation, Cash settled share based payment transactions, Share based payment transactions in which the terms of the arrangement provide the counterparty with a choice of settlement, Share based payment transactions in which the terms of the arrangement provide the entity with a choice of settlement, Share based payment transactions among group entities (2009 Amendments)</p> <p>Disclosure.</p>

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Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group D: Commerce

**1. Commerce Paper - I:
Management of Service Industry**

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Service Industry	15
2	Tourism and Hospitality Industry	15
3	Transport Industry	15
4	Health Care Industry	15
Total		60

Sr. No.	Modules / Units
1	Introduction to Service Industry
	Services-Concept- characteristics –classification-significance- importance of relationship marketing in services- technology and its impact on service industry- role of service industry in economic development- career opportunities
2	Tourism and Hospitality Industry
	Tourism Industry- significance- challenges- types of Tourism products-Present scenario of travel and tourism in India- Future prospects- Government's Tourism policy- Role /functions of Indian Tourism Development Corporation and Maharashtra Tourism Development Corporation Hospitality Industry- characteristics- classification Restaurants- classification and types of consumers in a restaurant
3	Transport Industry
	Role of transport in economic development- types of transport (road, rail, air & ocean)- merits, demerits & recent trends in each mode
4	Health Care Industry
	Features- types of health care services- major inputs of health care industry- role of Corporates & Government in health care sector- emerging trends in health care industry

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Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group D: Commerce

**2. Commerce Paper - II:
Commercial Administration**

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction and Orientation to Commercial Administration	15
2	Office Layout and Equipments	15
3	Office Communication	15
4	Information Management and Records	15
Total		60

Sr. No.	Modules / Units
1	Introduction and Orientation to Commercial Administration
	Commercial Administration: Meaning, nature and importance of Commercial Administration in business activity- role and functions of a commercial office- administrative structure of a commercial office- abilities, skills and attributes of office manager.
2	Office Layout and Equipments
	Office layout- Meaning, importance and types of office layout (enclosed or cellular/modular/ virtual etc.)- factors determining office layout- ergonomics with respect to comfort, health & safety Office equipments- various types of office equipments-functions of office equipments- types and uses of various office stationery-Role of IT in office administration
3	Office Communication
	Communication: Various channels of office communication- factors affecting selection of communication channels communication flows(upward/downward/vertical/horizontal/diagonal/grapevine)- barriers to effective communication- methods for intra firm communication- role of front office in communication with external stakeholders
4	Information Management and Records
	Information Management: Meaning and characteristics of information management- types of records to be maintained- characteristics of effective record management system- methods of classification of records-methods and procedures for managing inactive files- duties of record management Department.

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Elective Courses (EC)

1 B. Discipline Related Elective (DRE) Courses

**3. Commerce - V
Marketing**

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Marketing	12
2	Marketing Decisions I	11
3	Marketing Decisions	11
4	Key Marketing Dimensions	11
Total		45

Sr. No.	Modules / Units
1	Introduction to Marketing
	<ul style="list-style-type: none"> Marketing, Concept, Features, Importance, Functions, Evolution, Strategic v/s Traditional Marketing Marketing Research - Concept, Features, Process Marketing Information System-Concept, Components Data Mining- Concept, Importance Consumer Behaviour- Concept, ,Factors influencing Consumer Behaviour Market Segmentation- Concept, Benefits, Bases of market segmentation Customer Relationship Management- Concept , Techniques Market Targeting- Concept, Five patterns of Target market Selection
2	Marketing Decisions I
	<ul style="list-style-type: none"> Marketing Mix- Concept, Product- Product Decision Areas Product Life Cycle- Concept, Managing stages of PLC Branding- Concept , Components Brand Equity- Concept , Factors influencing Brand Equity Packaging- Concept , Essentials of a good package Product Positioning- Concept, Strategies of Product Positioning Service Positioning- Importance & Challenges Pricing- Concept, Objectives, Factors influencing Pricing, Pricing Strategies
3	Marketing Decisions
	<ul style="list-style-type: none"> Physical Distribution- Concept, Factors influencing Physical Distribution, Marketing Channels (Traditional & Contemporary Channels) Supply Chain Management-Concept, Components of SCM Promotion- Concept, Importance, Elements of Promotion mix Integrated Marketing Communication (IMC)- Concept, Scope ,Importance Sales Management- Concept, Components, Emerging trends in selling Personal Selling- Concept , Process of personal selling, Skill Sets required for Effective Selling
4	Key Marketing Dimensions
	<ul style="list-style-type: none"> Marketing Ethics: Concept, Unethical practices in marketing, General role of consumer organizations Competitive Strategies for Market Leader, Market Challenger, Market Follower and Market Nicher Marketing Ethics: Rural Marketing- Concept, Features of Indian Rural Market, Strategies for Effective Rural Marketing Digital Marketing-Concept, trends in Digital Marketing Green Marketing- concept, importance Challenges faced by Marketing Managers in 21st Century Careers in Marketing – Skill sets required for effective marketing Factors contributing to Success of brands in India with suitable examples, Reasons for failure of brands in India with suitable examples.

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Elective Courses (EC)

1 B. Discipline Related Elective (DRE) Courses

**4. Business Economics - V
Macro Economic Aspects of India**

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Macro Economic overview of India	15
2	Agriculture During Post Reform Period	10
3	The Industry And Service Sector During Post Reform Period	10
4	Banking and Financial Market	10
Total		45

Sr. No.	Modules / Units
1	Macro Economic overview of India
	<ul style="list-style-type: none"> • Overview of New Economic Policy-1991, - Role of Social Infrastructure with reference to education, health and family welfare. • Sustainable Development Goals and Policy measures: Make in India, Invest in India, and Skill Development and Training Programmes. • Foreign Investment Policy Measures in India – Foreign Investment Promotion Board, FDI- MNCs and their role.
2	Agriculture During Post Reform Period
	<ul style="list-style-type: none"> • National Agricultural Policy 2000: Objectives, Features and Implications • Agricultural pricing and agricultural finance • Agricultural Marketing Development-Agricultural Market infrastructure - Market information- Marketing training- Enabling environments-Recent developments
3	The Industry And Service Sector During Post Reform Period
	<ul style="list-style-type: none"> • Policy Measures- Competition Act 2003, Disinvestment Policy, Micro, Small and Medium Enterprises [MSME sector] since 2007. • Industrial Pollution in India: Meaning, Types, Effects and Control. • Service Sector: Recent trends, role and growth in Healthcare and Tourism Industry
4	Banking and Financial Market
	<ul style="list-style-type: none"> • Banking Sector- Recent trends, issues and challenges in Banking and Insurance Industry • Money Market – Structure, Limitations and Reforms. • Capital Market – Structure, Growth and Reforms.

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Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

1. Trade Unionism and Industrial Relations Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Trade Unionism	12
2	Functions of Trade Unions	12
3	Leadership ideology, Recognition, Registration and administration of trade union	11
4	ILO- Objectives, Principles and Organs	10
Total		45

Sr. No.	Modules / Units
1	Trade Unionism
	Meaning, Scope, Significance and Objectives, Structure of trade unions in India. New Role of Trade Union in the context of globalization
2	Functions of Trade Unions
	<ul style="list-style-type: none"> Functions of trade unions with respect to: <ul style="list-style-type: none"> i) Wages ii) Labour welfare iii) Training and education iv) Social security) Awareness of social responsibility vi) Environmental awareness. Problems of trade unions, Industrial dispute – causes of industrial disputes
3	Leadership ideology, Recognition, Registration and administration of trade union
	<ul style="list-style-type: none"> Impact of recession and globalization on trade unions in India. Problems of employees and need of trade unions in Information and Communication Industry.
4	ILO- Objectives, Principles and Organs
	<p>ILO- Objectives, principles and organs. Impact of ILO on Indian trade union movement.</p> <ul style="list-style-type: none"> Workers participation in management – concept, pre-requisites, forms & levels of participation, benefit of workers Participation in Management Women's participation in trade union activities.

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Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

2. Computer Systems and Applications Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Data Communication, Networking and Internet	18
2	Database and MySQL	09
3	Database and MySQL	09
4	Spread Sheet	09
Total		45

Sr. No.	Modules / Units
1	<p>Data Communication, Networking and Internet</p> <p>a) Data Communication Component, Data representation, Distributed processing. (Concepts only)</p> <p>b) Network Basics and Infrastructure</p> <ul style="list-style-type: none"> • Definition, Types (LAN, MAN, WAN) Advantages. • Network Structures – Server Based, Client server, Peer to Peer. • Topologies – Star, Bus, Ring. • Network Media, Wired – Twisted Pair, Co-axial, Fiber Optic and Wireless – Radio and Infrared. • Network Hardware: Hubs, Bridges, Switches, Routers. • Network Protocols – TCP/IP, OSI Model. <p>c) Internet</p> <ul style="list-style-type: none"> • Definition, Types of connections, sharing internet connection, Hot Spots. • Services on net- WWW, Email-Blogs. • IP addresses, Domain names, URLs, Hyperlinks, Web Browsers • Searching Directories, Search engines, Boolean search (AND, OR, NOT), Advanced search, Meta Search Engines. • Email – POP/SMTP accounts in Email, Different parts of an Email address. Receiving and sending emails with attachments by scanning attachments for viruses. • Cyber Crime, Hacking, Sniffing, Spoofing
2	<p>Database and MySQL</p> <p>a) Introduction :To Databases, Relational and Non-relational database system MySQL as a Non-procedural Language. View of data.</p> <p>b) MySQL Basics :Statements (Schema Statements, Data statements, Transaction statements), names (table & column names), data types (Char, Varchar, Text, Mediumtext, Longtext, Smallint, Bigint, Boolean, Decimal, Float, Double, Date, Date Time, Timestamp, Year, Time), Creating Database, inserting data, Updating data, Deleting data, expressions, built-in-functions – lower, upper, reverse length, ltrim, rtrim, trim, left, right, mid, concat, now, time, date, curdate, day, month, year, dayname, monthname, abs, pow, mod, round, sqrt missing data(NULL and NOT NULL DEFAULT values) CREATE,USE, ALTER (Add, Remove, Change columns), RENAME, SHOW, DESCRIBE (CREATE TABLE, COLUMNS, STATUS and DATABASES only) and DROP (TABLE, COLUMN, DATABASES statements), PRIMARY KEY FOREIGN KEY (One and more columns) Simple Validity checking using CONSTRAINTS.</p>
3	<p>Database and MySQL</p> <p>a) MySQL Simple queries : TheSELECT statement (From, Where, Group By, Having, Order By, Distinct, Filtering Data by using conditions. Simple and complex conditions using logical, arithmetic and relational operators (=, !=, <, >, <>, AND, OR, NOT, LIKE) Aggregate Functions – count, sum, avg, max, min.</p> <p>b) Multi-table queries:Simple joins (INNER JOIN), SQL considerations for multi table queries(table aliases, qualified column names,all column selections self joins).</p> <p>c) Nested Queries (Only up to two levels) :Using sub queries, sub query search conditions, sub queries & joins, nested sub queries, correlated sub queries, sub queries in the HAVING clause. Simple Transaction illustrating START, COMMIT, and ROLLBACK.</p>

Sr. No.	Modules / Units
4	Spread Sheet
	<p>a) Creating and Navigating worksheets and adding information to worksheets</p> <ul style="list-style-type: none"> Types of data, entering different types of data such as texts, numbers, dates, functions. Quick way to add data Auto complete, Autocorrect, Auto fill, Auto fit. Undo and Redo. Moving data, contiguous and non contiguous selections, Selecting with keyboard. Cut-Copy, Paste. Adding and moving columns or rows. Inserting columns and rows. Find and replace values. Spell check. Formatting cells, Numbers, Date, Times, Font, Colors, Borders, Fills. <p>b) Multiple Spreadsheets</p> <ul style="list-style-type: none"> Adding, removing, hiding and renaming worksheets. Add headers/Footers to a Workbook. Page breaks, preview. Creating formulas, inserting functions, cell references, Absolute, Relative (within a worksheet, other worksheets and other workbooks). <p>c) Functions</p> <ul style="list-style-type: none"> Financial functions: FV, PV, PMT, PPMT, IPMT, NPER, RATE Mathematical and statistical functions. ROUND, ROUNDDOWN, ROUNDUP, CEILING, FLOOR, INT, MAX, MIN, MOD, SQRT, ABS, SUM, COUNT, AVERAGE <p>d) Data Analysis</p> <ul style="list-style-type: none"> Sorting, Subtotal. Pivot Tables- Building Pivot Tables, Pivot Table regions, Rearranging Pivot Table.

Note :

- a) Theory 03 lectures per week.
- b) Practical batch size 20-25, 01 practical = 03 theory lectures per week.
- c) 10 Practical's are to be completed in each semester.

Semester V

Topic	Number of Practical's
Word processing	01
Spread sheet	03
MySQL	06

Minimum 6 practical's are to be recorded in the journal in the Semester V
[Minimum 4 on SQL, 2 on MS-Excel]

❖ Scheme of Examination

Type	Marks	Duration
Theory	75	2 ½ hours
Practical	20	1 hour per batch of 10
Active Participation and Class conduct	05	---

• Practical Examination Pattern- Semester V

Sr. No.	Topic	Marks
01	MySQL	07
02	Spread Sheet	03
03	Journal	05
04	Viva	05

- Practical examination to be conducted 2 to 3 weeks before the theory examination. Marks out of 25 to be submitted to the University before commencement of theory examination.
- Software Requirement :
MS-Excel 2010, VB 6.0
- Hardware
For a batch of 120 students minimum 10 computers with appropriate hardware and software installed on each computer. During practical hours maximum two student may share one computer.
- For in house computing facility fee of rupees 750/- be charged for each student per Semester in the existing fee structure against head of computer fee/computer practical.

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Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

3. Export Marketing Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Export Marketing	12
2	Global Framework for Export Marketing	11
3	India's Foreign Trade Policy	11
4	Export Incentives and Assistance	11
Total		45

Sr. No.	Modules / Units
1	Introduction to Export Marketing
	a) Concept and features of Export Marketing; Importance of Exports for a Nation and a Firm; Distinction between Domestic Marketing and Export Marketing b) Factors influencing Export Marketing; Risks involved in Export Marketing; Problems of India's Export Sector c) Major merchandise/commodities exports of India (since 2015); Services exports of India (since 2015); Region-wise India's Export Trade (since 2015)
2	Global Framework for Export Marketing
	a) Trade barriers; Types of Tariff Barriers and Non-Tariff barriers; Distinction between Tariff and Non-Tariff barriers b) Major Economic Groupings of the World; Positive and Negative Impact of Regional Economic Groupings; Agreements of World Trade Organisation (WTO) c) Need for Overseas Market Research; Market Selection Process, Determinants of Foreign Market Selection
3	India's Foreign Trade Policy
	a) Foreign Trade Policy (FTP) 2015-20 - Highlights and Implications, Export Trade facilitations and ease of doing business as per the new FTP b) Role of Directorate General of Foreign Trade (DGFT), Negative list of Exports, Deemed Exports c) Benefits to Status Holders & Towns of Excellence; Common benefits for EHTP, BTP and STP; Benefits enjoyed by (IIAs) Integrated Industrial Areas(SEZ), EOU, AEZ
4	Export Incentives and Assistance
	a. Financial Incentives available to Indian Exporters - Marketing Development Assistance (MDA), Market Access Initiative (MAI), Assistance to States for Infrastructure Development for Exports (ASIDE), Industrial Raw Material Assistance Centre(IRMAC), b. Institutional Assistance to Indian Exporters - Federation of Indian Export Organisations (FIEO), India Trade Promotion Organisation (ITPO), The Federation of Indian Chambers of Commerce and Industry (FICCI), Export Promotion Councils (EPCs) & Commodity Boards (CBs), Indian Institute of Foreign Trade (IIFT), Indian Institute of Packaging (IIP) c. Schemes - Export Promotion Capital Goods (EPCG) Scheme, Duty Exemption and Remission Schemes, Export Advance Authorisation Scheme; Duty Drawback (DBK); IGST Refund for Exporters

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Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

4. Marketing Research Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Marketing Research	12
2	Planning Research	11
3	Data Collection	11
4	Data Processing, Analysis, Reporting	11
Total		45

Sr. No.	Modules / Units
1	Introduction to Marketing Research
	a. Marketing Research- Definition, features, functions, significance of Marketing Research in marketing decision making, limitations of Marketing Research b. Steps in Marketing Research, Ethics in Marketing Research, Career options in Marketing Research, Qualities of a good Marketing Research professional c. Marketing Information System- Definition, components, essentials of a good MIS, Concept of Decision Support System- Components , importance Data Mining- concept, importance
2	Planning Research
	a. Research Design- concept, importance, types Hypothesis- concept, types, importance b. Questionnaire- concept, types of questions, steps in the preparation of questionnaire, essentials of a good questionnaire c. Sampling- concept, terms in sampling, techniques of sampling, essentials of good sampling
3	Data Collection
	a. Primary data-concept, merits, demerits, methods b. Secondary data- concept, merits, demerits, sources c. Qualitative and Quantitative research- concept, features, Qualitative v/s Quantitative research Integrating technology in data collection, methods- (online surveys, hand held devices, text messages, social networking), importance
4	Data Processing, Analysis, Reporting
	a. Stages in Data processing Editing- meaning, objectives, types Coding- meaning, guidelines Classification- meaning, methods Tabulation- meaning, methods b. Data Analysis & Interpretation Data Analysis- meaning, steps, use of statistical tools (SPSS, SAS, MS EXCEL, MINITAB) Data Interpretation- meaning, importance, stages c. Report Writing- concept, types, contents, essentials, use of visual aids in research report

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Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

**5. Investment Analysis and Portfolio
Management Paper - I**

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Portfolio Management – An Introduction	09
2	Portfolio Analysis and Selection	12
3	Portfolio Revision and Evaluation	12
4	Bond Valuation	12
Total		45

Sr. No.	Modules / Units
1	Portfolio Management – An Introduction
	<p>A) Investment - Meaning, Characteristics, Objectives, Investment V/s Speculation, Investment V/s Gambling and Types of Investors</p> <p>B) Portfolio Management – Meaning, Evolution, Phases, Role of Portfolio Managers, Advantages of Portfolio Management.</p> <p>C) Investment Environment in India and factors conducive for investment in India.</p>
2	Portfolio Analysis and Selection
	<p>A) Portfolio Analysis – Meaning and its Components, Calculation of Expected Return and Risk, Calculation of Covariance, Risk – Return Trade off.</p> <p>B) Portfolio Selection – Meaning, Feasible Set of Portfolios, Efficient Set of Portfolios, Selection of Optimal Portfolio, Markowitz Model, Limitations of Markowitz Model, Measuring Security Return and Portfolio Return and Risk under Single Index Model and Multi Index Model.</p>
3	Portfolio Revision and Evaluation
	<p>A) Portfolio Revision – Meaning, Need, Constraints and Strategies.</p> <p>B) Portfolio Evaluation – Meaning, Need, Measuring Returns (Sharpe, Treynor and Jensen Ratios) and Decomposition of Performance.</p>
4	Bond Valuation
	<p>A) Bond Valuation – Meaning, Measuring Bond Returns – Yield to Maturity, Yield to call and Bond Pricing. Bond Pricing Theorems, Bond Risks and Bond Duration. (Practical Problems on YTM and Bond Duration.)</p>

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Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

6. Transport Management Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Transportation Network	11
2	Factors Influencing transport development	11
3	Transportation Planning and Production Management	11
4	Multi Modal Transport System in India	12
Total		45

Sr. No.	Modules / Units
1	Transportation Network
	Definition of transport, Characteristics of transport, various mode of transport network- Air, Surface and Water; public transport and its importance, Element of Transport – way, unit of carriage, motive power, Terminal
2	Factors Influencing transport development
	Factors Influencing transport development: Physical, Economic, Political and Strategic, Concept of connectivity and accessibility, Transport organisation: terminal facilities for different modes, Transport Demand: Direction, Volume and Frequency
3	Transportation Planning and Production Management
	Classification of roads, types of parking, problems due to parking, nature of traffic problem in cities, traffic and environment - Pollution under control certificate agency, cost structure of different transport modes, discriminatory pricing
4	Multi Modal Transport System in India
	Intermodal systems – road/rail/sea; sea/air; road/air; road/rail, sea/rail, sea/road – Inland Container Depot (ICD) & Container Freight Station (CFS) Terminals, Roll-on/Roll-Off Service, Planning of multi modal transport system for Indian cities- Metro Rails, Light Rail Transit (LRT), Sub-Urban Trains, Ring Rail and Monorails, Bus Rapid Transit Systems.

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Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

**7. Entrepreneurship and Management of Small
Scale Industries Paper - I**

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Entrepreneurship	11
2	Entrepreneurial Development	11
3	Entrepreneurial Project Development	11
4	Specialized Focus Areas in Entrepreneurship	12
Total		45

Sr. No.	Modules / Units
1	Introduction to Entrepreneurship
	<p>Unit-1:-</p> <ul style="list-style-type: none"> • Meaning, Features, Need and Significance, Concept of Entrepreneur and Entrepreneurship • Importance, Significance and Growth of Entrepreneurial activity • Classification and Types of Entrepreneurs • Functions of an Entrepreneur <p>Unit-2:-</p> <ul style="list-style-type: none"> • Characteristics, Qualities and Competencies of a Successful Entrepreneur – Examples of Successful Indian Entrepreneurs. • Entrepreneurship as a Career - Creating Self-employment through Entrepreneurship • Scope of Entrepreneurship • Meaning, Features, Significance, Concept of Promoters - Types of Promoters <p>Unit-3:-</p> <ul style="list-style-type: none"> • Incentives and Subsidies to Entrepreneurs in India • Meaning, Features, Significance, Concept and Qualities of Intrapreneur – Meaning and • Concept of Intrapreneurship • Measures to Promote Intrapreneurship • Differentiating the Role of: Entrepreneurs and Businessman - Entrepreneurs and Managers - Entrepreneurs and Employees
2	Entrepreneurial Development
	<p>Unit-1:-</p> <ul style="list-style-type: none"> • Meaning, Significance and Concept of Entrepreneurial Development in India • Factors influencing Entrepreneurial Development – Pull and Push Factors • Barriers to Entrepreneurship • Managing the Problems faced by Entrepreneurs - Measures/Suggestions to Overcome Barriers to Entrepreneurship, Start up India-Make in India. <p>Unit-2:-</p> <ul style="list-style-type: none"> • Meaning, Concept and Inter-Linkage between: Innovation and Invention - Innovation and Entrepreneurship • Factors influencing Entrepreneurial Development and Motivation • Role of Psychological, Social and Cultural factors in Entrepreneurial Development • Theories of Entrepreneurship - Contribution of David McClelland and Joseph Schumpeter <p>Unit-3:-</p> <ul style="list-style-type: none"> • Need and Significance of Entrepreneurial Education and Training • Meaning, Concept & Areas of Entrepreneurship Development Programme (EDP) • Role of Entrepreneurial Development Programme (EDP) and Training Centers in India • Role of Entrepreneurial Development Institutes in India such as MSME-DI Mumbai, EDI Ahmedabad, MITCON, MCED, NIESBUD toward Entrepreneurial Development in India

Sr. No.	Modules / Units
3	Entrepreneurial Project Development
	<p>Unit-1:-</p> <ul style="list-style-type: none"> • Steps in Setting-up of an Entrepreneurial Venture • Idea Generation – Sources and Methods • Identification and Classification of Ideas • Meaning and Concept of Environment Scanning, SWOT Analysis and SWOT Matrix <p>Unit-2:-</p> <ul style="list-style-type: none"> • Meaning and Concept of Project Formulation • Meaning, Concept and Importance of Project Planning - Preparation of Project (Business) Plan -Points to be considered in Project Planning • Components of an ideal Business Plan: Market Plan, Financial Plan, Operational Plan, and HR Plan • Meaning and Concept of Project Report - Significance of Project Report - Contents of Project Report <p>Unit-3:-</p> <ul style="list-style-type: none"> • Meaning, Significance and Concept of Project Appraisal • Aspects and Methods of Project Appraisal: Economic Oriented Appraisal, Financial Appraisal, Market Oriented Appraisal, Technological Feasibility, Managerial Competency • Meaning, Concept, Significance and Importance of Feasibility Study • Types and Different Areas of Feasibility Study
4	Specialized Focus Areas in Entrepreneurship
	<p>Unit-1:-</p> <ul style="list-style-type: none"> • Meaning, Features, Concept, Role and Importance of Women Entrepreneurs • Problems faced by Women Entrepreneurs and Need for Promotion and Assistance • Measures/Suggestions to Overcome the Problems faced by Women Entrepreneurs • Agencies Supporting and Promoting Women Entrepreneurs- Stand up India. <p>Unit-2:-</p> <ul style="list-style-type: none"> • Meaning, Features, Concept, Role and Importance of Rural Entrepreneurs • Problems faced by Rural Entrepreneurs and Need for Promotion and Assistance • Measures/Suggestions to Overcome the Problems faced by Rural Entrepreneurs • Agencies Supporting and Promoting Rural Entrepreneurs <p>Unit-3:-</p> <ul style="list-style-type: none"> • Meaning, Features, Role and Importance, Concept of Social Entrepreneurship • Differentiating Role of Social Entrepreneurship and NGOs • Problems faced by Social Entrepreneurs and Need for Promotion and Assistance – Suggestions to Overcome the Challenges faced by Social Entrepreneurs • d. Examples of Social Entrepreneurship in India

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Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

8. International Marketing Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to International Marketing	12
2	Product Decisions in International Marketing	11
3	Finance and Pricing Decisions In International Marketing	11
4	International Marketing Environment	11
Total		45

Sr. No.	Modules / Units
1	Introduction to International Marketing
	<ul style="list-style-type: none"> a. International Marketing- Features, Importance and scope of International Marketing. Domestic Marketing & International Marketing. b. Motivating Factors for International Marketing, Problems in International Marketing, Challenges faced by Indian Exporter in International Market. c. International Marketing Research – Need & importance, Scope & complexities, International Marketing Information System- Concept, Importance and Components.
2	Product Decisions in International Marketing
	<ul style="list-style-type: none"> a. Product-Product Mix, International Product Life Cycle, New Product Development steps. b. Branding – Factors affecting International branding, Importance, Types. c. Labeling, Marking & Packaging – Essential of Good Packaging in International Marketing, Importance of Labeling, Marking & Packaging.
3	Finance and Pricing Decisions In International Marketing
	<ul style="list-style-type: none"> a. Export Finance-, Types, Features, Procedure for obtaining export finance. b. Export Financial Institutions-Role and Functions of Commercial Banks, EXIM, SIDBI, ECGC Cover. c. Pricing – Factors determining pricing in International Marketing, quotations including INCO terms (Sums / Practical Problems) Pricing strategies in International Marketing.
4	International Marketing Environment
	<ul style="list-style-type: none"> a. International Marketing Environment- ,Components of International Marketing Environment (Eco, Social, Cultural, Legal & regulatory environment) b. Trade barriers – Types (Tariff and Non-Tariff Barriers), trading blocs (EU, SAARC, ASEAN). c. International Forums – WTO -Role/ Functions, Agreements (TRIMS, TRIPS, GATS, AOA, AOT), IMF, IBRD, BRICS- Role/ Functions.

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Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

9. Merchant Banking Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Merchant Banking	11
2	Capital Funds	11
3	Issue Management Process	11
4	Issue Management & Due Diligence	12
Total		45

Sr. No.	Modules / Units
1	Merchant Banking
	<p>Merchant Banking and Financial Services: Introduction, Concept of merchant banking, Financial system in India and Development of merchant banks and regulations in India.</p> <p>Underwriting and Brokerage - Different roles played by underwriters and brokers in issue management and their responsibilities</p>
2	Capital Funds
	Raising Capital from International Markets - Needs of Indian companies for raising funds from foreign markets, Usage of Euro issue, Evaluation of various types of depository receipts - American Depository Receipts, Global Depository Receipts, FCCBs and FCEBs.
3	Issue Management Process
	<p>The process of issue management and merchant banker's role in it, The appointment of SEBI registered intermediaries and other intermediaries, The process of filing of offer document by the issuer with SEBI and the ROC with the help of the lead Merchant Banker, List of the documents to be submitted before opening of the issue, Copy of agreement between the Issuer and Merchant Banker, Certificate of compliance stating compliance of conditions, Due diligence certificate while registering DRHP/ Red Herring Prospectus/ prospectus with the ROC/ final post issue report, The type of In-Principle Approval from recognized stock exchanges for initial public issues as well as in the case for rights and further public offerings, the allotment, refund and payment of interest.</p>
4	Issue Management & Due Diligence
	<p>The general obligations of Intermediaries with respect to Public Issues and Rights Issue, The pricing in preferential issue, The pricing and restrictions on allotment of Qualified Institutional Placement, The pre-issue advertisement for rights issue, Utilization of funds raised through rights issue and the manner of disclosures in the offer document, The procedure for Institutional Placement Programme w.r.t Offer Document Pricing and Allocation/Allotment Restrictions, Minimum number of allottees, Restrictions on size of the offer, Period of subscription and display of demand, Transferability of eligible securities, The procedure for issue of Indian Depository Receipts (IDRs) w.r.t Eligibility Conditions for issue of IDR, Minimum Subscription Filing of Draft Prospectus, Due diligence Certificate, Payment of Fees and Issue of advertisements for IDR, Post Issue Reports, Undersubscribed Issue Finalisation of basis of allotment, The importance of due diligence, The role of external parties in the due diligence process and List of due diligence documents.</p>

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Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

10. Direct and Indirect Taxes Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Basic Terms	04
2	Scope of Total Income & Residential Status	04
3	Heads of Income	24
4	Deduction from Total Income	04
5	Computation of Total Income for Individual	09
Total		45

Sr. No.	Modules / Units
1	Basic Terms
	Assessee, Assessment, Assessment Year, Annual value, Business, Capital Assets, Income, Person, Previous Year, Transfer
2	Scope of Total Income & Residential Status
	Scope of Total Income (S: 5) Residential Status (S: 6) for Individual assessee
3	Heads of Income (S: 14)
	<ul style="list-style-type: none"> • Salary (S: 15 to 17) • Income from House Properties (S: 22 to 27) • Profit and Gain From Business (S:28, 30, 31, 32, 35, 35D, 36, 37, 40, 40A 43B. • Capital Gains (S: 45, 48, 49, 50, 54, 54 EC) restricted to computation of Capital gain on transfer of residential house property only • Income from Other Sources (S: 56 to S: 59) <p>Exclusions From Total Income (S: 10) Exclusion related to specified heads to be covered with relevant head.eg. Salary, Business Income, Capital Gain, Income from Other Sources</p>
4	Deduction from Total Income
	S 80 A, S 80C, 80CCC, 80D, 80DD, 80E, 80 U, 80 TTA
5	Computation of Total Income for Individual

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Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

11. Labour Welfare and Practice Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Labour welfare	15
2	Labour Legislations in India	10
3	Agencies of Labour welfare	10
4	Industrial Hygiene & Occupational Health	10
Total		45

Sr. No.	Modules / Units
1	Labour welfare
	<ul style="list-style-type: none"> • Meaning, Definition, Scope, Objective & Theories of Labour welfare. • Evolution of Labour Welfare in India. • Provisions for Labour welfare content in the Constitution of India (including Articles 41,42,43.....factories Act 1948, ESI Act 1948, Workmen's Compensation Act 1923)
2	Labour Legislations in India
	<ul style="list-style-type: none"> • Labour Welfare Facilities • National Commission on Labour and Labour Welfare • Labour Laws of the Elimination of Child Labour
3	Agencies of Labour welfare
	<ul style="list-style-type: none"> • Agencies of Labour welfare in India (Central govt. , State govt., Employers & Trade-Unions) • Labour Welfare Officer: role and functions. • Labour Administration in India
4	Industrial Hygiene & Occupational Health
	<ul style="list-style-type: none"> • Industrial hygiene & Occupational Health • Industrial accidents – causes & prevention. • Occupational diseases & Statutory Provisions, Fatigue, Frustration, Absentism

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Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

12. Purchasing and Store Keeping Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Material Management and Material Requirement Planning	12
2	Materials Research & 'E' Material management	11
3	Scientific Purchasing	11
4	Purchase procedure	11
Total		45

Sr. No.	Modules / Units
1	Material Management and Material Requirement Planning
	<p>a. Material Management – Definition, Concept, Importance, Objectives, Functions, Scope, Responsibilities of material manager, Interdepartmental relationship.</p> <p>b. Materials budget – Purpose, Procedures & Factors.</p> <p>c. Material Requirement Planning – Concept, Need, Objectives and Factors affecting MRP.</p>
2	Materials Research & 'E' Material management
	<p>a. Material Research – Meaning, Definition, Need, Importance, Scope & Functions.</p> <p>b. 'E' Material Management – Concept, Application & Operation, Uses & Advantages, Classes/ Types of materials.</p> <p>c. Coding and Standardization – Nature, Methods and Advantages of Codification, Standardization – Nature & Importance.</p>
3	Scientific Purchasing
	<p>a. Purchase Department - Types of Buyers/ Consumers, Personality traits for Purchase executives/ Manager-qualities & qualification, Functions of Purchase department, Records maintain by Purchase department</p> <p>b. Scientific Purchasing - Meaning, Importance, Objectives & Principles, Purchase policies-Centralized vs decentralized purchasing.</p> <p>c. Suppliers – Sources of supplier, Selection of Suppliers – Methods, Vendor rating & Vendor development.</p>
4	Purchase procedure
	<p>a. Purchase procedure - Make or Buy or Import decision, Buyer & Seller relationship – Techniques, Ethics in Buying – Principles, Purchase methods, Documentation.</p> <p>b. National purchase Procedure – Steps/procedure, Purchase requisition, quotations – types, Invoice – Types and different Methods of payment settlement, Legal aspect of contract- Contents and Clauses.</p> <p>c. International Purchase Procedure – Need, Indent house / firm – Functions & Services offered by Indent house, Steps/Procedure of Importing, Documentations, Emerging trends in purchasing.</p>

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Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

13. Insurance Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Risk Management	11
2	Insurance	11
3	Insurance Market	11
4	Insurance Regulation	12
Total		45

Sr. No.	Modules / Units
1	Risk Management
	<ul style="list-style-type: none"> a. Risk - Concept, different types of risks - actual and consequential losses b. Risk Management- Management of risks – Concept and Methods, loss minimization techniques c. Insurance Terminology: Common terms used in insurance - terms common to both life and non-life insurance - terms as specific to life and non-life insurance
2	Insurance
	<ul style="list-style-type: none"> a. Insurance – Concept, Nature of insurance, evolution of insurance, Different Types of insurance –importance of insurance, Insurance contract – Concept and Terms of an insurance contract b. Fundamental principles of insurance contract – principle of insurable interest, principle of indemnity, principle of subrogation, principle of contribution, principle of disclosure of all relevant information, principle of utmost good faith. Relevance of proximate cause c. Policy documents: Importance of a policy document, Format of a policy document
3	Insurance Market
	<ul style="list-style-type: none"> a. Insurance Market- Various Constituents of Insurance Market, operations of insurance companies - operations of intermediaries – specialist insurance companies – insurance specialists b. Insurance customers – different customer needs -importance of understanding customers – customer mind-sets’ - customer satisfaction - customer behaviour at purchase point - customer behaviour at the time of claim. c. Ethics in Insurance – concept and importance of ethical behaviour
4	Insurance Regulation
	<ul style="list-style-type: none"> a. Role of regulators – IRDA – Role, functions and importance b. Management of risk by individuals – management of risk by insurers – fixing of premiums, how insurance takes care of unexpected eventualities. c. Reinsurance – Concept and its importance for insurers - role of insurance in Economic development and social security - contribution of insurance to the society. Double Insurance

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Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

**14. Banking Law and Practice Paper - I
Central Banking**

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	An Overview of Central Banking	09
2	RBI as the Central Bank of India	09
3	Supervisory Role of RBI	09
4	Central Banking in other Countries	09
5	Central Banking in the Cyber World	09
Total		45

Sr. No.	Modules / Units
1	An Overview of Central Banking
	<p>Overview: Concept of Central Banking – Institutional Growth of Central Banking – The Changing Face of Central Banking.</p> <p>Role of Central Banks: Determination of Goals – Inflation Targeting – Exchange Rate Targeting – Money Supply Targeting – Money-Growth Targeting – Viable Alternatives to Central Bank – Central Banking in India.</p> <p>Contemporary Issues- Autonomy and Independence- credibility, accountability and transparency of a central bank</p>
2	RBI as the Central Bank of India
	<p>Policy Framework for RBI: Organizational Framework – Operational Framework – Role as a Central Banker – Promotional Role of RBI – Regulatory Role of RBI.</p> <p>RBI and Monetary Policy: Macroeconomic Policies: Objectives – What is a Monetary Policy? – Goals, Targets and Instruments – Monetary Policy in India.</p> <p>A Brief Overview of Fiscal Policy- Striking Balance between Inflation and Growth through Monetary and Fiscal Policies</p>
3	Supervisory Role of RBI
	<p>Regulation and Supervision: Need for Regulation and Supervision – Banking Regulation Act, 1949 – Banking Regulation and Supervision – Functions of the Department of Supervisory – Regulations Review Authority – Unified Regulator v/s Multiple Regulators.</p> <p>RBI – On-site Inspection and Off-site Monitoring and Surveillance: The Core Principles for Effective Supervision – On-site Examination – Off-site Surveillance – On-site Inspection and Off-site Monitoring in India – Off-site Monitoring in Different Countries – Computerized Off-site Monitoring and Surveillance (OSMOS).</p> <p>RBI and Financial System- Introduction- Functions- Characteristics of Financial System- Role of RBI in regulating Financial System and Financial Sector Reforms</p>
4	Central Bank in other Countries
	<p>Federal Reserve System – Bank of England – The European Central Banking, Bank of Japan, Peoples Bank of China</p> <p>Interconnectivity of Central Banks with Other International Financial Institutions- ADB- IMF- World Bank- BIS- Objectives- Role and Functions</p>
5	Central Banking in Cyber World:
	<p>E Banking, E money, IT induced Changes and Monetary Policy, E payments, Risks in the New IT ERA, Impact of IT, Globalization and Central Banks.</p>

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Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

15. Regional Planning Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Development	15
2	Factors Determining Regional Planning	10
3	Problems in India	10
4	Human and Environmental Impacts	10
Total		45

Sr. No.	Modules / Units
1	Development
	<ul style="list-style-type: none"> • Development: Meaning – Growth versus Development • Factors promoting development of resources, infrastructure, technology, culture – diversities & disparities & need for balanced growth. • Concept and Nature of Planning, need for planning of region
2	Factors Determining Regional Planning
	<ul style="list-style-type: none"> • Factors determining regional planning Area versus regions, formal functional & problem regions – utility of these concepts in identifying regions for planning. • National versus regional planning- Regional hierarchy & Multi-level planning
3	Problems in India
	<ul style="list-style-type: none"> • Regional Problem in India- varying levels of development- causative factors • Problems characterizing development-potential, declining • Backward and ecologically sensitive regions examples-Inter related nature of regional problem.
4	Human and Environmental Impacts
	<ul style="list-style-type: none"> • Human and Environmental impacts of regional planning • Rural and Urban planning policy • Rural and Tribal Development Plans.

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Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

16. Rural Marketing Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Rural Marketing	11
2	Rural Consumer Behaviour	12
3	Marketing Mix – Product and Price in Rural Marketing	11
4	Marketing Mix– Promotion and Distribution in Rural Marketing	11
Total		45

Sr. No.	Modules / Units
1	Rural Marketing
	<ul style="list-style-type: none"> a. Rural Marketing-Concept, Nature, Scope, Significance of Rural Marketing b. Factors contributing to Growth of rural markets, e-rural marketing, growing importance of rural marketing, challenges in rural marketing c. Components and classification of Rural markets, Rural Marketing Information System
2	Rural Consumer Behaviour
	<ul style="list-style-type: none"> a. Rural Consumer behaviour-features, Rural Market VS Urban Market, Lifestyle of rural consumer, Classification of rural consumers, factors influencing consumer behaviour b. Rural Marketing Research- Significance, Tools of marketing research for rural marketing c. FMCG sector in Rural India-concept and classification of consumer goods
3	Marketing Mix – Product and Price in Rural Marketing
	<ul style="list-style-type: none"> a. Potential and size of the Rural Markets, Marketing mix for rural marketing b. Product Strategy - Product mix Decisions - Competitive product strategies for rural markets, importance of Branding, Packaging and Labelling in rural marketing c. Pricing strategy – pricing objectives, pricing policies, innovative pricing methods for rural markets
4	Marketing Mix– Promotion and Distribution in Rural Marketing
	<ul style="list-style-type: none"> a. Promotion strategy - appropriate media - Designing right promotion mix – promotional campaigns b. Distribution - Logistics Management - Problems encountered, Channels for rural markets, selection of appropriate channels- Factors c. New approaches and strategies to reach out rural markets

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Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

17. Elements of Operational Research Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Operation Research	10
2	Replacement Theory	05
3	Linear Programming Problems (LPP)	15
4	Transportation Problem	15
Total		45

Pre-requisites: Use of Normal Distribution in finding Probabilities. Concept of present value of money. Application of derivatives to obtain minima of Cost functions

Sr. No.	Modules / Units
1	Introduction to Operation Research and Replacement Theory
	Introduction: Meaning and scope of Operations Research, Applications in Business, Commerce and Industry, limitations of Operations Research.
2	Replacement Theory
	Replacement Theory: Replacement Models for items that deteriorate with time assuming value money i) constant ii) changes with time. Replacement of items that fail completely using individual and Group replacement.
3	Linear Programming Problems (LPP)
	Mathematical Formulation of LPP . Solution to the LPP using Graphical Method, Simplex Method and Big M method Duality in LPP. Detection of optimum solution to primal using optimum solution to the dual.
4	Transportation Problem
	Description and Formulation of Transportation Problem Initial Basic Feasible Solution by i) North West Corner Rule, ii) Least Cost Entry Method (Matrix Minima), iii) Vogel's Approximation Method. Optimum Solution by MODI Method. Existence of Alternative optimum solution. Impact of change in some cost Coefficients on optimum solution. Maximization type and Unbalanced Transportation Problems.

***Revised Syllabus of Courses of B.Com. Programme at Semester V
with effect from the Academic Year 2018-2019***

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

18. Psychology of Human Behavior at Work Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	What is Organizational Behaviour?	11
2	Attitudes and Job Satisfaction	11
3	Motivation Concepts	12
4	Leadership	11
Total		45

Sr. No.	Modules / Units
1	What is Organizational Behaviour?
	<ul style="list-style-type: none"> a) The importance of interpersonal skills b) What managers do - management functions, roles, and skills c) Defining organizational behaviour; Disciplines that contribute to the OB field d) Challenges and Opportunities for OB - Responding to globalization; managing work force diversity; coping with “temporariness”; helping employees balance work–life conflicts; creating a positive work environment; improving ethical behaviour
2	Attitudes and Job Satisfaction
	<ul style="list-style-type: none"> a) Attitudes - Main components of attitudes; Major Job Attitudes b) Job Satisfaction - Measuring job satisfaction. What causes job satisfaction? The impact of satisfied and dissatisfied employees on the workplace
3	Motivation Concepts
	<ul style="list-style-type: none"> a) Defining Motivation; 4 early theories of motivation b) Contemporary theories of motivation - Goal Setting Theory, Equity Theory/ Organizational justice, Expectancy Theory
4	Leadership
	<ul style="list-style-type: none"> a) What is Leadership? Trait theories, Behavioural theories b) Contingency Theory – The Fiedler Model c) Charismatic Leadership and Transformational Leadership - Key characteristics of a charismatic leader; characteristics of transactional leaders; characteristics of transformational leaders d) Leading for the future: Mentoring

Revised Syllabus of Courses of B.Com. Programme at Semester V with effect from the Academic Year 2018-2019

Reference Books

Reference Books
Elective Courses (EC)
Discipline Specific Elective (DSE) Courses
Group A: Advanced Accountancy
1. Financial Accounting and Auditing VII- Financial Accounting
<ul style="list-style-type: none"> Ashish K. Bhattacharyya – “Financial Accounting for Business Managers”, Prentice Hall of India Pvt. Ltd. Shashi K. Gupta – “Contemporary Issues in Accounting”, Kalyani Publishers. R. Narayanaswamy – “Financial Accounting”, Prentice Hall of India, New Delhi Ashok Sehgal – “Fundamentals of Financial Accounting”, Taxmann’s Publishers Financial Accounting Reporting – Barry Elliot and Jamie Elliot – Prentice Hall (14th Edition)
2. Financial Accounting and Auditing VIII- Cost Accounting
<ul style="list-style-type: none"> Cost Accounting- A managerial emphasis by Horngren, Charles, Foster and Datar, Prentice Hall Management Accounting by Khan and Jain, Tata McGraw Hill Practical Costing by P C Tulsian, Vikas New Delhi Advanced problems and solutions in cost Accounting by S N Maheshwari, Sultan Chand New Delhi Cost Accounting (For B. Com 4th Sem, Delhi Univ) by Arora M N, Vikas Publishing House Pvt. Ltd. A Textbook of Cost And Management Accounting - 10th Edn by Arora M N, Vikas Publishing House Pvt. Ltd. Cost Accounting: Principles & Practice - 12 Edn by Arora M N, Vikas Publishing House Pvt. Ltd. Essentials of Cost Accounting by Arora M N, Vikas Publishing House Pvt. Ltd. Students Guide to Cost Accounting & Financial Management (Set of 2 Volumes) (CA-IPCC) (Group I) by Bhavesh N. Chandarana, Taxmann Lectures on Costing by Swaminathan: S. Chand and Company (P) Ltd., New Delhi Cost Accounting by C.S. Rayudu, Tata Mc. Grow Hill and Co. Ltd., Mumbai Cost Accounting by Jawahar Lal and Seema Srivastava, Tata Mc. Grow Hill and Co. Ltd., Mumbai Cost Accounting by Ravi M. Kishore, Taxmann Ltd., New Delhi Principles and Practices of Cost Accounting by N.K. Prasad, Book Syndicate Pvt. Ltd., Calcutta Cost Accounting Theory and Practice by B.K. Bhar, Tata Mc. Grow Hill and Co. Ltd., Mumbai Cost Accounting Principles and Practice by M.N. Arora, Vikas Publishing House Pvt. Ltd., New Delhi Advanced Cost and Management Accounting: Problems and Solutions by V.K. Saxena and C.D. Vashist, S. Chand and Company (P) Ltd., New Delhi Cost Accounting by S.P. Jain and K.L. Narang, Kalyani Publishers, Ludhiana Modern Cost and Management Accounting by M. Hanif, Tata McGraw Hill Education Pvt. Ltd., New Delhi Fundamentals of Cost Accounting by Jhamb. H. V., Ane Books Pvt. Ltd. Cost Accounting by Gupta Nirmal, Ane Books Pvt. Ltd.
Discipline Specific Elective (DSE) Courses
Group B: Business Management
1. Business Management Paper I
<ul style="list-style-type: none"> Essentials of Management by Koontz and Weihrich / McGraw Hill Principles of Management by Koontz and O. Donnel/ Tata McGraw Hill, New Delhi Principles of Management: Theory and practices by Sarangi S.K. VMP Publishers and Distributors. Guide to Management Ideas by Tim Hindle, The Economist Principles of Management by Terry G.R. AITBS Business Organization and Principles of Management by Dutta Chowdury, Central Education

Reference Books

- *Principles of Management*, Daver Rustoms, Crown
- *Principles of Management*, Tripathi P.C. Tata McGraw Hill, New York
- *Management Theory and Practices* by Dale, Ernest / McGraw Hill, New York.
- *Practice of Management* by Peter Drucker / Allied Publisher, New Delhi
- *Management* by Ricky W Griffin / Houghton Mifflin Company
- *Management* by Gary Dessler / Prentice Hall
- *Management* by Stephen Robbins, Mary Coulter / Prentice Hall
- *Management* by James Stoner, Edward Freeman / Prentice Hall
- *Time Management* by Roberta Roesch, Tata Mc Graw Hill
- *Time Management* by Marc MANCINI, Tata Mc Graw Hill

2. Business Management Paper II

- *Fundamentals of Financial Management*(5th edition) by Chandra Prasanna (2010). Tata McGraw Hill Education Pvt. Ltd.: New Delhi
- *Financial Management – Analytical and Conceptual Approach* (12th edition) by Kuchhal S.C. (1995).Chaitanya Publishing House: Allahabad
- *Financial Management* by Reddy R.Jayprakash (2010) APH Publishing Corporation: New Delhi
- *Financial Management – Theory and Practice* (5 & 6th edition) by Chandra Prasanna (2003, 2004). Tata McGraw Hill Education Pvt. Ltd.: New Delhi
- *Fundamentals of Financial Management* (13th edition) by Horne, James C. Van (2012) PHI Learning Pvt. Ltd.: New Delhi
- *Financial Management and decision making* by Samuels, John (1999) International Thomson Nusiness Press : London
- *Financial Management - problems & solutions* (2nd edition) by Kishore, Ravi M. (2010) Taxmann Publication Pvt. Ltd.: New Delhi
- *Financial Management : theory, concepts and cases*(5th rev edition) by Rustagi, R.P. (2011) Taxmann Publication Pvt. Ltd.: New Delhi
- *Financial Management : principles & problems* (7th edition) by Srivastava, R.M.&VermaShubhra (2002) PragatiPrakashan: Meerut
- *Fundamentals of Financial Management – problems and solutions* (3rd edition) by Maheswari, S.N. (2006) Sultan Chand and Sons: New Delhi

Discipline Specific Elective (DSE) Courses

Group C: Banking and Finance

1. Banking and Finance Paper- I Financial Markets

- Khan M.Y, *Financial Services*, Mc Graw Hill Education.
- Dr.S. Gurusamy, *Financial Services*, Vijay Nicole Imprints.
- E. Gordon and K. Natarajan – *Financial Markets and Services*
- Niti Chatnani- *Commodity markets* McGraw Hill Publication
- S. Kevin, - *Commodities & financial derivatives* PHI Learning Pvt Ltd

2. Banking and Finance Paper- II Financial Reporting Analysis

- Ashish K. Bhattacharyya – “*Financial Accounting for Business Managers*”, Prentice Hall of India Pvt. Ltd.
- Shashi K. Gupta – “*Contemporary Issues in Accounting*”, Kalyani Publishers.
- R. Narayanaswamy – “*Financial Accounting*”, Prentice Hall of India, New Delhi
- Ashok Sehgal – “*Fundamentals of Financial Accounting*”, Taxmann’s Publishers
- IFRS – Dr Ram Mohan Bhawe and Dr Anjali Bhawe

Reference Books

Discipline Specific Elective (DSE) Courses

Group D: Commerce

1. Commerce Paper I

- *Bhattacharjee, Service Sector Mgt; An Indian Perspective, Jaico Publishing house, 2011.*
- *Christopher Lovelock, service marketing –people technology, strategy, pearson education, IV Edi, 2003.*
- *Valarie A. Zeithaml & Mary Jo Bitner, Services Marketing, Tata McGraw-Hill, 2000.*
- *A. Vijaykumar, service sector in India – Recent Policy initiative, New century Publication, 2008.*

2. Commerce Paper II

- *Office Management, Pillai R S N, S. Chand Publishers, 2010*
- *Office Organisation & Management, N.Kumar & R. Mital, Anmol Publisher, 2001*
- *Office Management, Balachandran, Tata Mc Graw Hill, 2009*

Discipline Related Elective(DRE) Courses

3. Commerce V

- *Phillip Kotler. (2005) Marketing Management, Englewood cliffs, Prentice Hall, NJ*
- *Richard M. S Wilson, Colin Gilligan, Strategic Marketing Management, Viva Books Pvt. Ltd., 2003.*
- *Walker –Boyd, Larreche , Marketing Strategies –Planning Implementations, Tata McGraw Hill. 2004.*
- *Neelamegam, S. (2007) Marketing in India : Cases and Readings, Vikas, New Delhi*
- *Kotler, P., Keller, K.L. Koshy, A. & Jha. M. (2009). Marketing Management: A South Asian Perspective. (Thirteenth Ed). Pearson Education, New Delhi.*
- *Gandhi, J.C. Marketing a Managerial Introduction Tata McGraw Hill.*
- *Maheshwari, R.P., Jindal, Lokesh, (2011). Marketing Management Theory and Practice.*
- *Sherlekar, S.A. Marketing Management. Himalaya Publishing House.*
- *Saxena, Rajan. Marketing Management*
- *Ramaswamy & Kumari Nama. Marketing Management*

4. Business Economics V

- *Indian Economic Survey Reports (Annual), Ministry of Finance, Government of India*
- *Indian Economy by Misra and Puri, Himalaya Publishing House - Delhi*
- *Gaurav Dutt & Ashwini Mahajan, (2016) Indian Economy, S.Chand & company PVT LTD New Delhi*
- *A.N. Agarwal – Indian Economy problems of Development and Planning New Age International Publisher*
- *Ruddar Datt K.P.M Sundharam – Indian Economy S. Chand E-co LTD. Delhi*
- <http://www.environmentalpollution.in/industrial-pollution/industrial-pollution-types-effects-and-control-of-industrial-pollution/299-for-industrial-pollution>

Ability Enhancement Courses (AEC)

1. Trade Unionism and Industrial Relations Paper I

- *Myers C.A. & Kannappan S. (1970), 'Industrial Relation in India', Asia publishing House, India.*
- *Singh, J.K. (1988), 'Labour Economics. Principles Problem and Practices', Deep and Deep Publication Pvt. Ltd. New Delhi.*
- *Jackson, M.P. , Strikes*
- *Karnik V.B. (1974), 'Indian labour, Problems and prospects', Minewal Associations.*
- *Joshi C.K (1967), ' Unionism in Developing Economy', Asia Publication House, Bombay.*
- *Mamoria C.B. & Mamoria S. (1992), 'Dynamics of Industrial Relation in India', Himalaya Publishing House.*
- *Sahani, Dr, N.K. (2009) 'Industrial Relations' Kalyani Pub. Ludhiyana.*
- *Tripathi, P.C. (2009) 'Personal Management and Ind. Relations' – Sultan Chand and Sons, New Delhi.*
- *Memoria & Memoria- 'Ind. Relations' Himalaya Pub. House, Mumbai.*
- *A.M. Sharma- 'Ind. Relations' - Himalaya Pub. House, Mumbai.*
- *G. Ramanugan- The Honey bee to words a new culture in Ind, Relations- Sterling Pub. Pvt. Ltd.*

Reference Books

2. Computer Systems and Applications Paper I

- *Data Communication and Networking* -Behrouz A Forouzan
- *Introduction to Computers* – Peter Norton, Tata McGraw Hill
- *Fundamentals of Database Systems* - Elmasri Navathe, Somayajulu, Gupta
- *Database Systems and Concepts* - Henry F. Korth, Silberschatz, Sudarshan McGraw Hill
- *DBMS - Date*
- *The complete reference SQL* - Vikram Vaswani TMH
- *The complete reference SQL* - James R. Groff & Paul N. Weinberg TMG
- *Learning SQL* - Alan Beaulieu O'REILLY.
- *Learning MySQL* - Seyed M. M. and Hugh Williams, O'REILLY.
- *SQL a complete reference* - Alexis Leon & Mathews Leon TMG

3. Export Marketing Paper I

- *Export Policy Procedures& Documentation*– M. I. Mahajan, Snow White Publications Pvt. Ltd, 26th Edition,
- *International Business*, K. Aswathappa, McGraw-Hill Education (India) Pvt. Ltd., 6th Edition
- *Export Import Procedures - Documentation and Logistics*, C. Rama Gopal, New Age International Publishers, 2006 / Reprint Jan 2016
- *International Trade and Export Management*, Francis Cherunilam, Himalaya Publishing House, 20th Edition, 2017
- *R. K. Jain's, Foreign Trade Policy & Handbook of Procedures [With Forms, Circulars & Public Notices]*, Centax Publication, 2017
- *EXIM Policy & Handbook of EXIM Procedure – VOL I & II*
- *International Marketing and Export Management*, Gerald Albaum, Edwin Duerr, Alexander Josiassen, Pearson Publications, 8th Edition, June 2016
- *International Marketing Strategy*, Isobel Doole and Robin Lowe, 5th Edition, Thomson Learning, 2008.
- *Global marketing*, Warren J. Keegan 9th Edition Pearson Education, Delhi,
- *New Import Export Policy* - Nabhi Publications, 2017
- *P.K. Khurana, Export Management*, Galgotia Publishing Co, New Delhi
- *P.K. Vasudeva, International Marketing*-, Excel Books, fourth edition, New Delhi
- *Paras Ram, Export documentation and procedure A-Z*
- *Export: What, Where, How?* Paras Ram, & Nikhil K. Garg, Anupam Publishers, 47th Edition, 2016-17
- *International Marketing*, Mary C. Gilly, John L. Graham, Philip R. Cateora, 14th Edition, Tata McGraw-Hill Co. Ltd., 2014
- *International Marketing Management, An Indian Perspective*, R.L. Varshney and B. Bhattacharya, Sultan Chand & Sons, 24th Edition, 2012
- *International Marketing Analysis and Strategy*, Sakonkvisit, John J. Shaw, Prentice-Hall of India Pvt. Ltd., 5th Edition, 2008
- *International Marketing*, Subhash C. Jain, South-Western, 6th Edition, 2001
- *Export Management*, T.A.S. Balagopal, Himalaya Publishing House, Mumbai, 2014
- *Michael R. Czinkota and Iikka A. Ronkainen, International Marketing*, South-Western, 10th Edition, 2012
- *Export-Import and Logistics Management*, Charlie Hill, Random Publications, 2014
- *International Marketing Management*, M.V. Kulkarni, Everest Publishing House

4. Marketing Research Paper I

- *Marketing Research Text and Cases*, Rajendra Nargundkar, McGraw Hill, 2nd edition
- *Marketing Research (Text with Cases)*, Suja Nair, Himalaya Publishing House, Maharashtra, 2014
- *Marketing Research*, John Boyce, Tata McGraw Hill Publishing Co. Ltd., Maharashtra, 2011
- *Encyclopaedia of Marketing Research Series*, S.D. Singh, Anmol Publications Pvt. Ltd., New Delhi, 2012
- *Marketing Research: A Global Outlook*, V. Kumar, Sage Publications, New Delhi, 2015
- *Marketing Research*, G. C. Beri, McGraw Hill, New Delhi, 2007
- *Fundamentals of Marketing Research*, M.K. Gawande, Chandralok Prakashan, Kanpur, 2012
- *Marketing Research: The impact of internet*, Gates, Roger et al, John Wiley & sons, Great Britain, 2002

Reference Books

5. Investment Analysis and Portfolio Management Paper I

- *Security Analysis and Portfolio Management*, Prasanna Chandra, Tata McGraw Hill
- *Financial Management*, Prasanna Chandra, Tata McGraw Hill
- *Security Analysis and Portfolio Management*, Ravi Kishor, Taxman Publishers
- *Financial Management*, Khan & Jain, Tata McGraw Hill
- *Fundamentals of Investment Management*, Hirt and Block, Tata McGraw Hill. Ed 2009.
- *Portfolio Management Handbook*, Robert A. Strong, Jaico Publishing House, Mumbai

6. Transport Management Paper I

- Phil Hughes & Ed Ferrett (2010). *International Health and Safety at Work*. Routledge Publisher.
- Mather J. C. (ed.) (1992). 'Transport and Economic Development', Chugh Publications, Allahabad.
- Modak S.K. (1980). 'Adgunik Parivahanache Arthashastra', Maharashtra Vidhyapeeth Grantha Nirmitee Mandal, Nagpur.
- Hugh M. Kindred & Mary R. Brooks (1997). 'Multimodal Transport Rules'. Martinus Nijhoff Publishers.
- *Multimodal Transportation of Goods Act, 1993 Along With Allied Rules*, Professional Book Publishers.
- Slim Hammadi & Mekki Ksouri (2013). *Multimodal Transport Systems*. John Wiley & Sons.
- Joseph S. Szyliowicz, Luca Zamparini, Genseric L.L. Reniers & Dawna L. Rhoades (2016). *Multimodal Transport Security: Frameworks and Policy Applications in Freight and Passenger Transport*. Edward Elgar Publishing.
- United Nations Economic and Social Commission for Asia and the Pacific (2004). *Manual on Modernization of Inland Water Transport for Integration within a Multimodal Transport System*. United Nations Publications.
- Jean-Paul Rodrigue, Claude Comtois & Brian Slack (2013). *The Geography of Transport Systems*. Routledge.
- Christos N. Pyrgidis (2016). *Railway Transportation System: Design, Construction and Operation*. CRC Press.
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- *Container and Multimodal Transport Management* (2002). Shroff Publishers & Distributors.
- Faulks R.W. (1982). 'Principal of transport', Iran Allen.
- Owen, W. (1964). 'Strategy for Mobility', East-West Centre Edition, Honolulu.
- Bruton, M.J. (1985). *Introduction to Transportation Planning*, Hutchinson, London.
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- Pasricha (1999). *Road Safety guide for drivers of heavy vehicle*. Nasha Publications, Mumbai.
- K.W.Ogden, "Safer Roads – A guide to Road Safety Engineering".
- Babkov, V.F. (1986). *Road Conditions and Traffic Safety*. MIR Publications, Moscow.
- Popkes, C.A. (1986). *Traffic Control and Road Accident Prevention*. Chapman and Hall Limited.
- Pradeep Chaturvedi (2006). *Challenges of Occupational Safety and Health*. Concept Publishing Company.
- *Konkan Railway - A Dream Come True- Konkan Railway Corporation Ltd.*
- S. Ponnuswamy (2012), 'Urban Transportation: Planning, Operation and Management' Publisher- Tata McGraw-Hill Education.
- B.C. Vaidya (2003). 'Geography of Transport Development in India' Concept Publishing Company

7. Entrepreneurship & Management of Small Scale Industries Paper I

- Batra G.S. and Dangal R.C., *Entrepreneurship and Small Scale Industries*, Deep and Deep Publications Pvt. Ltd.
- *Entrepreneurial Development, Colombo Plan, 1998*, Tata McGraw Hill, New Delhi.
- *Entrepreneurship Development*, Himalaya Publishing House, Mumbai.
- Gupta C.B., *Entrepreneurial Development, 1995*, Somaiya Publication, New Delhi.
- Hisrich R.D., *Cases in International Entrepreneurship, 1997*, Liven, Chicago.
- Hisrich Robert D and Peters Michael, *Entrepreneurship, 2002*, Tata McGraw Hill, New Delhi,
- Mascarenhas Romeo S., *Entrepreneurship and Management of Small and Medium Enterprises*, Vipul Prakashan, Mumbai.

Reference Books

- Mascarenhas Romeo S., *Management of Small Scale Industries*, Vipul Prakashan, Mumbai.
- MSME Policy Document, Government of India.
- Pooja, *Micro, Small and Medium Enterprises (MSMEs) in Indian Economy*, New Century Publications New Delhi.
- *Principles of Entrepreneurship*, Excel India Publishers, New Delhi.
- Sharma P.K., *Development Banks and Entrepreneurship Promotion in India*, Mittal Publications.
- Singh P.N. and Saboo J.C., *Entrepreneurial Management*, Dr. P. N. Singh Centre for HRD.
- Vasant Desai, *Entrepreneurial Development*, 3 Volumes Himalaya Publishing House.
- Vasant Desai, *Entrepreneurship and Management of Small and Medium Enterprises*, Himalaya Publishing House.
- Vasant Desai, *Small Scale Industries and Entrepreneurship*, Himalaya Publishing House.
- Yerram Raju B. and Pujari Ram R., *The Small Entrepreneur Starting and Growing*, Excel Publication, New Delhi.

8. International Marketing Paper I

- *International Marketing* - Rathor Jani Rathor
- *International Business* - P. Suhbarau
- *Global Marketing Strategy* - Jeannet&Hennssey
- *Managing International Marketing* - dr. V. O. Varkey
- *Modern Marketing Research* – M.N.Mithani
- *Marketing Research* – G.C.Berry
- *Marketing Research : Applied Orientation*.- Naresh Malhotra
- *Marketing Research*- Boyd, Westfall & Stasch SakOnkvisit , John J. Shaw ,
- *International Marketing* -Phillip R Cateora and John Graham
- *International Marketing* - Varshney and Bhattacharya
- *International Marketing* - P.K. Vasudev.
- *International Marketing & Export Management* – Edwin Duerr, Jesper
- B.L. Varshney and B. Bhattacharya , *International Marketing Management* .
- P.G. Apte, *International Financial Management* .
- Francis Cherunilum, *International Marketing Management*.
- Phillip R. Cateoria, *International Marketing*.

9. Merchant Banking Paper I

- *Merchant Banking and Financial Services* – Dr. S Guruswamy Fourth Edition, Delhi Publishing House.
- *Merchant Banking Principles & Practices* – H. R Machiraju New Age International Ltd
- *Merchant Banking* – NISM 2015 Edition
- *Merchant Banking and Financial Services* – Dr L.N Natarajan, Margham Publications 2012

10. Direct and Indirect Taxation Paper I

- *Students guide to Income Tax (simplified version)* by V.K.Singhania and Monica Singhania, Taxmann
- *Systematic approach to Income Tax* by Ahuja & Gupta, Bharat Law Publication
- *Income Tax* by T.M. Manorahan, Snow White
- *Direct Tax ready reckoner* by N.V.Mehta, Kuber Publication
- *Indirect Taxes* by V.S.Datey, Taxmann
- *Service Tax* by S.S.Gupta, Taxmann
- *Commentary on M.V.A.T.ACT, 2002* by M.S.Mathuria & Dilip Phadke, Maharashtra Sales Tax Vat News
- *Indirect Taxes* by V.S.Balchandra, Sultanchand
- *Direct Taxes* by B.B. Lal and N. Vashishta, Pearson Education
- *Students Guide to Income Tax (Including Service Tax / VAT)* - Simplified Version with Problems and Solutions (Set of 2 Vols) by Dr Monica Singhania Dr. Vinod K Singhania, Taxmann
- *Indirect Tax Laws - Service Tax & VAT (Module -II)* by Vineet Sodhani, Taxmann
- *Indirect Taxes Law and Practice* by V. S. Datey, Taxmann

Reference Books

11. Labour Welfare & Practice Paper I

- Jayant S. Railkar- Labour welfare & Practice – Vipul Prakashan.
- A.M. Sarma – Aspects of Labour welfare & Social Security – Himalaya Publications.
- Punekar & Deodhar – Labour welfare Tata MC Graw Hill Publishing.
- Misra & Puri – Indian Economy – Himalaya Publications.
- Dutt & Sundharam - Indian Economy S. Chand Publication.
- Labour Welfare, Trade Unionisms and Industrial Relations – S.D. Panekar, S.B. Deodhar, Mrs. Saraswathi Sankaram, Himalaya Publishing House.

12. Purchasing and Storekeeping Paper I

- Ammer. Dean S : Materials Management (Richard D. Irwin Inc. U.S.A.).
- Baily, Peter and Farmer, D. : Purchasing Principles and Techniques : Arnold Heinemann, Publishers India New Delhi.
- Baily, Peter : Purchasing Principles and Management.
- Benjamin Melnitsky : Industrial Storekeeping Manual (Chilton Company, Philadelphia).
- Branch, Alan E. : International Purchasing and Management : Thomson Learning.
- Buchan and Keenigsberg : Scientific Inventory Management : Prentice Hall, U.S.A.
- Bagade, Shankar D. : Production and Materials Management : Himalaya.
- Chadha, H. L. : Industrial Purchasing and Materials Management (Jaico Publishing House, Bombay).
- Datta, A. K. : Modern Materials Management (Indian Society for Materials Management, Calcutta).
- Deb. A. : Materials Management (Academic Publishers, Calcutta).
- Dr. P. K. Bangar and Dr. B. S. Rupnawar Purchasing and Storekeeping Himalaya Publication House.
- Dobler, Donald W. : Purchasing and Supply Management Text and Cases : Tata McGraw Hill, 2000.
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- Gokarn, P. R. : Essentials of Materials Management : Somaiya.
- Gopalakrishnan, P. and Sandiya, M. S. : Purchasing Strategy (Sterling Publishers Pvt. Ltd., New Delhi).
- Gopalakrishnan, P. and Sundaresan, Materials Management : Prentice Hall of India, New Delhi). 5
- Gopalakrishnan, P. Purchasing and Materials Management : Tata McGraw Hill 2001.
- Heinritz, Stuart F. : Purchasing Principles and Applications (Prentice Hall U.S.A.)
- Kapoor, P. P. : Modern Purchasing Principles and Practices : S. Chand and Co. Ltd., New Delhi.
- Lee, Lamer: Purchasing and Materials Management Texts and Cases : Tata McGraw Hill.
- Magee, John F. : Production Planning and Inventory Control (McGrow Hill, U.S.A.).
- Materials Management, Inventory Control and Logistics Texts and Cases.
- Menon K. S. : Purchasing and Inventory Control : Wheeler.
- Morrison, A : Storage and Control of Stock (Pitman Publishing Co., London).
- Nair, N. K. Purchasing and Materials Management : Vikas.
- Roy Chowdhury, B. K. : Management of Materials (Sultan Chand and Sons, New Delhi).
- Varma : Essentials of Store Keeping and Purchasing : M. M. Sultan Chand.
- Westing, J. H., Fine, I.V., Zenz, G. J. : Purchasing Management (Wiley Eastern Ltd., New Delhi).

13. Insurance Paper I

- General Insurance, John Magee & David Bicklhaupt,
- Operational Transformation of General Insurance Industry during the period 1950 to 1990 & Beyond, R D Samarth
- Study on Distribution Functions in General Insurance & Role of Intermediaries, Arun Agarwal / PR Rao
- General Insurance for Information Technology Professionals, Martin Frappoli
- S. Arunajatesan and T.R. Vishwanathan: Risk Management and Insurance: Macmillan, New Delhi.
- Shashidharan K. Kutty: Managing Life Insurance: Prentice Hall of India, New Delhi
- Kenneth Black Jr. and Harold D. Skipper Jr.: Life and Health Insurance: Pearson, New Delhi
- Uma Narang, Insurance Industry in India, Features, Reforms & Outlook, New century Publication, 2013

Reference Books

14. Banking Law and Practice Paper I Central Banking

- *Central Banking- IIBF- MacMillan Publishers*
- *Central Banking – ICFAI Press*
- *Theory and Practice of Central Banking in India- V.A.Avdhani*
- *Central Banking- M H deKock*
- *Central Banking in Planned Economy- The Indian Experiment- C.R.Basu*

15. Regional Planning

- *Glasson, J. (1974), 'An Introduction to Regional planning, Hutchinson & Co., London.*
- *O.E.C.D (1970), 'The Regional Factor in Economic Development',*
- *Minahull, R.(1968), ' Regional Geography'. Hutchinson * Co., Ltd., London.*
- *B.I.S.R (1978), 'The Role of Fiscal Incentives in Reducing Regional Imbalances: Some Comparison', New Delhi.*
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16. Rural Marketing Paper I

- *Dantwala M.L., Indian Agriculture Since Independence Oxford & IBH Publishing Co. Pvt. Ltd. New Delhi– 110001, 1990.*
- *Habeeb U.R., Rahman K.S., Rural Marketing in India, HPH-Mumbai 400004---2003*
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- *Dogra Balram Ghuman Karmider Rural Marketing concepts and practices Tata McGrawHILL Education Ltd. New Delhi, 2011*
- *Singh S, Rural Marketing Management I/e Vikaj Publishing House New Delhi*

17. Elements of Operation Research Paper I

- *PERT & CPM Principles and Applications by L.S.Srinath*
- *Operations Research Principles & Practice by Ravinderan, Phillips Solber.*
- *Schaum's outline series Theory & Problems of Operations Research by Richard Bronson*
- *Operations Research by H.A.Taha*
- *Operations Research by Gupta & Hira*
- *Operations Research Theory & Applications by J.K.Sharma*
- *Operations Research Problems & Solutions by V.K.Kapoor*
- *Quantitative Techniques by Shenoy, Shrivastav & Sharma*
- *Introduction to Operations Research by Hiller & Lieberman*
- *Operations Research Techniques for Management by B.Banerjee*
- *Operations Research by Gupta & Manmohan*
- *Quantitative Techniques by N.D.Vohra*

18. Psychology of Human Behaviour at work Paper I

- *Robbins, S. P. Judge, T. A. & Vohra, N. (2013). Organizational Behavior. (15th ed.), Indian subcontinent adaptation, New Delhi: Pearson Education, Dorling Kindersley India pvt Ltd.*
- *Aquinas, P. G. (2013). Organisational Behavior Concepts Realities Application and Challenges. (2nd ed.) New Delhi: Excel Books*
- *Ashliegh, A. M. (2012). The psychology of people in organizations. Pearson Education*
- *Baltus, R. (2012). Personal psychology for work and life. Tata McGraw Hill*
- *Dash, C. (2013). Organisational behavior. New Delhi: International Book House*
- *Gibson, J. L., Ivancevich, J. M., & Konopaske, R.(2013). Organisations: Behaviour, Structure, Processes. Tata McGraw Hill*
- *Greenberg, J. (2013). Behaviour in organizations (10th ed.). PHI Learning Private Limited.*

Reference Books

- Luthans, F. (2013). *Organisational behaviour: An evidence –based approach*. Tata McGraw Hill
- McShane, S. L., Glinow, M. A., Sharma, R. R. (2012) *Organisational behavior*. (5th ed.): Tata McGraw Hill, New Delhi.
- Pareek, U. & Khanna, S. (2011). *Understanding organizational behavior*. Oxford University Press
- Rajendra, P. Maheshwari, J. & Mahajan, P. (2012). *Business organization management*. (2nd Revised ed.) New Delhi: International Book House
- Riggio, R. (2012). *Introduction to industrial and organizational psychology*. Pearson Education
- Schultz, D. & Schultz, S. (2013). *Psychology and work today*. Pearson
- Shankar, M. (2013). *Organizational behavior*. International Book House
- Sharma, S. (2013). *Organisational behavior*. New Delhi: Tata McGraw Hill.
- Singh, K. (2012). *Organizational behaviour text and cases*. New Delhi: Pearson Education.

B.Com. Programme
Under Choice Based Credit, Grading and Semester System
Course Structure

(To be implemented from Academic Year- 2018-2019)

Semester VI

No. of Courses	Semester VI	Credits
1	<i>Elective Courses (EC)</i>	
1A	<i>Discipline Specific Elective(DSE) Courses</i>	
1 & 2	*Any one group of courses from the following list of the Groups (A/B/C/D/E/F)	04+04
1B	<i>Discipline Related Elective(DRE) Courses</i>	
3	Commerce VI	03
4	Business Economics VI	03
2	<i>Ability Enhancement Courses (AEC)</i>	
5 & 6	**Any two courses from the following list of the courses	03+03
Total Credits		20

*List of groups of Discipline Specific Elective(DSE) Courses for Semester VI (Any One Group)	
Group A: Advanced Accountancy	
1	Financial Accounting and Auditing IX - Financial Accounting
2	Financial Accounting and Auditing X - Cost Accounting
Group B: Business Management	
1	Business Management Paper - III
2	Business Management Paper - IV
Group C: Banking and Finance	
1	Banking and Finance Paper - III
2	Banking and Finance Paper - IV
Group D: Commerce	
1	Commerce Paper - III
2	Commerce Paper - IV
Group E: Quantitative Techniques	
1	Quantitative Techniques Paper - III
2	Quantitative Techniques Paper - IV
Group F: Economics	
1	Economics Paper - III
2	Economics Paper - IV

**List of Ability Enhancement Courses (AEC) for Semester VI (Any Two)	
1	Trade Unionism and Industrial Relations Paper - II
2	Computer systems & Applications Paper - II
3	Export Marketing Paper - II
4	Marketing Research Paper - II
5	Investment Analysis Portfolio Paper - II
6	Transport Management Paper - II
7	Entrepreneurship& M.S.S.I. Paper - II
8	International Marketing Paper - II
9	Merchant Banking Paper - II
10	Direct & Indirect Taxation Paper - II
11	Labour Welfare & Practice Paper - II
12	Purchasing & Store keeping Paper - II
13	Insurance Paper - II
14	Banking Law & Practice Paper - II
15	Regional Planning Paper - II
16	Rural Marketing Paper - II
17	Elements of Operational Research Paper - II
18	Psychology of Human Behaviour at work Paper - II

***Revised Syllabus of Courses of B.Com. Programme at Semester VI
with effect from the Academic Year 2018-2019***

Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group A: Advanced Accountancy

**1. Financial Accounting and Auditing Paper-IX:
Financial Accounting**

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	AS – 14 - Amalgamation, Absorption & External Reconstruction	15
2	Accounting of Transactions of Foreign Currency	15
3	Liquidation of Companies	10
4	Underwriting of Shares & Debentures	10
5	Accounting for Limited Liability Partnership	10
Total		60

Sr. No.	Modules / Units
1	AS – 14 - Amalgamation, Absorption & External Reconstruction (excluding inter-company holdings)
	In the nature of merger and purchase with corresponding accounting treatments of pooling of interests and purchase method respectively. Meaning and Computation of purchase consideration. Problems based on purchase method only.
2	Accounting of Transactions of Foreign Currency
	In relation to purchase and sale of goods, services and assets and loan and credit transactions. Computation and treatment of exchange rate differences
3	Liquidation of Companies
	Introduction, Underwriting, Underwriting Commission Provision of Companies Act with respect to Payment of underwriting commission Underwriters, Sub-Underwriters, Brokers and Manager to issues Types of underwriting, Abatement Clause Marked, Unmarked and Firm-underwriting applications, Liability of the underwriters in respect of underwriting contract Practical problems
4	Underwriting of Shares & Debentures
	Meaning of liquidation or winding up Preferential payments Overriding preferential payments Preparation of statement of affairs, deficit / surplus account Liquidator's final statement of account
5	Accounting for Limited Liability Partnership
	Statutory Provisions Conversion of partnership firm into LLP Final Accounts

***Revised Syllabus of Courses of B.Com. Programme at Semester VI
with effect from the Academic Year 2018-2019***

Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group A: Advanced Accountancy

**2. Financial Accounting and Auditing Paper-X:
Cost Accounting**

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Cost Control Accounts	10
2	Contract Costing	10
3	Process Costing	10
4	Introduction to Marginal Costing	10
5	Introduction to Standard Costing	10
6	Some Emerging concepts of Cost accounting	10
Total		60

Sr. No.	Modules / Units
1	Cost Control Accounts
	Advantages and Disadvantages Cost Control Accounts, Principal Accounts, Subsidiary Accounts to be maintained Note- Simple practical problems on preparation of cost control accounts
2	Contract Costing
	Progress payments, Retention money, Contract accounts, Accounting for material, Accounting for Tax deducted at source by the contractee, Accounting for plant used in a contract, treatment of profit on incomplete contracts, Contract profit and Balance sheet entries. Excluding Escalation clause Note- Simple practical problems
3	Process Costing
	Process loss, Abnormal Gains and Losses, Joint products and by-products. Excluding Equivalent units, Inter-process profit Note- Simple Practical problems Process Costing and joint and by-products
4	Introduction to Marginal Costing
	Marginal costing meaning, applications, advantages, limitations Contribution, Breakeven analysis, Margin of safety and profit volume graph. Note- Simple Practical problems based on Marginal Costing excluding decision making
5	Introduction to Standard Costing
	Various types of standards, Setting of standards, Basic concepts of Material and Labour variance analysis. Note- Simple Practical problems based on Material and labour variances excluding sub-variances
6	Some Emerging concepts of Cost accounting
	Target Costing Life cycle Costing Benchmarking ABC Costing Note- No practical problems

***Revised Syllabus of Courses of B.Com. Programme at Semester VI
with effect from the Academic Year 2018-2019***

Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group B: Business Management

**1. Business Management Paper-IV
Management and Organization Development**

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Directing & Leading	15
02	Co-ordination & Motivation	15
03	Controlling & Information Management	15
04	Contemporary Issues in Management	15
Total		60

Sr. No.	Modules / Units
1	Directing and Leading
	<ul style="list-style-type: none"> • Communication as an important tool for effective direction and leadership • Barriers to Communication • Ethical issues in using social media for communication • Role of a leader in business organisations - qualities of a good leader • Style of leadership • Leadership continuum – developing an effective leader – path goal theory • Transactional and transformational leaders
2	Co-ordination and Motivation
	<ul style="list-style-type: none"> • Co-ordination as essence of management • Co-ordination vs co-operation vs conciliation • Motivation – meaning and importance of motivation • Financial and non-financial motivators • Theories of Motivation – Maslow’s theory – Herzberg’s theory – McGregor’s theory.
3	Controlling and information Management
	<ul style="list-style-type: none"> • Definition and steps in controlling. • Strategic and operational controlling techniques. • Requirements of an effective control system. • Flow of information in a typical organisation - Need for managing information. • Designing and developing modern MIS - Introduction to ERP.
4	Contemporary Issues in Management
	<ul style="list-style-type: none"> • Challenges in organisational growth and development - management perspective • Change management • Importance of time management and tools for effective time management • Addressing diversity due to human resource mobility • Conflict management.

***Revised Syllabus of Courses of B.Com. Programme at Semester VI
with effect from the Academic Year 2018-2019***

Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group B: Business Management

**2. Business Management Paper-VI
Financial Management**

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Capital Budgeting and Evaluation techniques	11
02	Working Capital Management	11
03	Receivable Management, Cash Management and Marketable Securities	12
04	Basic Principles of Cost Accounting	11
Total		45

Sr. No.	Modules / Units
1	Capital Budgeting and Evaluation techniques
	<ul style="list-style-type: none"> • Capital Budgeting - Meaning and Importance • Evaluation techniques • Pay-back method and ARR • NPV and Profitability index • Choice of evaluation techniques, uses and limitations
2	Working Capital Management
	<ul style="list-style-type: none"> • Working Capital – Meaning and Importance • Factors determining Working Capital requirements, Working Capital cycle • Classification of Working Capital – Gross and Net Working Capital, Permanent and Variable Working Capital, Positive and Negative Working Capital, Cash and Net Current Assets concept of Working Capital • Management of Working Capital • Estimation of Working Capital requirement
3	Receivable Management, Cash Management and Marketable Securities Management
	<ul style="list-style-type: none"> • Receivables Management – Meaning and importance, aspects of receivable management, Credit Policy and Credit Evaluation • Control of accounts receivables – Day's Sales Outstanding, Ageing Schedule, ABC Analysis • Cash Management – Meaning, motives of holding cash, ways of speeding up cash collections • Preparation of Cash Budget • Understanding the role of marketable securities in corporate financial management
4	Basic Principles of Cost Accounting
	<ul style="list-style-type: none"> • Cost Accounting – Meaning, classification of costs and non-cost items • Preparation of Cost sheet • Marginal Costing - Meaning, features, advantages and limitations of marginal costing, • Break Even Analysis • Application of marginal costing

***Revised Syllabus of Courses of B.Com. Programme at Semester VI
with effect from the Academic Year 2018-2019***

Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group C: Banking and Finance

**1. Banking and Finance Paper-III:
Risk Management**

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Foundations of Risk Management	15
02	Capital markets Risk Management	15
03	Credit Market Risk Management	15
04	Risk Measurement	15
Total		60

Sr. No.	Modules / Units
1	Foundations of Risk Management
	<ul style="list-style-type: none"> • Basic risk types • The role of risk management • Enterprise Risk Management (ERM) • History of financial disasters and risk management failures • 2007 financial crisis
2	Capital Market Risk Management
	<ul style="list-style-type: none"> • Equity, currencies & commodities markets in India • Introduction to Derivatives • Forward, Future and option contracts • Hedging through Derivatives contract • Fixed-income securities • Fixed-income risk management through derivatives • Rating agencies
3	Credit Market Risk Management
	<ul style="list-style-type: none"> • Introduction, • Information required for evaluation of credit risk, • Procedure for Credit Risk Management, • Credit Lifecycle, • Loan Review Mechanism, • RBI guidelines on Credit Rating Framework in Banks, • Introduction of Basel Norms and calculation of capital adequacy ratio
4	Risk Measurement
	<ul style="list-style-type: none"> • Estimation of volatilities and correlations (application to volatility term structures) Monte Carlo simulations (application to interest rate forecasting) • Linear Value-at-Risk (application to market, credit and operational risk) • Option valuation • Risk-adjusted return on capital (RAROC) & beta calculation • Risk management of derivatives (application to convertible risk) • Interest rates and measures of interest rate sensitivity

***Revised Syllabus of Courses of B.Com. Programme at Semester VI
with effect from the Academic Year 2018-2019***

Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group C: Banking and Finance

**2. Banking and Finance Paper-IV:
Actuarial Analysis in Banking and Insurance**

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Probability & Mathematical Statistics	12
02	Models	12
03	Mortality Model	12
04	Contingencies	12
05	Statistical Methods	12
Total		60

Sr. No.	Modules / Units
1	Probability & Mathematical Statistics
	Concepts of Probability, Bayes' Theorem, Concepts of Random Variable, Probability Distribution, Distribution Function, Expected Value, Variance and Higher Moments, Basic Discrete And Continuous Distributions, Central Limit Theorem, Statistical Inference And Sampling Distribution, Confidence Intervals For Unknown Parameters. Test Hypotheses, Concepts Of Analysis Of Variance
2	Models
	The Principles of Actuarial Modelling., General Principles of Stochastic Processes, Markov Chain, Markov Process., Concept of Survival Models., Estimation Procedures for Lifetime Distributions., Maximum Likelihood Estimators For The Transition Intensities In Models Of Transfers Between States With Piecewise Constant Transition Intensities.
3	Mortality Model
	Binomial Model of Mortality, Derive A Maximum Likelihood Estimator for The Probability of Death, How to Estimate Transition Intensities Depending on Age, Exactly Or Using The Census Approximation., How To Test Crude Estimates For Consistency With A Standard Table Or A Set Of Graduated Estimates, And Describe The Process Of Graduation.
4	Contingencies
	Simple assurance and annuity contracts, means and variances of the present values of the payments under these contracts, assuming constant deterministic interest. Expressions in the form of sums for the mean and variance of the present value of benefit payments under each contract above, in terms of the curtate random future lifetime, assuming that death benefits are payable at the end of the year of death and that annuities are paid annually in advance or in arrear, and, where appropriate, Obtain expressions in the form of integrals for the mean and variance of the present value of benefit payments under each contract above, in terms of the random future lifetime, assuming that death benefits are payable at the moment of death and that annuities are paid continuously, and, where appropriate.
5	Statistical Methods
	Concepts of decision theory, Decision function and a risk function. Apply decision criteria to determine which decision functions are best with respect to a specified criterion. In particular consider the minimax criterion and the Bayes criterion. Calculate probabilities and moments of loss distributions both with and without limits and risk-sharing arrangements. The properties of the statistical distributions which are suitable for modelling individual and aggregate losses. Apply the principles of statistical inference to select suitable loss distributions for sets of claims. Concepts of excesses (deductibles), and retention limits. The operation of simple forms of proportional and excess of loss reinsurance.

***Revised Syllabus of Courses of B.Com. Programme at Semester VI
with effect from the Academic Year 2018-2019***

Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group D: Commerce

**1. Commerce III:
Management of Service Industry**

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Housing and Construction Industry	15
02	Computer Services and e- commerce	15
03	Banking	15
04	Insurance	15
Total		60

Sr. No.	Modules / Units
1	Housing and Construction Industry
	Characteristics- scope- challenges-promotion activities of construction industry- role of co-operative societies and Government schemes- career opportunities
2	Computer Services and e- commerce
	e-commerce- concept-functions- merits & limitations IT enabled services (ITES): features- Business Process Outsourcing: concept- advantages & challenges- Consultancy services: classification & significance
3	Banking
	Types of Banks- functions of a commercial bank-types of banking products-role of RBI- recent trends in Banking- Career opportunities in Banking
4	Insurance
	Concept- importance- types (Life, Fire, Marine & General)- Regulation of Insurance sector: role of Insurance Regulatory and Development Authority of India – Foreign Direct Investment in insurance sector- career opportunities in insurance sector

***Revised Syllabus of Courses of B.Com. Programme at Semester VI
with effect from the Academic Year 2018-2019***

Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group D: Commerce

**2. Commerce IV:
Commercial Administration**

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Human Resource Management for office	15
02	Office Services -I	15
03	Office Services -II	15
04	Office Services -III	15
Total		60

Sr. No.	Modules / Units
1	Human Resource Management for office
	Human Resource Management: Meaning, nature and importance of human resource management- scope of HR functions in an office- duties and responsibilities of HR officer- records and information to be maintained with respect to the human resource- important HR legislations in India.
2	Office Services -I
	Reception & hospitality: Role and function of the reception desk- duties and responsibilities of a receptionist, importance of reception. Meetings & Travel Arrangement: meaning and procedure for business meetings- types of meetings- information and services related to travel- procedure for making travel arrangements
3	Office Services -II
	Accounts & financial services: Role and functions of an accounts department/ officer- documents to be prepared by the accounts officer- types of hardware and software used – procedure for making and receiving payments- bank and cash related documents and procedures, digital payments. Sales, marketing and customer care: functions of sales & marketing officer- functions of customer service officer, importance of customer care
4	Office Services -III
	Procurement & dispatch: role and functions of procurement officer- procedure for procurement of materials and services- functions of a dispatch clerk- documents to be maintained with respect to procurement and dispatch Inventory management: meaning and nature of inventory management, functions of inventory management - stock records to be maintained manual and electronic

***Revised Syllabus of Courses of B.Com. Programme at Semester VI
with effect from the Academic Year 2018-2019***

Elective Courses (EC)

1 B. Discipline Related Elective (DRE) Courses

**3. Commerce-VI
Human Resource Management**

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Human Resource Management	12
02	Human Resource Development	11
03	Human Relations	11
04	Trends In Human Resource Management	11
Total		45

Sr. No.	Modules / Units
1	Human Resource Management
	<ul style="list-style-type: none"> Human Resource Management – Concept, Functions, Importance, Traditional v/s Strategic Human Resource Management Human Resource Planning- Concept Steps in Human Resource Planning Job Analysis-Concept, Components, Job design- Concept, Techniques Recruitment- Concept, Sources of Recruitment Selection - Concept , process , Techniques of E,selection,
2	Human Resource Development
	<ul style="list-style-type: none"> Human Resource Development- Concept, functions Training- Concept, Process of identifying training and development needs, Methods of Training & Development (Apprenticeship, understudy, job rotation, vestibule training, case study, role playing, sensitivity training, In, basket, management games) Evaluating training effectiveness- Concept, Methods Performance Appraisal- Concept, Benefits, Limitations, Methods Potential Appraisal-Concept, Importance Career Planning- Concept, Importance Succession Planning- Concept, Need Mentoring- Concept, Importance Counseling- Concept, Techniques.
3	Human Relations
	<ul style="list-style-type: none"> Human Relations- Concept, Significance Leadership –Concept, Transactional & Transformational Leadership Motivation- Concept, Theories of Motivation,(Maslow’s Need Hierarchy Theory, Vroom’s Expectancy Theory, McGregor’s Theory X and Theory Y, Pink’s Theory of Motivation) Employees Morale- Concept, Factors affecting Morale, Measurement of Employees Morale Emotional Quotient and Spiritual Quotient- Concept, Factors affecting EQ & SQ Employee Grievance- Causes, Procedure for Grievance redressal Employee welfare measures and Healthy & Safety Measures.
4	Trends In Human Resource Management
	<ul style="list-style-type: none"> HR in changing environment: Competencies- concept, classification Learning organizations- Concept, Creating an innovative organization, Innovation culture- Concept, Need, Managerial role. Trends in Human Resource Management,: Employee Engagement- Concept, Types Human resource Information System (HRIS) – Concept, Importance, Changing patterns of employment. Challenges in Human Resource Management: Employee Empowerment, Workforce Diversity. Attrition, Downsizing, Employee Absenteeism, Work life Balance, Sexual Harassment at work place, Domestic and International HR Practices, Millennial (Gen Y)Competency Mapping

***Revised Syllabus of Courses of B.Com. Programme at Semester VI
with effect from the Academic Year 2018-2019***

Elective Courses (EC)

1 B. Discipline Related Elective (DRE) Courses

**4. Business Economics-VI
International Economics**

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Introduction to International Trade	10
02	Commercial Policy	10
03	Balance of payments and International Economic Organization	15
04	Foreign Exchange market	10
Total		45

Sr. No.	Modules / Units
1	Introduction to International Trade
	<ul style="list-style-type: none"> Theories of International Trade - Ricardo's Theory of Comparative Costs and the Heckscher- Ohlin Theory. Terms of Trade - Types and Limitations. Gains from International trade - Offer Curves and Reciprocal Demand.
2	Commercial Policy
	<ul style="list-style-type: none"> Commercial Trade Policy –Free Trade and Protection – Pros and Cons. Tariff And Non Tariff Barriers: Meaning, Types and Effects International Economic Integration – Types and Objectives:-EU and Brexit, ASAEN
3	Balance of payments and International Economic Organization
	<ul style="list-style-type: none"> Balance of Payment: Meaning, Structure, Types of Disequilibrium. Causes and measures to correct the disequilibrium in Balance of Payments WTO- Recent Developments in TRIPS, TRIMS and GATS.
4	Foreign Exchange market
	<ul style="list-style-type: none"> Foreign Exchange Market: Meaning, Functions, Determination of Equilibrium Rate of Exchange. Purchasing Power Parity Theory, Spot and Forward Exchange Rates, Arbitrage. Role of Central Bank in foreign exchange rate management, Managed flexible exchange rate system of India.

***Revised Syllabus of Courses of B.Com. Programme at Semester VI
with effect from the Academic Year 2018-2019***

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

1. Trade Unionism and Industrial Relations Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Industrial relations	12
2	Industrial conflicts and its Measures for Prevention and Settlement	12
3	Collective bargaining and Workers Participation in Management	11
4	Industrial relations in Public Sector Multi-nationals, and Co-operative Sector	10
Total		45

Sr. No.	Modules / Units
1	Industrial relations
	<ul style="list-style-type: none"> Industrial relations: Meaning, Importance, Scope, Role and Impact on Labour Laws legislation, Execution, Employer, Trade Unions and Judiciary Recommendations of Second National Commission on labour 2002.
2	Industrial conflicts and its Measures for Prevention and Settlement
	<ul style="list-style-type: none"> Industrial conflicts: Meaning causes and impact. Strike: Meaning, Types & Legal aspects. Concept of lockout. Measures for prevention and settlement of industrial conflicts- (a) Conciliation (b) Mediation (c) Arbitration (d) Adjudication.
3	Collective bargaining and Workers Participation in Management
	<ul style="list-style-type: none"> Collective bargaining: concept, principles and importance. Collective bargaining in India. Workers participation in management- Meaning, Types with reference to India.
4	Industrial relations in Public Sector Multi-nationals, and Co-operative Sector
	<ul style="list-style-type: none"> Industrial relations in public sector, multi-nationals, and co-operative Sector. Plant level Industrial relations:- standing orders and grievance procedure. Work and role of labour welfare officer.

***Revised Syllabus of Courses of B.Com. Programme at Semester VI
with effect from the Academic Year 2018-2019***

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

2. Computer Systems and Applications Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	E – Commerce	18
2	Advanced Spread Sheet	09
3	Advanced Spread Sheet	09
4	Visual Basic	09
Total		45

Sr. No.	Modules / Units
1	E – Commerce
	<ul style="list-style-type: none"> a) Definition of E-commerce b) Features of E-commerce c) Types of E-commerce (B2C, B2B, C2C, P2P) d) Business Models in E-commerce (Advertising, Subscription, Transaction Fee, Sales Revenue, Affiliate Revenue) e) Major B2C models (Portal, Etailer, Content Provider, Transaction Broker, Market Creator, Service Provider, Community Provider). f) E-Commerce Security: Integrity, Non repudiation, Authenticity, Confidentiality, Privacy Availability. g) Encryption: Definition, Digital Signatures, SSL. h) Payment Systems: Digital Cash, Online stored value, Digital accumulating balance payment, Digital credit accounts, digital checking. i) How an Online credit card transaction works. SET protocol. j) Limitation of E-commerce. k) M-commerce (Definition and Features).
2	Advanced Spread Sheet
	<ul style="list-style-type: none"> a) Multiple Spread sheets <ul style="list-style-type: none"> • Creating and using templates, Using predefined templates, Adding protection option. • Creating and Linking Multiple Spreadsheets. • Using formulas and logical operators. • Creating and using named ranges. • Creating Formulas that use reference to cells in different worksheets. b) Functions <ul style="list-style-type: none"> • Database Functions LOOKUP, VLOOKUP, HLOOKUP • Conditional Logic functions IF, Nested IF, COUNTIF, SUMIF, AVERAGEIF • String functions LEFT, RIGHT, MID, LEN, UPPER, LOWER, PROPER, TRIM, FIXED
3	Advanced Spread Sheet
	<ul style="list-style-type: none"> a) Functions <ul style="list-style-type: none"> • Date functions TODAY, NOW, DATE, TIME, DAY, MONTH, YEAR, WEEKDAY, DAYS360 • Statistical Functions COUNTA, COUNTBLANK, CORREL, LARGE, SMALL b) Data Analysis <ul style="list-style-type: none"> • Filter with customized condition. • The Graphical representation of data Column, Line, Pie and Bar charts. • Using Scenarios, creating and managing a scenario. • Using Goal Seek • Using Solver • Understanding Macros, Creating, Recording and Running Simple Macros. Editing a Macro(concept only)

Sr. No.	Modules / Units
4	Visual Basic
	<p>a) Introduction to Visual Basic, Introduction Graphical User Interface (GUI). Programming Language (Procedural, Object Oriented, Event Driven), Writing VB Projects. The Visual Basic Environment</p> <p>b) Introduction to VB Controls Text boxes, Frames, Check boxes, Option button, Designing the User Interface, Default & Cancel property, tab order, Coding for controls using Text, Caption, Value property and Set Focus method</p> <p>c) Variables, Constants, and Calculations Variable and Constant, Data Type (String, Integer, Currency, Single, Double, Date), Naming rules/conventions, Constants (Named & Intrinsic), Declaring variables, Val Function, Arithmetic Operations, Formatting Data.</p> <p>d) Decision and Condition Condition, Comparing numeric variables and constants, Comparing Strings, Comparing Text Property of text box, Compound Conditions (And, Or, Not). If Statement, if then-else Statement, LCase and Ucase function, Using If statements with Option Buttons & Check Boxes. MsgBox (Message box) statement Input Validation : Is Numeric function.</p> <p>e) Sub-procedures and Sub-functions, Using common dialog box, Creating a new sub-procedure, Writing a Function procedure. Simple loops using For Next statements and Do while statement and display output using MsgBox Statement.</p>

Note :

- a) Theory 03 lectures per week.
- b) Practical batch size 20-25, 01 practical = 03 theory lectures per week.
- c) 10 Practical's are to be completed in each semester.

Semester VI

Topic	Number of Practical's
Presentation skills	01
Advanced Spread Sheet	06
Introduction to Visual Basic	03

Minimum 6 practical's are to be recorded in the journal in the Semester VI
[Minimum 4 on VB, 2 on Advanced Spread Sheet]

❖ **Suggested list of Practical's for Semester VI**

1. Preparing a PowerPoint presentation on an E-Commerce website.
2. Calculation of DA, HRA, PF, Gross Salary and Net Salary using Spread Sheet
3. Calculation of Income Tax using Spread Sheet
4. Filtering data and Graphical representation of data using Spread Sheet
5. Using VLOOKUP and HLOOKUP using Spread Sheet
6. Creating and managing a scenario using Spread Sheet
7. Use of Goal Seek and Solver using Spread Sheet

8. Write a project in VB to design a suitable form to add two numbers and display their sum.
9. Write a project in VB to design a suitable form to enter sales and calculate and display the bonus which is 10% of sales.
10. Write a project in VB to design a suitable form to enter salary and calculate and display the DA which is 90% of salary.

❖ **Scheme of Examination**

Type	Marks	Duration
Theory	75	2½ hours
Practical	20	1 hour per batch of 10
Active Participation and Class conduct	05	---

• **Theory Examination Pattern**

All questions are compulsory

Question No.	Unit No.	Marks	Marks with Internal Option
Q. 1.	Objective type based on I, (II,III) and IV	11+2+2	23
Q. 2.	I	15	30
Q. 3.	II	15	30
Q. 4.	III	15	30
Q. 5.	IV	15	30

• **Practical Examination Pattern- Semester VI**

Sr. No.	Topic	Marks
01	Advanced Spread sheet	07
02	Introduction to VB Programing	03
03	Journal	05
04	Viva	05

- Practical examination to be conducted 2 to 3 weeks before the theory examination. Marks out of 25 to be submitted to the University before commencement of theory examination.
- Software Requirement :
Spread Sheet 2010, VB 6.0
- Hardware
For a batch of 120 students minimum 10 computers with appropriate hardware and software installed on each computer. During practical hours maximum two student may share one computer.
- For in house computing facility fee of rupees 750/- be charged for each student per Semester in the existing fee structure against head of computer fee/computer practical.

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Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

3. Export Marketing Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Product Planning and Pricing Decisions for Export Marketing	12
2	Export Distribution and Promotion	11
3	Export Finance	11
4	Export Procedure and Documentation	11
Total		45

Sr. No.	Modules / Units
1	Product Planning and Pricing Decisions for Export Marketing
	<ul style="list-style-type: none"> a) Planning for Export Marketing with regards to Product, Branding, Packaging b) Need for Labelling and Marking in Exports, Factors determining Export Price; Objectives of Export Pricing c) International Commercial (INCO) Terms; Export Pricing Quotations – Free on Board (FOB), Cost Insurance and Freight (CIF) and Cost and Freight (C&F); Problems on FOB quotation
2	Export Distribution and Promotion
	<ul style="list-style-type: none"> a) Factors influencing Distribution Channels; Direct and Indirect Exporting Channels; Distinction between Direct and Indirect Exporting Channels b) Components of Logistics in Export marketing; Selection criteria of Modes of Transport; Need for Insurance in Export Marketing c) Sales Promotion Techniques used in Export Marketing; Importance of Trade Fairs and Exhibitions; Benefits of Personal Selling; Essentials of Advertising in Export Marketing;
3	Export Finance
	<ul style="list-style-type: none"> a) Methods of Payment In export marketing; Procedure to open Letter of Credit, Types and Benefits of Countertrade b) Features of Pre-Shipment and Post-shipment finance; Procedure to obtain Export Finance; Distinction between Pre-shipment Finance and Post Shipment Finance. c) Role of Commercial Banks, EXIM Bank, SIDBI in financing exporters; Role of ECGC
4	Export Procedure and Documentation
	<ul style="list-style-type: none"> a. Registration with different authorities; Pre-shipment Procedure involved in Exports; Procedure of Quality Control and Pre-shipment Inspection; b. Shipping and Custom Stage Formalities; Role of Clearing & Forwarding Agent; Post-shipment Procedure for Realisation of Export Proceeds; Procedure of Export under Bond and Letter of Undertaking. (LUT) c. Importance of - Commercial Invoice cum Packing list, Bill of Lading/ Airway Bill, Shipping Bill/Bill of Export, Consular Invoice, Certificate of Origin

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Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

4. Marketing Research Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Applications of Marketing Research-I	12
2	Applications of Marketing Research-II	11
3	Applications of Marketing Research-III	11
4	Managing Marketing Research	11
Total		45

Sr. No.	Modules / Units
1	Applications of Marketing Research-I
	<ul style="list-style-type: none"> a. Product Research- concept, areas, steps in new product development Product Testing & Test Marketing- concept, methods b. Brand Research- concept, components of a Brand, importance of brand research Packaging Research- concept, importance c. Price Research- concept, factors influencing pricing, importance of price research, methods of price research
2	Applications of Marketing Research-II
	<ul style="list-style-type: none"> a. Physical Distribution research- concept, types of distribution channels, Supply Chain Management- concept, components of supply chain management, importance of physical distribution research b. Promotion Research- concept, elements of promotion, importance of promotion research Advertising Research- concept, scope, pre & post testing methods of advertising effectiveness c. Consumer Research- concept, objectives, methods Motivation Research- concept, importance
3	Applications of Marketing Research-III
	<ul style="list-style-type: none"> a. Sales Research- concept, significance, scope/areas b. Rural Marketing Research-concept, features of Indian rural market, sources of data, research tools, do's and don'ts in rural Marketing Research c. Global Marketing Research- concept, factors affecting Global Marketing , need and scope of Global Marketing Research
4	Managing Marketing Research
	<ul style="list-style-type: none"> a. Organizing Marketing Research activity- factors involved in organizing Marketing Research activity, methods of organizing Marketing Research activity, In house marketing department,--structure, merits , demerits b. Professional Marketing Research agencies- structure, merits, demerits, professional standards c. Prominent Marketing Research agencies- HTA, ORG, IMRB, NCAER, Nielson

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Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

**5. Investment Analysis and Portfolio
Management Paper - II**

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Fundamental Analysis	12
2	Technical Analysis	11
3	Efficient Market Theory	11
4	Capital Asset Pricing Model	11
Total		45

Sr. No.	Modules / Units
1	Fundamental Analysis
	<p>A) Economy Analysis – Meaning, Framework, Economic Analysis, Forecasting, Barometric or Indicator Approach, Econometric Model Building and Opportunistic Model Building.</p> <p>B) Industry Analysis – Concept of Analysis, Industry Life Cycle, Industry Characteristics</p> <p>Company Analysis – Financial Statements, Analysis of Financial Statements, (Practical questions on Debt equity ratios, total debt ratio, proprietary ratios, interest coverage ratio, Profitability ratios related to sales, investment and equity shares Efficiency or Activity Ratios) and Assessment of risk (Leverages)</p>
2	Technical Analysis
	<p>A) Dow Theory</p> <p>B) Meaning and Principles of Technical Analysis, Price Chart, Line Chart, Bar Chart, Japanese Candlestick Chart, Trends and Trend Reversals, Chart Patterns, Support and Resistance, Reversal Patterns, Continuation Patterns and Elliot Wave Theory</p> <p>C) Mathematical Indicators – Calculation of Moving Averages (Simple and Exponential Moving Average), Oscillators and Relative Strength Index</p> <p>D) Market Indicators</p> <p>E) Fundamental Analysis V/s Technical Analysis</p>
3	Efficient Market Theory
	<p>A) Random Walk Theory</p> <p>B) The Efficient Market Hypothesis</p> <p>C) Forms of Market Efficiency</p> <p>D) Competitive Market Hypothesis</p>
4	Capital Asset Pricing Model
	<p>A) CAPM – Fundamental Notions of Portfolio Theory, Assumption of CAPM, Efficient Frontier with Riskless Lending and Borrowing, Capital Market Line, Security Market Line and Pricing of Securities with CAPM.</p> <p>B) Arbitrage Pricing Theory (APT) – The Return Generating Model, Factors Affecting Stock Return, Expected Return on Stock, APT V/s CAPM.</p>

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Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

6. Transport Management Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Indian Surface Transport Service	11
2	Marketing of Transport Services	11
3	Transport Organisation	11
4	Safety Management Systems	12
Total		45

Sr. No.	Modules / Units
1	Indian Surface Transport Service
	Development of Railway network and problem-changes in composition of passenger and freight traffic, Development of Road transport- Growth of Automobile Industry, Indian Motor Vehicle Acts, Urban transport problems with special defence to Mumbai
2	Marketing of Transport Services
	Marketing of transport services: Role of Advertising – Changes in fares and freight rates and their impact on demand, Regulation of transport services: Licensing policies, transport taxation, role of International bodies in transport development
3	Transport Organisation
	Water transport: Present status of Inland and Coastal Shipping in India, Growth of Merchant Shipping, International competition and problems of port. Air transport: Working of Indian Airlines and Air India - International Airport Authority of India – Air Cargo.
4	Safety Management Systems
	Overview and Understanding Safety, factors for improving safety on roads – causes of accidents due to drivers and pedestrians-design, selection, operation and maintenance of motor trucks, Responsibility for Management of Safety, Basics of Safety Management, Safety Training Programme

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Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

**7. Entrepreneurship and Management of Small
Scale Industries Paper - II**

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Micro, Small and Medium Enterprises	11
2	Setting-up of SSI/SME/MSME	11
3	Organization of SSI/SME/MSME	11
4	Specialized Focus Areas in Micro, Small and Medium Enterprises	12
Total		45

Sr. No.	Modules / Units
1	Introduction to Micro, Small and Medium Enterprises
	<p>Unit-1: –</p> <ul style="list-style-type: none"> • Meaning, Features, Concept of SSI • Role and Importance of SSI • Evolution and Growth of SSI since Independence in India w.r.t. 5-Year Plans in India • SSI Support Mechanism in India - Central and State Level, Government and Non-Government Agencies support to SSI with due emphasis to Concessions and Incentives <p>Unit-2:-</p> <ul style="list-style-type: none"> • Meaning, Features, Concept of Micro, Small and Medium Enterprises • Need and Significance of MSMEs • Evolution and Growth of MSMEs since Economic Liberalization in India • Role and Importance of MSMEs <p>Unit-3:-</p> <ul style="list-style-type: none"> • Meaning, Features, Concept of Industrial Sickness • Causes of Industrial Sickness • Consequences of Industrial Sickness • Remedies to Resolve the Problem of Industrial Sickness
2	Setting-up of SSI/SME/MSME
	<p>Unit-1:-</p> <ul style="list-style-type: none"> • Steps in Setting-up a SSI/SME/MSME • Registration Procedure – Benefits of Registration – De-registration • Environmental and Locational Issues – Environmental Clearance • Steps in Setting up a SSI/SME/MSME in India with Special Reference to Clearances and Permissions required <p>Unit-2:-</p> <ul style="list-style-type: none"> • Meaning, Features, Concept of Regulatory Environment in India • Brief insights relating to Laws affecting SSI/SME/MSME • MSME Policy in India - Highlights of MSMED Act, 2006 • Classification of Manufacturing and Service Industries under MSMED Act, 2006 <p>Unit-3:-</p> <ul style="list-style-type: none"> • Growth and Expansion of SSI/SME/MSME • Options available to SSI/SME/MSME for Growth and Expansion (Part-I): Ancillarisation, Licensing, Franchising • Options available to SSI/SME/MSME for Growth and Expansion (Part-II): Outsourcing, Insourcing • Options available to SSI/SME/MSME for Growth and Expansion (Part-III): Mergers, Acquisitions, Takeovers in India and at Global Level

Sr. No.	Modules / Units
3	Organization of SSI/SME/MSME
	<p>Unit-1:-</p> <ul style="list-style-type: none"> • Meaning, Features, Concept of Organisation Structure of SSI/SME/MSME • Overview of Principles of Management applicable in Management of SSI/SME/MSME - Types of Organisation of SSI/SME/MSME • Problems and Prospects of SSI/SME/MSME • Legal Framework and Regulations Governing SSI/SME/MSME - Government Measures, Policy Support, Taxation Benefits for SSI/SME/MSME <p>Unit-2:-</p> <ul style="list-style-type: none"> • Meaning, Features, Concept of SSI/SME/MSME Funding • Requirements of Capital (Fixed and Working) for SSI/SME/MSME • Factors Determining Capital (Fixed and Working) Requirements of SSI/SME/MSME • Sources of Institutional Finance to SSI/SME/MSME <p>Unit-3:-</p> <ul style="list-style-type: none"> • Meaning, Features, Concept of Marketing Mechanism in SSI/SME/MSME • Marketing related Problems of SSI/SME/MSME - Measures to Reduce Marketing related Problems of SSI/SME/MSME • Export Potential of SSI/SME/MSME - Export Incentives available to SSI/SME/MSME – SSI/SME/MSME and Special Economic Zones (SEZs) • Role of Self Help Groups (SHGs) in Development of SSI/SME/MSME
4	Specialized Focus Areas in Micro, Small and Medium Enterprises
	<p>Unit-1:-</p> <ul style="list-style-type: none"> • Meaning, Features, Concept, Significance of Rural Industries • Nature of activities involved in Rural Industries - Measures to Support and Promote Rural Industries • Meaning, Features, Concept, Significance and Role of Rural Artisans • Measures to Support and Promote Rural Artisans – Role of Government and Non-Government Agencies in Promoting Rural Artisans <p>Unit-2:-</p> <ul style="list-style-type: none"> • Meaning, Features, Concept, Significance of Agro-based Industries • Nature of activities involved in Agro-based Industries - Measures to Support and Promote Agro-based Industries • Meaning, Features, Concept of Ancillary Industries • Nature of activities involved in Ancillary Industries - Measures to Support and Promote Ancillary Industries <p>Unit-3:-</p> <ul style="list-style-type: none"> • Meaning and Concept of Industrial Estates • Features of Industrial Estates • Utility and Significance of Industrial Estates to SSI/SME/MSME Sector • Policy Initiatives and Measures to Revive Industrial Estates

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Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

8. International Marketing Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	International Marketing Channels & Physical Distribution	12
2	Procedures & Policy Framework in International Marketing	11
3	International Trade Promotion Organization	11
4	Export Assistance, Incentives & Documentation	11
Total		45

Sr. No.	Modules / Units
1	International Marketing Channels & Physical Distribution
	<ul style="list-style-type: none"> a. International Marketing Channels- , Need and Importance. b. Method of Entry in International Market. Factors influencing selection of Suitable Channels. c. Physical Distribution – Importance, Scope and Problems.
2	Procedures & Policy Framework in International Marketing
	<ul style="list-style-type: none"> a. Foreign Trade Policy (FTP), 2015-20-Highlights and implications. b. Export Procedure- Registration Procedure, Role of Customs House Agent, Customs/Shipment Formalities, Procedure of Export Proceeds Realization. Procedure to obtain ISO Certification. c. Import Procedure involved in International Market.
3	International Trade Promotion Organization
	<ul style="list-style-type: none"> a. Export Marketing Organisation- and Types, Role and Functions of Export Promotion Councils, Commodity Board, IPP, FIEO, IIFT, DGFT, ITPO and IIP. b. Export Promotion Organisation- and Types. c. E- Marketing – Features Importance and Impact.
4	Export Assistance, Incentives & Documentation
	<ul style="list-style-type: none"> a. Main Assistance available for Exporters. b. Incentives available for exporters- Duty Drawback, EPCG, MDA, ASIDE, IRMAC. c. Export Documentation-and Importance, Main Export Documents- Commercial Invoice, Consular Invoice, Certificate of Origin, Shipping Bill, Mats Receipt, GR Form and Bill of Exchange.

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Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

9. Merchant Banking Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Factoring	11
2	Securitization	11
3	Mergers, Acquisitions & Takeovers	11
4	Disinvestment and Buyback of Equity Shares	12
Total		45

Sr. No.	Modules / Units
1	Factoring
	Factoring: Concept, Nature and Scope of Factoring, Forms of Factoring , Factoring vis-à-vis Bills Discounting , Factoring vis-à-vis Credit Insurance, Factoring vis-à-vis Forfeiting, Evaluation of a factor , Evaluation of factoring, Status of Factoring in India.
2	Securitization
	Securitization / Mortgages: Meaning, Nature and Scope of Securitization, Securitization as a Funding Mechanism, Securitization of Residential Real Estate and Mortgages -Features, Types and Provisions. Security Brokerage: Meaning of Brokerage, Types of Brokers, Difference between Broker and Jobber, SEBI Regulations relating to brokerage business in India.
3	Mergers, Acquisitions & Takeovers
	Difference between Mergers, Acquisitions and Takeover, The Role of Merchant Banker in M&A and Takeovers, SEBI (Substantial Acquisition of Shares and Takeovers) Regulations, 2011 w.r.t Substantial acquisition of shares or voting rights, Voluntary Offer- Offer Size, Offer Price, Payment Mode, Exemptions and Process of Open Offer.
4	Disinvestment and Buyback of Equity Shares
	The Role of Merchant Banker in Disinvestment Process, Role and Obligations of Merchant Banker in Buyback of Equity Shares, Role of Merchant Banker in Delisting of Shares, Role of Merchant Banker in Issue and Listing of Debt Securities and The Role of Merchant Banker in ESOP

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Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

**10. Direct and Indirect Taxation Paper - II
Goods and Service Tax Act**

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction	09
2	Levy and Collection of Tax	09
3	Time, Place and Value of Supply	09
4	Input Tax Credit & Payment of Tax	09
5	Registration under GST Law	09
Total		45

Sr. No.	Modules / Units
1	Introduction
	<ul style="list-style-type: none"> • What is GST • Need for GST • Dual GST Model • Definitions <ul style="list-style-type: none"> Section 2(17) Business Section 2(13) Consideration Section 2(45) Electronic Commerce Operator Section 2(52) Goods Section 2(56) India Section 2(78) Non taxable Supply Section 2(84) Person Section 2(90) Principal Supply Section 2(93) Recipient Section 2(98) Reverse charge Section 2(102) Services Section 2(105) Supplier Section 2(107) Taxable Person Section 2(108) Taxable Supply • Goods & Services Tax Network (GSTN)
2	Levy and Collection of Tax
	<ul style="list-style-type: none"> • Scope of Supply • Non taxable Supplies • Composite and Mixed Supplies • Composition Levy • Levy and Collection of tax • Exemption from tax
3	Time, Place and Value of Supply
	<ul style="list-style-type: none"> • Time of Supply • Place of Supply • Value of Supply
4	Input Tax Credit & Payment of Tax
	<ul style="list-style-type: none"> • Eligibility for taking Input Tax Credit • Input Tax Credit in Special Circumstances • Computation of Tax Liability and payment of tax
5	Registration under GST Law
	<ul style="list-style-type: none"> • Persons not liable registration • Compulsory registration • Procedure for registration • Deemed registration • Cancellation of registration

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Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

11. Labour Welfare and Practice Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Social Security	15
2	Labour Markets	10
3	Labour Force in India	10
4	Globalization & Labour	10
Total		45

Sr. No.	Modules / Units
1	Social Security
	<ul style="list-style-type: none"> • Meaning, Definition & Objective of Social Security. • Various Social Security provisions made in India (Employees provident fund Act, Maternity benefit Act, Family Pension Scheme, Provision of Gratuity Act 1972) • Trade Union – Structure, Types & Functions.
2	Labour Markets
	<ul style="list-style-type: none"> • Demand for and supply of labour- determinants of demand for and supply of labour – • Mobility of Labour • Problems of Agricultural Labour, Child Labour and Female Labour
3	Labour Force in India
	<ul style="list-style-type: none"> • Factors determining Labour Force. • Labour Force & Human Development in India • Participation of workers in Management • Industrial disputes
4	Globalization & Labour
	<ul style="list-style-type: none"> • Globalisation & Labour Markets in India. • Impact of Labour Migration. • ILO- Aims & objectives & impact on Labour Welfare.

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Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

12. Purchasing and Store Keeping Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Store Keeping and Materials Handling	12
2	Store Accounting and Store Record	11
3	Inventory Control	11
4	Logistics and Supply Chain Management (SCM)	11
Total		45

Sr. No.	Modules / Units
1	Store Keeping and Materials Handling
	<ul style="list-style-type: none"> • Store Keeping - Concept, Meaning, Objectives, Functions of Storekeeping, Types of stores, Stages in storekeeping, Duties and Responsibilities of Storekeeper. • Material handling – Objective, Advantages & Principles, Protection and Preservation of materials in store. • Store Location & Layout – Location of Store House, Factors influencing store location, Objectives, Principles and Types of store layout.
2	Store Accounting and Store Record
	<ul style="list-style-type: none"> • Store Accounting – Objectives, Importance, Advantages, Need for Store Accounting, Methods of Valuation of Material – FIFO, LIFO, Simple average & Weighted average method • Store Record – Concept, Objectives, Need, and Documents required for Store Record • Store Ledger & Bin card – Meaning, Advantages of Store ledger and Bin card, Stock Audit, Lead time- Concept & Classification
3	Inventory Control
	<ul style="list-style-type: none"> • Stock levels & Value analysis – Types of stock level, Value analysis – Concept, Essentials & Steps. • ABC analysis – Purpose, Steps and Advantages of ABC analysis. • Inventory Control – Objectives, Advantages and Disadvantages of Periodical & Perpetual Inventory Control, Selective Inventory control techniques, Economic Order Quantity – Importance.
4	Logistics and Supply Chain Management (SCM)
	<ul style="list-style-type: none"> • Logistics – Concepts, Nature, Importance & Challenges • Supply chain management – concepts, Objectives, Benefits & Process of Supply Chain Management • Recent trends in logistics & SCM – Role of IT in logistics / SCM, Issues & Challenges in logistics, Logistics Outsourcing – Concept & Benefits.

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Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

13. Insurance Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Life Insurance Products	11
2	General Insurance	11
3	Miscellaneous Coverage's	11
4	Insurance Business Environment in India	12
Total		45

Sr. No.	Modules / Units
1	Life Insurance Products
	<ul style="list-style-type: none"> a. Different products offered by life insurers – term plans, pure endowment plans, combinations of plans, traditional products b. Market linked policies, of Annuities and group policies. c. Procedure for obtaining life insurance policy, procedure for settlement of Claims.
2	General Insurance
	<ul style="list-style-type: none"> a. Fire Insurance- Risks faced by the owner of assets – exposure to perils – features of products covering fire and allied perils, Procedure for obtaining fire insurance policy b. Marine Insurance- Products covering marine and transit risks -products covering financial losses due to accidents, Procedure for obtaining marine insurance policy c. Health insurance - Products covering financial losses due to hospitalization - products covering miscellaneous risks. Procedure for obtaining health/ Medi-claim insurance policy
3	Miscellaneous Coverage's
	<ul style="list-style-type: none"> a. Motor insurance – Liability only policy – Package policy –Personal Accident insurance b. Burglary insurance – Baggage insurance – Legal Liability insurance – Public & Product Liability insurances – Professional Indemnity insurance c. Workmen's Compensation insurance – Fidelity Guarantee insurance – Banker's Indemnity insurance – Carrier's Legal Liability insurance – Jeweller's Block insurance -Aviation insurance – Engineering insurance – Rural insurances – Micro insurance
4	Insurance Business Environment in India
	<ul style="list-style-type: none"> a. Specialised Insurances: Industrial All Risks insurance – Advance Loss of Profits insurance – Oil & Energy Risks insurance – Satellite insurance b. Challenges in Insurance Industry, LIC v/s Private Insurance Companies in India c. Recent trends in Insurance, Growth of Insurance Business, Actuarial Role, Reasons for attraction of Foreign Insurance Companies in India.

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Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

**14. Banking Law and Practice Paper - II
Corporate and Securities Law**

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Company Law – An Overview	12
02	Regulatory Framework Governing Stock Exchanges as per Securities Contracts Regulation Act 1956	11
03	Security Exchange Board of India	11
04	The Depositories Act, 1996	11
Total		45

Sr. No.	Modules / Units
1	Company Law – An Overview
	<ul style="list-style-type: none"> • Development of Company Law in India • Doctrines Governing Corporates – Lifting the Corporate Veil, Doctrine of Ultra Vires, Constructive Notice, Indoor Management, Alter Ego. The Principle of Non Interference (Rule in Foss V/s Harbottle) – Meaning , Advantages , Disadvantages & Exceptions, Majority and Minority Rights under Companies Act • Application of Company Law to Banking and Insurance Sector Application of Companies Act to Banking and Insurance sector governed by Special Acts. S.1(4) of Companies Act 2013 Exceptions provided (S.67(3), S.73(1), S.129(1), 179(3), S.180(1)(c), S.186, S.189
2	Regulatory Framework governing Stock Exchanges as per Securities Contracts Regulation Act 1956
	<ul style="list-style-type: none"> • Definition of Securities, Spot Delivery Contract, Ready Delivery Contract, Stock Exchange. • Corporatisation and demutualisation of Stock Exchange –Meaning, Procedure & Withdrawal • Power of Recognised Stock Exchange to make rules restricting voting rights etc • Power of Central Government to Direct Rules or Make rules • Power of SEBI to make or amend bye laws of recognised stock exchange • Books and Accounts to be maintained by recognized stock exchange • Grounds on which stock exchange can delist the securities of a company. • Section 3 to Section 20
3	Security Exchange Board of India
	<ul style="list-style-type: none"> • SEBI: Objectives-terms-establishment-powers-functions-accounts and audit-penalties –registration. • Issues of Disclosure Investors Protection Guidelines: Pre & Post obligations-conditions for issue-Debt Security-IPO-E-IPO-Employee option-right-bonus-preferential allotment intermediary-operational-promoter lock in period requirements-offer document.
4	The Depositories Act, 1996
	<ul style="list-style-type: none"> • Depository – Meaning , Benefits , Models, Functions Participants • The Depository Act 1996 – Objectives, Eligibility condition for depository services, Fungibility, Bye laws of depository , Governance of Depository and Internal audit of depository Participants • BSDA and single registration for depository participants.

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Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

15. Regional Planning Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Regional Planning Strategies & Techniques	15
2	Regionalization of Planning in India	10
3	Regional Development in Maharashtra	10
4	Problem Regions and Case Studies	10
Total		45

Sr. No.	Modules / Units
1	Regional Planning Strategies & Techniques
	<ul style="list-style-type: none"> • Regional planning strategies & techniques • Planning machinery & problems of co-ordination – integrated area development • Multi-level nature of planning in India, specific contribution of planning at different levels.
2	Regionalization of Planning in India
	<ul style="list-style-type: none"> • Regionalization of planning in India: an assessment • Regional development & efficiency • Ecological dimension – strategy for future.
3	Regional Development in Maharashtra
	<ul style="list-style-type: none"> • Regional development in Maharashtra – regional backlogs causative factors. • Strategies for regional development – achievements & failures • Strategy for future.
4	Problem Regions and Case Studies
	<ul style="list-style-type: none"> • Problem regions: Nature of problems& strategies for its solution • Case Studies: Mumbai Metropolitan Region-Vidharbha, South Kokan, Marathwada, Western Ghats, Sugarcane growing areas

***Revised Syllabus of Courses of B.Com. Programme at Semester VI
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Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

16. Rural Marketing Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Agricultural Marketing	11
2	Rural Marketing and Market Regulation	12
3	Institutional Support to Rural Marketing	11
4	Problems in Rural Marketing	11
Total		45

Sr. No.	Modules / Units
1	Agricultural Marketing
	<ul style="list-style-type: none"> a. Agricultural Marketing- Concept, Nature and Types, Agriculture produce- concept and types of Agricultural Markets. b. Marketing agencies, Risks involved in marketing, Types of risks, Measures to minimise risks c. Contract Marketing (Farmer – Processor linkage), Marketing channels for agricultural produce
2	Rural Marketing and Market Regulation
	<ul style="list-style-type: none"> a. Regulated Market- APMC Act 1963, Standardisation and Grading, Inspection of quality, AGMARK b. The National Council for State Marketing Boards (NCOSAMB) State Trading corporation (STC), Public Distribution System(PDS) – Need and importance c. Fruit Products order (FPO) 1955 - objectives, Consumer Protection Act 1986- Rights of Consumers
3	Institutional Support to Rural Marketing
	<ul style="list-style-type: none"> a. Commission on Agriculture Costs and Prices (CACP)- Role, Functions and Importance b. National Agriculture Co-operative Marketing Federation (NAFED)-Role, Functions and Importance c. Agriculture and Processed Food Exports Development Authority (APEDA)-Role, Functions and Importance
4	Problems in Rural Marketing
	<ul style="list-style-type: none"> a. Problems in rural marketing---Strategies for rural marketing--- Integration, Efficiency, Cost and Price Spread b. Need for marketing finance, Source of marketing finance, Non Institutional--- Institutions---Commercial Banks---PACS, Farmers Service Societies (FSS), RRBs and NABARD c. Challenges and recent trends in rural marketing

***Revised Syllabus of Courses of B.Com. Programme at Semester VI
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Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

17. Elements of Operational Research Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Project Analysis	15
2	Theory of Games	15
3	Inventory Models	15
Total		45

Sr. No.	Modules / Units
1	Project Analysis
	Basic concepts and Definitions, Gannt Charts and its weaknesses, CPM and PERT networks, Numbering of Events, Contractual Obligation Time, Earliest occurrence time, Latest allowable occurrence Time and Slack Time for Events, Different types of floats for activities. Critical Path Calculations, Probability Assessment in PERT Networks. Time Cost Trade - Off Analysis for CPM Networks
2	Theory of Games
	Basic Concept and Definitions. Two Person Zero Sum Game. Saddle point, Pure and Mixed Strategies. Reducing the size of the game using dominance property. Optimum Solution to a 2x2 game without saddle point. Graphical solution to 2xn and mx2 games.
3	Inventory Models
	Costs in Inventory management Deterministic Inventory Models- EOQ Model with Instantaneous Replenishment and Constant Rate of Demand Assuming that shortages are not allowed (Mathematical derivation expected), its price break model. Other EOQ models with instantaneous/uniform rate of replenishment and constant rate of demand assuming shortages are allowed/not allowed.

***Revised Syllabus of Courses of B.Com. Programme at Semester VI
with effect from the Academic Year 2018-2019***

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

18. Psychology of Human Behavior at Work Paper-II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Understanding Work Teams	11
2	Conflict and Negotiation	11
3	Emotions and Moods	12
4	Organizational Change and Stress Management	11
Total		45

Sr. No.	Modules / Units
1	Understanding Work Teams
	a) Differences between groups and teams; Types of teams b) Creating effective teams
2	Conflict and Negotiation
	a) Defining Conflict; transitions in conflict thought b) The Conflict Process c) Negotiation: Bargaining strategies; the negotiation process
3	Emotions and Moods
	a) What are Emotions and Moods? The basic emotions; sources of emotions and moods b) Emotional Intelligence c) Organizational Behaviour applications of emotions and moods
4	Organizational Change and Stress Management
	a) a Forces for Change b) Work Stress and its Management

Revised Syllabus of Courses of B.Com. Programme at Semester VI with effect from the Academic Year 2018-2019

Reference Books

Reference Books
Elective Courses (EC)
Discipline Specific Elective (DSE) Courses
Group A: Advanced Accountancy
1. Financial Accounting and Auditing IX- Financial Accounting
<ul style="list-style-type: none"> Ashish K. Bhattacharyya – “Financial Accounting for Business Managers”, Prentice Hall of India Pvt. Ltd. Shashi K. Gupta – “Contemporary Issues in Accounting”, Kalyani Publishers. R. Narayanaswamy – “Financial Accounting”, Prentice Hall of India, New Delhi Ashok Sehgal – “Fundamentals of Financial Accounting”, Taxmann’s Publishers Financial Accounting Reporting – Barry Elliot and Jamie Elliot – Prentice Hall (14th Edition)
2. Financial Accounting and Auditing X- Cost Accounting
<ul style="list-style-type: none"> Cost Accounting- A managerial emphasis by Horngren, Charles, Foster and Datar, Prentice Hall Management Accounting by Khan and Jain, Tata McGraw Hill Practical Costing by P C Tulsian, Vikas New Delhi Advanced problems and solutions in cost Accounting by S N Maheshwari, Sultan Chand New Delhi Cost Accounting (For B. Com 4th Sem, Delhi Univ) by Arora M N, Vikas Publishing House Pvt. Ltd. A Textbook of Cost And Management Accounting - 10th Edn by Arora M N, Vikas Publishing House Pvt. Ltd. Cost Accounting: Principles & Practice - 12 Edn by Arora M N, Vikas Publishing House Pvt. Ltd. Essentials of Cost Accounting by Arora M N, Vikas Publishing House Pvt. Ltd. Students Guide to Cost Accounting & Financial Management (Set of 2 Volumes) (CA-IPCC) (Group I) by Bhavesh N. Chandarana, Taxmann Lectures on Costing by Swaminathan: S. Chand and Company (P) Ltd., New Delhi Cost Accounting by C.S. Rayudu, Tata Mc. Grow Hill and Co. Ltd., Mumbai Cost Accounting by Jawahar Lal and Seema Srivastava, Tata Mc. Grow Hill and Co. Ltd., Mumbai Cost Accounting by Ravi M. Kishore, Taxmann Ltd., New Delhi Principles and Practices of Cost Accounting by N.K. Prasad, Book Syndicate Pvt. Ltd., Calcutta Cost Accounting Theory and Practice by B.K. Bhar, Tata Mc. Grow Hill and Co. Ltd., Mumbai Cost Accounting Principles and Practice by M.N. Arora, Vikas Publishing House Pvt. Ltd., New Delhi Advanced Cost and Management Accounting: Problems and Solutions by V.K. Saxena and C.D. Vashist, S. Chand and Company (P) Ltd., New Delhi Cost Accounting by S.P. Jain and K.L. Narang, Kalyani Publishers, Ludhiana Modern Cost and Management Accounting by M. Hanif, Tata McGraw Hill Education Pvt. Ltd., New Delhi Fundamentals of Cost Accounting by Jhamb. H. V., Ane Books Pvt. Ltd. Cost Accounting by Gupta Nirmal, Ane Books Pvt. Ltd.
Group B: Business Management
1. Business Management Paper III
<ul style="list-style-type: none"> Essentials of Management by Koontz and Weihrich / McGraw Hill Principles of Management by Koontz and O. Donnel/ Tata McGraw Hill, New Delhi Principles of Management: Theory and practices by Sarangi S.K. VMP Publishers and Distributors. Guide to Management Ideas by Tim Hindle, The Economist Principles of Management by Terry G.R. AITBS Business Organization and Principles of Management by Dutta Chowdury, Central Education Principles of Management, Daver Rustoms, Crown

Reference Books

- *Principles of Management*, Tripathi P.C. Tata McGraw Hill, New York
- *Management Theory and Practices* by Dale, Ernest / McGraw Hill, New York.
- *Practice of Management* by Peter Drucker / Allied Publisher, New Delhi
- *Management* by Ricky W Griffin / Houghton Mifflin Company
- *Management* by Gary Dessler / Prentice Hall
- *Management* by Stephen Robbins, Mary Coulter / Prentice Hall
- *Management* by James Stoner, Edward Freeman / Prentice Hall
- *Time Management* by Roberta Roesch, Tata Mc Graw Hill
- *Time Management* by Marc MANCINI, Tata Mc Graw Hill

2. Business Management Paper IV

- *Fundamentals of Financial Management* (5th edition) by Chandra Prasanna (2010). Tata McGraw Hill Education Pvt. Ltd.: New Delhi
- *Financial Management – Analytical and Conceptual Approach* (12th edition) by Kuchhal S.C. (1995).Chaitanya Publishing House: Allahabad
- *Financial Management* by Reddy R.Jayprakash (2010) APH Publishing Corporation: New Delhi
- *Financial Management – Theory and Practice* (5 & 6th edition) by Chandra Prasanna (2003, 2004). Tata McGraw Hill Education Pvt. Ltd.: New Delhi
- *Fundamentals of Financial Management* (13th edition) by Horne, James C. Van (2012) PHI Learning Pvt. Ltd.: New Delhi
- *Financial Management and decision making* by Samuels, John (1999) International Thomson Nusiness Press : London
- *Financial Management - problems & solutions* (2nd edition) by Kishore, Ravi M. (2010) Taxmann Publication Pvt. Ltd.: New Delhi
- *Financial Management : theory, concepts and cases*(5th rev edition) by Rustagi, R.P. (2011) Taxmann Publication Pvt. Ltd.: New Delhi
- *Financial Management : principles & problems* (7th edition) by Srivastava, R.M.&VermaShubhra (2002) PragatiPrakashan: Meerut
- *Fundamentals of Financial Management – problems and solutions* (3rd edition) by Maheswari, S.N. (2006) Sultan Chand and Sons: New Delhi

Group C: Banking and Finance

1. Banking and Finance Paper- III Risk Management

- *Quantitative Risk Management : A Practical Guide to Financial Risk-* Thomas S. Coleman
- *Investment Theory and Risk Management:* Steve Peterson
- *Risk Management : M/s Macmillan India Limited*
- *Theory & Practice of Treasury Risk Management:* M/s Taxman Publications Ltd.
- *Corporate Value of ERM : Sim Segal*
- *Risk Management : Insurance and Derivatives* Dr G Kotreshwar-Himalaya Publishing House

2. Banking and Finance Paper- IV Actuarial Analysis in Banking & Insurance

- *“Actuarial Statistics: An Introduction Using R”* by Shailaja R Deshmukh.
- *“Predictive Modeling Applications in Actuarial Science”* by Richard A Derrig and Glenn Meyers
- *“Generalized Linear Models for Insurance Data (International Series on Actuarial Science)”* by Piet de Jong and Gillian Z Heller
- *“Contributions to Sampling Statistics (Contributions to Statistics)”* by Maria Giovanna Ranalli and Fulvia Mecatti
- *“Forecasting Product Liability Claims: Epidemiology and Modeling in the Manville Asbestos Case”* by J B Weinstein and Eric Stallard
- *“Financial Modeling, Actuarial Valuation and Solvency in Insurance”* by Mario V Wuthrich & Michael Merz
- *“Modern Actuarial Risk Theory: Using R”* by Rob Kaas and Marc Goovaerts
- *“Health Insurance: Basic Actuarial Models”* by Ermanno Pitacco
- *“Financial and Actuarial Statistics: An Introduction”* by Dale S Borowiak and Arnold F Shapiro

Reference Books

Group D: Commerce

1. Commerce III

- Bhattacharjee, Service Sector Mgt; An Indian Perspective, Jaico Publishing house, 2011.
- Christopher Lovelock, service marketing –people technology, strategy, Pearson Education, IV Ed, 2003.
- Valarie A. Zeithaml & Mary Jo Bitner, Services Marketing, Tata McGraw-Hill, 2000.
- A. Vijaykumar, service sector in India – Recent Policy initiative, New Century Publication, 2008.

2. Commerce IV

- Office Management, Pillai R S N, S. Chand Publishers, 2010
- Office Organisation & Management, N.Kumar & R. Mittal, Anmol Publisher, 2001
- Office Management, Balachandran, Tata McGraw Hill, 2009

Discipline Related Elective(DRE) Courses

3. Commerce VI

- Bernardin, John H: Human Resource Management, Tata McGraw Hill, New Delhi 2004.
- Arthur M, Career Theory Handbook, Prentice Hall Inc, Englewood Cliff.
- Belkaoui, A.R. and Belkaoui, J.M, Human Resource Valuation: A Guide to Strategies and Techniques, Quorum Books, Greenwood, 1995.
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- Greenhaus, J.H., Career Management, Dryden, New York.
- Mabey, C and Salama, G., Strategic Human Resource Management, Blackwell, Oxford.
- Aswathappa. K, Human Resource Management
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- M.N. Rudrabasavaraj: Cases in Human Resource Management –Himalaya Publishing House –New Delhi, 1998
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- Aswathappa K., Human Resource Management, Tata McGraw Hill, New Delhi.
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- George T. Milkovich and John W. Boudreau: Personnel / Human Resources Management: A Diagnostic Approach, 5th Edn. Plano, TX: Business Publications, 1998.
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- Sadri, J., Sadri, S., Nayak, N., A Strategic Approach to Human Resource Management, JAICO Publishing House.
- Davar, R. S. Personnel Management and Industrial Relations. Vikas Publication, Noida.
- Robbins, Stephen P. Organisational Behaviour. Pearson Education, New Delhi

4. Business Economics VI

- Kindleberger, C.P. (1973) International Economics, Homewood
- Kenan, P.B. (1994), The International Economy, Cambridge University Press, London
- Krugman, P.R. and M. Obstfeld (1994), International Economics: Theory and Policy, Glenview, Foreman
- Dwivedi D N (2013) International Economics: Theory and Policy, Vikas Publishing House New Delhi
- M.L. Jhingan – International Economics – Vrinda Publication Pvt. Ltd – Delhi
- Francis Cheunilam International Economics Tata McGraw – Hill Publishing Co. Ltd. New Delhi.
- Dominick Salvatore – International Economics – John Wiley & Sons, Inc Singapore.
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1. Trade Unionism and Industrial Relations Paper II

- Myers C.A. & Kannappan S. (1970), 'Industrial Relation in India', Asia publishing House, India.
- Singh, J.K. (1988), 'Labour Economics. Principles Problem and Practices', Deep and
- Deep Publication Pvt. Ltd. New Delhi.
- Jackson, M.P. , Strikes
- Karnik V.B. (1974), 'Indian labour, Problems and prospects', Minewal Associations.
- Joshi C.K (1967), ' Unionism in Developing Economy', Asia Publication House, Bombay.
- Mamoria C.B. & Mamoria S.(1992), 'Dynamics of Industrial Relation in India', Himalaya Publishing House.
- Sahani, Dr, N.K. (2009) 'Industrial Relations' Kalyani Pub. Ludhiyana.
- Tripathi, P.C. (2009) 'Personal Management and Ind. Relations' – Sultan Chand and Jons, New Delhi.
- Memoria & Memoria- 'Ind. Relations' Himalaya Pub. House, Mumbai.
- A.M. Sharma- 'Ind. Relations' - Himalaya Pub. House, Mumbai.
- G.Ramanugan- The Honey bee to words a new culture in Ind, Relations- Sterling Pub. Pvt. Ltd.

2. Computer Systems and Applications Paper II

- E- Commerce - Kenneth Laudon, Carol Traver , Pearson Education
- Frontiers of Electronic Commerce - Kalakota & Whinston
- E- Commerce - Rajaraman
- E- Commerce - Whitley
- E- Commerce concepts and cases - Rao and Deshpande.
- Programming in VB 6.0 - Julia case Bradley, Anita C. Milspaugh, TMH
- Visual Basic 6.0 Programming - Content Development Group, TMH
- The Complete Reference to Visual Basic 6 - Noel Jerke, TMH
- Visual Basic 6 Programming Black Book - Steven Holzner, Dreamtech Press

3. Export Marketing II

- Export Policy Procedures& Documentation– M. I. Mahajan, Snow White Publications Pvt. Ltd, 26th Edition,
- International Business, K. Aswathappa, McGraw-Hill Education (India) Pvt. Ltd., 6th Edition
- Export Import Procedures - Documentation and Logistics, C. Rama Gopal, New Age International Publishers, 2006 / Reprint Jan 2016
- International Trade and Export Management, Francis Cherunilam, Himalaya Publishing House, 20th Edition, 2017
- R. K. Jain's, Foreign Trade Policy & Handbook of Procedures [With Forms, Circulars & Public Notices], Centax Publication, 2017
- EXIM Policy & Handbook of EXIM Procedure – VOL I & II
- International Marketing and Export Management, Gerald Albaum, Edwin Duerr, Alexander Josiassen, Pearson Publications, 8th Edition, June 2016
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- International Marketing, Mary C. Gilly, John L. Graham, Philip R. Cateora, 14th Edition, Tata McGraw-Hill Co. Ltd., 2014
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4. Marketing Research Paper II

- *Marketing Research Text and Cases*, Rajendra Nargundkar, McGraw Hill, 2nd edition
- *Marketing Research (Text with Cases)*, Suja Nair, Himalaya Publishing House, Maharashtra, 2014
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- *Encyclopaedia of Marketing Research Series*, S.D. Singh, Anmol Publications Pvt. Ltd., New Delhi, 2012
- *Marketing Research: A Global Outlook*, V. Kumar, Sage Publications, New Delhi, 2015
- *Marketing Research*, G. C. Beri, McGraw Hill, New Delhi, 2007
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- *Marketing Research: The impact of internet*, Gates, Roger et al, John Wiley & sons, Great Britain, 2002

5. Investment Analysis and Portfolio Management Paper II

- *Security Analysis and Portfolio Management*, Prasanna Chandra, Tata McGraw Hill
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- *Security Analysis and Portfolio Management*, Ravi Kishor, Taxman Publishers
- *Financial Management*, Khan & Jain, Tata McGraw Hill
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7. Entrepreneurship & Management of Small Scale Industries Paper II

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- *Yerram Raju B. and Pujari Ram R., The Small Entrepreneur Starting and Growing, Excel Publication, New Delhi.*

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- *Ammer. Dean S : Materials Management (Richard D. Irwin Inc. U.S.A.).*
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- *General Insurance*, John Magee & David Bickelhaupt,
- *Operational Transformation of General Insurance Industry during the period 1950 to 1990 & Beyond*, R D Samarth
- *Study on Distribution Functions in General Insurance & Role of Intermediaries*, Arun Agarwal / PR Rao
- *General Insurance for Information Technology Professionals*, Martin Frappoli
- *S. Arunajatesan and T.R. Vishwanathan: Risk Management and Insurance: Macmillan, New Delhi.*
- *Shashidharan K. Kutty: Managing Life Insurance: Prentice Hall of India, New Delhi*
- *Kenneth Black Jr. and Harold D. Skipper Jr.: Life and Health Insurance:*
- *Pearson, New Delhi*
- *Uma Narang, Insurance Industry in India, Features, Reforms & Outlook, New century Publication, 2013*

14. Banking Law and Practice Paper I Corporate and Securities Law

- *Mamta Bhargava – Compliances and Procedures under SEBI Law*
- *V.L Iyer – SEBI Practice Manual - Taxmann*
- *D.K Jain – Company Law Ready Reckoner*
- *Bare Act – Corporate Laws Taxmann*

15. Regional Planning

- *Glasson, J. (1974), 'An Introduction to Regional planning, Hutchinson & Co., London.*
- *O.E.C.D (1970), 'The Regional Factor in Economic Development',*
- *Minahull, R.(1968), 'Regional Geography'. Hutchinson * Co., Ltd., London.*
- *B.I.S.R (1978), 'The Role of Fiscal Incentives in Reducing Regional Imbalances: Some Comparison', New Delhi.*
- *Misra, R.P et.al (1974). 'Regional Development Planning in India', Vikas, New Delhi.*
- *Sen. L.K. (ed.) (1972), 'Reading in micro level planning and rural growth centers, NICD, Hyderabad.*
- *B.M.R.P.E. (1974), Regional plan for Bombay metropolitan Region: 1970-1991, Bombay*
- *Planning Commission Draft Five Year Plans.*

16. Rural Marketing Paper II

- *Dantwala M.L., Indian Agriculture Since Independence Oxford & IBH Publishing Co. Pvt. Ltd. New Delhi-110001, 1990.*
- *Habeeb U.R., Rahman K.S., Rural Marketing in India, HPH-Mumbai 400004---2003*
- *Rural Marketing, Gopala swamy, Vikas Publishing House, New Delhi.*
- *Kashyp Pradeep, Rant Siddhartha, The Rural Marketing, Biztantra, Mumbai, 2005.*
- *Dogra Balram Ghuman Karmider Rural Marketing concepts and practices Tata McGrawHILL Education Ltd. New Delhi, 2011*
- *Singh S, Rural Marketing Management I/e Vikaj Publishing House New Delhi*

17. Elements of Operation Research Paper II

- *PERT & CPM Principles and Applications by L.S.Srinath*
- *Operations Research Principles & Practice by Ravinderan, Phillips Solber.*
- *Schaum's outline series Theory & Problems of Operations Research by Richard Bronson*
- *Operations Research by H.A.Taha*
- *Operations Research by Gupta & Hira*
- *Operations Research Theory & Applications by J.K.Sharma*
- *Operations Research Problems & Solutions by V.K.Kapoor*
- *Quantitative Techniques by Shenoy, Shrivastav & Sharma*
- *Introduction to Operations Research by Hiller & Lieberman*
- *Operations Research Techniques for Management by B.Banerjee*
- *Operations Research by Gupta & Manmohan*
- *Quantitative Techniques by N.D.Vohra*

Reference Books

18. Psychology of Human Behaviour at work Paper I

- Robbins, S. P. Judge, T. A. & Vohra, N. (2013). *Organizational Behavior*. (15th ed.), Indian subcontinent adaptation, New Delhi: Pearson Education, Dorling Kindersley India pvt ltd.
- Aquinas, P. G. (2013). *Organisational Behavior Concepts Realities Application and Challenges*. (2nd ed.) New Delhi: Excel Books
- Ashliegh, A. M. (2012). *The psychology of people in organizations*. Pearson Education
- Baltus, R. (2012). *Personal psychology for work and life*. Tata McGraw Hill
- Dash, C. (2013). *Organisational behavior*. New Delhi: International Book House
- Gibson, J. L., Ivancevich, J. M., & Konopaske, R. (2013). *Organisations: Behaviour, Structure, Processes*. Tata McGraw Hill
- Greenberg, J. (2013). *Behaviour in organizations* (10th ed.). PHI Learning Private Limited.
- Luthans, F. (2013). *Organisational behaviour: An evidence –based approach*. Tata McGraw Hill
- McShane, S. L., Glinow, M. A., Sharma, R. R. (2012) *Organisational behavior*. (5th ed.): Tata McGraw Hill, New Delhi.
- Pareek, U. & Khanna, S. (2011). *Understanding organizational behavior*. Oxford University Press
- Rajendra, P. Maheshwari, J. & Mahajan, P. (2012). *Business organization management*. (2nd Revised ed.) New Delhi: International Book House.
- Riggio, R. (2012). *Introduction to industrial and organizational psychology*. Pearson Education
- Schultz, D. & Schultz, S. (2013). *Psychology and work today*. Pearson
- Shankar, M. (2013). *Organizational behavior*. International Book House
- Sharma, S. (2013). *Organisational behavior*. New Delhi: Tata McGraw Hill.
- Singh, K. (2012). *Organizational behaviour text and cases*. New Delhi: Pearson Education.

**Revised Syllabus of Courses of B.Com. Programme at Semester V and VI
with effect from the Academic Year 2018-2019**

**Question Paper Pattern
(Practical Courses)**

Maximum Marks: 100

Questions to be set: 06

Duration: 03 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions A) Sub Questions to be asked 12 and to be answered any 10 B) Sub Questions to be asked 12 and to be answered any 10 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	20 Marks
Q-2	Full Length Practical Question OR	15 Marks
Q-2	Full Length Practical Question	15 Marks
Q-3	Full Length Practical Question OR	15 Marks
Q-3	Full Length Practical Question	15 Marks
Q-4	Full Length Practical Question OR	15 Marks
Q-4	Full Length Practical Question	15 Marks
Q-5	Full Length Practical Question OR	15 Marks
Q-5	Full Length Practical Question	15 Marks
Q-6	A) Theory questions B) Theory questions OR	10 Marks 10 Marks
Q-6	Short Notes To be asked 06 To be answered 04	20 Marks

Note:

Practical question of 15 marks may be divided into two sub questions of 7/8 or 10/5 Marks.

**Revised Syllabus of Courses of B.Com. Programme at Semester V and VI
with effect from the Academic Year 2018-2019**

**Question Paper Pattern
(Theoretical Courses)**

Maximum Marks: 100

Questions to be set: 06

Duration: 03 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions A) Sub Questions to be asked 12 and to be answered any 10 B) Sub Questions to be asked 12 and to be answered any 10 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	20 Marks
Q-2	Full Length Question OR	15 Marks
Q-2	Full Length Question	15 Marks
Q-3	Full Length Question OR	15 Marks
Q-3	Full Length Question	15 Marks
Q-4	Full Length Question OR	15 Marks
Q-4	Full Length Question	15 Marks
Q-5	Full Length Question OR	15 Marks
Q-5	Full Length Question	15 Marks
Q-6	A) Theory questions B) Theory questions OR	10 Marks 10 Marks
Q-6	Short Notes To be asked 06 To be answered 04	20 Marks

Note:

Theory question of 15 marks may be divided into two sub questions of 7/8 or 10/5 Marks.

University of Mumbai



No. AAMS_UGS/ICC/2022-23/ 105

CIRCULAR:-

Attention of the Principals of the Affiliated Colleges and Directors of the Recognized Institutions in Faculty of Science & Technology is invited to this office circular No. UG/166 of 2016-17 dated 19th November, 2016 relating to the revised syllabus F.Y.B.Sc.(Chemistry) (Sem . I & II) (CBCS).

They are hereby informed that the recommendations made by the Board of Studies in **Chemistry** at its meeting held on 09th June, 2022 and subsequently passed in the Faculty and then by the Board of Deans at its meeting held on 5th July, 2022 vide item No. 6.5 (R) have been accepted by the Academic Council at its meeting held on 11th July, 2022 vide item No. 6.5 (R) and that in accordance therewith, the revised syllabus of F.Y.B.Sc.(Chemistry) (Sem . I & II) (CBCS). has been brought into force with effect from the academic year 2022-23. (The same is available on the University's website www.mu.ac.in).

MUMBAI – 400 032

11th October, 2022

(Dr. Shailendra Deolankar)
I/c Registrar

To

The Principals of the Affiliated Colleges and Directors of the Recognized Institutions in Faculty of Science & Technology.

A.C/6.5(R)/11/07/2022

No. AAMS_UGS/ICC/ 2022-23/ 105

11th October, 2022

Copy forwarded with Compliments for information to:-

- 1) The Dean, Faculty of Science & Technology,
- 2) The Chairman, Board of Studies Chemistry,
- 3) The Director, Board of Examinations and Evaluation,
- 4) The Director, Board of Students Development,
- 5) The Director, Department of Information & Communication Technology,
- 6) The Co-ordinator, MKCL.

(Dr. Shailendra Deolankar)
I/c Registrar

Desktop/Circular Faculty of Science/priya

Copy to :-

- 1. The Deputy Registrar, Academic Authorities Meetings and Services (AAMS),**
- 2. The Deputy Registrar, College Affiliations & Development Department (CAD),**
- 3. The Deputy Registrar, (Admissions, Enrolment, Eligibility and Migration Department (AEM),**
- 4. The Deputy Registrar, Research Administration & Promotion Cell (RAPC),**
- 5. The Deputy Registrar, Executive Authorities Section (EA),**
- 6. The Deputy Registrar, PRO, Fort, (Publication Section),**
- 7. The Deputy Registrar, (Special Cell),**
- 8. The Deputy Registrar, Fort/ Vidyanagari Administration Department (FAD) (VAD), Record Section,**
- 9. The Director, Institute of Distance and Open Learning (IDOL Admin), Vidyanagari,**

They are requested to treat this as action taken report on the concerned resolution adopted by the Academic Council referred to in the above circular and that on separate Action Taken Report will be sent in this connection.

- 1. P.A to Hon'ble Vice-Chancellor,**
- 2. P.A Pro-Vice-Chancellor,**
- 3. P.A to Registrar,**
- 4. All Deans of all Faculties,**
- 5. P.A to Finance & Account Officers, (F.& A.O),**
- 6. P.A to Director, Board of Examinations and Evaluation,**
- 7. P.A to Director, Innovation, Incubation and Linkages,**
- 8. P.A to Director, Board of Lifelong Learning and Extension (BLLE),**
- 9. The Director, Dept. of Information and Communication Technology (DICT) (CCF & UCC), Vidyanagari,**
- 10. The Director of Board of Student Development,**
- 11. The Director, Department of Students Welfare (DSD),**
- 12. All Deputy Registrar, Examination House,**
- 13. The Deputy Registrars, Finance & Accounts Section,**
- 14. The Assistant Registrar, Administrative sub-Campus Thane,**
- 15. The Assistant Registrar, School of Engg. & Applied Sciences, Kalyan,**
- 16. The Assistant Registrar, Ratnagiri sub-centre, Ratnagiri,**
- 17. The Assistant Registrar, Constituent Colleges Unit,**
- 18. BUCTU,**
- 19. The Receptionist,**
- 20. The Telephone Operator,**
- 21. The Secretary MUASA**

for information.

UNIVERSITY OF MUMBAI



Revised Syllabus for F.Y.B.Sc. (Chemistry)

Semester: I & II (CBCS)

(With effect from the academic year 2022-23)

UNIVERSITY OF MUMBAI



Syllabus for Approval

Sr. No.	Heading	Particulars
1	Title of the Course	F.Y.B. Sc. (Chemistry)
2	Eligibility for Admission	12th Science of all recognized Board
3	Passing Marks	40%
4	Ordinances / Regulations (if any)	
5	No. of Years /Semesters	Two
6	Level	UG
7	Pattern	Semester
8	Status	Revised
9	To be implemented from Academic Year	From Academic Year: 2022-2023

Date:

Dr Vishwanath Patil
Chairman BoS in Chemistry

Signature:

Dr. Anuradha Majumdar
Dean, Science and Technology

Proposed syllabus for CBCS

F. Y. B. Sc. Chemistry

For the subject of chemistry, there shall be two papers for 45 lectures each comprising of three units of 15 L each.

Semester-I

1. Paper-I / II (General Chemistry) Unit-I will be for PhysicalChemistry
2. Paper-I / II Unit-II will be for Inorganic Chemistry
3. Paper- I / II Unit-III will be for OrganicChemistry.

Semester-II

1. Paper-I /II (General Chemistry) Unit-I will be for PhysicalChemistry
2. Paper-I / II Unit-II will be for Inorganic Chemistry
3. Paper-I / II Unit-III will be for OrganicChemistry

Choice Based Credit System F.Y.B.Sc. Chemistry
Syllabus To be implemented from the
Academic year 2022-2023

SEMESTER I

Course Code	Unit	Topic	Credits	L/per week
USCH101	I	Chemical Thermodynamics	2	1
		Chemical calculations		
	II	Atomic structure		1
		Periodic Table and periodicity		
	III	Basics of Organic Chemistry:		1
		Bonding and Structure of organic compounds		
		Fundamentals of organic reaction Mechanism		
USCH102	I	Chemical Kinetics	2	1
		Liquid States		
	II	Comparative Chemistry of Main Group elements		1
	III	Stereochemistry I		1
USCHP1	Chemistry Practical		2	6

SEMESTER II

Course Code	Unit	Topic	Credits	L/per week
USCH201	I	Gaseous State	2	1
		Electrochemistry – I		
		Chemical Equilibria and Thermodynamic Parameters		
	II	Concept of Qualitative Analysis		1
		Acid Base Theories		
	III	Chemistry of Aliphatic Hydrocarbons		1
USCH202	I	Ionic Equilibria	2	1
		Photochemistry		
		Molecular Spectroscopy		
	II	Chemical Bond and Reactivity		1
		Oxidation Reduction Chemistry		
	III	Stereochemistry II		1
		Aromatic Hydrocarbons		
USCHP2	Chemistry Practical		2	6

Programme Outcomes
B.Sc. Chemistry

The student graduating with the Degree B.Sc Chemistry should be able to acquire;

- i) Core competency: Students will acquire core competency in the subject Chemistry, and in allied subject areas.
- ii) A systematic and coherent understanding of the fundamental concepts in Physical chemistry, Organic Chemistry, Inorganic Chemistry, Analytical Chemistry, and all other related allied chemistry subjects.
- iii) Students will be able to use the evidence-based comparative chemistry approach to explain chemical synthesis and analysis.
- iv) Students will be able to characterize, identify and separate components of organic or inorganic origin and will also be able to analyze them by making use of the modern instrumental methods learned.
- v) Students will be able to understand the basic principle of equipment and instruments used in the chemistry laboratory.
- vi) Students will be able to demonstrate the experimental techniques and methods of their area of specialization in Chemistry
- vii) The course curriculum also includes components that can be helpful to graduate students to develop critical thinking ability by way of solving problems/numerical using basic chemistry knowledge and concepts.
- viii) Appreciate the central role of chemistry in our society and use this as a basis for ethical behavior in issues facing chemists including an understanding of safe handling of chemicals, environmental issues, and key issues facing our society in terms of energy, health, and medicine.
- ix) Lifelong learner: The course curriculum is designed to inculcate a habit of learning continuously through the use of advanced ICT techniques and other available techniques/books/journals for personal academic growth as well as for increasing employability opportunity.

SEMESTER I**Paper I****UNIT I**

1.1	Chemical Thermodynamics (10 L) Thermodynamic terms; System, surrounding, boundaries, types of system, Intensive and Extensive properties, State functions and path functions, Thermodynamic processes. First law of thermodynamics: Concept of heat (q), work (w), internal energy (U), enthalpy, heat capacity, relation between heat capacities, sign conventions, calculations of heat, work, internal energy and enthalpy (H). Thermochemistry: Heat of reactions, standard states, enthalpy of formation of molecules, enthalpy of combustion and its applications, calculations of bond energy, bond dissociation energy and resonance energy from thermochemical data, Kirchhoff's equation (Numerical problems expected wherever necessary)
1.2	Chemical Calculations: (5L) Methods of expressing concentration of solutions: Normality, Molarity, Formality, Mole fractions, Weight ratio, Volume ratio, Weight to volume ratio, ppm, ppb, millimoles, milliequivalents, Preparation of solutions. (Numerical problems expected wherever necessary)
	UNIT II
2.1	Atomic structure:(8 L) Historical perspectives of the atomic structure; J. J. Thomson Model, Rutherford's Atomic Model- alpha particle scattering experiment, Bohr's theory, its limitations and atomic spectrum of hydrogen atom. Structure of hydrogen atom. Hydrogenic atoms: <ol style="list-style-type: none"> 1. Simple principles of quantum mechanics 2. Atomic orbitals <ol style="list-style-type: none"> i) Hydrogenic energy levels ii) Shells, subshells and orbitals iii) Electron spin iv) Radial shapes of orbitals v) Angular shapes of orbitals. Aufbau principle, Hund's rule of maximum multiplicity and Pauli exclusion principle
2.2	Periodic Table and periodicity:(7 L) Long form of Periodic Table; Classification for elements as main group, transition and inner transition elements. Periodicity in the following properties: Atomic and ionic size, electron gain enthalpy, ionization enthalpy, effective nuclear charge (Slater's rule), electronegativity, Pauling and Mulliken methods. (Numerical problems expected, wherever applicable.)
	Unit III
3	Basics of Organic Chemistry
3.1	Classification and Nomenclature of Organic Compounds: (5L) Nomenclature of mono and bi-functional aliphatic compounds on the basis of priority order of the following classes of compounds: Alkanes, alkenes, alkynes, haloalkanes, alcohols, ethers, aldehydes, ketones, carboxylic acids, carboxylic acid

	derivatives (acid halides, esters, anhydrides, amides), nitro compounds, nitriles and amines and their cyclic analogues.
3.2	Bonding and Structure of organic compounds: (4L) Hybridization: sp ³ , sp ² , sp hybridization of carbon and nitrogen; sp ³ and sp ² hybridizations of oxygen in Organic compounds (alcohol, ether, aldehyde, ketone, carboxylic acid, ester, cyanide, amine and amide) Overlap of atomic orbitals: Overlaps of atomic orbitals to form sigma and pi bonds, shapes of organic molecules. Shapes of molecules; Influence of hybridization on bond properties (as applicable to ethane, ethene, ethyne).
3.3	Fundamentals of organic reaction mechanism: (6L) Electronic Effects: Inductive, electromeric, resonance and mesomeric effects, hyperconjugation and their applications. Dipole moment; Organic acids and bases; their relative strengths. Basic terms & concepts:: Homolytic and Heterolytic fission with suitable examples. Electrophiles and Nucleophiles; Nucleophilicity and basicity, Electrophilicity and acidity. Types (primary, secondary, tertiary, allyl, benzyl), shape and their relative stability of the following reactive intermediates: i. Carbocations ii. Carbanions and iii. Free radicals Introduction to types of organic reactions: Addition, Elimination and Substitution reaction. (With one example of each)
	Semester- I Paper – II Unit – I
1.1	Chemical Kinetics: (8L) Rate of reaction, rate constant, measurement of reaction rates, order and molecularity of reaction, Integrated rate equation of first order and Second order reactions (with equal initial concentration of reactants) Determination of order of reaction by a) Integration method b) Graphical method c) Ostwald's isolation method d) Half time method, Effect of temperature on the rate of reaction, Concept of activation energy and its calculation from Arrhenius equation (derivation not expected). (Numerical problems expected wherever necessary).
1.2	Liquid State: (7L) Surface tension: Introduction, methods of determination of surface tension by drop number method Viscosity: Introduction, coefficient of viscosity, relative viscosity, specific viscosity, reduced viscosity, determination of viscosity by Ostwald viscometer Refractive index: Introduction, molar refraction and polarizability, determination of refractive index by Abbe's refractometer. Liquid crystals: Introduction, Classification and structure of thermotropic phases (Nematic, Smectic and Cholesteric phases), applications of liquid crystals. (Numerical problems expected wherever necessary).
	Unit II
2	Comparative chemistry of Main Group Elements: (15L)

	<p>Metallic and non-metallic nature, oxidation states, electronegativity, anomalous behavior of second period elements, allotropy, catenation, diagonal relationship.</p> <p>Comparative chemistry of oxides and hydroxides of group I and group II elements.</p> <p>Some important compounds- NaHCO₃, Na₂CO₃, CaO, CaCO₃;</p> <p>oxides of carbon, oxides of Sulphur and Nitrogen with respect to environmental aspects like greenhouse effect, photochemical smog and acid rain.</p>
	Unit III
3	<p>Stereochemistry I: (15L)</p> <p>Projection formulae: Flying Wedge projection, Fischer Projection, Newman and Sawhorse Projection formulae (of erythro, threo isomers of tartaric acid and 2,3 - dichlorobutane) and their interconversions; Geometrical isomerism in alkene and cycloalkanes: cis–trans and syn-anti isomerism E/Z notations with C.I.P rules.</p> <p>Optical Isomerism: Optical Activity, Specific Rotation, Chirality/Asymmetry, Enantiomers, Molecules with two similar and dissimilar chiral-centres, Diastereoisomers, meso structures, racemic mixture and resolution (methods of resolution not expected).</p> <p>Relative and absolute configuration: D/L and R/S designations. Conformational analysis of alkanes (ethane, propane and n-butane); Relative stability with energy diagrams</p>

Semester II
Paper I
Unit I

1.1	<p>Gaseous State (6L)</p> <p>Kinetic theory of gases, Maxwell-Boltzmann's distribution of velocities (Qualitative discussion), Ideal gas laws, Deviation from ideal gas laws, Ideal and real gases, Reasons for deviation from ideal gas laws, Compressibility factor, Boyle's temperature, van der Waals equation of state, Critical phenomena, Relation between critical constants and van der Waals constants.</p> <p>(Numerical problems expected wherever necessary)</p>
1.2	<p>Electrochemistry - I (4 L)</p> <p>Conductance, specific conductance, equivalent conductance, molar conductance, Variation of molar conductance with concentration of strong and weak electrolyte. Reversible electrodes, Electrode potential, standard electrode potential, Galvanic cells, Conventions to represent the galvanic cells, Concept of emf of cell.</p> <p>(Numerical problems expected wherever necessary)</p>
1.3	<p>Chemical Equilibria and Thermodynamic Parameters (5L)</p> <p>Second law of thermodynamics, concept of entropy, Physical significance of entropy, Concept of free energy, Helmholtz and Gibbs free energy, Variation of free energy with temperature and pressure, Spontaneity and Physical significance of free energy.</p> <p>Reversible and irreversible reactions, equilibrium constants (K_c and K_p), relationship between K_c and K_p. Thermodynamic derivation of equilibrium constant</p> <p>(Numerical problems expected wherever necessary)</p>
	Unit II

2	Concept of Qualitative Analysis:(8 L)
2.1	Testing of Gaseous Evolutes, Role of Papers impregnated with Reagents in qualitative analysis (with reference to papers impregnated with starchiodide, potassium dichromate, lead acetate, dimethylglyoxime and oxinereagents).
	Precipitation equilibria, Formation of precipitates like AgCl, AgBr, AgI and BaSO ₄ effect of common ions, uncommon ions, oxidation states, buffer action, complexing agents on precipitation of ionic compounds. (Balanced chemical equations)
2.2	Acid Base Theories: (7L)
	Arrhenius, Lowry- Bronsted, Lewis, Solvent – Solute concept of acids and bases, Usanovich concept, Hard and Soft acids and bases, Applications of HSAB.
	Unit III
3	Chemistry of Aliphatic Hydrocarbons
3.1	Carbon - Carbon sigma bonds: (3L) Chemistry of alkanes: Formation of alkanes, Wurtz Reaction, Wurtz-Fittig reaction, free radical substitutions: Halogenation - relative reactivity and selectivity
3.2	Carbon - Carbon pi bonds (12L): Formation of alkenes and alkynes by elimination reactions: Mechanism of E1, E2, E1cb reaction. Saytzeff and Hofmann eliminations Reactions of alkenes: Electrophilic additions with mechanisms (Markownikoff / AntiMarkownikoff addition), Mechanism of oxymercuration - demercuration, hydroboration - oxidation, ozonolysis, reduction (catalytic and chemical), syn- and anti-dihydroxylation (oxidation), 1, 2- and 1, 4-addition reactions in conjugated dienes, Diels-Alder reaction. Reaction of alkynes: Acidity, Electrophilic and Nucleophilic additions with mechanisms. Hydration to form carbonyl compounds, Alkylation of terminal alkynes
	Semester II Paper II Unit I
1.1	Ionic Equilibria: (7L) Strong and weak electrolytes, degree of ionization, factors affecting degree of ionization, Ionization constant and ionic product of water, Ionization of weak acids and bases, Dissociation constants of mono-, di-, and tri-protic acids. pH scale, Buffer solutions, types of buffers, Derivation of Henderson equation for acidic and basic buffers, Buffer action, buffer capacity (Numerical problems expected, wherever necessary)
1.2	Photochemistry (4L) Laws of photochemistry, Quantum yield or efficiency, experimental determination of quantum yield, Reasons for low and high quantum yield, Primary and secondary processes. Photochemical reactions (with suitable examples), Photosensitizers and photosensitized reactions, Fluorescence, Phosphorescence and Chemiluminescence. (Numerical problems expected, wherever necessary)
1.3	Molecular Spectroscopy: (4L) Electromagnetic radiation, electromagnetic spectrum, Planck's equation, Interaction of electromagnetic radiation with matter; Absorption, Emission, Scattering, Electronic, Vibrational and Rotational transitions, Beer-Lamberts law.

	(Numerical problems expected, wherever necessary)
	Unit II
2.1	Chemical Bond and Reactivity:(10 L) Types of chemical bond, comparison between ionic and covalent bonds, polarizability (Fajan's Rule), shapes of molecules, Lewis dot structure, Sidgwick Powell Theory, basic VSEPR theory for AB _n type molecules with and without lone pair of electrons, isoelectronic principles, applications and limitations of VSEPR theory.
2.2	Oxidation Reduction Chemistry: (5L) Reduction potentials, Redox potentials: half reactions; balancing redox equations. Applications of redox chemistry; Redox reagents in Volumetric analysis; a) I ₂ b) KMnO ₄
	Unit III
3.1	Stereochemistry II: (5L) Cycloalkanes and Conformational Analysis: (5L) Types of cycloalkanes and their relative stability, Baeyer strain theory, Conformational analysis of cyclohexane: Chair, Boat and Twist boat forms; Relative stability with energy diagram.
3.2	Aromatic Hydrocarbons: (10L) Aromaticity: Hückel's rule, anti-aromaticity, aromatic character of arenes, cyclic carbocations/carbanions and heterocyclic compounds with suitable examples. Electrophilic aromatic substitution: halogenation, nitration, sulphonation and Friedel-Crafts alkylation/acylation with their mechanism, Directing effects of the groups

Reference Books:

Unit – I

- 1) Concise Graduate Chemistry – I, II, III & IV, University Text Book of Chemistry, University of Mumbai.
- 2)
- 3) Atkins, P. W. & Paula, J. de Atkin's Physical Chemistry 10th Ed., Oxford University Press (2014).
- 4) Castellan, G. W. Physical Chemistry 4th Ed. Narosa (2004).
- 5) Keith J. Laidler & John H. Meiser, Physical Chemistry, 2nd Ed. (2004)
- 6) Puri B. R., Sharma L. R. & Pathania M. S. Principles of Physical Chemistry, Vishal Publishing Company, 2008
- 7) Ball, D. W. Physical Chemistry Thomson Press, India (2007).
- 8) Mortimer, R. G. Physical Chemistry 3rd Ed. Elsevier: NOIDA, UP (2009).
- 9) Engel, T. & Reid, P. *Physical Chemistry* 3rd Ed., Prentice-Hall (2012).
- 10) McQuarrie, D. A. & Simon, J. D. *Molecular Thermodynamics* Viva Books Pvt. Ltd.: New Delhi (2004).
- 11) Levine, I. N. *Physical Chemistry* 6th Ed., Tata Mc Graw Hill (2010).

Unit II

1. Concise Graduate Chemistry – I, II, III & IV, University Text Book of Chemistry, University of Mumbai.
2. Lee, J.D. Concise Inorganic Chemistry ELBS, 1991.
3. Douglas, B.E. and McDaniel, D.H. Concepts & Models of Inorganic Chemistry, Oxford, 1970
4. Atkins, P.W. & Paula, J. Physical Chemistry, 10th Ed., Oxford University Press, 2014.
Day, M.C. and Selbin, J. Theoretical Inorganic Chemistry, ACS Publications, 1962.
5. Rodger, G.E. Inorganic and Solid State Chemistry, Cengage Learning India

Unit III

1. Concise Graduate Chemistry – I, II, III & IV, University Text Book of Chemistry, University of Mumbai.
2. Morrison, R. T. and Boyd, R. N. Organic Chemistry, Dorling Kindersley (India) Pvt Ltd. (Pearson Education).2012
3. Finar, I. L. Organic Chemistry (Volume 1), Dorling Kindersley (India) Pvt Ltd. (Pearson Education).
4. Finar, I. L. Organic Chemistry (Volume 2: Stereochemistry and the Chemistry of Natural Products), Dorling Kindersley (India) Pvt Ltd. (Pearson Education).
5. Eliel, E. L. and Wilen, S. H. Stereochemistry of Organic Compounds, Wiley: London, 1994
6. Kalsi, P. S. Stereochemistry Conformation and Mechanism, New Age International, 2005.
7. Mc Murry, J.E. Fundamentals of Organic Chemistry, 7th Ed. Cengage Learning India Edition, 2013
8. Paula Y Bruce, Organic Chemistry, 7th Ed, Pearson education, Asia.2014
9. Graham Solomon, Fryhle, Snyder, Organic Chemistry, Wiley publication. 12 th Ed,2016
10. Bahl and Bahl, Advanced Organic chemistry by S. Chand publication.2010
11. Peter Sykes. Guidebook to the mechanism in Organic chemistry ,6th edition
12. D. Nasipuri. Stereochemistry of Organic Compounds, Principles and Applications, Second Edition

Chemistry lab. Semester – I

Unit – I: Physical Chemistry

- 1) To prepare 0.1 N succinic acid and standardize the NaOH solution of different concentrations.
- 2) To determine the rate constant for the hydrolysis of ester using HCl as catalyst.
- 3) To determine enthalpy of dissolution of salt (KNO₃)
- 4) Determination of viscosity of aqueous solutions of (i) polymer (ii) ethanol and (iii) sugar at room temperature (Any two solutions).

Unit II: Inorganic Chemistry

- 1) Commercial analysis of (anytwo)
 - a) Mineralacid
 - b) Organicacid
 - c) Salt of weak acid and strongbase.
- 2) Titration using double indicator: analysis of solution of Na₂CO₃ and NaHCO₃

3) Gravimetric analysis

- To determine the percent purity of sample of BaSO_4 containing NH_4Cl
- To determine the percent purity of ZnO containing ZnCO_3 .

Unit III Organic Chemistry

- Purification of organic compounds by recrystallization selecting suitable solvent (minimum 2 organic compounds to be given)
(Learners are expected to report a) Solvent for recrystallization. b) Percentage Yield and the melting points of the purified compound.)
- Basic principles of Organic compound characterization (minimum 4 Solid organic compounds)
(Learners should perform Preliminary Tests, Solubility Test, obtain melting point and recrystallize the compound with given solvent)

Minimum 80 percent of practical must be completed in each term

Chemistry lab: Semester - II

Unit – I: Physical Chemistry

- To determine the amount of strong acid in the given solution by titrating against strong base conductometrically.
- To determine the dissociation constant of weak acid (K_a) using Henderson's equation and the method of incomplete titration pH metrically.
- To verify Beer-Lamberts law using KMnO_4 solution by colorimetric method.
- To standardize commercial sample of HCl using borax and to write material safety data of the chemicals involved.

Unit II Inorganic Chemistry

1) Qualitative analysis: (5 mixtures to be analyzed)

Semi-micro inorganic qualitative analysis of a sample containing two cations and two anions (from amongst):

Cations (from amongst): Pb^{2+} , Ba^{2+} , Ca^{2+} , Sr^{2+} , Cu^{2+} , Cd^{2+} , Fe^{2+} , Ni^{2+} , Mn^{2+} , Mg^{2+} , Al^{3+} , Cr^{3+} , K^+ , NH_4^+

Anions (from amongst): CO_3^{2-} , S^{2-} , SO_4^{2-} , NO_2^- , NO_3^- , Cl^- , Br^- , I^- , SO_4^{2-} , PO_4^{3-}

(Scheme of analysis should avoid use of sulphide ion in any form for precipitation/separation of cations.)

- Redox Titration:** To determine the percentage of copper(II) present in a given sample by titration against a standard aqueous solution of sodium thiosulfate (iodometry titration)

Unit III Organic Chemistry

1) Characterization of organic compounds containing C, H, (O), N, S, X elements
(6 solid/liquid Organic compounds)

(Preliminary Tests, Solubility/Miscibility Test, Detection of Elements, Detection of Functional group and determination of Physical constant)

Minimum 80 percent of practicals must be completed in each term

Reference Books

Unit I:Physical Chemistry

- 1) Laboratory Experiments in Chemistry I & II, University Practical Book of Chemistry, University of Mumbai.
- 2) Athawale, V. D. & Mathur, P. *Experimental Physical Chemistry* New Age International: New Delhi (2001).
- 3) Khosla, B. D.; Garg, V. C. & Gulati, A. *Senior Practical Physical Chemistry*, R. Chand & Co.: New Delhi (2011).
- 4) Garland, C. W.; Nibler, J. W. & Shoemaker, D. P. *Experiments in Physical Chemistry* 8th Ed.; McGraw-Hill: New York (2003).
- 5) Halpern, A. M. & McBane, G. C. *Experimental Physical Chemistry* 3rd Ed.; W.H. Freeman & Co.: New York (2003).

Unit II: Inorganic Chemistry

- 1) Laboratory Experiments in Chemistry I & II, University Practical Book of Chemistry, University of Mumbai.
- 2) Mendham, J., A. I. Vogel's *Quantitative Chemical Analysis* 6th Ed., Pearson, 2009.

Unit III: Organic Chemistry

- 1) Laboratory Experiments in Chemistry I & II, University Practical Book of Chemistry, University of Mumbai.
- 2) Mann, F.G. & Saunders, B.C. *Practical Organic Chemistry*, Pearson Education (2009).
- 3) Furniss, B.S.; Hannaford, A.J.; Smith, P.W.G.; Tatchell, A.R. *Practical Organic Chemistry*, 5th Ed., Pearson (2012).
- 4) Vogel, A.I., Tatchell, A.R., Furnis, B.S., Hannaford, A.J. & Smith, P.W.G., *Textbook of Practical Organic Chemistry*, Prentice-Hall, 5th edition, 1996.

Item No. _____

UNIVERSITY OF MUMBAI**Syllabus for Approval**

Sr. No.	Heading	Particulars
1	Title of Course	S. Y. B. Sc. Chemistry
2	Eligibility for Admission	F. Y. B. Sc. Passed from this university (or with ATKT in any two courses at the F. Y. B. Sc. Level) or equivalent qualification from other universities as may have been allowed by the relevant ordinances of this university
3	Passing marks	40%
4	Ordinances/Regulations (if any)	
5	No. of Semesters	Two
6	Level	U.G.
7	Pattern	Semester
8	Status	New
9	To be implemented from Academic year	2017-2018

Date : 05-5-2017**BoS Chairperson:****Convener: Dr. Ravindra G. Deshmukh****Signature:****Dr. Anil V. Karnik**

UNIVERSITY OF MUMBAI

Essentials Elements of The Syllabus

1	Title of Course	Syllabus for two semester S. Y. B. Sc. course in chemistry
2	Couse Code	USCH301, USCH302, USCH303 USCH401, USCH402, USCH404 USCHP1 to USCHP6
3	Preamble	Attached
4	Objective	<ul style="list-style-type: none">• To infuse in the learner a spirit of inquiry into the fundamental aspects of the various core areas of Chemistry.• To make the learner proficient in analysing the various observations and chemical phenomena presented to him during the course.• To make the learner capable of solving problems in the various units of this course• To give the learner an opportunity to get hands on experience of the various concepts and processes in the various branches of chemistry• To impart various skills of handling chemicals, reagents, apparatus, instruments and the care and safety aspects involved in such handling• To make the learner capable of analysing and interpreting results of the experiments he conducts or performs
5	Eligibility	Pass F. Y. B. Sc.
6	Fee Structure	As Per Guidelines issued from the University
7	No. of Lectures	9 lectures per week (three lectures per paper)
8	No. of Practicals	9 periods per week (three periods per paper)
9	Duration of Course	Two Semester

10	Notional Hours	72 hours per paper per semester Theory and 36 hours per paper per semester for laboratory sessions
11	No of students per batch	120 students per division (20 Students for laboratory sessions)
12	Selection	As per merit.
13	Assessment	End of semester examination of 100 marks per paper for theory and 50 marks per paper for laboratory sessions
14	Syllabus Detail	Attached
15	Title of the Unit	As given in the Syllabus text
16	Title of the Sub-unit	As given in the syllabus text.
17	Semester wise Theory	As prescribed in the syllabus text
18	Semester wise Practicals	As prescribed in the syllabus text.
19	Question Paper Pattern	As prescribed by the Faculty of Science
20	Scheme of evaluation of Project	N.A.
21	List of suggested reading	As Attached
22	List of websites	As Attached
23	List of You Tube videos	As attached
24	List of MOOCs	As Attached

REGULATIONS

1. Preamble and objectives of the Course :

In the first two semesters of the six semester graduation program of B. Sc.(Chemistry) the learner was introduced to some basic aspects in the various core branches of chemistry like Physical Chemistry, Organic chemistry and Inorganic chemistry. Concepts about the structure of atom, distribution of electrons, Thermodynamics, Formation of organic compounds and basic ideas in reactivity of molecules in general and organic compounds in particular were introduced to the learner. He was made inquisitive about why and how should atoms combine to give molecules or ions. The non-orbital approach to appreciating the shapes of polyatomic species in general and molecules in particular.

The story of chemistry is taken further in the coming two semesters of the second year of the B. Sc. (Chemistry) Program. However it is also realised that some students opting for the course on Chemistry may not continue with the subject subsequently as such the syllabus is designed to retain the interest of the serious learner of chemistry as well as be helpful to non-chemistry learners. With such students who would want to pursue other branches of science but would want to acquire a basic appreciation and experience of chemistry a separate paper (Paper-III) is designed. This paper along with the laboratory session unit that goes with it deals with the basics of chemical analysis, separating components from a given sample, basic concepts like pH, experimental techniques like Titrimetry, Gravimetry, using instruments to carry out analysis, the various techniques like chromatography, electrophoresis, Instrumentation in general is felt to be of interest to learners of various branches like physics, botany, zoology, and microbiology.

The major objectives of B.Sc. Chemistry course are

- To infuse in the learner a spirit of inquiry into the fundamental aspects of the various core areas of Chemistry.

- To make the learner proficient in analysing the various observations and chemical phenomena presented to him during the course.
- To make the learner capable of solving problems in the various units of this course
- To give the learner an opportunity to get hands on experience of the various concepts and processes in the various branches of chemistry
- To impart various skills of handling chemicals, reagents, apparatus, instruments and the care and safety aspects involved in such handling
- To make the learner capable of analysing and interpreting results of the experiments he conducts or performs
- To make the learner capable of acquiring or pursuing a source of livelihood like jobs in chemical industry
- To arouse the interest to pursue higher levels of learning in chemistry,

2. Condition for Admission

A candidate who has passed the F.Y.B.Sc. of Mumbai University or an examination of some other university accepted by the syndicate as equivalent there to with Chemistry, Physics, Maths, Botany, Zoology or Life Science shall be eligible for admission into S.Y.B.Sc., course in Chemistry.

To

3. Duration of the Course: one year

4. Course of study:

**Draft copy of the proposed revised syllabus for
Choice Based Credit System
S.Y.B.Sc. Chemistry
To be implemented from the Academic year 2017-2018**

For the subject of chemistry there shall be three papers for 45 lectures each comprising of three units of 15 L each.

Semester-III

1. Paper-I (General Chemistry) Unit-I Physical Chemistry
Unit-II Inorganic Chemistry
Unit-III Organic Chemistry.
2. Paper-II (General Chemistry) Unit-I Physical Chemistry
Unit-II Inorganic Chemistry
Unit-III Organic Chemistry.
3. Paper III Basics of Analytical Chemistry

Semester-IV

1. Paper-I (General Chemistry) Unit-I Physical Chemistry
Unit-II Inorganic Chemistry
Unit-III Organic Chemistry.
2. Paper-II (General Chemistry) Unit-I Physical Chemistry
Unit-II Inorganic Chemistry
Unit-III Organic Chemistry.
Basics of Analytical Chemistry
3. Paper III

Choice Based Credit System
S. Y. B. Sc.
Chemistry Syllabus
To be implemented from the Academic year 2017-2018

Course Content
Semester III

Course Code	Unit	Topics	Credits	L/Week
USCH301	I	Chemical Thermodynamics-II, Electrochemistry	2	1
	II	Chemical Bonding		1
	III	Reactions and reactivity of halogenated hydrocarbons, alcohols, phenols and epoxides		1
USCH302	I	Chemical Kinetics-II, Solutions	2	1
	II	Selected topics on p block elements		1
	III	Carbonyl Compounds		1
USCH303	I	Intorduction to Analytical Chemistry and Statistical Treatment of analytical data-I	2	1
	II	Classical Methods of Analysis.		1
	III	Instrumental Methods-I		1
USCHP1	Chemistry Practicals I		1	3
USCHP2	Chemistry Practicals II		1	3
USCHP3	Chemistry Practicals III		1	3

Semester IV

Course Code	Unit	Topics	Credits	L/Week
USCH401	I	Electrochemistry-II, Phase Equilibria	2	1
	II	Comparative Chemistry of the transition metals & Coordination Chemistry		1
	III	Carboxylic acids and their derivatives, Sulphonic acids		1
USCH402	I	Solid state, Catalysis	2	1
	II	Ions in aqueous medium & Uses and Environmental Chemistry of volatile Oxides and oxo-acids		1
	III	Amines, Diazonium salts, Heterocyclic compounds		1
USCH403	I	Separation Techniques in Analytical Chemistry	2	1
	II	Instrumental Methods-II		1
	III	Statistical Treatment of analytical data --II		1
USCHP4	Chemistry Practicals I		1	3
USCHP5	Chemistry Practicals II		1	3
USCHP6	Chemistry Practicals III		1	3

Semester III
Paper I
Theory: 45 Lectures

Unit I: Physical Chemistry

1.1 Chemical Thermodynamics-II(8L)

1.1.1 Free Energy Functions: Helmholtz Free Energy, Gibb's Free Energy, Variation of Gibb's

free energy with Pressure and Temperature.

1.1.2 Gibbs-Helmholtz equation, van't Hoff reaction isotherm and van't Hoff reaction isochore.

(Numericals expected).

1.1.3 Thermodynamics of Open System: Partial Molal Properties, Chemical Potential and its variation with Pressure and Temperature, Gibb's Duhem equation.

1.1.4 Concept of Fugacity and Activity

1.2 Electrochemistry: (7L)

1.2.1 Conductivity, equivalent and molar conductivity and their variation with dilution for weak and strong electrolytes.

1.2.2 Kohlrausch law of independent migration of ions.

1.2.3 Applications of conductance measurements: determination of degree of ionization and ionization constant of weak electrolyte, solubility and solubility product of sparingly soluble salts, ionic product of water. (Numericals expected).

1.2.4 Transference number and its experimental determination using Moving boundary method. (Numericals expected). Factors affecting transference number.

Unit-II

Chemical Bonding

2.1 Non-Directional Bonding (4L)

2.1.1 Ionic Bond: Conditions for the Formation of Ionic Bond.

2.1.2 Types of Ionic Crystals

2.1.3 Radius Ratio Rules

2.1.4 Lattice Energy, Born-Landé Equation

2.1.5 Kapustinski Equation

2.1.6 Born-Haber Cycle and its Application

2.2. Directional Bonding: Orbital Approach. (6L)

2.2.1 Covalent Bonding The Valence Bond Theory- Introduction and basic tenets.

- 2.2.2 Interaction between two hydrogen atoms and the Potential energy diagram of the resultant system.
- 2.2.3 Corrections applied to the system of two hydrogen atoms- Formation of H_2
- 2.2.4 Homonuclear diatomic molecules from He_2 to Ne_2
- 2.2.5 Resonance and the concept of Formal Charge; Rules for Resonance or Canonical structures.
- 2.2.6 Bonding in Polyatomic Species: The role of Hybridization. And types of hybrid orbitals- sp , sp^2 , sp^3 , sp^3d , sp^2d^2 and sp^3d^2 .
- 2.2.7 Equivalent and Non-Equivalent hybrid orbitals
- 2.2.8 Contribution of a given atomic orbital to the hybrid orbitals (with reference to sp^3 hybridisation as in CH_4 , NH_3 and H_2O and series like NH_3 , PH_3 , AsH_3 , BiH_3)

2.3 Molecular Orbital Theory (5L)

- 2.3.1. Comparing Atomic Orbitals and Molecular Orbitals.
- 2.3.2. Linear combination of atomic orbitals. to give molecular orbitals LCAO-MO approach for diatomic homonuclear molecules).
- 2.3.4. Wave mechanical treatment for molecular orbitals (H_2^+ and H_2)
- 2.3.4 Molecular orbital Theory and Bond Order and magnetic property: with reference to O_2 , O_2^+ , O_2^- , O_2^{2-}

(Problems and numerical problems expected wherever possible)

Unit III: Organic Chemistry

3.1.1. Reactions and reactivity of halogenated hydrocarbons: [4L]

- 3.1.1. **Alkyl halides:** Nucleophilic substitution reactions: S_N1 , S_N2 and S_Ni mechanisms with stereochemical aspects and factors affecting nucleophilic substitution reactions- nature of substrate, solvent, nucleophilic reagent and leaving group.
- 3.1.2. **Aryl halides:** Reactivity of aryl halides towards nucleophilic substitution reactions. Nucleophilic aromatic substitution (S_NAr) addition-elimination mechanism and benzyne mechanism.

3.1.2. Organomagnesium and organolithium compounds: [3L]

Nomenclature, nature, type and reactivity of carbon-metal bond. Preparation using alkyl / aryl halide. Structure, stability and reactions with compounds containing acidic hydrogen, carbonyl compounds, CO_2 , cyanides and epoxides.

3.2 Alcohols, phenols and epoxides: [8L]

- 3.2.1.**Alcohols:** Nomenclature, Preparation: Hydration of alkenes, hydrolysis of alkyl halides, reduction of aldehydes and ketones, using Grignard reagent. Properties: Hydrogen bonding, types and effect of hydrogen bonding on different properties. Acidity of alcohols, Reactions of alcohols
- 3.2.2.**Phenols:** Preparation, physical properties and acidic character. Comparative acidic strengths of alcohols and phenols, resonance stabilization of phenoxide ion. Reactions of phenols.
- 3.2.3.**Epoxides:** Nomenclature, methods of preparation and reactions of epoxides: reactivity, ring opening reactions by nucleophiles (a) In acidic conditions: hydrolysis, reaction with halogen halide, alcohol, hydrogen cyanide. (b) In neutral or basic conditions: ammonia, amines, Grignard reagents, alkoxides.

Semester III

Paper II

Unit I: Physical Chemistry

1.1 Chemical Kinetics-II (7L)

1.1.1 Types of Complex Chemical reactions: Reversible or opposing, consecutive and parallel reactions (No derivations, only examples expected),

Thermal chain reactions: H. and Br. reaction. (only steps involved, no kinetic expression expected).

1.1.2 Effect of temperature on the rate of reaction, Arrhenius equation, Concept of energy of activation (E_a). (Numericals expected).

1.1.3 Theories of reaction rates: Collision theory and activated complex theory of bimolecular reactions. Comparison between the two theories (Qualitative treatment only)

1.2 Solutions: (8 L)

1.2.1 Thermodynamics of ideal solutions: Ideal solutions and Raoult's law, deviations from Raoult's law–non-ideal solutions. Vapour pressure-composition and temperature -composition curves of ideal and non-ideal solutions. Distillation of solutions. Lever rule. Azeotropes.

1.2.2 Partial miscibility of liquids: Critical solution temperature; effect of impurity on partial miscibility of liquids with respect to Phenol-Water , Triethanolamine – Water and Nicotine – Water systems

1.2.3 Immiscibility of liquids- Principle of steam distillation.

1.2.4 Nernst distribution law and its applications, solvent extraction.

Unit-II

2. Selected topics on p block elements

(15L)

2.1 Chemistry of Boron compounds

- 2.1.1 Electron deficient compounds – BH_3 , BF_3 , BCl_3 with respect to Lewis acidity and applications.
- 2.1.2 Preparation of simple boranes like diborane and tetraborane.
- 2.1.3 Structure and bonding in diborane and tetraborane ($2e-3c$ bonds)
- 2.1.4 Synthesis of Borax.

2.2 Chemistry of Silicon and Germanium

- 2.2.1 Silicon compounds: Occurrence, Structure and inertness of SiO_2
- 2.2.2 Preparation of structure of SiCl_4
- 2.2.3 Occurrence and extraction of Germanium
- 2.2.4 Preparation of extra pure Silicon and Germanium

2.3 Chemistry of Nitrogen family

- 2.3.1 Trends in chemical reactivity - Formation of hydrides, halides, oxides with special reference to oxides of nitrogen.
- 2.3.2 Oxides of nitrogen with respect to preparation and structure of NO , NO_2 , N_2O and N_2O_4 .
- 2.3.3 Synthesis of ammonia by Bosch – Haber process.

Unit III: Organic Chemistry

Carbonyl Compounds: [15L]

- 3.1 Nomenclature of aliphatic, alicyclic and aromatic carbonyl compounds. Structure, reactivity of aldehydes and ketones and methods of preparation; Oxidation of primary and secondary alcohols using PCC, hydration of alkynes, action of Grignard reagent on esters, Rosenmund reduction, Gattermann – Koch formylation and Friedel Craft acylation of arenes
- 3.2 General mechanism of nucleophilic addition, and acid catalyzed nucleophilic addition reactions.
- 3.3 Reactions of aldehydes and ketones with NaHSO_3 , HCN , RMgX , alcohol, amine, phenyl hydrazine, 2,4-Dinitrophenyl hydrazine, LiAlH_4 and NaBH_4 .
- 3.4 Mechanisms of following reactions: Benzoin condensation, Knoevenagel condensation, Claisen-Schmidt and Cannizzaro reaction.
- 3.5 Keto-enol tautomerism: Mechanism of acid and base catalysed enolization
- 3.6 Active methylene compounds: Acetylacetone, ethyl acetoacetate diethyl malonate, stabilised enols. Reactions of Acetylacetone and ethyl acetoacetate (alkylation, conversion to ketone, mono- and dicarboxylic acid)

Semester IV

Paper I

Unit I: Physical Chemistry

1.1 Electrochemistry-II: (8 L)

- 1.1.1 Electrochemical conventions, Reversible and irreversible cells.
- 1.1.2 Nernst equation and its importance, Types of electrodes, Standard electrode potential, Electrochemical series (Numericals expected).
- 1.1.3 Thermodynamics of a reversible cell, calculation of thermodynamic properties: ΔG , ΔH and ΔS from EMF data. (Numericals expected)
- 1.1.4 Calculation of equilibrium constant from EMF data. (Numericals expected)
- 1.1.5 Concentration cells with transference and without transference. Liquid junction potential and salt bridge.
- 1.1.6 pH determination using hydrogen electrode and quinhydrone electrode. (Numericals expected)

1.2 Phase Equilibria: (7L)

- 1.2.1 Phases, components and degrees of freedom of a system, criteria of phase equilibrium. Gibbs Phase Rule and its thermodynamic derivation.
- 1.2.2 Derivation of Clausius – Clapeyron equation and its importance in phase equilibria. (numericals expected)
- 1.2.3 Phase diagrams of one-component systems (water and sulphur).
- 1.2.4 Two component systems involving eutectics, congruent and incongruent melting points (lead-silver system).

Unit-II

2.1 Comparative Chemistry of the transition metals (9 L)

- 2.1.1** Position in the periodic table; Natural occurrence principal ores and minerals;
- 2.1.2** Significance of special stability of d^0 , d^5 and d^{10} leading to variable oxidation states; Unusual oxidation states and their stabilities in aqueous solutions (with special reference to vanadium, and chromium.)

- 2.1.3** Origin of colour for transition metals and their compounds: such as reflectivity, surface coatings, particle size, packing density for metals and nature of d-orbitals, number of electrons in the d-orbitals, geometry, and ability for charge transfer).
- 2.1.4** Magnetic properties of transition metal compounds: Origin of magnetism-spin and orbital motion of electrons; equation for spin only and spin-orbital magnetism in terms of Bohr magnetons (No derivation of relevant equations expected); Reasons for quenching of orbital moments.
- 2.1.5** Chemistry of Titanium and vanadium: properties of Oxides and chlorides; use in titrimetric analysis
- 2.1.6** Qualitative tests for transition metal ions: General considerations in devising tests (with reference to Chromium, Manganese, iron, Cobalt Nickel and Copper)

2.2 Coordination Chemistry : (6 L)

2.2.1 Introduction to Chemistry of Coordination Compounds

- i. Historical perspectives: Early ideas on coordination compounds
- ii. Basic terms and nomenclature.
- iii. Types of ligands
- iv. Isomerism :General Types with special reference to stereoisomerism of coordination compounds (C.N=6)
- v. Evidence for the formation of coordination compounds,

2.2.2. Theories of coordination compounds

- i. Werner's Theory of coordination compounds,
- ii. Effective atomic number rule.
- iii. Eighteen electron Rule

2.2.3. Nature of the Metal-Ligand Bond:

- i. Valence Bond Theory; Hybridisation of the central metal orbitals- sp^3 , sd^3/d^3s sp^3d^2/d^2sp^3 , sp^2d ,
- ii. Inner and outer orbital complexes of .(suitable examples of Mn(II) Fe(II),Fe(III),Co(II)/Co(III),Ni(II), Cu(II) Zn(II) complexes with ligands like aqua, ammonia CN^- and halides may be used)
- iii. Limitations of V.B.T

2.2.4. Application of coordination compounds.

Unit III: Organic Chemistry

3.1 Carboxylic Acids and their Derivatives :(11 Lectures)

3.1.1. Nomenclature, structure and physical properties, acidity of carboxylic acids, effects of substituents on acid strength of aliphatic and aromatic carboxylic acids.

3.1.2. Preparation of carboxylic acids: oxidation of alcohols and alkyl benzene, carbonation of Grignard and hydrolysis of nitriles.

3.1.3. Reactions: Acidity, salt formation, decarboxylation, Reduction of carboxylic acids with LiAlH_4 , diborane, Hell-Volhard-Zelinsky reaction, Conversion of carboxylic acid to acid chlorides, esters, amides and acid anhydrides and their relative reactivity.

3.1.4. Mechanism of nucleophilic acyl substitution and acid-catalysed nucleophilic acyl substitution. Interconversion of acid derivatives by nucleophilic acyl substitution.

3.1.5. Mechanism of Claisen condensation and Dieckmann condensation.

3.2 Sulphonic acids: [4L]

Nomenclature, preparation of aromatic sulphonic acids by sulphonation of benzene (with mechanism), toluene and naphthalene, Reactions: Acidity of arene sulfonic acid, Comparative acidity of carboxylic acid and sulfonic acids. Salt formation, desulphonation. Reaction with alcohol, phosphorous pentachloride, IPSO substitution.

Semester IV Paper II

Unit I: Physical Chemistry

1.1 Solid State: (7L)

1.1.1 Recapitulation of laws of crystallography and types of crystals

1.1.2 Characteristics of simple cubic, face centered cubic and body centered cubic systems, interplanar distance in cubic lattice (only expression for ratio of interplanar distances are expected)

1.1.3 Use of X-rays in the study of crystal structure, Bragg's equation (derivation expected), X-rays diffraction method of studying crystal lattice structure, structure of NaCl and KCl. Determination of Avogadro's number (Numericals expected)

1.2 Catalysis: (8 L)

1.2.1 Types of catalysis, catalytic activity, specificity and selectivity, inhibitors, catalyst poisoning and deactivation

1.2.2 Mechanisms and kinetics of acid-base catalyzed reactions, effect of pH.

1.2.3 Mechanisms and kinetics of enzyme catalyzed reactions (Michaelis-Menten equation)

1.2.4 Effect of particle size and efficiency of nanoparticles as catalyst.

Unit-II

2 Ions in aqueous medium

2.1. Acidity of Cations and Basicity of Anions

- i. Hydration of Cations; Hydrolysis of Cations predicting degree of hydrolysis of Cations-effect of Charge and Radius.
- ii. Latimer Equation. Relationship between pKa, acidity and z^2/r ratios of metal ions graphical Presentation
- iii. Classification of cations on the basis of acidity category – Non acidic, Moderately acidic, strongly acidic, very strongly acidic with pKa values range and examples
- iv. Hydration of Anions; Effect of Charge and Radius; Hydration of anions-concept, diagram classification on the basis of basicity

2.2. Uses and Environmental Chemistry of volatile Oxides and oxo-acids

- i. Physical properties of concentrated oxo-acids like sulfuric, Nitric and Phosphoric acid
- ii. Uses and environments aspects of these acids

Unit III: Organic Chemistry

Nitrogen containing compounds and heterocyclic compounds:

3.1 Amines: Nomenclature, effect of substituent on basicity of aliphatic and aromatic amines;

- 3.1.1. Preparation: Reduction of aromatic nitro compounds using catalytic hydrogenation, chemical reduction using Fe-HCl, Sn-HCl, Zn-acetic acid, reduction of nitriles, ammonolysis of halides, reductive amination, Hofmann bromamide reaction.
- 3.1.2. Reactions- Salt Formation, N-acylation, N-alkylation, Hofmann's exhaustive methylation (HEM), Hofmann-elimination reaction, reaction with nitrous acid, carbylamine reaction, Electrophilic substitution in aromatic amines: bromination, nitration and sulphonation.

3.2 Diazonium Salts: (7 Lectures)

Preparation and their reactions/synthetic application - Sandmeyer reaction, Gattermann reaction, Gomberg reaction, Replacement of diazo group by -H, -OH. Azo coupling with phenols, naphthols and aromatic amines, reduction of diazonium salt to aryl hydrazine and hydroazobenzene

3.3 Heterocyclic Compounds: (8 Lectures)

- 3.3.1. Classification, nomenclature, electronic structure, aromaticity in 5-numbered and 6-membered rings containing one heteroatom;
- 3.3.2. Synthesis of Furan, Pyrrole (Paal-Knorr synthesis, Knorr pyrrole synthesis, and Hantzsch synthesis), Thiophene, Pyridine (Hantzsch synthesis),
- 3.3.3. Reactivity of furan, pyrrole and thiophene towards electrophilic substitution reactions on the basis of stability of intermediate and of pyridine on the basis of electron distribution. Reactivity of pyridine towards nucleophilic substitution on the basis of electron distribution.
- 3.3.4. Reactions of furan, pyrrole and thiophene: halogenation, nitration, sulphonation, Vilsmeier-Haack reaction, Friedel-Crafts reaction. Furan: Diels-Alder reaction, Ring opening. Pyrrole: Acidity and basicity of pyrrole. Comparison of basicity of pyrrole and pyrrolidine.
- 3.3.5. Pyridine: Basicity. Comparison of basicity of pyridine, pyrrole and piperidine. Sulphonation of pyridine (with and without catalyst), reduction and action of sodamide (Chichibabin reaction).

Semester III Chemistry Practicals:

Unit I: Physical Chemistry

1. To verify Ostwald's dilution law for weak acid conductometrically.
2. To determine dissociation constant of weak acid conductometrically.
3. To determine the critical solution temperature (CST) of phenol - Water System.
4. Determination of energy of activation of acid catalyzed hydrolysis of methyl acetate.
5. To investigate the reaction between $K_2S_2O_8$ and KI with equal initial concentrations of the reactants
6. To determine solubility of sparingly soluble salts (any two) conductometrically.

Unit II: Inorganic Chemistry

1. Identification of cations in a given mixture and Analytically separating them [From a mixture containing not more than two of the following: Pb(II), Ba(II), Ca(II), Sr(II), Cu(II), Cd(II), Mg(II), Zn(II), Fe(II), Fe(III), Ni(II), Co(II), Al(III), Cr(III)]
2. Crystallisation of potassium iodate and to estimate its purity before and after the separation.
3. Estimation of total hardness
4. Investigation of the reaction between Copper sulphate and Sodium Hydroxide (Standard EDTA solution to be provided to the learner).

Unit III: Organic Chemistry

Short organic preparation and their purification: Use 0.5-1.0g of the organic compound.

Purify the product by recrystallization. Report theoretical yield, percentage yield and melting point of the purified product.

Preparation of:

1. Cyclohexanone oxime from cyclohexanone.
2. Glucosazone from dextrose or fructose
3. Tribromoaniline from aniline.
4. β -Naphthylbenzoate
5. m-Dinitrobenzene from nitrobenzene

6. Phthalic anhydride from phthalic acid by sublimation
7. Acetanilide from aniline
8. p-Bromoacetanilide from acetanilide
9. Iodoform from acetone

(Any eight preparations)

Semester IV Chemistry Practicals:

Unit I: Physical Chemistry

1. To determine standard EMF and the standard free energy change of Daniel cell potentiometrically .
2. To determine the amount of HCl in the given sample potentiometrically.
3. Compare the strengths of HCl and H₂SO₄ by studying kinetics of acid hydrolysis of methyl acetate.
6. Industrial visit report.

Unit II: Inorganic Chemistry

1. Inorganic preparation – Nickel dimethyl glyoxime using microscale method.
2. Complex cation – *Tris* (ethylene diamine) nickel (II) thiosulphate.
3. Complex anion – Sodium Hexanitrocobaltate (III) The aim of this experiment is to understand the preparation of a soluble cation (sodium) and a large anion hexanitrocobaltate(III) and its use to precipitate a large cation (potassium)
4. Inorganic salt – Calcium or magnesium oxalate using PFHS technique

Unit III: Organic Chemistry

Qualitative Analysis of bi-functional organic compounds on the basis of

1. Preliminary examination
2. Solubility profile
3. Detection of elements C, H, (O), N, S, X.
4. Detection of functional groups
5. Determination of physical constants (M.P/B.P)

Solid or liquid Compounds containing not more than two functional groups from among the following classes may be given for analysis to be given: Carboxylic acids, phenol, carbohydrates, aldehydes, ketones, ester, amides, nitro, anilides, amines, alkyl and aryl halides.

Students are expected to write balanced chemical reactions wherever necessary.
(Minimum 6 compounds to be analyzed)

Reference Books for Practicals:

Unit I:

1. Khosla B.D., Garg V.C. and Gulati A., Senior Practical Physical Chemistry, R. Chand and Co., New Delhi (2011).
2. Garland C. W., Nibler J.W. and Shoemaker D.P., Experiments in Physical Chemistry, 8th Ed., McGraw-Hill, New York (2003).
3. Halpern A.M. and McBane G.C., Experimental Physical Chemistry, 3rd Ed., W.H. Freeman and Co., New York (2003).
4. Athawale V.D. and Mathur P., Experimental Physical Chemistry, New Age International, New Delhi (2001)

Unit II:

1. *Practical Inorganic Chemistry* by G. Marr and B. W. Rockett van Nostrand Reinhold Company (1972)

Unit III:

1. Mann, F.G. & Saunders, B.C. Practical Organic Chemistry, Pearson Education (2009)
2. Ahluwalia, V.K. & Aggarwal, R. Comprehensive Practical Organic Chemistry: Preparation and Quantitative Analysis, University Press (2000). Mann, F.G. & Saunders, B.C. Practical Organic Chemistry, Pearson Education (2009)
3. Furniss, B.S.; Hannaford, A.J.; Smith, P.W.G.; Tatchell, A.R. Practical Organic Chemistry, 5th Ed., Pearson (2012)
4. Vogel, A.I., Tatchell, A.R., Furnis, B.S., Hannaford, A.J. & Smith, P.W.G., Textbook of Practical Organic Chemistry, Prentice-Hall, 5th edition, 1996

Reference Books:

Unit I:

1. Barrow, G.M. Physical Chemistry Tata McGraw-Hill (2007).
2. Castellan, G.W. Physical Chemistry 4th Ed. Narosa (2004).
3. Kotz, J.C., Treichel, P.M. & Townsend, J.R. General Chemistry Cengage Learning India Pvt.Ltd., New Delhi (2009).
4. Mahan, B.H. University Chemistry 3rd Ed. Narosa (1998).
5. Petrucci, R.H. General Chemistry 5th Ed. Macmillan Publishing Co., New York (1985).
6. K.L.Kapoor A textbook of Physical Chemistry 3rd Ed. vol.1,2 Macmillan Publishing Co., New Delhi (2001)

Unit II:

1. *Practical Inorganic Chemistry* by G. Marr and B. W. Rockett van Nostrand Reinhold Company (1972)
2. Inorganic Chemistry – Gary Wulfsberg, Viva Book, First Indian Edition 2002
3. Quantitative Analysis – R.A.Day, A.L. Underwood, sixth edition
4. Vogel's Textbook of quantitative chemical analysis – J Mendham, R C Denny, J D Barnes, M Thomas, B Sivasankar

5. References.

6. Bruce H. Mahan, University Chemistry, Narosa publishing house pg. 611 to 683.
7. R. Gopalan , Universities Press India Pvt.Ltd. Inorganic Chemistry for Undergraduates.
8. Chemistry of Transition Elements Pg.- 608 – 679 .
9. J. D. Lee, 4th Edn., Concise Inorganic Chemistry, ELBS, The group III elements Pg. 359- 648.
10. D. F. Shriver and P. W. Atkins, Inorganic chemistry, 3rd edition, Oxford University Press (1999) page 325-446.
11. Ramesh Kapoor and R.S. Chopra, Inorganic Chemistry, R. Chand publishers, New Delhi.
12. CNR Rao edited, University General Chemistry, 513-578.
13. James E. Huheey, Inorganic Chemistry: Principles of Structure and Reactivity,
14. Emeleus and Anderson, Modern Aspects of Inorganic Chemistry, page no. 435-463.
15. Cotton and Wilkinson, Advanced Inorganic Chemistry, 3rd. Edition.
16. Gary Wulfsberg, Inorganic chemistry, Viva Books Pvt., Ltd. (2002).
17. Puri, Sharma and Kalia, Milestone publishers, Principles of Inorganic Chemistry, page 416-628.
18. Bruce H. Mahan, University Chemistry, Narosa publishing house.
19. R. Gopalan , Universities Press India Pvt.Ltd. Inorganic Chemistry for Undergraduates.
20. J. D. Lee, 4th Edn., Concise Inorganic Chemistry, ELBS
21. D. F. Shriver and P. W. Atkins, Inorganic chemistry, 3rd edition, Oxford University Press (1999)
22. Ramesh Kapoor and R.S. Chopra, Inorganic Chemistry, R. Chand publishers, New Delhi.
23. CNR Rao edited, University General Chemistry
24. James E. Huheey, Inorganic Chemistry: Principles of Structure and Reactivity,

25. Emeleus and Anderson, Modern Aspects of Inorganic Chemistry
26. Cotton and Wilkinson, Advanced Inorganic Chemistry, 3rd. Edition.
27. Gary Wulfsberg, Inorganic chemistry, Viva Books Pvt., Ltd. (2002).
28. Puri, Sharma and Kalia, Milestone publishers, Principles of Inorganic Chemistry

Unit III:

1. Morrison, R. T. and Boyd, R. N. Organic Chemistry, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education). 2012
2. Finar, I. L. Organic Chemistry (Volume 1), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
3. Finar, I. L. Organic Chemistry (Volume 2: Stereochemistry and the Chemistry of Natural Products), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education)
4. Mc Murry, J.E. Fundamentals of Organic Chemistry, 7th Ed. Cengage Learning India Edition, 2013.
5. Clayden, J.; Greeves, N.; Warren, S.; Wothers, P.; Organic Chemistry, Oxford University Press.
6. Graham Solomons, T.W. Organic Chemistry, John Wiley & Sons, Inc.
7. Comprehensive Organic Chemistry- The synthesis and reactions of Organic Compounds, Derek Barton, W. David Ollis.
8. Kalsi, P. S. Textbook of Organic Chemistry 1st Ed., New Age International (P) Ltd. Pub.
9. Eliel, E. L. and Wilen, S. H. Stereochemistry of Organic Compounds, Wiley: London, 1994.
10. Kalsi, P. S. Stereochemistry Conformation and Mechanism, New Age International, 2005

Semester III

Paper III

Basics in analytical Chemistry

Theory: 45 Lectures

The Role of Analytical chemistry in various fields including non-chemistry fields such as Environmental Science, Pharmacy, Medicine, Life Sciences, Petrochemicals, Arts (like Painting) Forensic sciences and so on can never be underestimated. This course is expected to introduce the learner to this interesting field of Analytical Chemistry.

It is expected to provide the learner an overview of this very important branch of chemistry. After successful completion of this course the learner is expected to be familiar with the question of what is analysis, why it is required and the methods, techniques, procedures and protocols that may be used or required in the course of a given problem of analysis. The learner is also expected to appreciate the role of an Analytical Chemist and a Chemical Analyst.

Correctness or acceptability of the results of a given analysis and how to deal with wrong or erroneous results: when to reject them and when and how to retain them to be meaningful and/or acceptable are some other attributes expected as outcomes of learning this paper.

As such it is felt that this paper will be a subject of choice and interest for learners preferring a specialisation in Chemistry as well as to those who may have interests in other science fields as Physics, Botany, Zoology, Microbiology, Geochemistry and so on.

Goal:

To introduce the learner to an area of learning that is vital for the inherent nature of the subject itself but also is important and irreplaceable irrespective of the long term interest of specialisation or subject of interest of the learner.

**Unit I- Intorduction to Analytical Chemistry and Statistical Treatment
of analytical data-I (15 L)**

Scope/ Objectives:

Learners should be able to

1. Select a method of analysis
2. Decide how to identify a sample and prepare it for analysis
3. Select a procedure for analysis
4. Identify sources of possible errors in the results obtained.

(Problems including numericals expected wherever necessary)

1.1. Role of Analytical Chemistry (9 L)

- 1.1.1. Language of analytical chemistry: important terms and their significance in Analytical Chemistry.
- 1.1.2. Purpose of Chemical Analysis; Analysis Based (i) On the nature of information required: (Proximate, Partial, Trace, Complete Analysis) and (ii) On the size of the sample used (Macro, semi-micro and micro analysis)
- 1.1.3. Classical and Non-Classical Methods of Analysis; their types and importance.

1.2. Significance of Sampling in Analytical Chemistry

- 1.2.1. Terms involved in Sampling
- 1.2.2. Types of Sampling
- 1.2.3. Sampling techniques

1.3. Results of Analysis. (6L)

- 1.3.1. Errors in Analysis and their types
- 1.3.2. Precision and Accuracy in Analysis
- 1.3.3. Corrections for Determinate Errors

(Problems including Numericals expected wherever required)

References:

1. Instrumental Analysis by Douglas A. Skoog, F. James Holler, Stanley R. Crouch
2. Instrumental methods of analysis by Willard, H.H.; Merritt, L.L. Jr.; Dean, J.A.; Settle, 7th Edition
3. Fundamental of Analytical Chemistry by Douglas A. Skoog, West, F. James Holler, S. R. Crouch

4. Modern Analytical Chemistry by David Harvey, McGraw-Hill Higher Education

Unit II- Classical Methods of Analysis(15 L)

Objectives:

The main objectives of this unit is to

- Introduce classical methods of chemical analysis.
- Appreciate the various terms and types of titrimetric analysis.
- Ability to select proper titrimetric method
- Appreciate the usefulness of the gravimetric method of analysis
- Identify a suitable gravimetric method
- Perform the required calculations involved in the analysis by titrimetry as well as gravimetry.

2. Classical Methods of Analysis. (04L)

2.1. Titrimetric Methods

- 2.1.1. Terms involved in Titrimetric methods of analysis. Comparing volumetry and Titrimetry
- 2.1.2. The Conditions suitable for titrimetry
- 2.1.3. Types of titrimetry – Neutralisation (Acidimetry, alkalimetry), Redox, (Iodometry, Iodimetry,) Precipitation and Complexometric titrations and indicators used in these titrations
- 2.1.4. Tools of Titrimetry: Graduated glasswares and Calibration

2.2. Standard solutions (Primary and Secondary standards in Titrimetry) and Calculations in Titrimetry.

2.3. Neutralisation Titrations (04L)

- 2.3.1. Concept of pH and its importance in Neutralisation Titrations
- 2.3.2. End point and Equivalence point of Neutralisation titrations
- 2.3.3. Determination of End point by using
 - i. Indicators causing colour change
 - ii. Change in potential, (by potentiometry)
 - iii. Change in conductance (by conductometry)
- 2.3.4. Construction of titration curve (on the basis of change in pH)of a titration of
 - i. Strong acid-weak base
 - ii. Strong base-weak acid

2.4. Gravimetric analysis (06 L)

- 2.4.1. General Introduction to Gravimetry.
- 2.4.2. Types of Gravimetric Methods –
- 2.4.3. Precipitation Gravimetry:
 - i. Steps involved in precipitation gravimetry analysis
 - ii. Conditions for precipitation
 - iii. Completion of precipitation,
 - iv. Role of Digestion, Filtration, Washing, Drying Ignition of precipitate.

- v. Applications of Gravimetric Analysis: Determination of sulfur in organic compounds; Estimation of Nickel in Cu-Ni alloy using dimethyl glyoxime; Determination of Aluminum by converting it to its oxide.

References:

- 1) Skoog et al. "Fundamentals of Analytical chemistry" Cengage Learning, Eight Edition, chapter 13, 14 and 15
- 2) Day and Underwood, "Quantitative analysis" prentice hall 1991, chapter 3
- 3) S.M. Khopkar, "Basic Concepts of Analytical Chemistry", IInd Edition New Age International Publisher
- 4) Gary D. Christan, "Analytical Chemistry", VIth Edition, Wiley Students Edition, Chapter No 8,9,10
- 5) Fundamental of Analytical Chemistry by Douglas A. Skoog, West, F. James Holler, S. R. Crouch
- 6) Modern Analytical Chemistry, David Harvey (page numbers 232 -265)

Unit III: Instrumental Methods-I [15 L]

Objectives:

On completing the learning of this unit the learner is expected to

- Know the various instrumental methods of analysis
- Advantages of using instruments to make measurements
- The various observable properties of a given analyte and the stimulus best suited for its analysis
- Know about a generalized diagram of an analytical instrument
- Select a suitable instrumental method for analysis
- Appreciate the basic terms in spectrometry
- Use the relationship between absorbance (and its variations) and concentration of the analyte.
- Choose a suitable method for photometric titrations.

3. Basic Concepts in Instrumental methods (03)

3.1. Relation between the Analyte, Stimulus and measurement of change in the observable property.

3.2. Block Diagram of an Analytical instrument.

3.3. Types of Analytical Instrumental methods based on

- i. Optical interactions (eg. Spectrometry: uv-visible, Polarimetry)
- ii. Electrochemical interactions (eg. Potentiometry, Conductometry,)
- iii. Thermal interactions (eg. Thermogravimetry)

3.4. Spectrometry (07 L)

3.4.1. Interaction of electromagnetic radiation with matter: Absorption and Emission spectroscopy

3.4.2. Basic Terms: Radiant Power, Absorbance, Transmittance, Monochromatic

light, Polychromatic light, Wavelength of maximum absorbance, Absorptivity and Molar Absorptivity

- 3.4.3. Statement of Beer's Law and Lambert's Law, Combined Mathematical Expression of Beer -Lambert's Law, Validity of Beer-Lambert's Law, Deviations from Beer-Lambert's Law ((Real deviations, Instrumental deviations and Chemical deviations)
(Numerical problems based on Beer-Lambert's Law)
- 3.4.4. Instrumentation for absorption spectroscopy: Colorimeters and Spectrophotometers
- 3.4.5. Block Diagrams for Single beam and Colorimeter, and Spectrophotometer (Principles, Construction and working-Details of Components expected i.e , source ,Sample holder , Filters/Monochromators, Detectors such as Photomultiplier tube)
- 3.4.6. Applications of UV-Visible Spectrophotometry **(02 L)**
 - (a) Qualitative analysis such as Identification of functional groups in Organic compounds ,Chromophores and Auxochrome,*cis* and *trans* isomers
 - (b) Quantitative analysis by Calibration curve method and
- 3.4.7. Photometric Titrations: Principle ,Instrumentation, Types of Photometric titration Curves with examples. **(03L)**

References:

- 1.Instrumental Methods of Chemical Analysis by Gurdeep R. Chatwal ,
Sham K.Anand pp 2.107-2.148
- 2.Principles of Instrumental Analysis by Skoog, Holler, Nieman, 5th Edition pp 143-172.
- 3. Instrumental Methods of Analysis by Willard, Merritt, Dean, Settle
7th Edition pp 118-181.

Semester III
Chemistry Practicals:
Paper III
Basics in Analytical Chemistry

1. Tools of Analytical Chemistry-I:

- a) Analytical glass wares like burettes, pipettes, Standard flasks, Separating funnels.
- b) Weighing tools such as two pan balance and monopan balance, digital balances:
- c) Incineration devices: Burners, Electrical Incinerators, Muffle Furnace,
- d) Drying Devices: Hot Air Oven, Microwave Oven, Descicators, Vacuum descicators
- e) Monochromators, Filters, Sample holders, Prisms, Diffraction Gratings, Photoemissive cells, Photomultiplier tubes

(The learner should draw diagrams and write-ups providing uses, care and maintenance of the items mentioned in (a) and principle, construction and uses of items (b) to (e) in his journal.

2. Gravimetric estimation of Nickel (II) as Ni-DMG and calculation of % error.
(The learner is expected to know the role of the various reagents/chemicals used In the estimation, various steps involved. They should write the complete and Balanced chemical reaction for the formation of the $\text{Ni}(\text{DMG})_2$ complex.
3. Colorimetric Determination of Copper Ions in given Solution by using calibration curve method and calculation of % error.
(The learner is expected to learn the relation between concentration and Absorbance, to draw a calibration curve, use the slope of the calibration curve and compare it with the calculated slope. They are also expected to state the error estimate of their results).
4. Determination of buffer capacity of acid buffer and basic buffer.
(The learner is expected to learn the use pH meter, standardization of pH meter, use of Henderson's equation and calculation of buffer capacity)
5. Estimation of Aspirin
6. Gravimetric estimation of barium ions using K_2CrO_4 as precipitant calculation of % error.
(The learner is expected to learn the skills of using the counterpoise technique used in this gravimetric estimation; Using counterpoise method whatman No.42 for filtration. In such a case no incineration or use of silica crucible is required. They are also expected to state the error estimate of their results)

Semester IV
Paper III Basics in Analytical Chemistry -II
Theory: 45 Lectures
Unit –I -Methods of separation (15 L)

Objectives:

The learner is expected to understand

- The importance of separation in sample treatment
- Various methods of separations
- How to select a method of separation of an analyte from the matrix
- How a solute gets distributed between two immiscible phases
- Principle of solvent extraction and various terms involved therein
- Effect of various parameters on solvent extraction of a solute
- Classification of Chromatographic methods
- Paper and thin layer chromatography and using them in practice.

1. Separation Techniques in Analytical Chemistry (02 L)

- 1.1. An Introduction to Analytical Separations and its importance in analysis.
- 1.2. Estimation of an analyte without effecting separation.
- 1.3. Types of separation methods
 - 1.3.1. Based on Solubilities (Precipitation, Filtration Crystallisation)
 - 1.3.2. Based on Gravity- Centrifugation
 - 1.3.3. Based on volatility-Distillation ;

- 1.3.4. Based on Electrical effects-Electrophoresis
- 1.3.5. Based on retention capacity of a Stationary Phase -Chromatography;
- 1.3.6. Based on distribution in two immiscible phases-Solvent Extraction;
- 1.3.7. Based on capacity to exchange with a resin-Ion Exchange;
- 1.4. **Electrophoresis:** Principles, Basic Instrumentation, Working and Application in separation of biomolecules like enzymes and DNA. (02L)
- 1.5. **Solvent extraction** (06 L)
 - 1.5.1. Introduction, Nernst distribution Law, Distribution Ratio, Partition Coefficient.
 - 1.5.2. Conditions of extraction: Equilibration time, Solvent volumes, temperature, pH.
 - 1.5.3. Single step and multi step extraction, Percentage extraction for single step and multistep extraction. Separation factor.
 - 1.5.4. Batch and continuous extraction
- 1.6. Chromatography : (05L)
 - 1.6.1. Introduction to Chromatography
 - 1.6.2. Classification of chromatographic methods based on stationary and mobile phase
 - 1.6.3. Paper Chromatography: Principle, techniques and applications of Paper Chromatography in separation of cations.
 - 1.6.4. Thin layer Chromatography Principle, technique and Applications in determining the purity of a given solute; Following progress of a given reaction .

References :

1. D.A. Skoog, D.M. West, F.J. Holler and CX.R. Crouch – Fundamentals of Analytical chemistry, 8th edition
2. G.H. Morrison and H. Freiser , Solvent extraction in analytical chemistry
3. P. G. Swell and B. Clarke, Chromatographic separations , Analytical chemistry by open Learning , John Wiley and sons, 1987
4. Modern Analytical Chemistry , David Harvey (page numbers 596 -606)
5. Modern Analytical Chemistry , David Harvey (page numbers 215 -217)

Unit –II - Instrumental Methods-II

(15 L)

Objectives

On completing this unit the learner is

- Expected to appreciate the nature of interaction between applied electrical potential and the concentration of the analyte.
- The nature of chemical reactions that influence potential of a given cell.
- Familiar with the various types of electrodes or half cells.
- Appreciate the nature, need and importance of pH
- Expected to know the applications of the various instrumental methods dealt with in this unit.

2. Instruments based on the electrochemical properties of the analytes

- 2.1. Potentiometry: (05 L)
 - 2.1.1. Principle.
 - 2.1.2. Role of Reference and indicator electrodes

- 2.1.3. Applications in Neutralisation reactions with reference to the titration of a Strong acid against a Strong Base (using quinhydrone electrode)
- 2.1.4. Graphical methods for detection of end points
- 2.2. pHmetry: **(04 L)**
 - 2.2.1. Principle
 - 2.2.2. Types of pH meters.
 - 2.2.3. Principle, Construction Working and Care of Combined Glass electrode
 - 2.2.4. Applications in Titrimetry (Strong acid-Strong Base) biological and environmental analysis.
- 2.3. Conductometry: **(06 L)**
 - 2.3.1. Principle
 - 2.3.2. Conductivity cell its construction and care
 - 2.3.3. Applications in Neutralisation Titrimetry with respect to
 - i. Strong Acid-Strong Base
 - ii. Strong Acid-Weak Base
 - iii. Strong Base-weak Acid
 - iv. Weak Acid- Weak Base.
 - 2.3.4. Advantages & limitations of conductometric titrations.

References:

- 1) Principles of Instrumental analysis, D. A. Skoog, 3rd edition, Saunders college publishing. Chapters: 20, 23 Page nos: 600 - 605, 631, 704 - 711.
- 2) Vogel's Text book of quantitative inorganic analysis, 4th edition, ELBS/ Longman. Chapters: XIV, XV Page nos: 566 - 601, 615 – 625.
- 3) Instrumental methods of analysis, B. K. Sharma, Goel publishing house. Miscellaneous methods: Chapters: 1, 3, 4 Page nos: 1 - 14, 21 - 57.

Unit III- Statistical Treatment of analytical data --II (15 L)

Objectives:

On completing this unit the learner is expected to understand

- i) The use of statistical methods in chemical analysis.
- ii) The nature of indeterminate errors
- iii) The randomness of such errors and its distribution around a correct or acceptable result
- iv) Computation of Confidence limits and confidence interval
- v) Test for rejection of doubtful result
- vi) Method to draw best fitting straight line

3.1.Nature of Indeterminate Errors: (03L)

- 3.1.1. The true and acceptable value of a result of analysis
- 3.1.2. Measures of central tendency: mean, median. mode, average
- 3.1.3. Measures of dispersion: Absolute deviation, relative deviation, relative average deviation, standard deviation,(s,sigma) variance, coefficient of variation

3.2. Distribution of random errors: (02L)

3.2.1. Gaussian distribution curve.

3.2.2. Equation and salient features of Gaussian distribution curve

3.3. Concept of Confidence limits and confidence interval and its computation using (03 L)

- (i) Population standard deviation
- (ii) Student's t test
- (iii) Range

3.4. Criteria for rejection of doubtful result (02 L)

- (i) 2.5 d rule
- (ii) 4.0 d rule
- (iii) Q test

3.5. Test of Significance (02 L)

- (i) Null hypothesis
- (ii) F-test (variance ratio test)

3.6. Graphical representation of data and obtaining best fitting straight line (03 L)

- (a) For line passing through origin
- (b) For line not passing through origin

[Numerical problems wherever possible, expected]

References:

1. Modern Analytical Chemistry, David Harvey (page numbers 53 -84)
2. Fundamentals of analytical chemistry – Skoog and West

Semester IV Chemistry Practicals:

Paper III Elective (Basics in analytical Chemistry)

1. Tools of Analytical Chemistry-II
 - a. Filtration Flasks, Funnels, Separating Funnels, Distillation apparatus, Vacuum Distillation assembly, Centrifuge machine, Electrophoresis apparatus.
 - b. Development chamber for chromatography
 - c. Electrodes like Reference Electrodes and Indicator Electrodes (with respect to care and maintenance.)
 - d. Conductivity cell (with respect to care and maintenance.)
 - e. Combined Glass electrode (with respect to care and maintenance.)
 - f. Types of Salt Bridges and preparation of any one or use of salt bridge, its effect on the potential of a given electrode/cell

(The learner should draw diagrams and write-ups providing uses of the items mentioned in (a and b) and Principle, Construction care and Uses of items (c) to (f) in his journal.)

2. **Paper chromatography:** Separation of cations like Fe(III), Ni(II) and Cu(II) in a sample.

3. Separation of a solute between two immiscible solvents to determine the distribution ratio and/or extraction efficiency. (Solutes could be as their aqueous solutions and the organic solvent ethyl acetate) Suggested solute for the distribution study: Fe (III) in aqueous solutions.

(The learner is expected to learn the technique of solvent extraction by using separating funnel, method to estimate the concentrations of the solute distributed in the two immiscible phases, determination of the extraction efficiency)

4. Conductometric titration: Estimation of given acid by conductometric titration with strong base and calculation of % error. (The learner is expected to learn the handling of the conductometer and the conductivity cell, determination of end point by plotting a graph. They are also expected to state the error estimate of their results).
5. Estimation of Fe(II) in the given solution by titrating against $K_2Cr_2O_7$ potentiometrically and calculation of % error. (The learner is expected to learn the handling of the potentiometer, use of Platinum electrode and reference electrode like SCE. They will learn to determine end point by plotting a graph. They are also expected to state the error estimate of their results).
6. Gravimetric estimation of Sulfate as $BaSO_4$ and calculation of % error. (The learner is expected to write a balanced chemical reaction, need for digestion of the precipitate and the skill required to carry out the incineration and to estimate the % error.)
(The learner is expected to write a balanced chemical reaction, need for digestion of the precipitate and the skill required to carry out the incineration and to estimate the % error.)

REFERENCES:

For paper III

1. D. A. Skoog, D. M. West, F. J. Holler, and S. R. Crouch, **Analytical Chemistry: An Introduction**, 7th ed., Chapter 15, pp. 345-381.
2. A.I. Vogel. "Textbook of Quantitative Inorganic Analysis," Longman, London (1961).
3. R.V. Dilts. "Analytical Chemistry. Methods of Separation," van Nostrand, N.Y. (1974).
4. **Some Experiments for B. Tech in Chemistry & Chemical Technology** compiled by Prof. J.B.BARUAH, Mrs. Abhilasha Mohan Baruah and Mr. Parikshit Gogoi

UNIVERSITY OF MUMBAI
No. UG//56 of 2016-17

CIRCULAR:-

A reference is invited to the Syllabi relating to the B.Sc. degree course, vide this office Circular No. UG/98 of 2015-16, dated 13th October, 2016 and the Principals of affiliated Colleges in Science are hereby informed that the recommendation made by the Ad-hoc Board of Studies in Chemistry at its meeting held on 7th July, 2016 has been accepted by the Academic Council meeting held on 14th July, 2016 vide item No. 4.13 and that in accordance therewith, the revised syllabus as per the Choice Based Credit System for T.Y. B.Sc. programme in Chemistry (Sem. V & VI), which are available on the University's web site (www.mu.ac.in) and that the same has been brought into force with effect from the academic year 2016-17.

MUMBAI – 400 032
/6 November, 2016


(Dr.M.A.Khan)
REGISTRAR

To,

The Principals of the affiliated Colleges in Science.

A.C/4.13/14.07.2016


No. UG//56A of 2016

MUMBAI-400 032

/6 November, 2016

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(Dr.M.A.Khan)
REGISTRAR

PTO..

UNIVERSITY OF MUMBAI



Syllabus for sem V & VI

Program: B.Sc.

Course: CHEMISTRY

(Credit Based Semester and Grading System with
effect from the academic year 2016–2017)

T.Y.B.Sc.
CHEMISTRY
Credit Based Semester and Grading System
To be implemented from the Academic year 2016-2017

SEMESTER V

Theory

Course	UNIT	TOPICS	Credits	L / Week
USCH501	I	<p>1.1 Colligative Properties of Dilute Solutions (8L)</p> <p>1.1.1 Dilute solution, colligative properties, Raoult's law, relative lowering of vapour pressure.</p> <p>1.1.2 Elevation in boiling point of a solution, thermodynamic derivation relating elevation in the boiling point of a solution and the molar mass of the non-volatile solute.</p> <p>1.1.3 Depression in freezing point of a solution, thermodynamic derivation relating the depression in the freezing point of a solution and the molar mass of the non-volatile solute.</p> <p>1.1.4 Osmotic pressure, van't Hoff's equation for osmotic pressure, (derivation is expected) and determination of molar mass of the solute. Abnormal molar masses of solutes and van't Hoff factor (calculation of Degree of Association and Degree of Dissociation.)</p> <p>1.2 Phase Rule (7L)</p> <p>1.2.1 Gibb's phase rule and terms involved in the equation.</p> <p>1.2.2 Application of phase rule to ONE component systems (i) water system, (ii) sulphur system</p> <p>1.2.3 Application of phase rule to TWO component systems, condensed systems, condensed phase rule, eutectic systems (Lead-Silver system), desilverisation of lead.</p> <p>1.2.4 Introduction to three component system, explanation of phase diagram for three liquids forming one immiscible pair.</p>	2.5	1

		<p>2.1 Surface Chemistry & Catalysis (9L)</p> <p>2.1.1 Adsorption: Physical and Chemical Adsorption, types of adsorption isotherms . Langmuir's adsorption isotherm (Postulates and derivation expected). B.E.T. equation for multilayer adsorption, (derivation not expected). significance of the terms involved in the equation is expected.),determination of surface area of an adsorbent using B.E.T. equation. Numericals on surface area determination are expected.</p> <p>2.1.2 Catalysis: Homogeneous and heterogeneous catalysis, catalytic activity and selectivity, promoters, inhibitors, catalyst poisoning and deactivation,</p> <p>2.1.3 Acid-Base catalysis, mechanism and kinetics of acid-base catalyzed reactions, effect of pH on acid-base catalyzed reactions. Mechanism and kinetics of enzyme catalyzed reaction (Michaelis-Menten equation).</p> <p>2.2 Colloids (6L)</p> <p>2.2.1 Introduction to colloidal state of matter.</p> <p>2.2.2 Origin of charge on colloidal particles. Concept of electrical double layer, zeta potential, Helmholtz and Stern model, Electro-kinetic phenomena: 1.Electrophoresis, 2.Electrophoresis , 3. Streaming potential 4. Sedimentation potential .</p> <p>2.2.3 Colloidal electrolytes.</p> <p>2.2.4 Donnan Membrane Equilibrium.</p> <p>2.2.5 Surfactants, micelle formation, applications of surfactants in detergents, food industry, in pesticide formulations.</p>	
	II		
	III	<p>3.1 Electrochemistry – Electrochemical cells (15L)</p> <p>3.1.1 Lewis concept of Activity and Activity coefficient, Mean ionic activity and mean ionic activity coefficient γ_{\pm} of an electrolyte, expression for activities of electrolytes of different valence type, ionic strength</p>	

		<p>3.1.2 Classification of cells: 1.chemical cells without transference 2.Concentration cells with and without transference (derivations of expression for concentration cell EMF are expected) Origin of liquid-liquid junction potential and its elimination using a salt bridge.</p> <p>3.1.3 Applications of EMF .measurements in the determination of 1. pH of a solution using quinhydrone and glass electrode. 2 solubility and solubility product of sparingly soluble salts using chemical cell and concentration cell method 3. determination of liquid-liquid junction potential .</p>		
	IV	<p>4.1 Introduction to Polymers (8L) 4.1.1 Basic terms : macromolecule, monomer, repeat unit, degree of polymerization. 4.1.2. Classification of polymers based on (i) source, (ii) structure, (iii) thermal response, (iv) physical properties. 4.1.3. Molar masses of polymers: 1. Number average molar mass, 2.Weight average molar mass, 3. Viscosity average molar mass, monodispersity, polydispersity. 4.1.4. Methods of determining molar masses of polymers : 1. Ultracentrifuge method (Limiting velocity method only). Viscosity method (Mark-Houwink equation). 4.1.5. Introduction to light emitting polymers (characteristics, method of preparation and it's application are expected).</p> <p>4.2 Crystalline State (7L) 4.2.1. Laws of Crystallography 4.2.2. Characteristics of simple cubic, face centered and body centered cubic system, inter planar distance in cubic lattices (only expressions for ratios of inter planar distances are expected). 4.2.3. Use of X- rays in the study of crystal structure, Bragg's equation (derivation expected), X- ray diffraction method of studying crystal lattices, structure of NaCl and KCl,</p>		1

		determination of Avagadro number. 4.2.4. Elementary idea of defects in crystals- Frenkel defect and Schottky defect.		
USCH502	I	1. Chemical Bonding And Solid State Chemistry (15L) 1.1 Molecular Symmetry (7L) 1.1.1 Introduction and Importance. 1.1.2 Symmetry elements and symmetry operations. 1.1.3 Concept of a Point Group with illustrations using the following point groups: (i) C_{av} (HCl), (ii) D_{ah} (H_2), (iii) C_{2v} (H_2O), (iv) C_{3v} (NH_3), (v) C_{2h} (trans – trichloroethylene), and (vi) D_{3h} (BCl_3). 1.2 Molecular Orbital Theory for Polyatomic Species (5L) 1.2.1 Simple triatomic species: H_3^+ and H_3 (correlation between bond angle and Molecular orbitals). Term such as Walsh correlation diagram, Symmetry Adapted Linear Combinations (SALCs), Ligand Group orbitals (LGOs), transformation of atomic orbitals into appropriate symmetry types, expected to be discussed 1.3 (3L) Other molecules (considering only σ -bonding): i) BeH_2 , ii) H_2O , Explanation of terms viz. crystal lattice, lattice points, unit cells and lattice constants.	2.5	1

	II	<p>2. Solid Materials (15L) 2.1 Structures of Solids (10L) 2.1.1 Importance of solid state chemistry. 2.1.2 Classification of solids on the basis of bonding. 2.1.3 Closest packing of rigid spheres (hcp, ccp), packing density in simple cubic, bcc, fcc and hcp lattices (numerical problems expected). Point defects with respect to Frenkel and Schottky defects expected. 2.1.4 Structure metallic solids. 2.1.5 Tetrahedral and octahedral interstitial voids in ccp lattice, tetrahedral holes, limiting radius ratios for different coordination numbers and their significance, calculation of limiting radius ratio for coordination number 4. 2.1.7 Structures of sodium chloride and cesium chloride. 2.2 Superconductivity (05L) 2.2.1 Superconductivity, Meissner effect. 2.2.2 Different superconducting materials viz, conventional superconductors, organic superconductors, alkali metal fullerenes (A₃C₆₀) and high temperature Superconductors. 2.2.3 Applications of superconducting materials.</p>		1
	III	<p>3. Chemistry of elements (15L) 3.1 Inner transition elements (3L) 3.1.1 Introduction: position of f-block elements and comparison between lanthanides and actinides 3.1.2 The shapes of f-orbitals. 3.1 Lanthanides Series (10L) 3.2.1 Chemistry of lanthanides with reference to (i) lanthanide contraction, (ii) Oxidation states (iii) magnetic and spectral properties, 3.2.2 Occurrence, extraction and separation of lanthanides by Solvent extraction. 3.2.3 Applications of lanthanides.</p>		1

		3.3 Actinides Series (2L) 3.3.1 Chemistry of Uranium and with reference to occurrence, extraction (solvent extraction method), 3.3.2 Properties and applications.		
	IV	4. Solution Chemistry 4.1 Acid-base Chemistry in Aqueous Medium (8L) 4.1.1 Acidity of mono- and polyatomic cations. 4.1.2 Basicity of mono- and polyatomic anions (discussion for 4.1.1 as well as 4.1.2 to Include Latimer equation and predominance diagrams). 4.2 Chemistry in Non-aqueous Solvents (7L) 4.2.1 Classification of solvents and importance of non-aqueous solvents. 4.2.2 Characteristics and study of liquid ammonia, dinitrogen tetraoxide and acetic acid as non-aqueous solvents with respect to (i) acid-base reactions and (ii) redox reactions.		
USCH503	I	1.1. Mechanism of Organic Reactions (15L) 1.1.1 Thermodynamic and Kinetic control of organic reactions: Concept with mechanisms of the following reactions: addition of HX to butadiene; sulfonation of naphthalene. Nucleophilicity/ electrophilicity vs Basicity/acidity. 1.1.2 Mechanism of elimination reactions, with stereochemistry: E1 and E2 reactions: regioselectivity (Saytzeff and Hofmann rules). 1.1.3 Mechanism of reactions of carbonyl compounds with nucleophiles: 1.1.3.1 Formation of acetals/ketals from aldehydes and ketones. 1.1.3.2 Reaction of aldehydes and ketones with primary and secondary amines. 1.1.3.3 Acyl nucleophilic substitution (tetrahedral mechanism): Acid catalysed esterification of Carboxylic acids and base promoted hydrolysis of esters. 1.1.4 Mechanism of rearrangements with examples and stereochemistry wherever applicable. 1.1.4.1 Migration to electron deficient carbon: Pinacol,	2.5	1

		<p>Benzylic acid. 1.1.4.2 Migration to electron deficient nitrogen: Beckmann, Hofmann.</p> <p>1.1.5 Mechanism of the following reactions with synthetic application: Claisen condensation, Michael addition.</p>		
	II	<p>2. Stereochemistry (15L)</p> <p>2.1.1 Molecular chirality and element of symmetry: Mirror Plane symmetry (inversion centre), rotation-reflection (alternating) axis, Chirality of compounds without stereogenic centre: cummulenes, spirans and biphenyls.</p> <p>2.1.2 Stability of cycloalkanes: Strains in cycloalkanes-angle, eclipsing, transannular (3 to 8 membered). Conformations of cyclohexane, mono- and di- alkyl cyclohexanes and their relative stabilities.</p> <p>2.1.3 Stereo selectivity and Stereo specificity: Idea of enantioselectivity (ee) and diastereoselectivity (de). Topicity-enantiotopic and diastereotopic atoms, groups and faces.</p> <p>Stereochemistry of-</p> <p>(1) Substitution reactions- S_N1, S_N2, S_Ni (reaction of alcohol with thionyl chloride). (2) $E2$-anti-elimination-Base induced dehydrohalogenation of 1-bromo-1,2- diphenylpropane. (3) Addition reactions to olefins-i) catalytic hydrogenation ii) bromination (electrophilic anti addition) (iii)syn-hydroxylation (molecular addition) with OsO_4 and $KMnO_4$.</p>		1
	III	<p>3.1 Carbohydrates (10L)</p> <p>3.1.1 Introduction: Classification, Sources, Reducing and non-reducing sugars DL notation.</p> <p>3.1.2 Structures of monosaccharides: Fischer projection (4-6 carbon monosaccharides and Haworth formula-Furanose and pyranose forms of pentoses and hexoses. Interconversion :open and Haworth forms of monosaccharides with 5 and 6 carbons. Chair conformation with stereochemistry of D-glucose and D-fructose. Stability of chair forms of D-</p>		1

		<p>glucose.</p> <p>3.1.3 Determination of open chain configuration- of D-glucose assuming the configuration of D-arabinose; and of D-fructose assuming the configuration of D-glucose.</p> <p>3.1.4 Anomers and epimers of monosaccharides. Enantiomers and diastereomers of glucose. Mutarotation (with mechanism) in D-glucose.</p> <p>3.1.5 Chain lengthening and shortening reaction: Modified kiliani-fischer synthesis. Wohl method.</p> <p>3.1.6 Reactions of D-glucose and D-fructose: (a) osazone formation (b) reduction- H_2/Ni, $NaBH_4$ c)oxidation- bromine water, HNO_3, HIO_4. D) interconversion of D-glucose and D-fructose e) acetylation f) methylation [e and f with cyclic pyranose form].</p> <p>3.1.7 Commercial importance of carbohydrates in pharmaceutical, paper,food and Textile industries.</p> <p>3.2. IUPAC Nomenclature (5L) IUPAC systematic and accepted trivial nomenclature of the following classes of compounds, including substituted ones (up to 2 substituents/ functional groups):</p> <p>3.2.1 (a)Bicyclic compounds- spiro-,fused, and bridged (upto 11 carbon atoms)-saturated and unsaturated compounds.</p> <p>3.2.2 (b) Biphenyls.</p> <p>3.2.3 (c) Cummulenes upto 3 double bonds (d) Monocyclic (5 and 6 membered) aromatic and non-aromatic heterocyclic compounds containing a maximum of two hetero atoms among N,O,S.</p> <p>3.1.1Introduction:Classification, Sources, Reducing and non-reducing sugars DL notation.</p> <p>3.1.2 Structures of monosaccharides: Fischer projection (4- 6 carbon monosaccharides and Haworth formula-Furanose and pyranose forms of pentoses and hexoses. Interconversion :open and Haworth forms of monosaccharides with 5 and 6 carbons. Chair conformation with</p>		
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		<p>stereochemistry of D-glucose and D-fructose. Stability of chair forms of D-glucose.</p> <p>3.1.3 Determination of open chain configuration- of D-glucose assuming the configuration of D-arabinose; and of D-fructose assuming the configuration of D-glucose.</p> <p>3.1.4 Anomers and epimers of monosaccharides. Enantiomers and diastereomers glucose. Mutarotation (with mechanism) in D-glucose.</p> <p>3.1.5 Chain lengthening and shortening reaction: Modified kiliani-fischer synthesis. Wohl method.</p> <p>3.1.6 Reactions of D-glucose and D-fructose: (a) osazone formation (b) reduction- H_2/Ni, $NaBH_4$ c)oxidation- bromine water, HNO_3, HIO_4. D) interconversion of D-glucose and D-fructose e) acetylation f) methylation [e and f with cyclic pyranose form].</p> <p>3.2. IUPAC Nomenclature (5L) IUPAC systematic and accepted trivial nomenclature of the following classes of compounds, including substituted ones (up to 2 substituents/functional groups):</p> <p>3.2.1 (a)Bicyclic compounds- spiro-,fused, and bridged (upto 11carbon atoms)-saturated and unsaturated compounds.</p> <p>3.2.2 (b) Biphenyls.</p> <p>3.2.3 (c) Cummulenes upto 3 double bonds (d) Monocyclic (5 and 6 membered) aromatic and non-aromatic heterocyclic compounds containing a maximum of two hetero atoms among N,O,S.</p>		
	IV	<p>4.1. Heterocyclic Chemistry (8L)</p> <p>4.1.1 Introduction: Electronic structure and aromaticity of furan, pyrrole,thiophene and pyridine.</p> <p>4.1.2 Synthesis: Synthesis of furans, pyrroles, and thiophenes by Paal-Knor synthesis. Pyridines by Hantzsch synthesis and from 1,5-diketones.</p> <p>4.1.3 Reactivity: Reactivity towards electrophilic substitution reactions- of furan, pyrrole and thiophene on basis</p>		1

		<p>of stability of intermediate; and of pyridine on the basis of electron distribution. Nucleophilic substitution reaction of pyridine on the basis of electron distribution.</p> <p>4.1.4 Reactions of heterocycles: The following reactions of furan, pyrrole and thiophene: Halogenation, Nitration, Sulphonation, Vilsmeier formylation reaction, Friedel-Crafts reaction. Furan: Diels-Alder reaction. Ring opening of furan. Pyrrole: Acidity and basicity of pyrrole - Comparison of basicity of pyrrole and pyrrolidine, Acid catalyzed polymerization of pyrrole. Pyridine: Basicity. Comparison of basicity of pyridine, pyrrole and piperidine. Sulphonation of pyridine, with and without catalyst. Reduction. Oxidation of alkyl pyridines and action of sodamide (Chichibabin reaction). N-methylation of pyridine. Quaternization of piperidine, pyrrolidine and Hofmann elimination of the quaternary salts.</p> <p>4.2. Organic Synthesis (7L)</p> <p>4.2.1 Introduction: Criteria for ideal organic synthesis. Yield and selectivity. Multi-component synthesis – with examples, Mannich reaction, Hantzsch synthesis of pyridines (without mechanism).</p> <p>4.2.2 Illustrative synthesis of industrially important compounds: Ibuprofen (chiral synthesis), paracetamol (green synthesis), L-ascorbic acid (from D-glucose), norfloxacin, thyroxine, vanillin, methyl dihydrojasmonate (Hedione), Bifenox-I, pigment red 242, indigo, 2-hydroxy-3-amino-5-nitrobenzene sulphonic acid.</p> <p>4.2.3 Newer methods of organic synthesis: Introduction to the use of the following in organic synthesis: Ultrasound, microwaves, PTC.</p> <p>4.1.1 Introduction: aromaticity of furan, pyrrole, thiophene and pyridine.</p> <p>4.1.2 Synthesis: Synthesis of furans, pyrroles, and thiophenes by Paal-Knorr synthesis. Pyridines by Hantzsch</p>		
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		<p>synthesis and from 1,5-diketones. 4.1.3</p> <p>Reactivity: Reactivity towards electrophilic substitution reactions- of furan, pyrrole and thiophene on basis of stability of intermediate; and of pyridine on the basis of electron distribution. Nucleophilic substitution reaction of pyridine on the basis of electron distribution.</p> <p>4.1.4 Reactions of heterocycles: The following reactions of furan, pyrrole and thiophene: Vilsmeier formylation reaction, Friedel-Crafts reaction.</p> <p>Furan: Diels-Alder reaction. Ring opening of furan. Pyrrole: Acidity and basicity of pyrrole-Comparison of basicity of pyrrole and pyrrolidine, Acid catalyzed polymerization of pyrrole. Pyridine: Basicity. Comparison of basicity of pyridine, pyrrole and piperidine. Sulphonation of pyridine, with and without catalyst. Reduction. Oxidation of alkyl pyridines and action of sodamide (Chichibabin reaction). N-methylation of pyridine. Quaternization of piperidine, pyrrolidine and Hofmann elimination of the quaternary salts.</p> <p>4.2. Organic Synthesis (7L)</p> <p>4.2.1 Introduction: Criteria for ideal organic synthesis. Yield and selectivity. Multi- component synthesis – with examples, Mannich reaction, Hantzsch synthesis of pyridines (without mechanism).</p> <p>4.2.2 Illustrative synthesis of industrially important compounds: Ibuprofen (chiral synthesis), paracetamol (green synthesis), L- ascorbic acid (from D-glucose), norfloxacin, nalidixic acid, vanillin, methyl dihydrojasmonate (Hedione), Bifenox-I, pigment red 242, 2-hydroxy-3-amino-5-nitrobenzene sulphonic acid.</p> <p>4.2.3 Newer methods of organic synthesis: Introduction to the use of the following in organic synthesis: Ultrasound, microwaves, PTC.</p>		
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USCH504	I	<p>1. Treatment of analytical data-I and sampling (15 L)</p> <p>1.1 Treatment of Analytical Data (7L)</p> <p>Types of errors, determinate and indeterminate errors, minimization of errors, constant and proportionate errors, accuracy and precision, measures of dispersion and central tendency: mean, median, average deviation, relative average deviation, standard deviation, variance, coefficient of variation.[Numerical problems expected]</p> <p>1.2 Sampling (8L)</p> <p>Terms involved, importance of sampling, sampling techniques, sampling of gases, ambient and stack sampling, equipment used, sampling of homogeneous and heterogeneous liquids, sampling of static and flowing liquids, methods and equipments used, sampling of solids, importance of particle size and sample size, samples used, need for the reduction in the sample size, methods of reduction in sample size, collection, preservation and dissolution of the sample.</p>	2.5	1
	II	<p>2. Titrimetric analysis-I and UV-Visible spectroscopy. (15L)</p> <p>2.1 Acid-base Titrations (5L)</p> <p>Construction of titration curves and choice of indicators in the titration of [1] strong acid and strong base, [2] strong acid and weak base, [3] weak acid and strong base, [4] weak acid and weak base.</p> <p>2.2 Precipitation titrations (4L)</p> <p>Argentometric titrations, construction of the titration curve, Volhard's method, Mohr's method, adsorption indicators, theory and applications.</p> <p>2.3 U.V. Visible Spectroscopy (4L)</p> <p>Photometers and spectrophotometers, Instrumentation in the case of single and double beam spectrophotometers, Qualitative and quantitative analysis, calibration curve method.</p>		1

	III	3. Methods of separation-I (15L) 3.1 Solvent Extraction (8L) Partition coefficient and distribution ratio, extraction efficiency, separation factor, role of complexing agents in solvent extraction, chelation, ion pair formation, solvation, types of solvent extraction: batch, continuous. [Numerical problems expected] 3.2 Chromatography (2L) Introduction to chromatographic techniques, classification of chromatographic techniques. 3.3 Planar Chromatography (5L) Principle, techniques and applications of [1] Paper chromatography [2] Thin layer chromatography		1
	IV	4. Optical methods (15L) 4.1 Atomic Spectroscopy (7L) Absorption and emission spectra, energy level diagrams, process involved in atomization, flame photometry, flame atomizer, types of burners, monochromators and detectors, atomic absorption spectroscopy; flame and electrothermal atomizer, sources, instrumentation, quantitative applications of atomic absorption and flame photometry, calibration curve method, standard addition and internal standard method. 4.2 Molecular Fluorescence and Phosphorescence Spectroscopy (4L) Theory, instrumentation and applications 4.3 Turbidimetry and Nephelometry (4L) Scattering of light, effect of concentration, particle size and wavelength on light scattering, instrumentation and applications.		1

Practicals

USCHP05	<p style="text-align: center;">Practicals of Course USCH501</p> <p><u>Physical Practicals</u></p> <p>Chemical Kinetics – To determine the order between $K_2S_2O_8$ & KI by fractional change method.</p> <p>Viscosity – To determine the molecular weight of high polymer polyvinyl alcohol (PVA) by viscosity measurement.</p> <p style="text-align: center;">OR</p> <p>To determine the radius of a glycerol molecule by viscosity measurement.</p> <p>Potentiometry –</p> <ol style="list-style-type: none"> To determine the amount of Fe(II) in the given solution by titration with a standard $K_2Cr_2O_7$ solution and hence to find the formal redox potential of Fe^{3+}/Fe^{2+} To determine the solubility product and solubility of AgCl potentiometrically using chemical cell. <p style="text-align: center;">OR</p> <ol style="list-style-type: none"> To determine the solubility product and solubility of AgCl potentiometrically using concentration cell. <p>Colorimetry – To determine the amount of Fe(III) present in the given solution by using salicylic acid by colorimetric titration.(static method) ($\lambda = 525\text{ nm}$)</p> <p>pH –Metry – To determine acidic and basic dissociation constants of amino acid hence to calculate isoelectric point.</p> <p>Course USCH502</p> <p><u>Inorganic Practicals</u></p> <p>Inorganic preparations</p> <ol style="list-style-type: none"> Potassium diaquo bis-(oxalate)cuprate (II)$K_2[Cu(C_2O_4)_2 \cdot (H_2O)]$ 	3	8

	<p>2. $\text{CuCl}_2 \cdot 2\text{DMSO}$</p> <p>3. Bis(ethylene diamine)iron(II)sulphate $[\text{C}_2\text{H}_4(\text{NH}_2)_2\text{FeSO}_4 \cdot 4\text{H}_2\text{O}]$.</p> <p>4. Skill based Qualitative preparation of Chromium (II)acetate $\text{Cr}(\text{OAc})_2$ so that the following outcomes are achieved:</p> <ul style="list-style-type: none"> • Setting up reactor for Cr(II) ions • Identification of oxidation states of Chromium • Preparation of chromium(II)acetate • Isolation of the product 		
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	Volumetric analysis <ol style="list-style-type: none"> 1. Determination of magnesium from the supplied commercial sample of Milk of magnesia tablet 2. Estimation of Nickel(II) complexometrically using murexide indicator (Students are expected to standardize supplied EDTA solution using $\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$) 		
USCHP06	<p style="text-align: center;">Practicals of Course USCH503</p> <p><u>Organic Practicals</u></p> <ol style="list-style-type: none"> i. Separation of binary (solid-solid) mixture. (Weights and physical constant of both crude components of the mixture are to be reported. (Minimum 4 mixtures) ii. Identification of an organic compound of known chemical type. (Minimum 4 mixtures) <p style="text-align: center;">Syllabus for Organic Chemistry Sem-VI</p> <p><u>Organic preparations</u></p> <ol style="list-style-type: none"> i. Acetylation of hydroquinone. ii. Nitration of nitrobenzene. iii. Hydrolysis of ethyl benzoate. iv. Bromination of acetanilide. <p><u>Course USCH504</u></p> <p><u>Analytical Practicals</u></p> <ol style="list-style-type: none"> 1. Estimation of persulphate in the given sample by the method of back titration. 2. Determination of the calcium and the magnesium content of a dolomite sample. 3. Determination of glucose content of a honey sample by Winstater's method. 4. Determination of the amount of fluoride in the given solution colorimetrically. 5. Determination of Vitamin C content of a given tablet by titration with sodium hydroxide pH metrically 	3	8

**T.Y.B.Sc.
Chemistry
Credit Based Semester and Grading System
To be implemented from the Academic year 2016-2017**

**SEMESTER VI
Theory**

Course	UNIT		Credits	L / Week
USCH601	I	1.1 Molecular Spectroscopy –I (15L) 1.1.1 Dipole moment: Dipole moment, polarization of a bond, bond moment, dipole moment and molecular structure. 1.1.2 Rotational Spectrum: Rotational spectrum of a diatomic molecule, rigid rotor, moment of inertia, energy levels, conditions for obtaining pure rotational spectrum, selection rule, nature of spectrum, determination of inter nuclear distance and isotopic shift. 1.1.3 Vibration (IR) spectrum: Vibrational motion, degrees of freedom, modes of vibration, vibrational spectrum of a diatomic molecule, simple harmonic oscillator, energy levels, zero point energy, conditions for obtaining vibrational spectrum, selection rule, nature of spectrum. 1.1.4 Vibration-Rotation spectrum of diatomic molecule vibrating rotor, energy levels, selection rule, nature of spectrum, R and P branches, anharmonic oscillator : energy levels, selection rule, fundamental band, overtones . Application of vibration-rotation spectrum in determining Force constant, determination and significance. Introduction to infrared spectra of simple molecules like H ₂ O and CO ₂ 1.1.5 Raman Spectroscopy : Scattering of electromagnetic radiation, Rayleigh scattering, Raman scattering, nature of Raman spectrum , Stoke's lines, anti-Stoke's lines, Raman shift, quantum theory of Raman spectrum, comparative study of IR and Raman spectra, rule of mutual exclusion.(example of CO ₂ molecule).	2.5	1
	II	2.1 Basics of Quantum Chemistry (10L) 2.1.1 Classical mechanics, limitations of classical mechanics, Black body radiation, photoelectric effect, Compton effect. 2.1.2 Introduction to quantum mechanics,		1

		<p>Planck's theory of quantization, wave particle duality, de-Broglie equation, Heisenberg's uncertainty principle.</p> <p>2.1.3 Progressive and standing waves, boundary conditions, Schrodinger's time independent wave equation(derivation not expected)., interpretation and properties of wave function.</p> <p>2.1.4 Postulates of quantum mechanics (following are to be considered),1. state function and it's significance2. Concept of operators : definition, addition, subtraction and multiplication of operators, commutative and non- commutative operators, linear operator, Hamiltonian operator, 3. Eigen function and eigen value, eigen value equation.</p> <p>2.2 Applied Electrochemistry (5L)</p> <p>2.2.1 Polarization, concentration polarization and it's elimination</p> <p>2.2.2 Decomposition potential, experimental determination of decomposition potential, factors affecting decomposition potential (nature of electrolyte, nature of electrodes and temperature) Tafel's equation for hydrogen overvoltage, Overvoltage, experimental determination of over-voltage,</p> <p>2.2.3</p> <p>Electroplating ---objectives and procedures</p>		
	III	<p>3.1 Renewable Energy Sources (5L)</p> <p>3.1.1. Lithium ion cell.</p> <p>3.1.2. Fuel cells; Choice of fuel and oxidant, Bacon's H₂ and O₂ fuel cell.</p> <p>3.1.3. Solar cells, solar energy, photovoltaic effect, semiconductors as solar energy converters, silicon solar cell</p> <p>3.1.4. Hydrogen : Fuel of the future, production of hydrogen by direct electrolysis of water, advantages of hydrogen as a universal energy medium.</p> <p>3.2 Nuclear Magnetic Resonance Spectroscopy (6L)</p> <p>3.2.1. Nuclear spin, magnetic moment, nuclear 'g' factor, energy levels, Larmor precession, Relaxation processes in n.m.r. (spin-spin relaxation and spin-lattice relaxation).</p> <p>3.2.2. NMR Spectrometer, chemical shift, shielding and deshielding of protons, low resolution n.m.r. spectrum of methanol and ethanol.</p>		1

		3.3 Chemical Kinetics (4 L) 3.3.1 Collision theory of reaction rates, application of collision theory to 1. uni-molecular reaction and 2. bimolecular reaction (Lindemann theory, derivation expected). Merits and drawbacks of collision theory. 3.3.2 Classification of reactions as slow, fast and ultra-fast. study of kinetics of fast reactions by Stop flow method.		
	IV	4.1 Nuclear Chemistry 4.1.1 Types of nuclear radiations and their characteristics, behaviour of ion pairs in electric field, detection and measurement of nuclear radiations using G. M. Counter and Scintillation Counter. 4.1.2 Kinetics of radioactive decay, units of radioactivity (Curie, Becquerel, Rutherford) 4.1.3 Radioactive equilibrium (secular and transient), determination of radioactive constants for radio-elements having 1. moderate half life, 2. long half life 3. extremely long or short half life. 4.1.4 Use of radioisotopes as tracers in 1. chemical investigations- reaction mechanism, 2. age determination- dating by carbon-14 4.1.5 Nuclear reactions – nuclear transmutation, artificial radioactivity Q-value of nuclear reaction, threshold energy. 4.1.6 Fissile and fertile material, nuclear fission, chain reaction, factor controlling fission process. (multiplication factor and critical size or mass of fissionable material), nuclear power reactor and breeder reactor.		
USCH602	I	Coordination Chemistry (15L) 1.1 Crystal Field Theory (CFT) 1.1.1 Basic tenets of Crystal field theory and effect of crystal field on central metal valence orbitals. 1.1.2 Splitting of <i>d</i> orbitals in octahedral, tetrahedral and square planar complexes. 1.1.3 Crystal field splitting energy ($10Dq$) for octahedral complexes and factors affecting the magnitude of $10Dq$. 1.1.4 Crystal field stabilization energy (CFSE), calculation of CFSE, for octahedral and tetrahedral complexes with	2.5	1

		<p>d^1 to d^{10} metal ion configurations.</p> <p>1.1.5 Effect of crystal field splitting on i) Ionic radius and ii) Lattice energy.</p> <p>1.1.6 Theoretical failure of the CFT model.</p> <p>1.1.7 Experimental evidence for co- valence in co-ordination compounds.(i) ESR spectrum of $[\text{IrCl}_6]^{2-}$ (ii) NMR spectrum of tris (acetyl acetanato) vanadium complex, (iii) Intensities of $d-d$ transitions, and (iv) Nephelauxetic effect. Consequences of crystal field splitting on various properties such as ionic radii, hydration energy, lattice energy, enthalpies of formation, colour and magnetic properties.</p> <p>1.2 Molecular Orbital Theory (MOT) of Coordination Complexes</p> <p>1.2.1 Application to octahedral complexes in case of (i) $[\text{Ti}(\text{H}_2\text{O})]^{3+}$, (ii) Fluoro complexes of Fe(II) and Fe (III) and (iii) Cyano complexes of Fe(II) and Fe (III).</p> <p>1.2.2 Effect of pi-bonding an ligand field splitting parameter in $\text{M} \rightarrow \text{L}$ and $\text{L} \rightarrow \text{M}$ interactions.</p> <p>1.3 Electronic States and Terms for Polyelectronic Atoms</p> <p>1.3.1 Introduction: electronic configuration and electronic states, Term symbols, coupling of spin momenta (M_s),orbital momenta (M_l)and spin- orbit coupling or Russell-Saunders coupling.</p> <p>1.3.2 Determination of Terms for p^2 electronic configuration (as in a carbon atom).</p> <p>1.3.3 Terms and micro-states for transition metal atoms/ions.</p>		
	II	<p>2. Properties of Coordination compounds (15L)</p> <p>2.1 Stability of Complexes (5L)</p> <p>2.1.1 Thermodynamic stability and kinetic stability of complexes with examples.</p> <p>2.1.2 Stability constants: Stepwise and overall constants and their inter- relationship.</p> <p>2.1.3 Factors affecting thermodynamic stability.</p> <p>2.1.4 Potentiometric method of determination of stability constants with example of silver-ammonia complex.</p> <p>2.2 Substitution Reactions in Octahedral Complexes (5L)</p>		1

2.2.1 Introduction, types of reactions in complexes.

2.2.2 Ligand substitution reactions: basic mechanisms.

2.2.3 Inert and labile complexes and

		<p>electronic configurations and lability of complexes.</p> <p>2.2.4 Acid hydrolysis, base hydrolysis and anation reactions.</p> <p>2.3 Electronic Spectra (5L)</p> <p>2.3.1 Types of electronic transitions like intra –ligand transitions, charge transfer transitions and intra-metal transitions and (<i>d-d</i> or ligand field transitions for transition metals).</p> <p>2.3.2 Rules for electronic transitions: Spin and Orbital or Laporte selection rules.</p> <p>Orgel Diagrams for D Terms (i.e., d^1, d^4 and d^6, d^9 electronic configurations) and its use in interpretation of visible electronic absorption spectra of these configurations.</p>		
	III	<p>Organometallic Chemistry (15L)</p> <p>3.1 Organometallic Compounds of main group metals (6L)</p> <p>3.1.1 Introduction: General synthetic methods: (i) Oxidative addition, (ii) Metal-Metal exchange (Transmetallation), (iii) Carbanion-Halide exchange, (iv) Metal Hydrogen exchange and (v) Methylene insertion reactions.</p> <p>3.1.2 Chemical reactions: (i) Reactions with oxygen, (ii) Alkylation and arylation reactions (iii) Reactions with protic reagents and (iv) Complex formation reactions.</p> <p>3.2 Organometallic compounds of transition metals (9L)</p> <p>3.2.1 Synthesis, structure, reactions and of ferrocene.</p> <p>3.2.2 Bonding in ferrocene on the basis of VBT.</p> <p>3.2.3 Bonding in Re and Mo halide complexes.</p> <p>Some Selected Topics (15L)</p> <p>4.1 Inorganic Polymers (3L)</p> <p>4.1.1 Various methods of classification with examples.</p> <p>4.1.2 Chemistry of borazine with reference to preparation, properties, structures, bonding and applications.</p> <p>4.2 Characteristics and Treatment</p>		1
	IV			
				1

		<p>of Liquid Effluent (06L)</p> <p>4.2.2 Characterization of waste: biochemical oxygen demand (BOD), chemical oxygen demand (COD), total organic carbon (TOC), aerobic and anaerobic processes.</p> <p>4.2.3 Removing of solid contaminants, physical and chemical principles such as coagulation, flocculation and sedimentation.</p> <p>4.2.4 Primary, secondary and tertiary of liquid effluents.</p> <p>4.3 Nanomaterials(04L)</p> <p>4.3.2 Introduction and importance of nanomaterials.</p> <p>4.3.3 Properties (Comparison between bulk and nanomaterials): (i) Optical properties, (ii) Electrical conductivity, and (iii) Mechanical properties.</p> <p>4.3.4 Forms of nanomaterials: nanofilms, nanolayers, nanotubes, nanowires, and nanoparticles.</p> <p>4.3.5 Chemical methods of preparation: (i) Colloidal route, and (ii) Sol-gel method.</p> <p>4.5 Inorganic Pharmaceuticals (2L)</p> <p>4.4.2 Gastrointestinal agents viz., (i) antacids (aluminium hydroxide, milk of magnesia, sodium bicarbonate and (ii) cathartics (magnesium sulphate and sodium phosphate).</p> <p>Topical agents viz., (i) protectives and adsorbents (talc, calamine), (ii) antimicrobial agents (potassium permanganate, tincture iodine, boric acid) and astringents (alum).</p>		
USCH603	I	<p>1.1 Spectroscopy (15L)</p> <p>1.1.1 Introduction : Electromagnetic spectrum, units of wavelength and frequency.</p> <p>1.1.2 UV- Visible Spectroscopy: Basic theory, solvents, nature of UV-VIS spectrum, concept of Chromophore, auxochrome, bathochromic shift, Hypsochromic shift hyperchromic</p>	2.5	1

		<p>effect and chromophore-auxochrome interactions.</p> <p>1.1.3 IR Spectroscopy: Basic theory, nature of IR spectrum, selection rule , fingerprint region.</p> <p>1.1.4 PMR Spectroscopy: Basic theory of NMR, nature of PMR spectrum, chemical shift (δ unit), standard for PMR, solvents used. Factors affecting chemical shift: (1) inductive effect (2) anisotropic effect (with reference to C=C, C\equivC, C=O and benzene ring). Spin- spin coupling and coupling constant. Proton exchange-application of deuterium exchange ,Application of PMR in structure determination.</p> <p>1.1.5 Spectral characteristics of following classes of organic compounds, including benzene and monosubstituted benzenes, with respect to UV-VIS, IR,PMR: (1)alkanes (2)alkenes and polyenes (3) alkynes (4) haloalkanes (5) alcohols (6) carbonyl compounds (7) ethers (8) carboxylic acids (9) esters (10)amines (11) amides (broad regions characteristic of different groups are expected).</p> <p>1.1.6 Mass Spectrometry: Basic theory.Nature of mass spectrum. General rules of fragmentation. Importance of - molecular ion peak, isotopic peaks, basepeak, Nitrogen rule.Illustrative fragmentation of alkanes and aliphatic carbonyl compounds (No McLafferty rearrangement).</p> <p>1.1.7 Problems of structure elucidation of simple organic compounds using individual or combined use of the above spectroscopic technique are expected.(index of hydrogen deficiency should be the first step in solving the problems).</p>		
	II	<p>2.1 Polymers (11L)</p> <p>2.1.1 Introduction: General idea of monomers, polymers, and polymerization, natural and synthetic polymers. Homopolymers and copolymers. Classification of polymers- Plastic, fibres, resins, elastomers. Thermoplastics and thermosets. Copolymers-alternating, block, random, graft.</p> <p>2.1.2 Mechanism of free radical addition</p>		1

		<p>polymerization.</p> <p>2.1.3 Elastomers: Natural and synthetic rubbers. Diene polymerization: 1,2- and 1,4- addition (cis and trans) polymerization of isoprene. 1,3-Butadiene-styrene copolymer.</p> <p>2.1.4 Stereochemistry of polymers: Tacticity. Role of Ziegler-Natta catalyst (co- ordination polymerization) in directing the tacticity in polypropylene (no mechanism).</p> <p>2.1.5 Preparation & use of polymers: (1) Addition polymers: (a) polyethylene (b) polypropylene (c) PVC (d) polystyrene (e) polyacrylonitrile (f) polyvinylalcohol (g) Teflon. (2) Condensation Polymers: (a) Polyesters (b) polyamides (c) polyurethans (d) phenol-formaldehyde resin (e) epoxy resin (f) polycarbonates.</p> <p>2.1.6 Recyclable polymers. Biodegradable polymers and their uses. Biomedical use of polymers.</p> <p>2.1.7 Additives to polymers: Plasticizers ,stabilizers and fillers.(The students are expected to identify monomers in a given polymer and draw the structure of a polymer from a given set of monomers).</p> <p>2.2 Photochemistry</p> <p>2.2.1 Introduction: Difference between thermal and photochemical reactions. Jablonski diagram, singlet and triple states, allowed and forbidden transitions, fate of excited molecules, photosensitization. 2.2.2 Photochemical reactions of olefins: photoisomerisation, photochemical rearrangement of 1,4-dienes (di π methane)</p> <p>2.2.3 Photochemistry of carbonyl compounds: Norrish I, Norrish II cleavages, Photo reduction (e.g. benzophenone to benzpinacol).</p>		
	<p>III</p> <p>3.1</p>	<p>3.1 Catalysts and Reagents (5L) Study of the following catalysts and reagents with respect to functional group transformations and selectivity (no mechanism).</p> <p>3.1.1 Catalysts : Catalysts for ¹ hydrogenation: Raney Ni,Pt and PtO₂: C=C, CN, NO₂, aromatic ring; Pd/C: C=C, COCl→CHO (Rosenmund); Lindlar catalyst: alkynes; Wilkinson's catalyst for</p>		

		<p>stereo selective reduction of olefins.</p> <p>3.1.2 Reagents: (1) LiAlH₄ and Red-Al: reduction of CO, COOR, CN, NO₂. (2) NaBH₄: reduction of CO (3) SeO₂: hydroxylation of allylic and benzylic positions, oxidation of CH₂, alpha to CO to CO. (5) mCPBA and R-OOH/H₂O₂ for epoxidation of C=C. (6) NBS: allylic and benzylic bromination of position alpha to CO.</p> <p>3.2 Natural Products (10L)</p> <p>3.2.1 Introduction: Primary and secondary metabolites. Introduction to the following natural products with respect to the sources and classes. (Structures of the compounds specified below are expected).</p> <p>(a) Terpene: Isoprene and special isoprene rule. α-terpeniol, citral, camphor, α-pinene.</p> <p>(b) Alkaloids: nicotine, atropine.</p> <p>(c) Vitamins: Vitamins A and C.</p> <p>(d) Hormones: adrenaline, thyroxine.</p> <p>(e) Steroids: cholesterol, progesterone.</p> <p>3.2.2 Structure determination of natural products: 3.2.2.1 Ozonolysis in terpenoids- Examples of open chain and monocyclic monoterpenes. 3.2.2.2 Hofmann exhaustive methylation and degradation in alkaloids – simple open chain and monocyclic amines. 3.2.2.3 Structure determination of citral and nicotine through degradation studies. Total synthesis of degradation studies. Total synthesis of (i) Citral from 3-methylbutan-1-ol (ii) Nicotine from nicotinic acid.</p> <p>3.2.4 Commercial importance of terpenoids and alkaloids: Synthesis of camphor from α-pinene, α and β ionones, geraniol and nerol from citral.</p> <p>3.2.5</p>		
	IV	<p>4.1 Organometallic Chemistry (5L)</p> <p>4.1.1 Introduction: Carbon-metal bond- Nature, types reactivity.</p> <p>4.1.2 Organo magnesium Compounds: Grignard reagent :Preparation, structure, and stability, Reaction with compounds containing acidic hydrogen, carbonyl compounds, cyanides and CO₂.</p> <p>4.1.3 Organolithium Compounds : Preparation using alkyl/aryl halides. Reactions with compounds containing</p>		1

		<p>acidic hydrogen, alkyl halides, carbonyl compounds, cyanides and CO₂. Lithium dialkyl cuprates: Preparation and reactions with aliphatic /aromatic/vinyllic halides.</p> <p>4.1.4 Organozinc compounds: Preparation of dialkyl zinc. Reaction with water, acid chlorides and alkyl halides. Reformatsky reaction (with mechanism).</p> <p>4.2 Chemistry of some Important Biomolecules: (10L)</p> <p>4.2.1 α-Amino acids: Structure, configuration, Essential amino acids and their abbreviations, classification, Properties: pH dependency of ionic structure and isoelectric point. Methods of preparations: Strecker synthesis, amidomalonate synthesis, Erlenmeyer azalactone synthesis.</p> <p>4.2.2 Polypeptides and Proteins: Polypeptides: Peptide bond. Nomenclature and representation of polypeptides. Merrifields solid phase peptide synthesis (example of di- and tri- peptides for nomenclature and synthesis). Proteins: Sources, types, functions, colloidal nature, separation based on isoelectric point, denaturation and functions. Partial and total hydrolysis. General idea of primary, secondary, tertiary and quaternary structures.</p> <p>4.2.3 Nucleic acids: Selective hydrolysis of nucleic acids. Sugars and bases in nucleic acids. Structures of nucleosides and nucleotides in DNA and RNA. Structure of nucleic acids (DNA and RNA): Base pairing in nucleic acids. Importance of nucleic acids-self duplication, protein synthesis.</p>		
USCH604	I	<p>Electroanalytical methods. (15L)</p> <p>1.1 D.C. Polarography (11L): Polarizable and nonpolarizable electrodes, basic principles, residual current, diffusion current, limiting current, dropping mercury electrode, supporting electrolyte half wave potential, derivation of the polarographic wave equation for a reversible reaction. Ilkovic equation, oxygen interference and its removal, maxima and minima suppressors, polarographic cell, qualitative</p>	2.5	1

		and quantitative analysis, calibration curve and standard addition method, applications. [Numerical problems expected] 1.2 Amperometric Titrations: Basic principles, rotating platinum electrode and nature of the titration curves, applications, advantages and limitations.		
	II	Methods of separation-II (15L) 2.1 Gas chromatography (6L): Gas liquid chromatography, basic principles retention time, retention volume, resolution, peak width theoretical plates. HETP, instrumentation, columns, detectors, applications. 2.2 High Performance Liquid Chromatography (4L): Instrumentation, types of elution, U.V. and I.R. detector and applications 2.3 Ion Exchange Chromatography (5L): Types of ion exchangers, mechanism of ion exchange, selectivity coefficients and separation factors, capacity and its determination, factors affecting the separation of ions, applications.		1
	III	Treatment of analytical data-II and Titrimetric analysis-II (15L) 3.1 Treatment of Analytical Data (6L): Distribution of random errors, Gaussian curve, students' t, confidence limits and confidence interval, criteria for rejection of result: 2.5d rule, 4.0 rule and Q test, F test, testing for significance, null hypothesis, method of averages, least squares method. Numerical problems expected] 3.2 Complexometric Titrations (5L): General introduction, EDTA titrations, advantages and limitations of EDTA as the titrant, absolute and conditional formation constants of metal EDTA complexes, construction of titration curves, types of EDTA titrations, methods of increasing the selectivity of EDTA as a titrant, metallochromic indicators, theory and applications. 3.3 Redox Titrations (4L): General introduction, theory of redox indicators, criterion for choosing an indicator for a redox titration, construction of the titration curves in the case of (1) Fe (II) Vs. Ce(IV)		1

		(2) Fe (II) Vs. dichromate, use of diphenyl amine and ferroin as redox indicators.		
	IV	Concepts in Quality and miscellaneous methods (15L) 4.1 Total quality management (5L) : concept of quality, quality control, quality assurance total quality management, ISO series, Good laboratory practices 4.2 Mass Spectrometry (2L): Basic principles, introduction of components only 4.3 Thermal Methods (5L): Classification of thermal methods, thermogravimetric analysis, basic principles, instrumentation factors affecting the TG curve, applications 4.4 Introduction to Radio Analytical Techniques (3L): Classification of the techniques, introduction to neutron activation analysis and its applications.		1

Practicals

	Practicals of Course USCH601 Physical Practicals Chemical Kinetics – To determine the energy of activation for the acid catalysed hydrolysis of methyl acetate. Partition coefficient To determine the equilibrium constant for the reaction $KI + I_2 \rightleftharpoons KI_3$ by partition method. (Partition coefficient of I_2 between CCl_4 and water is to be given)		
USCHP07	Potentiometry – 1. To determine the strength of the given strong acid (HCl) by potentiometric titration using quinhydrone electrode (Calculation of pH from E_{cell} and the plot of (a) $\frac{dE}{dV}$ against V (b) pH against V graphs are expected). OR To determine pK _a value of the given weak monobasic acid (CH_3COOH) by e.m.f. measurements. 2. To determine E_{cal} at room temperature	3	8

	<p>and using this value, determine standard reduction potential of Ag/Ag^+ electrode at room temperature.</p> <p>Conductometry – To determine the amount of dibasic acid (Oxalic acid) by conductometric titration against strong base.</p> <p style="text-align: center;">OR</p> <p>To determine the relative strength of monochloroacetic acid and acetic acid conductometrically.</p> <p>Course USCH602 <u>Inorganic Practicals</u> Inorganic preparations</p> <ol style="list-style-type: none"> 1. Mercury tetrathiocyanato Cobaltate (II) $\text{Hg}[\text{Co}(\text{SCN})_4]$ 2. Magnesium oxinate $[\text{Mg}(\text{Ox})_2]$ 3. Tris-acetyl acetonato iron(III) $[\text{Fe}(\text{AcAc})_3]$ 4. Tetrammine copper(II) sulphate. $[\text{Cu}(\text{NH}_3)_4]\text{SO}_4 \cdot \text{H}_2\text{O}$ <p>Inorganic estimations/ Analysis</p> <ol style="list-style-type: none"> 1. Estimation of copper iodometrically using sodium thiosulphate. (Students are expected to standardize supplied sodium thiosulphate solution using potassium dichromate) 2. Estimation of lead by complexometry using EDTA solution. (Students are expected to standardize the supplied EDTA solution. Suggested standard for standardization: $\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$) 		
USCHP08	<p style="text-align: center;">Practicals of Course USCH603</p> <p><u>Organic Practicals</u> Binary Mixture Separation Separation of mixture containing (VL + NVL) & (S + VL) components.</p> <p>Organic Preparations</p> <ol style="list-style-type: none"> 1. Aniline/p-toluidine \rightarrow N-Acetyl derivative 2. Salicylic acid/nitrobenzene/ Acetanilide \rightarrow Nitro derivative 	3	8

	<ol style="list-style-type: none"> 3. β- naphthol \rightarrow Methyl Ether derivative (Using dimethyl sulphate) 4. Acetanilide \rightarrow p-bromoacetanilide derivative 5. Aniline/ p-toluidine \rightarrow Schiff base with benzaldehyde 6. Hydroquinone/beta naphthol \rightarrow Acetyl derivative 7. Methyl salicylate/ethyl benzoate \rightarrow Acid derivative (Hydrolysis) 8. Benzaldehyde/p-nitrobenzaldehyde \rightarrow Acid (Oxidation) <p>Course USCH604</p> <p><u>Analytical Practicals</u></p> <ol style="list-style-type: none"> 1. Determination of chemical oxygen demand of a water sample. 2. Determination of percentage purity of a sample of common salt using a cation exchanger. 3. Determination of potassium content of a commercial salt sample by flame photometry. 4. Determination of acetic acid content of a vinegar sample by potentiometric titration with sodium hydroxide using quinhydrone. 5. Determination of Cr (VI) in the given solution as dichromate by the method of least squares, spectrophotometrically 		
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Reference List for Paper-I (Physical Chemistry)

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5. W. L. Jolly, *Modern inorganic chemistry*, 2nd Ed. McGraw Hill Book Co., (1991).
6. B. E. Douglas and H. McDaniel, *Concepts and models in inorganic chemistry*, 3rd Ed., John Wiley & Sons, Inc., New York, (1994).
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8. R. W. Hay, *Bioinorganic chemistry*, Ellis Harwood, England, (1984).

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11. For preparation of $\text{CuCl}_2 \cdot 2\text{DMSO}$ Refer Microscale Inorganic Chemistry by Z. Szafran, Ronald M. Pike and Mono M. Singh. Pub. John Wiley and Sons 1991. p.218.

References For Paper-III (Organic Chemistry)

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3. Organic Chemistry, T.W.G. Solomon and C.B. Fryhle, 8th Edition, John Wiley & Sons, 2004
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5. Fundamentals of Organic Chemistry, G. Marc Loudon, 4th Edition Oxford
6. Organic Chemistry, L.G. Wade Jr and M.S. Singh, 6th Edition, 2008
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T Y B Sc Chemistry
Choice Based Credit System

SEMESTER V

Applied Component

(Drugs and Dyes)

COURSE CODE: USACDD501

CREDITS: 02

LECTURES: 60

Unit			Topics	
I	1.1		General Introduction to Drugs	(8L)
		1.1.1	Definition of a drug, sources of drugs, requirements of an ideal drug, classification of drugs (based on therapeutic action),	
		1.1.2	Nomenclature of drugs: Generic name, Brand name, Systematic name	
		1.1.3	Definition of the following medicinal terms: Pharmacon, Pharmacology, Pharmacophore, Prodrug, Half – life efficiency, LD ₅₀ , ED ₅₀ , GI ₅₀ Therapeutic Index.	
		1.1.4	Brief idea of the following terms: Receptors, Agonists, Antagonists, Drug-receptor interaction, Drug Potency, Bioavailability, Drug toxicity, Drug addiction, Spurious Drugs, Misbranded Drugs, Adulterated Drugs, Pharmacopoeia.	
	1.2		Routes of Drug Administration and Dosage Forms	(3L)
		1.2.1	Oral and Parenteral routes with advantages and disadvantages.	
		1.2.2	Formulations & combination formulation, Different dosage forms (including Patches & Adhesives, emphasis on sustained release formulations and enteric coated tablets).	
	1.3		Pharmacodynamic agents: A brief introduction of the following pharmacodynamic agents and the study with respect to their chemical structure, chemical class, therapeutic uses, and side effects.	
		1.3.1	CNS Drugs: Classification based on pharmacological actions: CNS Depressants & CNS Stimulants. Concept of sedation and hypnosis, anaesthesia. <ul style="list-style-type: none"> Phenytoin (Hydantoin) Trimethadione (Oxazolidinediones) (Synthesis from acetone) Alprazolam (Benzodiazepines) Levetiracetam (Pyrrolidines) Amphetamine (Phenethylamine) (Asymmetric synthesis from phenyl acetic acid) Chlorpromazine (Phenothiazines) 	(4L)

UNIT-II (Drugs)

2	2.1		Analgesics, Antipyretics and Anti-inflammatory Drugs.	(4L)
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		2.1.1	Analgesics and Antipyretics <ul style="list-style-type: none"> • Morphine (Phenanthrene alkaloids) • Tramadol (Cyclohexanols) (Synthesis from salicylic acid) • Aspirin (Salicylates) • Paracetamol (p-Amino phenols) 	
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		2.1.2	Anti-inflammatory Drugs Mechanism of inflammation and various inflammatory conditions. <ul style="list-style-type: none"> • Steroids: Prednisolone, Betamethasone • Sodium Diclofenac, Aceclofenac (N- Aryl anthranilic acids) (Synthesis from 2,6-dichlorodiphenyl amine) 	
	2.2		Antihistaminic Drugs	(2L)
			<ul style="list-style-type: none"> • Diphenhydramine (Ethanol amines) • Cetrizene (Piperazine) (Synthesis from 4-Chlorobenzhydryl chloride) • Chlorpheniramine maleate (Ethyl amines) • Pantoprazole (Benzimidazoles) 	
	2.3		Cardiovascular drugs	(3L)
			Classification based on pharmacological action <ul style="list-style-type: none"> • Isosorbide dinitrate (Nitrates) • Valsartan (Amino acids) (structure not expected) • Atenolol (Aryloxy propanol amines) (Synthesis from 3-Hydroxy phenyl acetamide) • Amlodipine (Pyridines) • Frusemide /Furosemide (Sulfamoyl benzoic acid) • Rosuvastatin (Pyrimidine) 	
	2.4		Antidiabetic Agents	(2L)
			General idea and types of diabetes; Insulin therapy <ul style="list-style-type: none"> • Glibenclamide (Sulphonyl ureas) • Metformin (Biguanides) • Dapagliflozin (Pyranose) • Pioglitazone (Thiazolidinediones) (Synthesis from 2-(5-ethylpyridin-2-yl) ethanol) 	
	2.5		Antiparkinsonism Drugs	(2L)
			Idea of Parkinson's disease. <ul style="list-style-type: none"> • Procyclidine hydrochloride (Pyrrolidines) • Ethopropazine hydrochloride (Phenothiazines) • Levodopa (Amino acids) (Synthesis from Vanillin) 	
	2.6		Drugs for Respiratory System General idea of: Expectorants; Mucolytes; Bronchodilators; Decongestants; Antitussives <ul style="list-style-type: none"> • Ambroxol (Cyclohexanol) (Synthesis from paracetamol) • Salbutamol (Phenyl ethyl amines) • Oxymetazoline (Imidazolines) 	(2L)

			• Codeine Phosphate (Opiates)	
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Reference Books: (For units I & II)

1. Foye's principles of medicinal chemistry. 6th Edition, Edited by Davis William & Thomas Lemke, Indian edition by B I Publication Pvt Ltd, Lippincott Williams & Wilkins.
2. Text book of organic medicinal & pharmaceutical chemistry. Wilson & Gisovolds, 11th Edition by John H Block, John M Beale Jr.
3. Medicinal chemistry. Ashutosh Kar, New Age International Pvt. Ltd Publisher. 4th edition.
4. Burger's Medicinal Chemistry, Drug Discovery and Development. Abraham and Rotella. Wiley
5. Medicinal chemistry. Ashutosh Kar, New Age International Pvt. Ltd Publisher. 4th edition.
6. Medicinal chemistry. V.K. Ahluwalia and Madhu Chopra, CRC Press.
7. Principle of medicinal chemistry. Vol 1 &2 S. S. Kadam, K. R. Mahadik, K. G. Bothara
8. The Art of Drug synthesis. Johnson and Li. Wiley, 2007.
9. The organic chemistry of drug design & drug action. 2nd ed. By Richard B Silvermann, Academic Press.
10. The Organic Chemistry of Drug Synthesis. Lednicer and Mitscher, Wiley.

Unit III (Dyes)

3	3.1		Introduction to the dye-stuff Industry	(5L)
		3.1.1	Dyes	
			<p>Definition of dyes, requirements of a good dye i.e. Colour, Chromophore and Auxochrome, Solubility, Linearity, Coplanarity, Fastness, Substantivity, Economic viability.</p> <p>Definition of fastness and its properties and Mordants with examples</p> <p>Explanation of nomenclature or abbreviations of commercial dyes with at least one example suffixes – G, O, R, B, K, L, C, S H, 6B, GK, 6GK,</p> <p>Naming of dyes by colour index (two examples) used in dye industries.</p>	
		3.1.2	Natural and Synthetic Dyes	
			<p>Natural Dyes: Definition and limitations of natural dyes.</p> <p>Examples and uses of natural dyes w.r.t Heena, Turmeric, Saffron, Indigo, Madder, Chlorophyll –names of the chief dyeing material/s in each natural dye [structures not expected],</p> <p>Synthetic dyes: Definition of synthetic dyes, primaries and intermediates. Important milestones in the development of synthetic dyes – Emphasis on Name of the Scientist, dyes and the year of the discovery is required. (structure is not expected)</p>	
	3.2		Substrates for Dyes : Types of fibres	(3L)
		3.2.1	Natural: cellulosic and proteinaceous fibres, examples – wool, silk and cotton structures and names of dyes applied on each of them.	
		3.2.2	Semi – synthetic: definition and examples [structures not expected]	
		3.2.3	Synthetic: Nylon, Polyesters and Polyamides structures and names of dyes applied on each of them	
		3.2.4	Blended fabrics: definition and examples [structures not expected]	
		3.2.5	Binding forces of dyes on substrate: ionic forces, covalent linkages, hydrogen bonding, vander-walls forces	
	3.3		Classification of dyes based on applications and dyeing methods	(7L)
		3.3.1	Dyeing methods	
			<p>Basic Operations involved in dyeing process:</p> <p>i. Preparation of fibres ii. Preparation of dyebath</p> <p>iii. Application of dyes iv. Finishing</p>	
			<p>Dyeing Method of Cotton Fibres:</p> <p>(i) Direct dyeing (ii) Vat dyeing</p> <p>(iii) Mordant dyeing (iv) Disperse dyeing</p>	

		3.3.2	Classification of dyes based on applicability on substrates (examples with structures) (a) Acid Dyes- Orange II, (b) Basic Dyes-methyl violet, (c) Direct cotton Dyes- Benzofast Yellow 5GL (d) Azoic Dyes – Diazo components; Fast yellow G, Fast orange R. Coupling components. Naphthol AS, Naphthol ASG (e) Mordant Dyes-Eriochrome Black A, Alizarin. (f) Vat Dyes- Indanthrene brown RRD, (g) Sulphur Dyes- Sulphur Black T (no structure) (h) Disperse Dyes-Celliton Fast brown 3R, (i) Reactive Dyes- Cibacron Brilliant Red B,	
		3.3.3	Optical Brighteners: General idea, important characteristics of optical brighteners and their classes [Stilbene, Coumarin, Heterocyclic vinylene derivatives, Diaryl pyrazolines, Naphthylamide derivatives] general structure of each class.	

Unit – IV (Dyes)

4	4.1		Colour and Chemical Constitution of Dyes	(4L)
		4.1.1	Absorption of visible light, Colour of wavelength absorbed, Complementary colour.	
		4.1.2	Relation between colour and chemical constitution.	
			(i) Armstrong theory (quinonoid theory) and its limitations. (ii) Witt's Theory: Chromophore, Auxochrome, Bathochromic & Hypsochromic Shift, Hypochromic & Hyperchromic effect (iii) Valence Bond theory, comparative study and relation of colour in the following classes of compounds/dyes: Benzene, Nitrobenzene, Nitroanilines, Nitrophenols, Benzoquinones, Azo, Triphenyl methane, Anthraquinones. (iv) Molecular Orbital Theory.	
	4.2		Unit process and Dye Intermediates	
		4.2.1	A brief idea of Unit Processes	(3L)
			Introduction to primaries and intermediates	
			Unit processes: definition and brief ideas of below unit processes: (a) Nitration (b) Sulphonation (c) Halogenation (d) Diazotization: (3 different methods & its importance) (e) Ammonolysis (f) Oxidation NB: Definition, Reagents, Examples of each unit processes mentioned above with reaction conditions (mechanism is not expected)	

		4.2.2	Preparation of the Following Intermediates	(8L)
			<u>Benzene derivatives:</u> Benzenesulphonic acid; 1,3-Benzenedisulphonic acid; sulphanilic acid; o-, m-, p-chloronitrobenzenes; o-, m-, p-nitroanilines; o-, m-, p-phenylene diamines; Naphthol ASG	
			<u>Naphthalene Derivative:</u> Schaeffer acid; Tobias acid; Naphthionic acid; N.W. acid; cleve-6-acid; H-acid; Naphthol AS	
			<u>Anthracene Derivative:</u> 1-Nitroanthraquinone; 1-Aminoanthraquinone Anthraquinone-2-sulphonic acid; Benzanthrone.	

References (For Units III & IV):

1. Chemistry of Synthetic Dyes, Vol I – VIII, Venkatraman K., Academic Press 1972
2. The Chemistry of Synthetic Dyes and Pigments, Lubs H.A., Robert E Krieger Publishing Company, NY ,1995
3. Chemistry of Dyes and Principles of Dyeing, Shenai V.A., Sevak Publications, 1973

I] Practicals

SEMESTER V

(Drugs and Dyes)

COURSE CODE: USACDD5P1

CREDITS: 02

1. Estimation of Ibuprofen (back titration method)
2. Estimation of Acid neutralizing capacity of a drug
3. Preparation of Aspirin from salicylic acid.
4. Separation of components of natural pigments by paper chromatography (eg: chlorophyll)

II] Project:

Preparation of Orange II dye (semi-microscale 1.0gms) and its use for dyeing different fabrics

SEMESTER VI

(Drugs and Dyes)

COURSE CODE: USACDD601

CREDITS: 02

LECTURES: 60

UNIT – I (Drugs)

1	1.1		Drug Discovery, Design and Development	(6L)
		1.1.1	Discovery of a Lead compound: Screening, drug metabolism studies and clinical observation, Lipinski's rule of 5	
		1.1.2	Medicinal properties of compounds from Natural Sources: Anti-infective and anticancer properties of Turmeric (Curcumin)	
		1.1.3	Development of drug: The Pharmacophore identification, modification of structure or functional group, Structure activity relationship (Sulphonamides).	
		1.1.4	Structure modification to increase potency: Homologation, Chain branching and Extension of the structure.	
		1.1.5	Computer assisted drug design.	
	1.2		Drug Metabolism: Introduction, Absorption, Distribution, Bio-transformation, Excretion Different types of chemical transformation of drugs with specific examples.	(3L)
	1.3		Chemotherapeutic Agents: Study of the following chemotherapeutic agents with respect to their chemical structure, chemical class, therapeutic uses, side effects and introduction to MDR wherever applicable.	
		1.3.1	Antibiotics and antivirals: Definition, <ul style="list-style-type: none">• Amoxicillin (β-lactum antibiotics)• Cefpodoxime (Cephalosporins)• Doxycycline (Tetracyclines)• Levofloxacin (Quinolones) (Synthesis from 2,3,4 – Trifluoro -1-nitrobenzene)• Aciclovir/Acyclovir (Purines)	(2L)
		5.3.2	Antimalarials: Types of malaria; Symptoms; Pathological detection during window period (Life cycle of the parasites not to be discussed) <ul style="list-style-type: none">• Chloroquine (3-Amino quinolones)• Artemether (Benzodioxepins) Following combination to be discussed: Artemether-Lumefantrine (no structure)	(2L)
		1.3.3	Anthelmintics and AntiFungal agents Drugs effective in the treatment of Nematodes and Cestodes infestations.	(2L)

		<ul style="list-style-type: none"> • Diethyl carbamazine (Piperazines) • Albendazole (Benzimidazoles) (Synthesis from 2- Nitroaniline) • Clotrimazole (Imidazole) • Fluconazole (Triazole) (Synthesis from 1- Bromo – 2,4-difluorobenzene) 	
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UNIT – II(Drugs)
Chemotherapeutic Agents continued.

2	2.1	Antiamoebic Drugs Types of Amoebiasis <ul style="list-style-type: none"> • Metronidazole, Ornidazole, Tinidazole (Imidazole) Synthesis of Metronidazole from glyoxal by Debus-Radziszewski imidazole synthesis route Following combination therapy to be discussed: Ciprofloxacin-Tinidazole	(1L)
	2.2	Antitubercular and Antileprotic Drugs Types of Tuberculosis; Symptoms and diagnosis of Tuberculosis. Types of Leprosy. General idea of Antibiotics used in their treatment. <ul style="list-style-type: none"> • PAS (Amino salicylates) • Isoniazide (Hydrazides) • Pyrazinamide (Pyrazines) • (+) Ethambutol (Aliphatic diamines) (Synthesis from 1- Nitropropane) • Dapsone(Sulphonamides) (Synthesis from 4- Chloronitrobenzene) • Clofazimine (Phenazines) • Bedaquiline (Quinoline) Following combination therapy to be discussed: (i) Rifampin + Ethambutol + Pyrazinamide (ii) Rifampin + Isoniazide + Pyrazinamide	(3L)
	2.3	Anti-Neoplastic Drugs Idea of malignancy; Causes of cancer Brief idea of Immuno Stimulants &Immuno depressants <ul style="list-style-type: none"> • Lomoustine (Nitrosoureas) • Anastrozole(Triazoles) (Synthesis from 3,5-bis (bromo methyl) toluene) • Cisplatin (Chloro Platinum) • Vincristine, Vinblastine, Vindesine) (Vinca alkaloids) (structure not expected) 	(2L)
	2.4	Anti-HIV Drugs Idea of HIV pathogenicity, Symptoms of AIDS <ul style="list-style-type: none"> • AZT/Zidovudine, Lamivudine,DDI (Purines) 	(1L)
	2.5	Drug Intermediates: Synthesis and uses <ol style="list-style-type: none"> 1. 2,3,6-Triamino-6- hydroxypyrimidine from Guanidine 2. p-[2'-(5-Chloro-2-methoxy benzamido) ethyl]-benzenesulphonamide from Methyl-5-chloro-2- methoxybenzene 3. 3-(p-Chlorophenyl)-3- hydroxypiperidine from 3-Chloroacetophenone 	(2L)

			4. p-Acetyl amino benzenesulphonyl chloride from Aniline 5. Epichlorohydrine from propene	
	2.6		Nano particles in Medicinal Chemistry Introduction; Carbon nano particles (structures) and Carbon nano tubes: <ul style="list-style-type: none"> • Functionalization for Pharmaceutical applications • Targeted drug delivery • In vaccine (Foot and mouth disease) • Use in Bio-physical treatment. Gold nano particles in treatment of: Cancer; Parkinsonism; Alzheimer. Silver nano particles: Antimicrobial activity.	(4L)
	2.7		Drugs and Environmental Aspects <ul style="list-style-type: none"> • Impact of Pharma-industry on environment, • International regulation for human experimentation with reference to: "The Nuremberg Code" and "The Helsinki Declaration". 	(2L)

Reference Books (For Units I & II):

1. Foye's principles of medicinal chemistry. 6th Edition, Edited by Davis William & Thomas Lemke, Indian edition by B I Publication Pvt Ltd, Lippincott Williams & Wilkins.
 2. Text book of organic medicinal & pharmaceutical chemistry. Wilson & Gisovolds, 11th Edition by John H Block, John M Beale Jr.
 3. Medicinal chemistry. Ashutosh Kar, New Age International Pvt. Ltd Publisher. 4th edition.
 4. Burger's Medicinal Chemistry, Drug Discovery & Development. Abraham & Rotella. Wiley
 5. Medicinal chemistry. Ashutosh Kar, New Age International Pvt. Ltd Publisher. 4th edition.
 6. Medicinal chemistry. V.K. Ahluwalia and Madhu Chopra, CRC Press.
 7. Principle of medicinal chemistry. Vol 1 & 2 S. S. Kadam, K. R. Mahadik, K. G. Bothara
 8. The Art of Drug synthesis. Johnson and Li. Wiley, 2007.
 9. The organic chemistry of drug design & drug action. 2nd ed. By Richard B Silvermann, Academic Press.
 10. The Organic Chemistry of Drug Synthesis. Lednicer and Mitscher, Wiley.
 11. Text book of drug design and discovery. Povl-Krog-Sgaard-Larsen, Tommy Liljefors and ULF Madsen, 3rd Edition Taylor & Francis.
 12. Bio-applications of nanoparticles. Edited by Warren C.W. Chan, Springer Publication.
 13. Nanoparticle and technology for drug delivery (Drugs and pharmaceutical sciences). Ram B.Gupta & Uday B.Kompella Pub. Informa Healthcare.
 14. Nano forms of carbon and its applications. Edited by Maheshwar Sharon and Madhuri Sharon. Monad Nanotech Pvt. Ltd.
 15. Environmental Chemistry. A. K. De
 16. Text Book on Law and Medicine. Chokhani and Ghormade. 2nd Edition. Hind Law House, Pune.
 17. Essentials of Medical Pharmacology. K D Tripathi, Jaypee Brothers Medical publishers Pvt. Ltd.
- Practical organic chemistry, Vogel.

SEMESTER VI

Unit – III (Dyes)

3	3.1		Classification of Dyes based on Chemical Constitution and Synthesis of Selected Dyes (Synthesis of the dyes marked with * is expected)	(12L)
			i) Nitro Dye: Naphthol Yellow S	
			ii) Nitroso Dye: Gambine Y	
			iii) Azo dyes: a) Monoazo dyes: Orange IV *(from sulphanilic acid) & Eriochrome Black T* (from β - naphthol) b) Bisazo dyes: Congo Red* (from nitrobenzene) c) Trisazo Dye: Direct Deep Black EW* (from benzidine)	
			iv) Diphenylmethane dye: Auramine O* (from N,N-dimethyl aniline)	
			v) Triphenylmethane dye: a) Diamine series: Malachite Green* (from benzaldehyde) b) Triamine series: Acid Magenta c) Phenol series: Rosolic acid	
			vi) Heterocyclic Dyes: a) Thiazine dyes: Methylene Blue b) Azine dyes: Safranin T* (from o-toluidine) c) Xanthene Dyes: Eosin* (from phthalic anhydride) d) Oxazine Dyes: Capri Blue e) Acridine Dyes: Acriflavine	
			vii) Quinone Dyes: a) Naphthaquinone: Naphthazarin b) Anthraquinone Dyes: Indanthrene Blue* (from anthraquinone)	
			viii) Indigoid Dyes: Indigo* (from aniline + monochloroacetic acid)	
			ix) Phthalocyanine Dyes: Monastral Fast Blue B	
	3.2		Health and Environmental Hazards of Synthetic Dyes and their Remediation Processes	(3L)
		3.2.1	Impact of the textile and leather dye Industry on the environment with special emphasis on water pollution	
		3.2.2	Health Hazards: Toxicity of dyes w.r.t food colours.	
		3.2.3	Effluent Treatment Strategies: Brief introduction to effluent treatment plants (ETP) Primary Remediation processes: (Physical Processes) Sedimentation, Aeration, Sorption (activated charcoal, fly ash etc.) Secondary Remediation processes: Biological Remediation – Biosorption, bioremediation and biodegradation Chemical Remediation: Oxidation Processes (chlorination), Coagulation-flocculation-Precipitation	

Unit – IV (Dyes)

4	4.1		Non-textile uses of dyes:	(8L)
		4.1.1	Biomedical uses of dyes i) Dyes used in formulations (Tablets, capsules, syrups etc) Indigo carmine, Sunset yellow, Tartrazine ii) Biological staining agents Methylene blue, Crystal violet and Safranin T iii) DNA markers Bromophenol blue, Orange G, Cresol red iv) Dyes as therapeutics Mercurochrome, Acriflavine, Crystal Violet, Prontosil	
		4.1.2	Dyes used in food and cosmetics: i) Properties of dyes used in food and cosmetics ii) Introduction to FDA and FSSAI iii) Commonly used food colours and their limits	
		4.1.3	Paper and leather dyes i) Structural features of paper and leather ii) Dyes applicable to paper and leather	
		4.1.4	Miscellaneous dyes i) Hair dyes ii) Laser dyes iii) Indicators iv) Security inks iv) Coloured smokes and camouflage colours	
	4.2		Pigments	(3L)
			Definition of pigments, examples, properties of pigments, difference between dyes and pigments. Definition of Lakes and Toners	
	4.3		Dyestuff Industry - Indian Perspective	(4L)
		4.3.1	Growth and development of the Indian Dyestuff Industry	
		4.3.2	Strengths, Weaknesses, Opportunities and Challenges of the Dyestuff industry in India	
		4.3.3	Make in India - Future Prospects of the Dye Industry	

References (For Units III & IV)

1. Chemistry of Synthetic Dyes, Vol I – IV, Venkatraman K., Academic Press 1972
2. The Chemistry of Synthetic Dyes and Pigments, Lubs H.A., Robert E Krieger Publishing Company, NY ,1995
3. Chemistry of Dyes and Principles of Dyeing, Shenai V.A., Sevak Publications, 1973
4. Environmental Studies, Joseph Benny, Tata McGraw Hill Education, 2005
5. Fundamental Concepts of Environmental Chemistry, Sodhi. G. S., Alpha Science International, 2009
6. Planning Commission, Niti Aayog, FSSAI and FDA websites
7. Green Chemistry for Dyes Removal from Waste Water- Research Trends and Applications, Ed. Sharma S.K., Wiley, 2015
8. Environmental Pollution- Monitoring and Control, Khopkar S.M., New Age International (P) Ltd, New Delhi, 1982

Practicals

SEMESTER V

(Drugs and Dyes)

COURSE CODE: USACDD6P1

CREDITS: 02

1. O-Methylation of β -naphthol.
2. Preparation of Paracetamol from p-aminophenol.
3. Preparation of Fluorescein
4. TLC of a mixture of dyes (safranin-T, Indigo carmine, methylene blue)

II] Preparation of monograph of any one drug from syllabus by I.P. method.

OR

Industrial visit Report.

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AC 7/4/2014
Item No. 4.23

Semester I USBO101		L	Cr
Paper I -- Plant Diversity 1		45	2
<u>UNIT I</u>		15	
<u>ALGAE</u>			
1	Structure, life cycle and systematic position of <i>Nostoc</i> and <i>Spirogyra</i> .		
2	Economic importance of Algae.		
<u>UNIT II</u>		15	
<u>FUNGI</u>			
1	Structure, life cycle and systematic position of <i>Rhizopus</i> and <i>Aspergillus</i>		
2	Economic importance of Fungi.		
3	Modes of nutrition in Fungi (Saprophytism and Parasitism).		
<u>UNIT III</u>		15	
<u>BRYOPHYTA</u>			
1	General characters of Hepaticae		
2	Structure, life cycle and systematic position of <i>Riccia</i> .		

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AC 7/4/2014
Item No. 4.23

<u>Semester I</u> USB0102		L	Cr
Paper II – Form and Function 1		45	2
<u>UNIT I</u>		15	
CELL BIOLOGY			
1	General structure of plant cell: cell wall Plasma membrane (bilayer lipid structure, fluid mosaic model)		
2	Ultra structure and functions of the following cell organelles: Endoplasmic reticulum and Chloroplast		
<u>UNIT II</u>		15	
ECOLOGY			
1	Energy pyramids, energy flow in an ecosystem.		
2	Types of ecosystems: aquatic and terrestrial.		
<u>UNIT III</u>		15	
GENETICS			
1	Phenotype/Genotype, Mendelian Genetics- monohybrid, dihybrid; test cross; back cross ratios.		
2	Epistatic and non epistatic interactions; multiple alleles.		

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AC 7/4/2014
Item No. 4.23

	Semester I USBOP1	L	Cr
	PRACTICAL Paper I – Plant Diversity 1	30	1
1	Study of stages in the life cycle of <i>Nostoc</i> from fresh/ preserved material and permanent slides.		
2	Study of stages in the life cycle of <i>Spirogyra</i> from fresh/ preserved material and permanent slides.		
3	Economic importance of algae: <i>Ulva</i> (Biofuel), <i>Spirulina</i> (Neutraceutical), <i>Gelidium</i> (Agar)		
4	Study of stages in the life cycle of <i>Rhizopus</i> from fresh/ preserved material and permanent slides.		
5	Study of stages in the life cycle of <i>Aspergillus</i> from fresh/ preserved material and permanent slides.		
6	Economic importance of Fungi: Mushroom , Yeast, wood rotting fungi (any bracket fungus).		
7	Study of stages in the life cycle of <i>Riccia</i> from fresh/ preserved material.		
8	Study of stages in the life cycle of <i>Riccia</i> with the help of permanent slides.		
	PRACTICAL PAPER II- FORM AND FUNCTION 1	30	1
1	Examining various stages of mitosis in root tip cells (<i>Allium</i>)		
2	Cell inclusions: Starch grains (Potato and Rice); Aleurone Layer (Maize)		
3	Cystolith (<i>Ficus</i>); Raphides (<i>Pistia</i>); Sphaeraphides (<i>Opuntia</i>).		
4	Identification of cell organelles with the help of photomicrograph: Plastids: Chloroplast, Amyloplast, Endoplasmic Reticulum and Nucleus		
4	Identification of plants adapted to different environmental conditions: Hydrophytes: Floating: Free floating (<i>Pistia/Eichornia</i>); Rooted floating (<i>Nymphaea</i>); Submerged (<i>Hydrilla</i>)		
5	Mesophytes (any common plant); Hygrophytes (<i>Typha/Cyperus</i>)		

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6	Xerophytes : Succulent (<i>Opuntia</i>); Woody Xerophyte (<i>Nerium</i>); Halophyte (<i>Avicennia</i> pneumatophore) No sections in ecology, only identification and description of specimens. Morphological adaptations only.		
7	Calculation of mean, median and mode.		
8	Calculation of standard deviation.		
9	Frequency distribution, graphical representation of data- frequency polygon, histogram, pie chart.		
10	Study of Karyotypes: Human: Normal male and female, <i>Allium cepa</i> .		

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AC 7/4/2014
Item No. 4.23

Semester II USBO201		Hrs	Cr
Paper I -- Plant Diversity 1		45	2
<u>UNIT I</u>		15	
<u>PTERIDOPHYTES</u>			
1	Structure life cycle, systematic position and alternation of generations in <i>Nephrolepis</i>		
2	Stelar evolution		
<u>UNIT II</u>		15	
<u>GYMNOSPERMS</u>			
2	Structure life cycle systematic position and alternation of generations in <i>Cycas</i>		
3	Economic importance of Gymnosperms		
<u>Unit III</u>			
<u>ANGIOSPERMS</u>		15	
1.	Leaf: simple leaf, types of compound leaves, Incisions of leaf, venation, phyllotaxy, types of stipules, leaf apex, leaf margin, leaf base, leaf shapes. Modifications of leaf: spine, tendril, hooks, phyllode, pitcher, <i>Drosera</i> or insectivorous plants.		
2	Inflorescence: Racemose: simple raceme, spike, catkin, spadix, panicle. Cymose: monochasial, dichasial, polychasial. Compound: corymb, umbel, cyathium, capitulum, verticellaster, hypanthodium.		
3	Study of following families: Malvaceae, Amaryllidaceae.		

Semester II USBO202		Hrs	Cr
Paper II – Form and Function 1		45	2
<u>UNIT I</u>		15	
<u>ANATOMY</u>			
1	Simple tissues, complex tissues.		
2	Primary structure of dicot and monocot root, stem and leaf.		
3	Epidermal tissue system: types of hair, monocot and dicot stomata.		

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Item No. 4.23

<u>UNIT II</u>		15	
<u>PHYSIOLOGY</u>			
1	Photosynthesis: Light reactions, photolysis of water, photophosphorylation (cyclic and non cyclic), carbon fixation phase (C ₃ , C ₄ and CAM pathways).		
<u>UNIT III</u>		15	
<u>MEDICINAL BOTANY</u>			
1	Concept of primary and secondary metabolites, difference between primary and secondary metabolites.		
2	Grandma's pouch: Following plants have to be studied with respect to botanical source, part of the plant used, active constituents present and medicinal uses: <i>Oscimum sanctum</i> , <i>Adathoda vasica</i> , <i>Zinziber officinale</i> , <i>Curcuma longa</i> , <i>Santalum album</i> , <i>Aloe vera</i> .		

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AC 7/4/2014
Item No. 4.23

	Semester II USBOP2	Cr
	PRACTICAL Paper I – Plant Diversity 1	1
1	Study of stages in the life cycle of <i>Nephrolepis</i> : Mounting of ramentum, hydathode, T.S. of rachis.	
2	T.S. of pinna of <i>Nephrolepis</i> passing through sorus.	
3	Stelar evolution with the help of permanent slides: Protostele: haplostele, actinostele, plectostele, mixed protostele, siphonostele: ectophloic, amphiphloic, dictyostele, eustele and atactostele.	
4	<i>Cycas</i> : T.S of leaflet (<i>Cycas</i> pinna)	
5	Megasporophyll, microsporophyll, coralloid root, microspore, L.S. of ovule of <i>Cycas</i> – all specimens to be shown.	
6	Economic importance of Gymnosperms: <i>Pinus</i> (turpentine, wood, seeds)	
7	Leaf morphology : as per theory	
8	Types of inflorescence: as per theory	
9	Malvaceae	
10	Amaryllidaceae	
	PRACTICAL Paper II – Form and Function 1	1
1	Primary structure of dicot and monocot root.	
2	Primary structure of dicot and monocot stem.	
3	Study of dicot and monocot stomata.	
4	Epidermal outgrowths: with the help of mountings Unicellular: <i>Gossypium</i> /Radish Multicellular: <i>Lantana</i> /Sunflower Glandular: <i>Drosera</i> and Stinging: <i>Urtica</i> – only identification with the help of permanent slides. Peltate: <i>Thespesia</i> Stellate: <i>Erythrina</i> / <i>Sida acuta</i> / <i>Solanum</i> / <i>Helecteris</i>	

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	T-shaped: <i>Avicennia</i>	
5	Separation of chlorophyll pigments by strip paper chromatography.	
6	Separation of amino acids by paper chromatography.	
7	Change in colour because of change in pH: Anthocyanin: black grapes/Purple cabbage	
8	Test for tannins: tea powder/catechu.	
9	Identification of plants or plant parts for grandma's pouch as per theory.	

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DISTRIBUTION OF TOPICS AND CREDITS
F Y B Sc. BOTANY SEMESTER I

Course	Nomenclature	Credits	Topics
USBO1O1	PLANT DIVERSITY 1	02	1. Algae
			2. Fungi
			3. Bryophyta
USBO1O2	FORM AND FUNCTION I	02	1. Cell Biology
			2. Ecology
			3. Genetics
USBOP1	Plant Diversity I, form and Function I (Practical I & II)	02	

F Y B Sc BOTANY SEMESTER II

Course	Nomenclature	Credits	Topics
USBO2O1	PLANT DIVERSITY I	02	1. Pteridophytes
			2. Gymnosperms
			3. Angiosperms
USBO2O2	FORM AND FUNCTION I	02	1. Anatomy
			2. Physiology
			3. Medicinal Botany
USBOP2	Plant Diversity I, Form and Function I (Practical I & II)	02	

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References

1. College Botany Volume I and II Gangulee, Das and Dutta latest edition. Central Education enterprises
2. Cryptogamic Botany Volume I and II by G M Smith McGraw Hill.
3. Genetics by Russel. Wesley Longman inc publishers. (5th edition)
4. Plant Physiology by Taiz and Zeiger Sinauer Associates inc. publishers
5. Fundamentals of Ecology by E P Odum and G W Barrett. Thompson Asia Pvt Ltd. Singapore.
6. Cell Biology by De Robertis

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Scheme of Examinations

Internal and External Assessment as per CBSS of University of Mumbai

Note:

- Two short field excursions for habitat studies are compulsory.
Field work of not less than eight hours duration is equivalent to one period per week for a batch of 15 students.
- A candidate will be allowed to appear for the practical examinations only if he/she submits a certified journal of F.Y.B.Sc. Botany or a certificate from the Head of the department / Institute to the effect that the candidate has completed the practical course of F.Y.B.Sc. Botany as per the minimum requirements. In case of loss of journal a candidate must produce a certificate from the Head of the department /Institute that the practicals for the academic year were completed by the student. However such a candidate will be allowed to appear for the practical examination but the marks allotted for the journal will not be granted.

UNIVERSITY OF MUMBAI



**Syllabus for the S.Y.B.Sc.
Program: B.Sc.
Course : BOTANY**

(Credit Based Semester and Grading System with
effect from the academic year 2015–2016)

Syllabus for the S.Y.B.Sc. Program: B.Sc.Course : BOTANY

S.Y.B.Sc. Botany Syllabus
Restructured for Credit Based and Grading System
To be implemented from the Academic year 2015-2016

SEMESTER III

Course Code	UNIT	TOPICS	Credits	L / Week
USBO301	<u>PLANT DIVERSITY II</u>			
	I	Thallophyta- Algae	2	1
	II	Bryophyta		1
	III	Angiosperms		1
USBO302	<u>FORM AND FUNCTION II</u>			
	I	Instrumentation and Techniques	2	1
	II	Cell Biology		1
	III	Cytogenetics		1
USBO303	<u>CURRENT TRENDS IN PLANT SCIENCES I</u>			
	I	Pharmacognosy & Phytochemistry	2	1
	II	Forestry & Economic Botany		1
	III	Molecular Biology		1
USBOP3	Practical based on all the three courses in theory		3	9

Syllabus for the S.Y.B.Sc. Program: B.Sc.Course : BOTANY

SEMESTER IV

Course Code	UNIT	TOPICS	Credits	L / Week
USBO401	<u>PLANT DIVERSITY II</u>			
	I	Thallophyta: Fungi, Plant Pathology and Lichens	2	1
	II	Pteridophyta and Paleobotany		1
	III	Gymnosperms		1
USBO402	<u>FORM AND FUNCTION II</u>			
	I	Anatomy	2	1
	II	Physiology and Plant Biochemistry		1
	III	Ecology and Environmental Botany		1
USBO403	<u>CURRENT TRENDS IN BOTANY I</u>			
	I	Horticulture	2	1
	II	Biotechnology		1
	III	Biostatistics & Bioinformatics		1
USBOP4	Practical based on all the three courses in theory		3	9

Syllabus for the S.Y.B.Sc. Program: B.Sc.Course : BOTANY

SEMESTER III THEORY

Course Code	Title	Credits
USBO301	<u>PLANT DIVERSITY II</u>	2 Credits (45 lectures)
<u>Unit I : Thallophyta- Algae</u> <ul style="list-style-type: none"> General Characters of Division Phaeophyta: Distribution, Cell structure, pigments, reserve food, range of thallus, reproduction: asexual and sexual, Alternation of Generations, Economic Importance. Structure, life cycle and systematic position of <i>Dictyota</i> <i>Sargassum</i> Pigments in Algae. 		15 Lectures
<u>Unit II : Bryophyta</u> <ul style="list-style-type: none"> General Account of Class Anthocerotae and Musci Structure, life cycle and systematic position of <ul style="list-style-type: none"> <i>Anthoceros</i> <i>Funaria</i> 		15 Lectures
<u>Unit III : Angiosperms</u> <u>Morphology of Flowering Plants</u> <ul style="list-style-type: none"> Flower Morphology : <ul style="list-style-type: none"> Parts of a flower, flower symmetry; Flower as a modified shoot, Thalamus, insertion of floral leaves on the thalamus The accessory whorls : Calyx types and modifications, Corolla – forms; Aestivation, The Perianth; The Essential whorls: Androecium parts of the androecium, Number and insertion of stamens, Union of stamens; Types of CoronaGynoecium: the carpel, style and stigma; Union of Carpel; ovary- placentation, types of ovules, evolution of placenta in Angiosperm. Floral formula, floral diagram. With the help of Bentham and Hooker’s system of classification for flowering plants study the vegetative, floral characters and economic importance of the following families: <ul style="list-style-type: none"> Magnoliaceae Myrtaceae Asteraceae Apocynaceae Amaranthaceae Palmae 		15 Lectures

Syllabus for the S.Y.B.Sc. Program: B.Sc.Course : BOTANY

Course Code	Title	Credits
USBO302	<u>FORM AND FUNCTION II</u>	2 Credits (45 lectures)
<u>Unit I : Instrumentation and Techniques</u> <ul style="list-style-type: none"> • Microscopy – Principle and working of Light, and electron microscope. • Chromatography- Principles and techniques in paper and thin layer chromatography. • Principles and techniques of Horizontal and Vertical electrophoresis. 		15 Lectures
<u>Unit II : Cell Biology</u> <ul style="list-style-type: none"> • Ultra Structure and functions of the following cell organelles: <ul style="list-style-type: none"> ○ Mitochondrion ○ Peroxisomes ○ Glyoxysomes ○ Ribosomes • Cell Division and its significance <ul style="list-style-type: none"> ○ Cell Cycle ○ Mitosis & Meiosis ○ Differences between Mitosis and Meiosis • Nucleic Acids: Types, structure and functions of <ul style="list-style-type: none"> ○ DNA ○ RNA 		15 Lectures
<u>Unit III : Cytogenetics</u> <ul style="list-style-type: none"> • Variation in Chromosome structure (Chromosomal Aberrations) Definition, Origin, Cytological and Genetic Effects of the following: Deletions, Duplications, Inversions and Translocations. • Variation in Chromosome Number Origin and production, morphological and cytological features, applications in crop improvement and evolution of Aneuploids and Euploids (Monoploids, Autopolyploids and allopolyploids) • Extranuclear Genetics Organelle heredity- <ul style="list-style-type: none"> ○ Chloroplast determines heredity -Plastid transmission in plants, Streptomycin resistance in <i>Chlamydomonas</i>. ○ Mitochondrion determined heredity- petite colonies in yeast 		15 Lectures

Syllabus for the S.Y.B.Sc. Program: B.Sc.Course : BOTANY

Course Code	Title	Credits
USBO303	<u>CURRENT TRENDS IN PLANT SCIENCES I</u>	2 Credits (45 lectures)
<u>Unit I : Pharmacognosy and Phytochemistry</u> <ul style="list-style-type: none"> • Introduction to pharmacopoeia • Study of secondary metabolites (sources, properties and uses) with reference to <ul style="list-style-type: none"> ○ Alkaloids, ○ Glycosides, ○ Tannins, ○ Volatile oils and ○ Gums and resins (example of one plant for each category) 		15 Lectures
<u>Unit II : Forestry and Economic Botany</u> <ul style="list-style-type: none"> • Types of forests – classification of forests, different types of forests in India • Applications of forestry- Social forestry, Reforestation, Aforestation, Deforestation. • Economic Botany: <ul style="list-style-type: none"> ○ Fibres: Types of fibres, fibre yielding plants ○ Paper: Types of paper, paper yielding plants, paper processing. ○ Spices and condiments: Nutmeg, Mace, Clove, Cardamom and Saffron 		15 Lectures
<u>Unit III : Molecular Biology</u> <ul style="list-style-type: none"> • DNA replication : Replication(prokaryotic and eukaryotic) • Protein Synthesis: <ul style="list-style-type: none"> ○ Central dogma of Protein synthesis ○ Transcription: The transcription process in prokaryotes and eukaryotes, RNA synthesis, RNA processing, Adenylation& Capping. 		15 Lectures

Syllabus for the S.Y.B.Sc. Program: B.Sc.Course : BOTANY

SEMESTER III PRACTICAL

Semester III USBOP3 PRACTICAL Paper I – Plant Diversity II	Cr 1
Algae <ol style="list-style-type: none">1. Study of stages in the life cycle of <i>Dictyota</i> from fresh/ preserved material and permanent slides.2. Study of stages in the life cycle of <i>Sargassum</i> from fresh/ preserved material and permanent slides.3. Economic importance and range of thallus in Phaeophyta Bryophyta <ol style="list-style-type: none">4. Study of stages in the life cycle of <i>Anthoceros</i> from fresh/ preserved material and permanent slides.5. Study of stages in the life cycle of <i>Funaria</i> from fresh/ preserved material and permanent slides. Angiosperms <ol style="list-style-type: none">6. Study of Floral Morphology7- Study of one plant from each family prescribed for theory: morphological9. peculiarities and economic importance of the members of these families.	

Syllabus for the S.Y.B.Sc. Program: B.Sc.Course : BOTANY

Semester III USBOP3 PRACTICAL Paper II – FORM AND FUNCTION- II	Cr 1
Instrumentation and Techniques 1 Preparation of herbarium and wet preservation technique 2 Chromatography: Separation of amino by circular paper chromatography 3 Separation of Carotenoids by thin layer chromatography 4 Horizontal and Vertical Gel Electrophoresis – Demonstration	
Cell Biology 5 Study of the ultra-structure of cell organelles prescribed for theory from Photomicrographs 6 Estimation of DNA from plant material (one Std& one Unknown, No Std Graph) 7 Estimation of RNA from plant material (one Std& one Unknown, No Std Graph)	
Cytogenetics 8 Study of inheritance pattern with reference to Plastid Inheritance 9 Aberrations --- karyotypes - Cri – du- chat, Philadelphia, D-G translocation, Down Syndrome.	

Syllabus for the S.Y.B.Sc. Program: B.Sc.Course : BOTANY

Semester III USBOP3		Cr
PRACTICAL - Paper III CURRENT TRENDS IN PLANT SCIENCES I		1
Pharmacognosy		
1	A. Tests for alkaloids from <i>Strychnos</i> (seeds) and <i>Holarrhena</i> (bark) B. Tests for glycosides from <i>Glycyrrhiza</i> rhizome/ <i>Aloe</i> leaf/ <i>Senna</i> leaf.	
2	Preparation of any herbal cosmetic.(Demonstration)	
3	Stomatal Index	
4	Palisade Ratio, Vein islet number	
Forestry and Economic Botany		
5	Study of Biodiversity Composition of different types of forests in India (tropical, subtropical & temperate)	
6	Sources, properties and uses of : fibres & paper	
7	Sources , properties and uses of spices and condiments	
Molecular Biology		
8	DNA sequencing- Sanger's method	
9	Determining the sequence of amino acids in the protein molecule synthesised from the given m-RNA strand (prokaryotic and eukaryotic)	

Syllabus for the S.Y.B.Sc. Program: B.Sc.Course : BOTANY

SEMESTER IV THEORY

Course Code	Title	Credits
USBO401	<u>PLANT DIVERSITY II</u>	2 Credits (45 lectures)
<u>Unit II : Thallophyta: Fungi, Plant Pathology and Lichens</u> <u>Fungi-</u> <ul style="list-style-type: none"> General characters of Ascomycetae Structure, life cycle and systematic position of <i>Erysiphe</i> and <i>Xylaria</i> <u>Plant Pathology-</u> <ul style="list-style-type: none"> Symptoms, causative organism, disease cycle and control measures of <ul style="list-style-type: none"> Powdery mildew and Late blight of potato <u>Lichens-</u> <ul style="list-style-type: none"> Classification, Structure, Method of Reproduction, Economic Importance and Ecological Significance of Lichens. 		15 Lectures
<u>Unit II : Pteridophyta and Paleobotany</u> <u>Pteridophyta-</u> <ul style="list-style-type: none"> Salient features and classification upto orders (with examples of each) of Psilophyta and Lepidophyta (G M Smith's system of classification to be followed), Structure, life cycle and systematic position of <i>Selaginella</i> <u>Paleobotany-</u> <ul style="list-style-type: none"> The geological time scale; Formation and types of fossils; Structure and systematic position of form genus <i>Rhynia</i> 		15 Lectures
<u>Unit III : Gymnosperms</u> <ul style="list-style-type: none"> Salient features, classification up to orders (with examples of each) and economic importance of Coniferophyta (Chamberlain's system of classification to be followed) Structure life cycle and systematic position of <i>Pinus</i> Structure and systematic position of the form genus <i>Cordaites</i> 		15 Lectures

Syllabus for the S.Y.B.Sc. Program: B.Sc.Course : BOTANY

Course Code	Title	Credits
USBO402	<u>FORM AND FUNCTION II</u>	2 Credits (45 lectures)
<u>Unit I : Anatomy</u> <ul style="list-style-type: none"> • Normal Secondary Growth in Dicotyledonous stem and root. • Secondary growth in Monocot stem – <i>Dracaena</i>. • Mechanical Tissue system <ul style="list-style-type: none"> ○ Tissues providing mechanical strength and support and their disposition ○ I-girders in aerial and underground organs • Conducting tissue system : <ul style="list-style-type: none"> ○ Xylem and its elements, ○ Phloem and its elements ○ Types of Vascular Bundles. 		15 Lectures
<u>Unit II : Plant Physiology and Plant Biochemistry</u> <ul style="list-style-type: none"> • Respiration: Aerobic: Glycolysis, TCA Cycle, ETS & Energetic of respiration; Anaerobic respiration. • Photorespiration • Photoperiodism: Phytochrome Response and Vernalization with reference to flowering in higher plants, Physico-chemical properties of phytochrome, Pr-Pfr interconversion, role of phytochrome in flowering of SDPs and LDPs; • Vernalization mechanisms and applications. 		15 Lectures
<u>Unit III : Ecology and Environmental Botany</u> <ul style="list-style-type: none"> • Biogeochemical Cycles- Carbon, Nitrogen and Water. • Ecological factors: Concept of environmental factors. Soil as an edaphic factor, Soil composition, types of soil, soil formation, soil profile. • Community ecology- Characters of community - Quantitative characters and qualitative characters 		15 Lectures

Syllabus for the S.Y.B.Sc. Program: B.Sc.Course : BOTANY

Course Code	Title	Credits
USBO403	<u>CURRENT TRENDS IN PLANT SCIENCES I</u>	2 Credits (45 lectures)
<u>Unit I : Horticulture and Gardening</u> <ul style="list-style-type: none"> • Introduction to Horticulture: Branches of Horticulture • Gardening: <ul style="list-style-type: none"> ○ Locations in the garden- edges, hedges, lawn, flower beds, avenue, water garden (with names of two plants for each category). Focal point. • Types of gardens <ul style="list-style-type: none"> ○ Formal and informal gardens, ○ National Park: Sanjay Gandhi National Park. ○ Botanical Garden: Veer Mata Jijabai Udyan (Victoria Garden). 		15 Lectures
<u>Unit II : Biotechnology</u> <ul style="list-style-type: none"> • Introduction to plant tissue culture <ul style="list-style-type: none"> ○ Laboratory organization and techniques in plant tissue culture ○ Totipotency ○ Organogenesis ○ Organ culture – root cultures, meristem cultures, anther and pollen culture, embryo culture. • R-DNA technology- <ul style="list-style-type: none"> ○ Gene cloning ○ Enzymes involved in Gene cloning ○ Vectors used for Gene cloning. 		15 Lectures
<u>Unit III : Biostatistics and Bioinformatics</u> <ul style="list-style-type: none"> • Biostatistics: <ul style="list-style-type: none"> ○ The chi square test. ○ Correlation – Calculation of coefficient of correlation. • Bioinformatics <ul style="list-style-type: none"> ○ Information technology: History and tools of IT, Internet and its uses. ○ Introduction to Bioinformatics- goal, need, scope and limitation ○ Aims of Bioinformatics: Data organization, Tools of Bioinformatics- tools for web search, Data retrieval tools- Entrez, ○ BLAST ○ Bioinformatics programme in India. 		15 Lectures

Syllabus for the S.Y.B.Sc. Program: B.Sc.Course : BOTANY

SEMESTER IV PRACTICAL

Semester IV USBOTP4 PRACTICAL Paper I – Plant Diversity		Cr 1
Fungi and Plant Pathology		
1 Study of stages in the life cycle of <i>Erysiphe</i> from fresh/ preserved material and permanent slides.		
2 Study of stages in the life cycle of <i>Xylaria</i> from fresh/ preserved material and permanent slides.		
3 Study of fungal diseases as prescribed for theory.		
4 Study of Lichens (crustose, foliose, & fruiticose).		
Pteridophyta and Palaeobotany		
5-6 Study of stages in the life cycle of <i>Selaginella</i> from fresh/ preserved material and permanent slides.		
7 Study of form genera <i>Rhynia</i> with the help of permanent slides/ photomicrographs.		
Gymnosperms		
8- Study of stages in the life cycle of <i>Pinus</i> from fresh/ preserved material and permanent slides.		
9 permanent slides.		
10 Study of the form genus <i>Cordaites</i> with the help of permanent slide/ photomicrographs.		

Syllabus for the S.Y.B.Sc. Program: B.Sc.Course : BOTANY

SEMESTER IV USBOT P4 PRACTICALS Paper II – FORM AND FUNCTION- II	Cr 1
Anatomy <ol style="list-style-type: none"> 1 Study of normal secondary growth in the stem and root of a Dicotyledonous plant 2 Study of secondary growth in monocot stem (<i>Dracena</i>). 3 Types of mechanical tissues, mechanical tissue system in aerial, underground organs. 4 Study of conducting tissues- Xylem and phloem elements in Gymnosperms and Angiosperms as seen in LS and through maceration technique. 5 Study of different types of vascular bundles. Plant Physiology and Plant Biochemistry <ol style="list-style-type: none"> 6 Q₁₀ – germinating seeds using Phenol redindicator 7 NR activity – <i>in-vivo</i> 8 Estimation of proteins by Lowry's method (Prepare standard graph). Ecology and Environmental Botany <ol style="list-style-type: none"> 9 Study of the working of the following Ecological Instruments- Soil thermometer, Soil testing kit, Soil pH, Wind anemometer. 10 Mechanical analysis of soil by the sieve method & pH of soil. 11 Quantitative estimation of organic matter of the soil by Walkley and Blacks Rapid titration method. 12 Study of vegetation by the list quadrat method 	

Syllabus for the S.Y.B.Sc. Program: B.Sc.Course : BOTANY

SEMESTER IV USBOP4		Cr
PRACTICALS - Paper III – CURRENT TRENTS IN PLANT SCIENCES		1
Horticulture		
1	Study of five examples of plants for each of the garden locations as prescribed for theory	
2	Preparation of garden plans – formal and informal gardens	
3	Bottle and dish garden preparation.	
Biotechnology		
4	Various sterilization techniques	
5	Preparation of Stock solutions, Preparation of MS medium.	
6	Seed sterilization, callus induction	
7	Regeneration of plantlet from callus	
8	Identification of the cloning vectors – pBR322, pUC 18, Ti plasmid.	
Biostatistics and Bioinformatics		
9	Chi square test	
10	Calculation of coefficient of correlation	
11	Web Search – Google, Entrez.	
12	BLAST	



Syllabus for the S.Y.B.Sc. Program: B.Sc.Course : BOTANY

SEMESTER - III, , S.Y.B.Sc. BOTANY PRACTICAL SKELETON PAPER (PROPOSED)

TIME - 2 hours 15 min

PAPER – I

Total Marks – 50

- Q.1. Identify, Classify and describe specimen 'A' . Sketch neat and labeled diagram. (10)
Q.2. Identify, Classify and describe specimen 'B' . Sketch neat and labeled diagram. (10)
Q.3. Assign the specimen 'C' to its family giving reasons. Give the distinguishing characters, floral Diagram and floral formula. Sketch the L.S. of flower and T.S. of ovary. (10)
Q.4. Identify and describe the specimen/ slide/ photograph - 'D', 'E', 'F', 'G' and 'H'. (15)
Q.5. Journal. (05)

KEY :

- A. – *Dictyota / Sargassum*
B. – *Anthoceros / Funaria*
C. Any Angiospermic Family as per syllabus.
D. Algae – economic importance / range of thallus in Phaeophyta
E. *Anthoceros / Funaria*
F. Calyx / Corolla (any one type)
G. Androecium / Gynoecium (any one type)
H. Economic importance or morphological peculiarity of any one family.
-

SEMESTER - III, , S.Y.B.Sc. BOTANY PRACTICAL SKELETON PAPER (PROPOSED)

TIME - 2 hours 15 min

PAPER – II

Total Marks – 50

- Q.1. To Separate given material 'A' by any appropriate chromatography technique . (10)
Q.2. To estimate DNA/ RNA from the given sample 'B'. (10)
Q.3. Make an Idiogram from the given Karyotype 'C'. Identify and enlist the symptoms of the chromosomal abberation. (10)
Q.4. Identify and describe the specimen/ photograph - 'D' (05), 'E' (05) and 'F' (05 or 03 + 02). (15)
Q.5. Field Report. (05)

KEY :

- A. – Carotenoids/amino acids
B. Cauliflower
C. Cri-du-chat; Philadelphia; D-G translocation, Down Syndrome
D. Electrophoresis
E. Dry or wet preservation
F. Cell organelles / Plastid inheritance.

Syllabus for the S.Y.B.Sc. Program: B.Sc.Course : BOTANY

SEMESTER - III, , S.Y.B.Sc. BOTANY PRACTICAL SKELETON PAPER (PROPOSED)

TIME - 2 hours 15 min

PAPER – III

Total Marks – 50

- Q.1. a). Identify the active constituents present in specimen 'A' by performing suitable chemical tests. (08)
- Q.1. b). Calculate the stomatal index / palisade ratio / vein – islet numbers from the given specimen 'B'. (07)
- Q.2. Describe the ecological factors, enlist the dominant flora and mark the area on the map of a forest type 'C' . (10)
- Q.3. Determine the sequence of bases in a DNA strand by Sanger's method from the given data 'D' or Determine the sequence of amino acids in the polypeptide synthesized from the given m-RNA strand 'D' (08)
- Q.4. Identify and describe the specimen/ slide/ photograph - 'E', 'F' , and 'G'. (12)
- Q.5. Viva - Voce. (05)

KEY :

- A. Alkaloids / Glycosides.
B. Betel leaf / *Vinca* leaf.
E. Importance of _____ in herbal cosmetics.
F. Fibres / Paper.
G. Spices / Condiments.

Syllabus for the S.Y.B.Sc. Program: B.Sc.Course : BOTANY

SEMESTER - IV, , S.Y.B.Sc. BOTANY PRACTICAL SKELETON PAPER (PROPOSED)

TIME - 2hours 15 min

PAPER – I

Total Marks – 50

- Q.1. Identify, Classify and describe specimen 'A' . Sketch neat and labeled diagram. (10)
Q.2. Identify, Classify and describe specimen 'B' . Sketch neat and labeled diagram. (10)
Q.3. Identify, Classify and describe specimen 'C' .Sketch neat and labeled diagram. (10)
Q.4. Identify and describe the specimen/ slide/ photograph - 'D', 'E' and 'F' . (15)
Q.5. Journal. (05)

KEY :

A. – *Xylaria* / *Erysiphe*

B. – *Selaginella* – Stem / *strobilus*

C. *Pinus* – needle / stem / male cone.

D. Fungal disease – Powdery mildew / any other disease as per syllabus.

E. Lichen.

F. *Rhynia* / *Cordaitea*.

SEMESTER - IV, ,S.Y.B.Sc. BOTANY PRACTICAL SKELETON PAPER (PROPOSED)

TIME - 2hours 15 min

PAPER – II

Total Marks – 50

- Q.1. a). Make a temporary stained preparation of T.S. of specimen 'A' and comment on the secondary growth . (10)
Q.1. b). Make a temporary stained preparation of T.S. of specimen 'B' and comment on the mechanical tissue system .

OR

Macerate the given material 'B' and describe the conducting tissue seen. (05)

Q.2. Perform the Physiological experiment 'C' allotted to you . (12)

Q.3. Perform the Ecological experiment 'D' allotted to you . (12)

Q.4. Identify and describe the specimen/ slide/ photograph - 'E', and 'F' . (06)

Q.5. Viva - Voce. (05)

KEY :

A. – Dicot stem/ dicot root / monocot stem.

B. – Mechanical Tissue (*Coleus* stem, *Typha* leaf, *Maize* stem and *Maize* root / *Annona* / *Magnolia* formaceration).

E. – Vascular bundles / phloem/xXylem.

F. – Ecological Instrument.

Syllabus for the S.Y.B.Sc. Program: B.Sc.Course : BOTANY

SEMESTER - IV, , S.Y.B.Sc. BOTANY PRACTICAL SKELETON PAPER (PROPOSED)

TIME - 2hours 15 min

PAPER – III

Total Marks – 50

- Q.1. Prepare a garden plan 'A' . Mention any three garden locations with suitable plants (Botanical names). (10)
- Q.2. Prepare MS medium OR Perform seed sterilization technique 'B' . (08)
- Q.3. a). Perform Chi- square test OR Coefficient of Correlation using the given data 'C' and analyse the results . (12)
- Q.3.b). Perform the experiment 'D' related to Web search. (06)
- Q.4.a). Identify and describe the specimen/ photograph -'E' (05)
- Q.4.b).** Identify and describe the specimen/ photograph - 'F', 'G' and 'H' . (09)

KEY :

- E. Bottle or dish garden.
- F. Sterilization Technique.
- G. Cloning Vectors.
- H. Bioinformatics.

UNIVERSITY OF MUMBAI



Syllabus for F.Y.B.Sc. Program BSc Course: ZOOLOGY

Semester I and II

(Credit Based Semester and Grading System
with effect from the academic year 2015–2016)

Syllabus Committee Members

Dr. Anil S. Singh	-	Convenor
Dr. Manisha Kulkarni	-	Co-convenor
Dr. Jyotsna Mahale	-	Co-convenor
Dr. Meenakshi Sundaresan	-	Co-convenor
Prof. Lata Sardesai	-	Co-convenor
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Prof. Shanta Janyani	-	Co-convenor
Dr. S. Rangoonwala	-	Co-convenor
Dr. Minakshi Gurav	-	Member (Teacher)
Dr. Shirley B. Agwuocha	-	Member (Teacher)
Dr. Vishakha Shingala	-	Member (Teacher)
Dr. Gayathri N.	-	Member (Teacher)
Dr. Ansariya Rana	-	Member (Teacher)
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Dr. Shashikala Prajapati	-	Member (Teacher)
Dr. R.B. Singh	-	Member (Teacher)
Prof. Nitin Wasnik	-	Member (Teacher)
Prof. Nikhil C. Disoria	-	Member (Teacher)
Ms. Purva S. Prabhu	-	Member (Student)
Ms. Sachi R. Mayekar	-	Member (Student)
Ms. Neha Vajandar	-	Member (Student)
Ms. Payal A. Shah	-	Member (Student)
Ms. Anuradha Gaikar	-	Member (Student)
Ms. Sonal S. Prabhulkar	-	Member (Student)

Syllabus for FYBSc Course – ZOOLOGY

1. Preamble
2. Pedagogy
3. Syllabus Semester I & II
4. References and Additional Reading
5. Scheme of Examination and Paper Pattern
6. Distribution of periods
7. Model Question bank

Aims

- To nurture interest in the students for the subject of Zoology
- To create awareness of the basic and modern concepts of Zoology
- To orient students about the importance of abiotic and biotic factors of environment and their conservation.
- To provide an insight to the basic nutritional and health aspects of human life.
- To inculcate good laboratory practices in students and to train them about scientific handling of important instruments.

Preamble

While presenting this new syllabus to the teachers and students of Semester I and Semester II (F.Y.B.Sc.) Zoology, I am extremely happy to state that for the first time efforts have been made to seek inputs of all the stake holders to make it more relevant.

In the first meeting of the Board of Studies an apex committee was formed to study syllabi worldwide with a view to include modern modules and plan semesters at UG and PG programs in advance to avoid overlapping and duplication of topics in various courses.

Meeting with the industry at the Indian Merchants' Chamber and with the meritorious alumni helped adding need based components. For the first time students were a part of the syllabus committee and the process became participative when the draft was finalized in an open meeting with all the Zoology teachers after having sought democratic criticism on the proposed syllabus placed on the University website for about one month.

While following the guidelines of UGC, use of animals is excluded from the practicals, substituting the same with audiovisual, ICT and simulation aids and that the syllabus is made more interesting with new, innovative topics. Providing the pedagogy as also indicating objectives and desired outcome of every topic for the teachers, and question bank for the students apart from the question paper pattern became an integral part of the syllabus, therefore.

Care is taken to provide the drafts from time to time and declare the final syllabus well in advance enabling the teachers to make preparations before commencement of the academic year and facilitating students to execute their right to know the details before admissions.

The success of this revamped syllabus will depend totally on the enthusiasm of the teachers which is very high all throughout the process and their hands will be strengthened by publishing the University text books for the first time. This curriculum of the Zoologists, for the Zoologists and by the Zoologists developed with the united efforts will take our ever progressive subject to greater heights in the years to come.

- VINAYAK DALVIE, Chairman, BOS in Zoology

**Syllabus for
FYBSc.
Course – ZOOLOGY
To be implemented from Academic year 2015-16
SEMESTER - I**

COURSE CODE	UNIT	TOPICS	CREDITS	LECTURES/WEEK
USZO101	I	Wonders of animal world	2	1
	II	Biodiversity and its conservation		1
	III	Footsteps to follow		1
USZO102	I	Laboratory safety and Units of Measurement	2	1
	II	Animal Biotechnology		1
	III	Instrumentation		1
USZOP1	Practical based on both courses		2	6

SEMESTER - II

COURSE CODE	UNIT	TOPICS	CREDITS	LECTURES/WEEK
USZO201	I	Population Ecology	2	1
	II	Ecosystem		1
	III	National park and Sanctuaries		1
USZO202	I	Nutrition and Health	2	1
	II	Public health and Hygiene		1
	III	Common human Diseases		1
USZOP2	Practical based on both courses		2	6

SYLLABUS F.Y.B.Sc. ZOOLOGY
UNIT WISE DISTRIBUTION

Semester I		Semester II	
Course 1	Course 2	Course 3	Course 4
Unit 1 Wonders of animal world	Unit 1 Laboratory Safety and Units of Measurement	Unit 1 Population Ecology	Unit 1 Nutrition and Health
Unit 2 Biodiversity and its Conservation	Unit 2 Animal Biotechnology	Unit 2 Ecosystem	Unit 2 Public Health and Hygiene
Unit 3 Footsteps to follow	Unit 3 Instrumentation	Unit 3 National Parks and Sanctuaries	Unit 3 Common Human Diseases
Practical (USZO P1)	Practical (USZO P1)	Practical (USZO P2)	Practical (USZO P2)

PEDAGOGY

F.Y.B.Sc. Syllabus

First year B.Sc. course is the entry point for the students to undergraduate classes which acts like a guiding force for them to make up their mind in selecting a subject they would wish to pursue their studies in future for carving their career in a particular field.

The syllabus committee in the subject of Zoology for F.Y.B.Sc. Class has designed this syllabus with a view that it is most appropriate time when we transform our traditional closed classroom teaching learning practices to more of field and activity based studies, the correct methodology for the study of Natural Sciences. It is recommended to orient the students about ecosystem, bio-diversity, wildlife conservation and management with the help of models, photographs, movies, documentaries, charts and use of ICT and then take learners to field to have realistic experiences. This will enable them to get true insight about endurance of animal life in relation to human activity inducing sentiment of love, care and protection in the young mind and heart leading to understand importance of co-existence and conservation of bio-diversity. An interaction with the officials of wildlife protection force should be allowed to get basic knowledge about the relevant acts through lectures which for creating awareness about these issues and also to make best use of the knowledge in their own interest as well as for the country. Instrumentation and Animal Biotechnology component would initiate academia- industry interface and should be edified in collaboration with expertise from relevant research institutes and industrial establishments and entrepreneurs by inviting them as guest speakers or through industrial visits, excursions for practical experience about the principle, working and application of the instruments for commercial use. Population ecology need to be explained in the context with census to enlighten pupils about the effect of diversity and dynamism of human population on socio economic status of India. Experts from the field of nutrition and health can be invited to enlighten learners on the topics of nutritional value of food, balanced diet, ill-effects of eating junk food and aerated drinks. Medical professionals, relevant NGO's maybe engaged to educate students regarding myth, precautionary measures, immunization drives of common diseases, ill-effects of self-medication and stress, significance of BMI through series of programmes. During medical emergencies it is of immense importance to provide first aid assistance to the diseased within the golden period i.e. of few minutes. This enhances the possibility to save life, thus it is strongly recommended to form a consortium of colleges to conduct training in rotation of first aid techniques for teachers and students both with the help of organizations like Red Cross Society, Health Department of Civic Bodies, Civil Defence Department and Local Self Government etc.

Dr. Anil S. Singh
Convenor

F.Y.B.Sc. ZOOLOGY

(THEORY)

SEMESTER I

USZO101 (Course 1)

Wonders of Animal World, Biodiversity and its Conservation

Unit 1: Wonders of Animal World

(15 L)

Objective: *To take learners through a captivating journey of hoarded wealth of marvellous animal world.*

Desired Outcome: *Curiosity will be ignited in the mind of learners, to know more about the fascinating world of animals which would enhance their interest and love for the subject of Zoology.*

- 1.1: Echolocation in Bats and Cetaceans - Dolphins and Whales
- 1.2: Mechanism of Pearl formation in Mollusca
- 1.3: Bioluminescence in Animals: Noctiluca, Glow worm, Firefly, Angler Fish (Mechanism and use for the animal)
- 1.4: Regeneration in Animals - Earthworm (Annelida) and Lizard (Reptile)
- 1.5: Mimicry in Butterflies and its significance: Great Eggfly and Common Crow, Common Palmfly and Plain Tiger.
- 1.6: Mechanism of Coral formation and types of Coral reefs
- 1.7: Bird migration: Definition, types and factors inducing bird migration
- 1.8: Adaptive features of desert animals: Reptiles (Phrynosoma) and Mammals (Camel)
- 1.9: Breeding and Parental care in:
 - 1.9.1: Pisces - Ovo-viviparous (Black Molly/Guppy), Mouth brooders (Tilapia), Brood pouches (Sea horse)
 - 1.9.2: Amphibia - Mouth brooders (Darwin's Frog), Egg carriers (Midwife Toad)

1.9.3: Mammals - Egg-laying (Duck-billed Platypus), Marsupials (Kangaroo)

1.10: Aves: Brood Parasitism (Cuckoo)

Unit 2: Biodiversity and its Conservation (15 L)

***Objective:** To orient learners about rich heritage of Biodiversity of India and make them understand significance of its conservation.*

***Desired Outcome:** Learners would appreciate treasure of Biodiversity, its importance and hence would contribute their best for its conservation.*

2.1: Introduction to Biodiversity - Definition, Concepts, Scope and Significance

2.2: Levels of Biodiversity - Introduction to Genetic, Species and Ecosystem Biodiversity

2.3: Introduction of Biodiversity Hotspots- (Western Ghats and Indo-Burma Border)

2.4: Values of biodiversity - Direct and Indirect use value

2.5: Threats to Biodiversity - Habitat loss and Man-Wildlife conflict

2.6: Biodiversity conservation and management

2.6.1: Conservation strategies: *in situ*, ex-situ, National parks, Sanctuaries and Biosphere reserves.

2.6.2: Introduction to International efforts : Convention on Biological Diversity (CBD), International Union for Conservation of Nature and Natural Resources (IUCN), United Nations Environment Program - World Conservation Monitoring Centre (UNEP-WCMC)

2.6.3: National Biodiversity Action Plan, 2002

- 2.6.4: Introduction to Indian Wildlife (Protection) Act, 1972 and Convention for International Trade of endangered species

Unit 3: Footsteps to follow (15 L)

***Objective:** To teach learners about innovative and novel work of scientists/philosopher/entrepreneurs in the field of biological sciences.*

***Desired Outcome:** Minds of learners would be impulsed to think differently and would be encouraged ipso facto to their original crude ideas from the field of biological sciences.*

- 3.1: Dr. Hargobind Khorana (Genetic code)
- 3.2: Dr. Varghese Kurien (Amul –White revolution)
- 3.3: Dr. Salim Ali (Ornithologist)
- 3.4: Anna Hazare (Water Conservation-Ralegan Siddhi)
- 3.5: Baba Amte (Anandvan)
- 3.6: Kiran Mazumdar Shaw (Biocon)
- 3.7: Gadre Fisheries (Surimi)

Two cases preferably of local importance to the college be additionally taught.

USZO102 (Course 2)

INSTRUMENTATION and ANIMAL BIOTECHNOLOGY

Unit 1: Laboratory safety, Units and Measurement (15 L)

***Objective:** To make learners aware of risks involved in handling of different hazardous chemicals, sensitive (electrical/electronic) instruments and infectious biological specimens especially during practical sessions in the laboratory and to train them to avoid mishap.*

***Desired Outcome:** Learners would work safely in the laboratory and avoid occurrence of accidents (mishaps) which will boost their scholastic performance and economy in use of materials/chemicals during practical sessions.*

1.1: Introduction to good laboratory practices

1.2: Use of safety symbols: meaning, types of hazards and precautions

1.3: Units of measurement:

1.3.1: Calculations and related conversions of each: Metric system- length (meter to micrometer); weight (gram to microgram), Volumetric (Cubic measures)

1.3.2: Temperature: Celsius, Fahrenheit, Kelvin

1.3.3: Concentrations: Percent solutions, ppt, ppm, ppb dilutions, Normality, Molarity and Molality.

1.3.4: Biostatistics: Introduction and scope, Sampling and its types, Central Tendencies (mean, median, mode) Tabulation, Graphical representations (Histograms, bar diagrams, pie diagrams).

Unit 2: Animal Biotechnology

(15 L)

Objective: To acquaint learners to the modern developments and concepts of Zoology highlighting their applications aiming for the benefit of human being.

Desired Outcome: Learners would understand recent advances in the subject and their applications for the betterment of mankind; and that the young minds would be tuned to think out of the box.

2.1: Biotechnology: Scope and achievements of Biotechnology (Fishery, Animal Husbandry, Medical, Industrial)

2.2: Transgenesis: Retro viral method, Nuclear transplantation method, DNA microinjection method and Embryonic stem cell method

2.3: Cloning (Dolly)

2.4: Ethical issues of transgenic and cloned animals

2.5: Applications of Biotechnology:

2.5.1: DNA fingerprinting: Technique in brief and its application in forensic science (Crime Investigation)

2.5.2: Recombinant DNA in medicines (recombinant insulin)

2.5.3: Gene therapy: Ex-vivo and *In vivo*, Severe Combined Immunodeficiency (SCID), Cystic Fibrosis

2.5.4: Green genes: Green Fluorescent Protein (GFP) from Jelly fish-
valuable as reporter genes used to detect food poisoning.

Unit 3: Instrumentation

(15 L)

***Objective:** To provide all learners a complete insight about the structure and train them with operational skills of different instruments required in Zoology.*

***Desired Outcome:** Students will be skilled to select and operate suitable instruments for the studies of different components of Zoology of this course and also of higher classes including research.*

3.1: Microscopy

3.1.1: Construction, principle and applications of dissecting and compound microscope.

3.2: Colorimetry and Spectroscopy - Principle and applications.

3.3: pH - Sorenson's pH scale, pH meter - principle and applications.

3.3: Centrifuge - Principle and applications (clinical and ultra centrifuges).

3.4: Chromatography - Principle and applications (Partition and Adsorption)

3.5: Electrophoresis - Principle and applications (AGE and PAGE)

SEMESTER I
Practical USZOP1 (Course I)

1. Mounting of foraminiferan shells from sand (any 3)
2. Study of types of Corals - Brain, Organ pipe, Stag Horn, Mushroom coral Study of
3. Study of the following;
 - a. Symbiosis (Termite and Trychonympha, hermit crab and sea anemone)
 - b. Camouflage (leaf insect, chameleon)
 - c. Cannibalistic mate-eating animals (Spider and Praying Mantis)
 - d. Animal architects: Termites, Harvester ant and Baya weaver bird
 - e. Study of bioluminescent organisms – Noctiluca, glow worm, fire fly, angler fish.
4. Breeding and parental care in Amphibia- *Rhacophorus*, Midwife toad, Darwin's frog, Caecilian.
5. Mounting of scales of fish (placoid, cycloid and ctenoid)
- 6
 - a) Study of Adaptive radiation in Reptiles - Turtle, Tortoise, *Phrynosoma*, *Draco*)
 - b) Identification and differentiation of venomous and non-venomous snakes (Scales, Fangs, Bite marks, etc.)
7. Study of Types of feathers(contour, filoplume, down), beaks(Nectar feeding , Insect catching, Fruit eating, Scavenging, Filter feeding), claws (perching, wading, swimming, hopping) in birds
- 8
 - a. Identification of birds - Coppersmith Barbet, Bulbul, Rose ringed Parakeet, Magpie Robin, two local birds.
 - b. Field Report – To be done in a group of ten students (submission of written / typed report preferably along with photographs/ tables/ graphs.

Other Suggested topics for field observation/survey:

- Butterflies/ Fishes/ Migratory birds of local area.
 - Variations in Human like Attached vs. Free Earlobes, Blood Groups, Eye colour, etc. using statistical method.
9. Observations of fauna in the field (with reference to theory syllabus).

***Note - The practicals may be conducted by using specimens authorised by the wild such other regulating authorities though it is strongly recommended that the same should be taught by using photographs/audio-visual aids/ simulations / models, etc. as recommended by the UGC and as envisaged in the regulations of the relevant monitoring bodies. Specimens, however, shall be procured for the purpose of conducting practicals mentioned here-in-above.**

#There shall be at least one excursion/field trip

SEMESTER I

Practical USZOP1 (Course II)

- Interpretation of safety symbols (toxic, corrosive, explosive, flammable, skin irritant, oxidizing, compressed gases, aspiration hazards and Biohazardous infectious material.)
1. b) Study of Central tendencies and plotting of Bar diagram, histogram and pie diagram.
 2. Identification of transgenic fish (Trout and Salmon) / cloned animals (Dolly sheep, cc cat and Snuppy dog) from photograph.
 3. Extraction of fruit juice with pectinase from apple/guava/or any other suitable fruit
 - Calculation of pH of three different samples (one each acidic, alkaline and neutral) using pH paper/Universal Indicator and confirming the result with pH meter.
 4. Application of DNA Fingerprinting in criminology (photograph of electrophoretic pattern to be given for interpretation by the students)
 5. a) Study of parts of microscope and their functions.
b) Technique of focussing a permanent slide under 10x and 45x (objectives).
 6. a) Dilution of given sample and estimation of OD by using colorimeter.
b) Calculation of concentration from the given OD using formula.
 - Calculation of pH of three different samples (one each acidic, alkaline and neutral) using pH paper/universal indicator/pH indicator from red cabbage and confirming the result with pH meter.
 7. a) Separation of amino acids from the mixture by paper chromatography.
b) Calculation of R_f value of separated pigments/amino acids from given chromatogram and their identification from standard chart.
 8. a) Separation of pigments by adsorption chromatography using chalk.
b) Separation of lipids by TLC,
 - 9.

***Note - The practicals may be conducted by using specimens authorised by the wildlife and such other regulating authorities though it is strongly recommended that the same should be taught by using photographs/audio-visual aids/ simulations / models, etc. as recommended by the UGC and as envisaged in the regulations of the relevant monitoring bodies. No new specimens, however, shall be procured for the purpose of conducting practicals mentioned here-in-above.**

Course I (USZO101)

REFERENCES AND ADDITIONAL READING

1. Wonders of the Animal World - University Text Book of Zoology, F.Y.B.Sc. Semester I Course 1. V.V. Dalvie, G.B. Raje, P. Sardesai, N.S. Prabhu, University Press.
2. Vertebrate Zoology Volume I- Jordan and Verma , S. Chand and Co.
3. Invertebrate Zoology Volume II- Jordan and Verma , S. Chand and Co.
4. Invertebrate Zoology- T. C. Majumuria , S. Nagin and Co.
5. Chordate Zoology- P. S. Dhami and J. K. Dhami , R. Chand and Co.
6. Invertebrate Zoology- P. S. Dhami and J. K. Dhami , R. Chand and Co.
7. Introduction to Vertebrates- Moore Cambridge University- Low Priced Edition
8. Zoology- S. A. Miller and J. B. Harley, Tata McGraw Hill
9. Modern Textbook of Zoology, Invertebrates, R. L. Kotpal
10. Fundamentals of Ecology- E. P. Odum , Sanders Publication
11. Fundamentals of Ecology- M.C.Dash-2nd edition, Tata McGraw Hill
12. Essentials of Ecology and Environmental Science - S.V.S Rana
13. Biodiversity- S.V.S Rana- Prentice Hall Publications
14. Modern Biology- V. B. Rastogi
15. Biology of Mollusca- D. R. Khanna
16. A Textbook of Zoology, Vol. II- T. Jeffery Parker and William. A. Haswell- Low Price Publications
17. Ecology and Environment- P. D. Sharma, R. K. Rastogi Publications
18. Introduction to Ecology- R. Dajoz
19. Wildlife Laws and its Impact on Tribes- Mona Purohit , Deep and Deep Publications
20. Biodiversity- K.C.Agarwal- Agro Botanica Publications
21. Butterflies of India – Isaac Kehimkar- BNHS Publication

Course II (USZO102)

REFERENCES AND ADDITIONAL READINGS

1. Basic Laboratory Techniques, Instrumentation and Biotechnology- University Text Book of Zoology, F.Y.B.Sc. Semester I Course 2. V.V. Dalvie, R. G. Deshmukh, R. D'souza and H.U. Shingadia University Press.
2. Introduction to Practical Biochemistry – David T. Plummer (Tata McGraw Hill Publishing Co. Ltd.)
3. Introductory Practical Biochemistry – S.K. Sawhney and Randhir Singh (Narosa Publishing House)
4. Methods in Biostatistics – B. K. Mahajan, (Jaypee Publications)
5. Microscopy and Cell Biology - V. K. Sharma, (Tata McGraw Hill Publishing Co. Ltd.)
6. Bioinstrumentation – L. Veerakumari, (M.J.P. Publishers)
7. Principles and Techniques of Practical Biochemistry – Keith Wilson and John Walker, (Cambridge University Press)
8. Biotechnology- Thieman and Pallidino, Pearson edu.
9. Biotechnology –Glick and Pasternak
10. Biochemistry –Satyanarayana
11. Understanding biotechnology- Aluizio Borem ,David Bowe-Low price edition –Pearson Publication
12. A Textbook of Biotechnology – R. C. Dubey, S. Chand Publication.
13. A Manual of Medical Laboratory Technology -A. H. Patel, Navneet Prakashan Ltd.
14. Biological instruments and methodology – Dr. P. K. Bajpai, S. Chand company Ltd.
15. Calculations in Molecular biology and Biotechnology - Frank H. Stephenson, Academic Press.

SCHEME OF EXAMINATION (THEORY)

- (a) Internal assessment of twenty five (25) marks per course per semester should be conducted according to the guidelines given by University of Mumbai vide circular number UG/04 of 2014 Dated 5th June 2014 to be implemented from academic year 2014-15.
- (b) External assessment of seventy five (75) marks per course per semester should be conducted as per the following skeleton question paper pattern.
- (c) One practical examination of fifty (50) marks per course each should be conducted at the end of every semester.

SKELETON- EXAMINATION PATTERN FOR THE ABOVE SYLLABUS

All Questions are compulsory

Figures to the right indicate full marks

Time: 2.5 hours

Total marks: 75

Q.1.	UNIT 1 Answer any four out of eight (5 marks each)	20 marks
Q.2.	UNIT 2 a. Answer any one of the two (10 marks) b. Answer any two out of the four (5 marks each)	20 marks
Q.3.	UNIT 3 Answer any two out of four (10 marks each)	20 marks
Q.4.	a. Unit 1 - (One note of five marks OR objective type questions) b. Unit 2 - (One note of five marks OR objective type questions) c. Unit 3- (One note of five marks OR objective type questions)	15 marks

*For Question 4 it is recommended to have objective questions such as –

- (a) Match the column
- (b) MCQ
- (c) Give one word for
- (d) True and False
- (e) Define the term
- (f) Answer in one sentence etc.

MODEL QUESTION BANK SEMESTER I
USZO101(COURSE I)

Question bank is suggestive and not exhaustive. The paper setters are free to modify the questions or include new questions to the best of their wisdom

UNIT 1 - (05 Marks)

1. Write a note on echolocation in Dolphins/ Whales
2. Write a short note on : Pearl formation in Mollusca
3. Describe : Mechanism of bioluminescence
4. Enumerate the uses of bioluminescence
5. Describe the uses of bioluminescence for..... (Noctiluca, Glow worm, Firefly, Angler fish, etc.)
6. Write a short note on : Luciferin – Luciferase interaction
7. Describe the process of regeneration in Earthworm
8. What is regeneration? Explain the term with an example
9. What is mimicry? Explain with an example.
10. Describe: mimicry in butterfly
11. Describe briefly the formation of Corals
12. Write a short note on types of coral reefs.
13. Describe needs of migration in birds.
14. Describe briefly, the factors inducing migration in birds.
15. How does Camel adapt itself to the desert environment?
16. Describe parental care and breeding in (Examples of Pisces, Amphibia)
17. Describe briefly: Brood parasite
18. Explain parental care in Duck-billed Platypus

UNIT 2 - (05 Marks/10 Marks)

Questions that could be asked for 10 marks:

1. Explain biodiversity and its importance. What is a biodiversity hotspot? Explain Western Ghats as biodiversity hotspot in India.
2. Explain: Direct use value / Indirect use value
3. Explain biodiversity and its types.
4. Enumerate and explain threats to biodiversity.
5. State the factors which amount to habitat loss.
6. Explain the concept of Man-Wildlife conflict with an example.
7. Give a detailed account on *in situ* hybridization and ex-situ hybridization

8. Describe National Park and state its importance in conservation
9. Describe Sanctuary and state its importance in conservation
10. Give a brief account on biosphere reserve.
11. Give a detailed account on: CBD (Convention on Biological Diversity).
12. Give an account of national biodiversity plan 2002.
13. Describe important clauses of Convention for International Trade of endangered species.

Questions that could be asked for 05 marks:

1. Explain biodiversity and mention its types.
2. Explain biodiversity and give two importance
3. Explain biodiversity hotspot
4. Describe *in situ* conservation strategies.
5. Write note on ex-situ conservation strategies.
6. Give an account of genetic / species / ecosystem biodiversity.
7. Enumerate importance threat to biodiversity.
8. State direct and indirect use value of biodiversity.

UNIT 3 - (10 Marks)

1. Give a detailed account on:(Name of the eminent personality) For e.g.: Gadre Fisheries, Kiran Mazumdar Shaw, Baba Amte etc.
2. Describe in detail -(Name of the case study)
For e.g.: Amul white revolution, Biocon, Genetic code etc.
3. Give a detailed account on the contribution made by Dr.Salim Ali in the field of Ornithology.
4. What is white revolution? State contribution of Dr. Verghese Kurian for it.
5. Describe the work of water conservation of Anna Hazare.

MODEL QUESTION BANK SEMESTER I USZO102 (COURSE II)

Question bank is suggestive and not exhaustive. The paper setters are free to modify the questions or include new questions to the best of their wisdom

UNIT I: (5 marks)

1. Describe in brief (Minimum five points)
 - a. Good laboratory practices
 - b. Chemical hazards in a laboratory
 - c. Physical hazards in a laboratory
 - d. Biological hazards in a laboratory
 - e. Personal hygiene in laboratory
 - f. Waste disposal
2. Define and give conversions of the three scales of measuring temperature.
3. Define Molarity. How would you prepare
 - a. 1 litre of 0.1 M NaOH solution? (Mol.wt. of NaOH=40)
 - b. 100 ml of 1M NaOH
 - c. 500 ml of 0.2 M NaOH
4. Define Normality. How would you prepare 1 litre of 2 N NaOH solution?
5. Explain briefly the measures of central tendencies?
6. Define mean, median and mode and explain each with an example.
7. The observations of length (in cm) of 10 fishes are 22, 24, 34, 26, 28, 31, 20, 25, 36, 32. Calculate the arithmetic mean of fish length (in cm).
8. Calculate the arithmetic mean for the following data on fish length by Direct method.

Class interval (length in cm)	5-15	15-25	25-35	35-45	45-55
Frequency (no. of fish)	9	21	40	22	8

9. Calculate the arithmetic mean for the above data on fish length by shortcut method.
10. How do you find the median of the data and state the significance of median?
11. What is mode? How do you calculate mode for ungrouped and grouped data?
12. What is random sampling? State the significance.
13. Explain simple, subdivided and multiple bar diagrams.
14. What is a pie diagram? Write the formula for calculating the angles of degrees for different components.
15. The following data shows the areas in million square miles of the oceans of the world. Construct a pie diagram for the data.

Ocean	Pacific	Atlantic	Indian	Antarctic	Arctic	Total
Area (million sq. miles)	70.8	41.2	28.5	7.6	4.8	152.9

t

Plot a histogram/Bar diagram? Explain how it is constructed.

UNIT 2: (5 marks)

1. Give applications of Biotechnology in the field of Medicine / Fishery / Animal Husbandry.
2. Give the Scope of Biotechnology in different areas as a diagrammatic sketch
3. What is SCID? Name the scientist who discovered the gene therapy for it.
4. In SCID which enzyme does not work properly?
5. Which cells are used for SCID gene therapy?
6. Which gene is defective in SCID?
7. Define transgenesis and mention any two transgenic animals.
8. Ethical issues of transgenesis.
9. Enlist five applications of DNA finger printing.
10. What are green genes? State one application of it.

(10 marks)

1. Describe SCID and its treatment with suitable diagram.
2. Explain various methods of transgenesis.
3. What is Cystic fibrosis? Explain its diagnostic biotechnological method.
4. Define transgenesis and explain retro viral method with its application.

UNIT 3: (10 marks)

1. Describe the components of a compound microscope giving function.

2. Explain the principle and the applications of compound microscope.
3. Discuss in detail the principle, construction and applications of dissecting microscope.
4. Write the principle and applications of
 - a. Colorimeter
 - b. Centrifuge
 - c. Spectroscopy
 - d. Compound microscope
 - e. Dissecting microscope
5. Explain the principle of centrifugation and add a note on its application.
6. What is pH? Give the principle and applications of pH meter.
7. Describe paper chromatography as a separation technique.
8. Describe Agarose gel electrophoresis. Add a note on its applications.
9. Explain the principle and applications of Polyacrylamide gel electrophoresis.
10. With the help of a diagram, explain the parts of a colorimeter. Discuss the principle and uses.
11. Describe principle and uses of colorimeter.
12. Explain the principle and application of adsorption chromatography.

PRACTICALS

USZOP1 (Course I)

Skeleton -Practical Examination Question Paper Pattern

Time: 2 hrs

Marks: 50

Q.1. From the given sample mount foraminiferan shells (Minimum three types) (15 Marks)

OR

Mounting of scales (placoid and cycloid/ctenoid) from fishes.

Q.2. Identify the photograph of the given animals and comment on the type of interaction /speciality. (symbiosis, camouflage, cannibalistic mate eating animals and animal architects,bioluminescence). Any two (10 Marks)

Q.3. Identify giving reasons - Venomous/Non-venomous snake (from photographs). (5 Marks)

Q.4. Identification (one specimen each) (10 Marks)

- a. Types of corals
- b. Amphibians-breeding and parental care
- c. Adaptive radiation in reptiles
- d. Types of feathers/ claws in birds
- e. Types of beaks in birds

Q.5. Field study report (Biodiversity) and viva on it. (10 Marks)

Semester I
USZOP1 (Course II)
Skeleton -Practical Examination Question Paper Pattern

Time: 2 hrs

Marks: 50

- Q. 1 Dilute the given sample and estimate the OD using colorimeter (Three dilutions) (15marks)
OR
Calculate concentration from given OD by formula (3 concentrations)
OR
Find pH of water samples (three) and comment on their chemical nature.
OR
Using red cabbage pH indicator, determine pH of the given samples and comment on their chemical nature
OR
Extract fruit juice using pectinase and compare the result with a set without using pectinase.
- Q. 2. Perform experiment for separation of pigments by adsorption chromatography. (10Marks)
OR
Perform experiment for separation of mixture of amino acids by paper chromatography
OR
Calculate R_f value and identify the pigment from chromatogram.
OR
Perform Thin Layer Chromatography (TLC) for separation of lipids
- Q. 3. Focus the given slide under 10 X and 45 X and show it to examiner. (5 Marks)
OR
Prepare a frequency distribution table / Plot histogram / Pie diagram / Bar diagram from the given data.
- Q. 4. Identification (10 Marks)
(Safety Symbols (two), parts of compound microscope, transgenic animals, DNA fingerprinting)
- Q. 5. Journal and Viva voce(on practical component) (10 Marks)

SEMESTER-II

USZO201 (Course: 3)

Ecology and Wildlife Management

Unit 1: Population ecology:

(15 L)

***Objective:** To facilitate the learning of population ecology, its dynamics and regulatory factors important for its sustenance.*

***Desired Outcome:** This unit would allow learners to study about nature of animal population, specific factors affecting its growth and its impact on the population of other life form.*

1.1: Population dynamics

- 1.1.1: Population density
- 1.1.2: Natality
- 1.1.3: Mortality
- 1.1.4: Fecundity
- 1.1.5: Age structure
- 1.1.6: Sex ratio
- 1.1.7: Life tables
- 1.1.8: Survivorship curves
- 1.1.9: Population dispersal and distribution patterns
- 1.1.10 Niche concept

1.2: Population growth regulation

- 1.2.1: Intrinsic mechanism – Density dependent fluctuations and oscillations
- 1.2.2: Extrinsic mechanism- Density independent, environmental and climate factors, population interactions

1.3: Population growth pattern

- 1.3.1: Sigmoid
- 1.3.2: J Shaped

1.4: Human census (India) – Concept, mechanism and significance

Unit 2: Ecosystem:

(15 L)

Objective: *To impart knowledge of different components of ecosystem and educate about essentials of coexistence of human beings with all other living organisms.*

Desired Outcome: *Learners will grasp the concept of interdependence and interaction of physical, chemical and biological factors in the environment and will lead to better understanding about implications of loss of fauna specifically on human being, erupting spur of desire for conservation of all flora and fauna.*

2.1: Concept of Ecosystems

2.1.1: Ecosystem - Definition and components

2.1.2: Impact of temperature on biota

2.1.3: Biogeochemical cycles (Water, Oxygen, Nitrogen, Sulphur)

2.1.4: Fresh water ecosystem – Lentic and Lotic

2.1.5: Food chain and food web in ecosystem (Fresh water and Grass land).

2.1.6: Ecological pyramids - energy, biomass and number.

2.1.7: Animal interactions (commensalism, mutualism, predation, antibiosis, parasitism)

Unit 3: National parks and Sanctuaries of India

(15 L)

Objective: *To enlighten learners about the current status of wild life conservation in India in the light of guidelines from different relevant governing agencies vis-à-vis with adversity of poaching and biopiracy.*

Desired Outcome: *Learners would be inspired to choose career options in the field of wild life conservation, research, photography and ecotourism.*

3.1: Concept of Endangered and Critically Endangered species using examples of Indian Wildlife with respect to National Parks and Wildlife

Sanctuaries of India (Sanjay Gandhi National Park, Tadoba Tiger Reserve, Corbett National Park, Kaziranga National Park, Gir National Park, Silent Valley, Pirotan Island Marine Park, Keoladeo Ghana National Park, Bandipur Sanctuary)

3.2: Management strategies with special reference to Tiger and Rhinoceros in India

3.3: Ecotourism

3.4: Biopiracy

SEMESTER-II

Course: 4 [USZO 202]

NUTRITION, PUBLIC HEALTH AND HYGIENE

Unit 1: Nutrition and Health

(15 L)

Objective: To make learners understand the importance of balanced diet and essential nutrients of food at different stages of life.

Desired Outcome: Healthy dietary habits would be inculcated in the life style of learners in order to prevent risk of developing health hazards in younger generation due to faulty eating habits.

- 1.1: Concept of balanced diet, dietary recommendations to a normal adult, infant, pregnant woman and aged.
- 1.2: Malnutrition disorders – Anemia (B₁₂ and Iron deficiency), Rickets, Marasmus, Goiter, Kwashiorkor (cause, symptoms, precaution and remedy).
- 1.3: Constipation, piles, starvation, acidity, flatulence, peptic ulcers (cause, symptoms, precaution and remedy).
- 1.4: Obesity (Definition and consequences).
- 1.5: Importance of fibres in food.
- 1.6: Significance of breast feeding.
- 1.7: Swine flu and Dengue (cause, symptoms, precaution and remedy).
- 1.8: BMI calculation and its significance.

Unit 2: Public Health and Hygiene

(15 L)

Objective: *To impart knowledge about source, quantum and need for conservation of fast depleting water resource and essentials of maintaining proper sanitation, hygiene and optimizing use of electronic gadgets.*

Desired Outcome: *Promoting optimum conservation of water, encouragement for maintaining adequate personal hygiene, optimum use of electronic gadgets, avoiding addiction, thus facilitating achievement of the goal of healthy young India in true sense.*

2.1: Health

2.1.1: Definition of Health, the need for health education and health goal.

2.1.2: Physical, psychological and Social health issues.

2.1.3: WHO and its programmes - Polio, Small pox, Malaria and Leprosy (concept, brief accounts and outcome with respect to India).

2.1.4: Ill effects of self-medication.

2.2: Water and water supply

2.2.1: Sources and properties of water.

2.2.2: Purification of water, small scale, medium scale and large scale (rapid sand filters)

2.2.3 : Water footprint (concept, brief accounts and significance).

2.3: Hygiene:

2.3.1: Hygiene and health factors at home, personal hygiene, oral hygiene and sex hygiene.

2.4: Radiation risk:

2.4.1: Mobile Cell tower and electronic gadgets (data of recommended level, effects and precaution).

2.5: First Aid:

2.5.1: Dog bite and its treatment.

2.6: Blood bank – Concept and significance

UNIT 3: Common Human Diseases and Disorders (15 L)

Objective: *To educate learners about causes, symptoms and impact of stress related disorders and infectious diseases.*

Desired Outcome: *Learners will be able to promptly recognize stress related problems at initial stages and would be able to adopt relevant solutions which would lead to psychologically strong mind set promoting positive attitude important for academics and would be able to acquire knowledge of cause, symptoms and precautions of infectious diseases.*

3.1: Stress related disorders

3.1.1: Hypertension, Diabetes type II, anxiety, insomnia, migraine, depression (cause, symptoms, precaution and remedy)

3.2: Communicable and non-communicable diseases

3.2.1: Tuberculosis and Typhoid

3.2.2: Hepatitis (A and B), AIDS, Gonorrhea and Syphilis

3.2.3: Diseases of respiratory system- Asthma, Bronchitis.

3.2.4: Oral Cancer

(Discuss cause/causative agents, symptoms, diagnostics, precaution /prevention and remedy)

SEMESTER II
Practical USZOP2 (Course III)

1. Interpretation of the given graphs/ tables and comment on pattern of population nature :
 - i. Survivorship curve
 - ii. Life tables
 - iii. Fecundity tables
 - iv. Age structure
 - v. Sex ratio
2. a) Calculation of Natality, Mortality, Population density from given data
b) Estimation of population density by capture recapture method
3. Interpretation of Growth curves (Sigmoid and J shaped)
4. Estimation of hardness from given water sample (tap water v/s well water)
5. Estimation of Free carbon dioxide (Free CO₂) from two different samples- aerated drinks(diluted) v/s tap water
6. Identification and interpretation of aquatic and terrestrial (Grassland) food chains and food webs
7. Construction of food chain/food web using given information/data.
8. a) Identification and interpretation of ecological pyramids of energy, biomass and number
b) Construction of different types of pyramid from given data.
9. Study of the following:
 - a) Endangered (Great Indian Bustard, Asiatic lion, Blackbuck, Olive Ridley sea turtle) and critically endangered species (Slender-billed vulture, Gharial, Malabar civet) of Indian wildlife and state reasons for their decline
 - b) Study Biodiversity hotspots using world map (Western Ghats and Indo-Burma)Study of sanctuaries, national parks, biosphere reserves in India with respect to its brand fauna (as listed in theory)

***Note - The practicals may be conducted by using specimens authorised by the wildlife and such other regulating authorities though it is strongly recommended that the same should be taught by using photographs/audio-visual aids/ simulations / models, etc. as recommended by the UGC and as envisaged in the regulations of the relevant monitoring bodies. No new specimens, however, shall be procured for the purpose of conducting practicals mentioned here-in-above.**

#There shall be at least one excursion/field trip

SEMESTER II
Practical USZOP2 (Course IV)

1. Qualitative estimation of Vitamin C by Iodometric method.
2. Study of microscopic structure of starch granules of different cereals (wheat, maize and jowar).
 3. a) Estimation of maltose from brown/white bread.
 - b) Moisture content from biscuits or other suitable food products.
4. Food adulteration Test:
 - a) Milk adulterants (starch and glucose), methylene blue reduction Test (MBRT).
 - b) Adulterants in Cheese, Butter, Jaggery, Ghee, Honey, Iodised Salt.
5.
 - a) Estimation of protein content of two egg varieties.
 - b) Study of efficacy of different antacids (any two antacids).
6. .Study of Human Parasites

Endoparasites - Protozoans (*Entamoeba*, *Plasmodium*),
Helminths (*Ascaris*, *Wuchereria*),
Ectoparasites (Head louse, tick) and Exoparasites (Bed bug, Mosquito).
7. Screening of anaemic/non-anaemic persons using CuSO_4 method.
8. First Aid – Demonstration Practical Training for teachers and students to be conducted by the experts from Redcorss, Civil defence, Civic authorities by individual institute or cluster colleges in rotation.
9. BMI analysis - Measurement of Height/ Weight and calculation of BMI using formula, preparation and submission of report. (10 students/ group-50 readings/group)

***Note - The practicals may be conducted by using specimens authorised by the wildlife and such other regulating authorities though it is strongly recommended that the same should be taught by using photographs/audio-visual aids/ simulations / models, etc. as recommended by the UGC and as envisaged in the regulations of the relevant monitoring bodies. No new specimens, however, shall be procured for the purpose of conducting practicals mentioned here-in-above.**

Semester II USZOP2 (Course III)
Skeleton -Practical Examination Question Paper Pattern

Time: 2 hrs

Marks: 50

Q.1. Estimate Hardness from given water samples and compare the results. (15 Marks)

OR

Estimate Free CO₂ from given samples and compare the results.

Q.2. Solve the given problems (using statistical approach wherever possible) based on (Any two) (10Marks)

Natality
Mortality
Sex Ratio
Fecundity
Population density

Q.3. Identify brand animals (Min. 4) and place them in their respective National parks/ Sanctuaries on the given map quoting reasons for their decline. (5 Marks)

OR

Mark National parks and Sanctuaries on the map of India and mention the name of their brand animals stating reason for their decline. (Min. 4)

(5 Marks)

OR

Identify endangered and critically endangered animals (photographs) one each and state their reason of decline (5 Marks)

Q.4. Study the given information and give answers on the basis of food chain/food web and ecological pyramids. (10 Marks)

OR

Prepare food chain/food web and ecological pyramid from the given data and give its significance. (10 Marks)

OR

Identify and interpret the given graph/growth curve/age structure and comment on the pattern of population dispersal. (10 Marks)

OR

Determine Population density by capture and recapture method. (10 Marks)

Q.5. Journal and Viva voce (Based on practical component) (10 Marks)

Semester II USZOP2 (Course IV)
Skeleton -Practical Examination Question Paper Pattern

Time: 2 hrs

Marks: 50

- Q.1. Estimate Vitamin C from given sample. (15 Marks)
OR
Estimate Maltose content from bread.
OR
Estimate protein content from two different types of eggs.
- Q.2. Analyse the given food sample and identify food adulterants (any 2 samples). (10 Marks)
OR
Evaluate milk quality by Methylene Blue Reduction Test (MBRT).
OR
Determine efficacy of different antacids (any two) on acidic solution.
- Q.3. Determine moisture content from biscuits/ any other suitable food product. (5 Marks)
OR
On the basis of microscopic structure of starch granules identify different cereals (any two).
OR
Detect adulterants present in the given milk sample (any two).
OR
Determine whether given blood sample is from anaemic/non-anaemic person using CuSO_4
Method and suggest the appropriate diet.
- Q.4. Identification (10 Marks)
a) One specimen of Protozoan Parasites.
b) One specimen of Helminth Parasites.
c) One specimen from Ectoparasite
d) One specimen from Exoparasite
e) One specimen from Endoparasite
- Q.5. Submission of report of Body Mass Index (viva based on it) (10 Marks)

Note: There shall be at least one excursion/field trip.

USZO201 (Course III)

REFERENCES AND ADDITIONAL READING

1. Introduction to Ecology and Wildlife - University Text Book of Zoology, F.Y.B.Sc. Semester II Course 3. University Press.
2. Fundamentals of Ecology - Eugene P. Odum and Grey W. Barrett, Brook Cole/ Cengage learning
3. Fundamentals of Ecology - M. C. Dash , Tata McGraw Hill company Ltd, New Delhi
4. Ecology - Mohan P. Arora , Himalaya Publishing House
5. Field Biology and Ecology -- Alen H. Benton and William E. Werner ,Tata McGraw Hill ltd, New Delhi
6. Ecology and Environment - Sharma P. D , Rastogi Publication, Mumbai
7. Ecology : Principles and Applications - Chapman J.L , Cambridge University trust
8. Ecology - Subramaniam and Others, Narosa Publishing House
9. Wildlife laws and its impact on tribes - Mona Purohit, Deep and deep Publication
10. Biology - Eldra Solomon, Linda R. Berg and Diana W. Martin, Thomson/ Brooks/ Cole
11. Economic Zoology, Biostats and Animal Behaviour - Shukla, Mathur, Upadhyay, Prasad. Rastogi Publications.

USZO202 (Course IV)

REFERENCES AND ADDITIONAL READING

1. Common Diseases, Health and Hygiene - University Text Book of Zoology, F.Y.B.Sc. Semester II Course 4. University Press.
2. Common Medical Symptoms edited - P. J. Mehta National Inblisents and Distributions
3. Parks Textbook of Preventive and Social Medicine K. Park M/S Banarasidas Bhanot Jabalpar.
4. Human Physiology – Volume I – II C. C. Chatterjee, Medical Allied agency, Kolkatta.
5. Parasitology (Protozoology and Helminthology) - K. D. Chatterjee, Chatterjee Medial Publishers.

6. Nand's handbook of Forensic Medicine and Toxicology - Apurba Nandy, NCBA publication.
7. Essentials of Public Health and Sanitation- Part I and Part II. All India Institute of Local Self Government.
8. Epidemiology and Management for Health Care for all. P.V. Sathe, A. P. Sathe, Popular Prakashan, Mumbai.
9. Textbook of Medical Parasitology- C. K. JayaramPaniker. Jaypee Brothers.
10. A Treatise on Hygiene and Public Health. -B. N. Ghosh. Calcutta Scientific Publishing Company.
11. Prevention of Food Adulteration, Act 1954. Asian Law House.
12. Clinical Dietetics and Nutrition - F. P. Antia and Philip, Oxford University Press.
13. A Complete Handbook of Nature Cure - Dr. H. K. Bakru, Jaico Publishing House.
14. Dietetics - B. Srilakshmi, New Age International (P) Ltd. Publishers.
15. Nutrition: Principles and Application in Health Promotion - J. B. Lippincott Company. Philadelphia.
16. Are You Healing Yourself Mr. Executive - Dr. R. H. Dastur. IBH Publishing Company.
17. Food Nutrition and Health- Dr. Shashi Goyal, Pooja Gupta, S. Chand Publications.
18. Public Health Nutrition. Edited - Michael J. Gidney, Barrie M. Margetts, John M. Kearney and Lenore Arab. Willey Blackwell Publication.
19. Food and Nutrition – Vol. I and II - Dr. Swaminathan , Bappco Publication.
20. Textbook of Human Nutrition - Mahtab Bamji, Prahlad Rao.
21. Total Health by Paramjit Rana.

SCHEME OF EXAMINATION THEORY

- (a) Internal assessment of twenty five (25) marks per course per semester should be conducted as class test according to the guidelines given by University of Mumbai vide circular number UG/04 of 2014 Dated 5th June 2014 to be implemented from academic year 2014-15.
- (b) External assessment of seventy five (75) marks per course per semester should be conducted as per the following skeleton paper pattern.
- (c) One practical examination of fifty (50) marks per course each should be conducted at the end of every semester.

SKELETON- EXAMINATION PATTERN FOR THE ABOVE SYLLABUS

All Questions are compulsory

Figures to the right indicate full marks

Time: 2.5 hours

Total marks: 75

Q.1.	UNIT 1 Answer any four out of eight (5 marks each)	20 marks
Q.2.	UNIT 2 a. Answer any one of the two (10 marks) b. Answer any two out of the four (5 marks each)	20 marks
Q.3.	UNIT 3 Answer any two out of four (10 marks each)	20 marks
Q.4.	a. Unit 1 - (One note of five marks OR objective type questions) b. Unit 2 - (One note of five marks OR objective type questions) c. Unit 3- (One note of five marks OR objective type questions)	15 marks

*For Question 4 it is recommended to have objective questions such as –

- (a) Match the column
- (b) MCQ
- (c) Give one word for
- (d) True and False
- (e) Define the term
- (f) Answer in one sentence etc.

MODEL QUESTION BANK
SEMESTER II
USZO203 (COURSE III)

Question bank is suggestive and not exhaustive. The paper setters are free to modify the questions or include new questions to the best of their wisdom

UNIT 1: (10 marks)

Describe with suitable Example

1. J-Shaped and Sigmoid growth patterns
2. Population dispersal and distribution patterns
3. Natality and Mortality
4. Natality and Fecundity
5. Fecundity and Mortality
6. Density dependant fluctuation and oscillations
7. Population interactions
8. Age structure and population density
9. Concept of niche and its significance in population ecology.

Write notes on / Give a brief account of: (5 marks)

1. Population density
2. Natality
3. Mortality
4. Fecundity
5. Age structure
6. Sex ratio
7. Survivorship curve
8. Sigmoid growth pattern
9. J-shaped growth curve
10. Intrinsic mechanism
11. Extrinsic mechanism
12. Niche
13. Population dispersal and distribution pattern

UNIT 2: (5 marks)

1. Effect of temperature on metabolism

16. Impact of temperature on reproduction
17. Effect of temperature on animal behaviour
18. Define ecosystem and describe any two abiotic factors
19. Define ecosystem and describe any two biotic factors
20. Explain producers / autotrophs
21. Give a brief account of various levels of consumers in an ecosystem
22. Describe in short the inter-relationship between biotic and abiotic factors
23. Describe the following (any one of the cycles can be asked) water cycle, nitrogen cycle and oxygen cycle, sulphur cycle.
24. Explain any one of the following - lake or river
25. Explain food chain from terrestrial or aquatic ecosystem
26. What is food web and explain the same with a suitable example
27. Give a brief account of: Energy pyramid, Pyramid of biomass, Pyramid of numbers.

Unit 3: (10 marks question)

1. State the differences between National park and Wildlife Sanctuary?
2. Write an account of critically endangered species of Indian wildlife with at least two examples.
3. Explain briefly management strategy of any one tiger project in India.
4. Briefly explain management strategy of Rhinoceros project in India.
5. Write in detail about Indian Wildlife (Protection) Act 1972.
6. What is biopiracy? Explain with suitable examples.
7. Write a note on flora and fauna of Sanjay Gandhi national park.
8. Write an account of Tadoba tiger reserve project.
9. Give an account of biodiversity of Jim Corbett national park.
10. Write a note on Ranthambore Tiger reserve.
11. Write in details about Gir Lion project.
12. Write a note on Keoladeo Ghana National park.
13. Write an account of biodiversity of Silent valley.
14. Describe in detail about Bandipur sanctuary.
15. Write a note on ecotourism in India with few examples.

MODEL QUESTION BANK (COURSE IV) SEMESTER II

Question bank is suggestive and not exhaustive. The paper setters are free to modify the questions or include new questions to the best of their wisdom

Unit I (5 marks)

Explain the following:

1. Concept of balanced diet and dietary recommendations of any one of the following:
a) Normal adult b) Infant c) Pregnant woman d) Aged
2. Cause and symptoms of the following: a) Anemia b) B₁₂ deficiency c) Vitamin D deficiency d) Marasmus e) Kwashiorkor f) Goiter, g) Swine flu, h) Dengue
3. Precautions and remedy for all above mentioned health conditions.
4. Significance of breast feeding.
5. Importance of fibres in food.
6. Food adulterants and toxins with two side effects of each.
7. Causes, symptoms, precautions and treatment of a) Constipation, b) Piles, c) Insomnia, d) Starvation, e) Flatulence, f) Peptic ulcer, g) Obesity
8. BMI and its significance.

Unit II (5/10 marks)

Question of 5 marks:

1. Give a brief account and outcome of WHO Programs:
a) Polio b) Smallpox c) Malaria d) Leprosy
2. a) Explain the concept of health goal and health knowledge.
b) Enlist different needs of health education.
c) State five points of social health issues.

Question of 10 marks:

1. Describe sources and properties of water in relation to human consumption.

2. Describe methods of purification of water – small scale, medium scale and large scale.
3. Explain the concept of water footprint and give its significance.
4. Describe disposal of human and animal waste – STP and ETP, its functioning and significance.
5. Give a brief of risk of radiation from mobile cell towers and electronic gadgets.
6. Explain the concepts of physical health, psychological health and myth related to it.
7. Describe the term hygiene and explain in brief health factors related to it at home.
8. Explain personal hygiene, oral hygiene and sex hygiene with significance of each.
9. Describe ill effects of self medication with respect to antibiotics and steroids.
10. Give brief account of first aid symbols.

Unit III (10 marks)

1. Explain causes, symptoms, precautions and remedy
 - a) Hypertension
 - b) Diabetes Type II
 - c) Anxiety and Insomnia
 - d) Migraine and depression
2. Explain causes, symptoms, precautions and remedy
 - a) Tuberculosis
 - b) Common flu
 - c) Dengue
 - d) Malaria
 - e) Typhoid
 - f) Hepatitis A
 - g) Hepatitis B
 - h) AIDS

UNIVERSITY OF MUMBAI

No. UG/34 of 2018-19

CIRCULAR:-

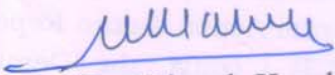
Attention of the Principals of the affiliated Colleges and Directors of the recognized Institutions in Science & Technology Faculty is invited to this office Circular No. UG/02 of 2016-17, dated 21st April, 2016 relating to syllabus of the Bachelor of Science (B.Sc.) degree course.

They are hereby informed that the recommendations made by the Board of Studies in Zoology at its meeting held on 9th April, 2018 have been accepted by the Academic Council at its meeting held on 5th May, 2018 vide item No. 4.31 and that in accordance therewith, the revised syllabus as per the (CBCS) for the S.Y.B.Sc. in Zoology (Sem - III & IV) has been brought into force with effect from the academic year 2018-19, accordingly. (The same is available on the University's website www.mu.ac.in).

MUMBAI-400 032

22nd June, 2018

To


(Dr. Dinesh Kamble)
I/c REGISTRAR

The Principals of the affiliated Colleges & Directors of the recognized Institutions in Science & Technology Faculty. (Circular No. UG/334 of 2017-18 dated 9th January, 2018.)

A.C/4.31/05/05/2018

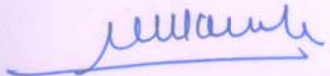
No. UG/ 34 -A of 2018

MUMBAI-400 032

22nd June, 2018

Copy forwarded with Compliments for information to:-

- 1) The I/c Dean, Faculty of Science & Technology,
- 2) The Chairman, Board of Studies in Zoology,
- 3) The Director, Board of Examinations and Evaluation,
- 4) The Director, Board of Students Development,
- 5) The Co-Ordinator, University Computerization Centre,


(Dr. Dinesh Kamble)
I/c REGISTRAR

UNIVERSITY OF MUMBAI



Program: S.Y.B. Sc.

Course: Zoology

Syllabus for Semester III & IV

(Choice Based Credit System with effect
from the academic year 2018-2019)

S. Y. B. Sc. Syllabus Framing Committee

Sr. No.	Name	Address	Status
1	Dr. Anita Jadhav readersmailbox@rediffmail.com	Head & Associate Prof., Department of Zoology, ICL College, Vashi, Navi-Mumbai	I/C Chairperson, BoS in Zoology
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PREFACE

Holistic development of students is the main purpose of the curriculum. While this is attempted through prescribing dynamic and updated curricular inputs, the new course that will be effective from the academic year 2018- 2019, will follow the Semester mode. The main aim of the revision of syllabus was to modify it to meet the unique requirements of students, up gradation of knowledge in the subject of zoology and to inculcate the skill of reasoning. The contents of the syllabus have been drawn-up to accommodate the widening horizons of the discipline of Biological Sciences. All possible attempts have been made to update the syllabus by incorporating current and most recent developments in various branches of Zoological Sciences, nevertheless, classical zoology also has been given due weightage. Introduction of an elective paper in zoology will also provide a glimpse of its application. Inclusion of research methodology to the undergrads is the highlight of the course. I am sure that these revised syllabi will cater to better understanding of the subject and beyond.

I appreciate and congratulate the entire team of syllabus framing for the co-operation, tireless work and wish them success.

**Chairperson,
Ad-hoc Board of Studies in Zoology**

PREAMBLE

As a traditional procedural norm of the University of Mumbai, it is the Board of Studies that includes various disciplines, which revive the syllabi after completion of a cycle of five years. Due to rapid advancement in technology, new ideas and concepts, and an ocean of information being generated every day that necessitates updating the students in this present era of exponential information and knowledge. However, in the former practice of syllabus revision, students were unable to imbibe new ideas and concepts as there was limited scope of including them within the syllabi that was theoretical with poor applicability

Looking at the employment generating potential and need of trained human resource in various service sectors in our state, it was became imperative to make a breakthrough from the traditional practice of revising syllabus; and instead giving an opportunity to the stakeholders to adapt and acclimatize with the changes around them and imbibe knowledge which shall enable them to develop entrepreneurship and / or employment avenues and opportunities after pursuing the coveted degree.

With this intention, the Board of Studies in Zoology took decision to put before the S. Y. B. Sc. Zoology students one elective, so that they can study topics of their interest. Board of Studies in Zoology is the only Board in the University that has offered two electives for the S. Y. B. Sc. students and safeguarded their career. Further, BoS formulated Four Syllabus Review Committees (one per course with composition of 01 Convenor and 04 Members). All the committee members worked extensively and exhaustively; and prepared draft of the syllabus. The said draft was uploaded on the website of University of Mumbai for public criticism. The invited opinions were thereby incorporated in the syllabus to make it versatile and student friendly with high applicability. Further, the draft syllabus was re-discussed in the workshop where several teachers and students contributed their views to improve it. In the academic year 2016-17, new syllabus was introduced but it is revived immediately after two years with inclusion of new concepts and techniques. Due care is taken to make the syllabus interdisciplinary, flexible and choice based. All the member teachers have tried their level best to come out with “Need Based Syllabus” that may spark motives in all the stakeholders. We hope that the stakeholders will enjoy the learning of this syllabus in the classrooms, laboratories and on the field.

Dr. G. B. Raje
Coordinator

PEDAGOGY

While disseminating the content of the present syllabus, it is imperative and expected that the facilitator is well versed or/and develops their Pedagogical Content Knowledge (PCK), which would include aspects like content, methodology, evaluation and so on. At the onset, the facilitator may include various topic-specific instructional strategies, employing the use of organizers (topic announcement in advance, making models, flip charts, photography, etc). Learning of topics on chromosomes, nucleic acids, cell biology, biomolecules, physiological processes are hence revised, and during the presentations by the learner, the facilitator is able to gauge the preconceptions and learning disabilities. Any misunderstanding of basic concepts can thus be clarified such as 'difference between gene and allele'. Peer teaching is another aspect of pedagogy which takes into account participative learning thus enhancing the learning of the content and making it enjoyable, for example, the use of 'Punnet squares' for working out the crosses in various illustrations on monohybrid and dihybrid ratios, problems based on inheritance, pedigree analysis, molecular biology etc. A declarative learning strategy, which employs the use of familiar contexts and analogies, illustrative diagrams, questioning techniques, discussions, may be used for topics like multiple alleles, polygenic inheritance, DNA testing for paternity issues, scientific attitude, methodology, scientific writing etc. This would enhance the relevance of these topics and engender motivation, thereby balancing the blend of content and pedagogy in teaching. The syllabus includes practical investigations, individual or group student experiments, simulations to assist learners in visualizing and /or internalizing the concepts and processes. The learner could be encouraged to organize field trips, nature trails and treks in and around the ecosystems like lakes, beaches, sanctuaries, national-parks etc. for learning topics like ethology and conservation, amazing animals, applied zoology, pollution and other such, where sensitization, awareness and action are to be invoked within the learner. Visits to museums, and an interdisciplinary approach with various departments like geology, history, geography, chemistry, psychology, medicine would bring about a multi and cross approach to learning concepts such as paleontological evidences, nucleic acids, physiological processes, biomolecules, holistic health and neurological and genetic diseases. ICT enabled learning is the need of the hour and could include screening of documentaries, videos, animations, PPT's, and the use of social media such as Whatsaap, Instagram, Facebook be employed for impactful and continued learning. Facilitators can upload the teaching material, videos of lectures, links to websites for not only enhancing but also focusing and developing the topics of interest by the learner by way of self-study. More importantly, the syllabus endeavours to develop life skills by discovering and

honing entrepreneurial skills of the learner. To accomplish this purpose, visits to apiary, vermicomposting units, and dairy could be encouraged, also interviews with various entrepreneurs, officials of funding agencies must be undertaken to comprehend the nuances of business. Also small projects on various entrepreneurial aspects like setting up vermicomposting bins and aquaria, sale of the vermicompost or setting up an ornamental fish farms, innovations in dairy products and its sale could be encouraged in the campuses. The elective papers are so construed that the learner is driven to gain knowledge, experience through activity-based assignments, and projects, which would enhance entrepreneurial skills, a logical understanding and analysis of business functions.

Capt. Nilima Prabhu
Dr. Dilip Kakavipure
Mr. Venkatesh Hegde
Dr. Surekha Gupta
Convenors

Syllabus for S. Y. B. Sc. Course: ZOOLOGY
Credit Based Semester and Grading System
(To be implemented from the Academic Year 2018-2019)

SEMESTER – III

COURSE CODE	UNIT	TOPIC	CREDITS	LECTURES /WEEK
USZO301	I	Fundamentals of Genetics	2	1
	II	Chromosomes and Heredity		1
	III	Nucleic Acids		1
USZO302	I	Nutrition and Excretion	2	1
	II	Respiration and Circulation		1
	III	Control and Coordination of Life Processes, Locomotion and Reproduction		1
USZOE303A ELECTIVE 1	I	Ethology	2	1
	II	Parasitology		1
	III	Economic Zoology		1
USZOE303B ELECTIVE 2	I	Maintenance of Aquarium	2	1
	II	Agricultural, Household Pests and their Control		1
	III	Amazing Animals		1
USZOP3	Practicals based on all three courses		03	9

Important Note: College may choose either Elective 1 or Elective 2 for Semester III and Semester IV as their third course depending on the preference selected by majority of the students and endorsed by Head of the Department of Zoology and the Principal of the college.

SEMESTER IV

COURSE CODE	UNIT	TOPIC	CREDITS	LECTURES /WEEK
USZO401	I	Origin and Evolution of Life	2	1
	II	Population Genetics and Evolution,		1
	III	Scientific Attitude, Methodology, Scientific Writing and Ethics in Scientific Research		1
USZO402	I	Cell Biology	2	1
	II	Endomembrane System		1
	III	Biomolecules		1
USZOE403A ELECTIVE 1	I	Comparative Embryology	2	1
	II	Aspects of Human Reproduction		1
	III	Pollution and its Effect on Organisms		1
USZOE403B ELECTIVE 2	I	Dairy Industry	2	1
	II	Sericulture		1
	III	Aquaculture		1
USZOP4	Practicals based on all three courses		03	9

Important Note: College may choose either Elective 1 or Elective 2 for Semester III and Semester IV as their third course depending on the preference selected by majority of the students and endorsed by Head of the Department of Zoology and the Principal of the college.

UNIT WISE DISTRIBUTION OF SYLLABUS

UNIT WISE DISTRIBUTION OF SYLLABUS							
Semester III				Semester IV			
Course 5	Course 6	(Elective 1) Course 7A	(Elective 2) Course 7B	Course 8	Course 9	(Elective 1) Course 10A	(Elective 2) Course 10B
Unit 1 Fundamentals of Genetics	Unit 1 Nutrition & Excretion	Unit 1 Ethology	Unit 1 Maintenance of Aquarium	Unit 1 Origin & Evolution of Life	Unit 1 Cell Biology	Unit 1 Comparative Embryology	Unit 1 Dairy Industry
Unit 2 Chromosomes & Heredity	Unit 2 Respiration & Circulation	Unit 2 Parasitology	Unit 2 Agricultural & Household Pests& their Control	Unit 2 Population Genetics & Evolution	Unit 2 Endomembrane System	Unit 2 Aspects of Human Reproduction	Unit 2 Sericulture
Unit 3 Nucleic Acids	Unit 3 Control and Coordination of Life Processes, Locomotion & Reproduction	Unit 3 Economic Zoology	Unit 3 Amazing Animals	Unit 3 Scientific Attitude, Methodology, Scientific Writing & Ethics in Scientific Research	Unit 3 Biomolecules	Unit 3 Pollution & its Effects on Organisms	Unit 3 Aquaculture
Practical (USZO P3)	Practical (USZO P3)	Practical (USZO P3)	Practical (USZO P3)	Practical (USZO P4)	Practical (USZO P4)	Practical (USZO P4)	Practical (USZO P4)

SEMESTER III

Sr. No.	USZO301 (Course-V)	No. of lectures allotted	Learning pleasure
	Fundamentals of Genetics, Chromosomes and Heredity, Nucleic acids		
	Unit 1: Fundamentals of Genetics	15L	25hrs
	Objectives: <ul style="list-style-type: none"> ➤ <i>To introduce basic terms of genetics.</i> ➤ <i>To develop conceptual clarity of Mendelian principles of inheritance and other forms and pattern of inheritance</i> 		
	Desired outcome: <ul style="list-style-type: none"> ➤ <i>Learner would comprehend and apply the principles of inheritance to study heredity.</i> ➤ <i>Learner will understand the concept of multiple alleles, linkage and crossing over.</i> 		
1.1	Introduction to Genetics <ul style="list-style-type: none"> • Definition, Scope and Importance of Genetics. • Classical and Modern concept of Gene (Cistron, Muton, Recon). • Brief explanation of the following terms: Allele, Wild type and Mutant alleles, Locus, Dominant and Recessive traits, Homozygous and Heterozygous, Genotype and Phenotype, Genome. 	02L	02hrs
1.2	Mendelian Genetics <ul style="list-style-type: none"> • Mendelian Genetics: Monohybrid & Dihybrid Cross, Test Cross, Back Cross, Mendel's Laws of Inheritance, Mendelian Traits in Man. • Exceptions to Mendelian inheritance: Incomplete dominance, Co-dominance, Lethal Genes, Epistasis - Recessive, Double recessive, Dominant and Double dominant. • Chromosome theory of inheritance. • Pedigree Analysis-Autosomal dominant and recessive, X- linked dominant, and recessive. 	08L	12hrs

1.3	Multiple Alleles and Multiple Genes <ul style="list-style-type: none"> • Concept of Multiple Alleles, Coat colour in rabbit, ABO and Rh blood group system • Polygenic inheritance with reference to skin colour and eye colour in humans. • Concept of Pleiotropy. 	03L	06hrs
1.4	Linkage and Crossing Over <ul style="list-style-type: none"> • Linkage and crossing over, Types of crossing over, Cytological basis of crossing over. 	02L	05hrs
	Unit: 2: Chromosomes and Heredity	15L	26hrs
	Objectives: <ul style="list-style-type: none"> ➤ <i>To familiarize the learners with the structure, types and classification of chromosomes.</i> ➤ <i>To introduce the concept of sex determination and its types, sex influenced and sex-limited genes.</i> 		
	Desired outcome: <ul style="list-style-type: none"> ➤ <i>Learner will comprehend the structure of chromosomes and its types.</i> ➤ <i>Learner will understand the mechanisms of sex determination.</i> ➤ <i>Learner would be able to correlate the disorders linked to a particular sex chromosome.</i> 		
2.1	Chromosomes <ul style="list-style-type: none"> • Types of Chromosomes–Autosomes and Sex chromosomes • Chromosome structure - Heterochromatin, Euchromatin • Classification based on the position of centromere • Endomitosis, Giant chromosomes- Polytene and Lampbrush chromosomes and Significance of Balbiani rings 	04L	08hrs

2.2	Sex- determination <ul style="list-style-type: none"> Chromosomal Mechanisms: XX-XO, XX-XY, ZZ-ZW Sex determination in Honey bees: Haplo-diploidy Sex determination in <i>Drosophila</i>- Genic balance theory, Intersex, Gynandromorphs Parthenogenesis Hormonal influence on sex determination- Freemartin and Sex reversal. Role of environmental factors- <i>Bonelia</i> and Crocodile Barr bodies and Lyon hypothesis 	07L	10hrs
2.3	Sex linked, sex influenced and sex-limited inheritance. <ul style="list-style-type: none"> X-linked: Colour-blindness, Haemophilia Y-linked: Hypertrichosis Sex-influenced genes Sex-limited genes 	04L	08hrs
	Unit: 3 Nucleic acids	15L	30hrs
	Objectives: <ul style="list-style-type: none"> ➤ To introduce the learner to the classical experiments proving DNA as the genetic material. ➤ To introduce the learner the structure of nucleic acids and the concept of central dogma of molecular biology. ➤ To familiarize the learner with the concept of gene expression and regulation. 		
	Desired outcome: <ul style="list-style-type: none"> ➤ Learner will understand the importance of nucleic acids as genetic material. ➤ Learner would comprehend and appreciate the regulation of gene expressions. 		
3.1	Genetic material <ul style="list-style-type: none"> Griffith's transformation experiment, Avery-Macleod & McCarty 	07L	14hrs

	<p>experiment and Hershey Chase experiment of Bacteriophage infection</p> <ul style="list-style-type: none"> • Chemical composition and structure of nucleic acids • Double helix nature of DNA, Solenoid model of DNA • Types of DNA – A, B, Z & H forms • DNA in Prokaryotes - Chromosomal and Plasmid • Extra nuclear DNA - Mitochondria and Chloroplast • RNA as a genetic material in virus • Types of RNA: Structure and function 		
3.2	<p>Flow of genetic information in a eukaryotic cell</p> <ul style="list-style-type: none"> • DNA Replication • Transcription of mRNA • Translation • Genetic code 	05L	08hrs
3.3	<p>Gene expression and regulation</p> <ul style="list-style-type: none"> • One gene-one enzyme hypothesis /one polypeptide hypothesis • Concept of Operon • Lac Operon 	03L	08hrs

	SEMESTER – III		
Sr. No	USZO302 (COURSE-VI)	No. of lect allotted	Learning pleasure
	Nutrition and Excretion, Respiration and Circulation, Control and Coordination of Life Processes, Locomotion and Reproduction		
	Unit: 1 Nutrition and Excretion	15L	23hrs
	Objectives: <ul style="list-style-type: none"> ➤ <i>To introduce the concepts of physiology of nutrition, excretion and osmoregulation.</i> ➤ <i>To expose the learner to various nutritional apparatus, excretory and osmoregulatory structures in different classes of organisms.</i> 		
	Desired outcome: <ul style="list-style-type: none"> ➤ <i>Learner would understand the increasing complexity of nutritional, excretory and osmoregulatory physiology in evolutionary hierarchy.</i> ➤ <i>Learner would be able to correlate the habit and habitat with nutritional, excretory and osmoregulatory structures.</i> 		
1.1	Comparative study of nutritional apparatus (structure and function): Amoeba, Hydra, Cockroach, Amphioxus, Pigeon, Ruminants.	05L	06hrs
1.2	Physiology of digestion in man.	02L	04hrs
1.3	Comparative study of excretory and osmoregulatory structures and functions. a) Amoeba -Contractile vacuole b) Planaria -Flame cells c) Cockroach- Malpighian tubules	05L	08hrs
1.4	Categorization of animals based on principle nitrogenous excretory products	01L	01hrs
1.5	Structure of kidney, uriniferous tubule and physiology of urine formation in man	02L	04 hr

	Unit: 2 Respiration and Circulation	15L	27hrs
	Objectives: <ul style="list-style-type: none"> ➤ <i>To introduce the concepts of physiology of respiration and circulation</i> ➤ <i>To expose the learner to various respiratory and circulatory organs in different classes of organisms.</i> 		
	Desired outcome: <ul style="list-style-type: none"> ➤ <i>Learner would understand the increasing complexity of respiratory and circulatory physiology in evolutionary hierarchy.</i> ➤ <i>Learner will be able to correlate the habit and habitat of animals with respiratory and circulatory organs.</i> 		
2.1	Comparative study of respiratory organs (structure and function): Earthworm, Spider, Any bony fish (Rohu / <i>Anabas</i> / <i>Clarius</i>), Frog and Pigeon.	03L	06hrs
2.2	Structure of lungs and physiology of respiration in man	02L	03hrs
2.3	Comparative study of circulation: (a) Open and Closed type, (b) Single and Double type.	02L	04hrs
2.4	Types of circulating fluids- Water, Coelomic fluid, Haemolymph, Lymph and Composition of blood	02L	03hrs
2.5	Comparative study of hearts (structure and function): Earthworm, Cockroach, Shark, Frog, Crocodile and Pigeon.	04L	07hrs
2.6	Structure and mechanism of working of heart in man.	02	04hrs
	Unit: 3 Control and Coordination, Locomotion and Reproduction	15L	25hrs
	Objectives: <ul style="list-style-type: none"> ➤ <i>To introduce the concepts of physiology of control and coordination, locomotion and reproduction.</i> ➤ <i>To expose the learner to various locomotory and reproductive structures in different classes of organisms.</i> 		
	Desired outcome: <ul style="list-style-type: none"> ➤ <i>Learner would understand the process of control and coordination by nervous and endocrine regulation.</i> 		

	<p>➤ <i>Learner would be amazed by various locomotory structures found in the animal kingdom.</i></p> <p>➤ <i>Learner would be acquainted with various reproductive strategies present in animals.</i></p>		
3.1	<p>Control and co-ordination</p> <ul style="list-style-type: none"> • Irritability in <i>Paramecium</i>, nerve net in <i>Hydra</i>, nerve ring and nerve cord in earthworm. • Types of neurons based on the structure and function. • Conduction of nerve impulse: Resting potential, Action potential and Refractory period • Synaptic transmission 	05L	08hrs
3.2	<p>Movement and Locomotion</p> <p>Locomotory organs- structure and functions;</p> <p>a. Pseudopodia in <i>Amoeba</i> (Sol- Gel theory), Cilia in <i>Paramecium</i></p> <p>b. Wings and legs in cockroach</p> <p>c. Tube feet in starfish</p> <p>d. Fins of fish</p>	04L	08hrs
3.3	Structure of striated muscle fibre in human and sliding filament theory	02L	02hrs
3.4	<p>Reproduction</p> <p>a. Asexual Reproduction- Fission, Fragmentation, Gemmule formation and Budding</p> <p>b. Sexual reproduction</p> <p>i. Gametogenesis</p> <p>ii. Structure of male and female gametes in human</p> <p>iii. Types of fertilization</p> <p>iv. Oviparity, Viviparity, Ovo-viviparity</p>	04L	07hrs

	SEMESTER III		
	USZOE1303 (COURSE-VIIA) ELECTIVE 1		
	Ethology, Parasitology, Economic Zoology	15L	26hrs
	Unit: 1 Ethology		
	Objectives: <ul style="list-style-type: none"> ➤ <i>To equip learner with a sound knowledge of how animals interact with one another and their environment.</i> ➤ <i>To enable the learner to understand different behavioural patterns.</i> 		
	Desired Outcome: <ul style="list-style-type: none"> ➤ <i>Learner would gain insight into different types of animal behaviour and their role in biological adaptations.</i> ➤ <i>Learner would be sensitized to the feelings which are instrumental in social behaviour.</i> 		
1.1	Introduction to Ethology: <ul style="list-style-type: none"> • Definition, History and Scope of Ethology • Animal behaviour : Innate and Learned behaviour • Types of learning: Habituation, Imprinting and Types of imprinting - Filial and sexual, Classical conditioning • Instrumental learning and insight learning. 	04L	06hrs
1.2	Aspects of animal behaviour: <ul style="list-style-type: none"> • Communication in bees and ants • Mimicry and colourations • Displacement activities, Ritualization • Migration in fish, schooling behaviour • Habitat selection, territorial behaviour. 	07L	12hrs
1.3	Social behaviour: <ul style="list-style-type: none"> • Social behaviour in primates-Hanuman langur • Elements of socio-biology: Altruism and Kinship 	04L	08hrs

	Unit: 2 Parasitology	15L	27hrs
	Objectives: <ul style="list-style-type: none"> ➤ To acquaint the learner with the concepts of parasitism and its relationship in the environment. ➤ To introduce the learner to modes of transmission of parasites. 		
	Desired Outcome: <ul style="list-style-type: none"> ➤ Learner would understand the general epidemiological aspects of parasites that affect humans and take simple preventive measures for the same. ➤ Learner would comprehend the life cycle of specific parasites, the symptoms of the disease and its treatment. 		
2.1	Introduction to Parasitology and Types of Parasites <ul style="list-style-type: none"> • Definitions: Parasitism, Host, Parasite, Vector-biological and mechanical • Types of parasite- Ectoparasite, Endoparasite and their subtypes • Parasitic adaptations in Ectoparasites and Endoparasites • Types of host: Intermediate and definitive, reservoir 	03L	06hrs
2.2	Host-parasite relationship and host specificity <ul style="list-style-type: none"> • Different types of host- parasite relationship, structural specificity, physiological specificity and ecological specificity 	02L	06hrs
2.3	Life cycle, pathogenicity, control measures and treatment <ul style="list-style-type: none"> • <i>Entamoeba histolytica</i>, <i>Fasciola hepatica</i>, <i>Taenia solium</i>, <i>Wuchereria bancrofti</i> 	04L	06hrs
2.4	Morphology, life cycle, pathogenicity, control measures and treatment <ul style="list-style-type: none"> • Head louse (<i>Pediculus humanus capitis</i>), Mite (<i>Sarcoptes scabiei</i>), Bed bug (<i>Cimex lectularis</i>) 	02L	06hrs
2.5	Parasitological significance <ul style="list-style-type: none"> • Zoonosis- Bird flu, Anthrax, Rabies and Toxoplasmosis 	04L	03hrs

	Unit 3 Economic Zoology	15L	24hrs
	Objectives: <ul style="list-style-type: none"> ➤ To disseminate information on economic aspects of animals like apiculture, vermiculture and dairy science. ➤ To encourage young learner for self-employment. 		
	Desired Outcome: <ul style="list-style-type: none"> ➤ Learner would gain knowledge on animals useful to mankind and the means to make the most of it. ➤ Learner would learn the modern techniques in animal husbandry. ➤ Learner would pursue entrepreneurship as a career. 		
3.1	APICULTURE	06L	08hrs
3.1.1	Methods of bee keeping and management <ul style="list-style-type: none"> • Introduction to different species of honey bees used in apiculture. • Selection of flora and bees for apiculture. • Advantages and disadvantages of traditional and modern methods of apiculture. • Pests and Bee enemies- Wax moth, wasp, black ants, bee-eaters, king crow and disease control 		
3.1.2	Economic importance <ul style="list-style-type: none"> • Honey- Production, chemical composition and economic importance • Bee wax- Composition and economic importance. • Role of honey bee in pollination. 		
3.2	VERMICULTURE	04L	08hrs
3.2.1	Rearing methods, management and economic importance <ul style="list-style-type: none"> • Introduction to different species of earthworms used in vermiculture. • Methods of vermiculture. • Maintenance and harvesting 		

	<ul style="list-style-type: none"> Economic importance: Advantages of vermiculture, demand for earthworms; market for vermicompost and scope for entrepreneurship. 		
3.3	DAIRY SCIENCE	05L	08hrs
3.3.1	Dairy development in India <ul style="list-style-type: none"> Role of dairy development in rural economy, employment opportunities 		
3.3.2	Dairy Processing <ul style="list-style-type: none"> Filtration, cooling, chilling, clarification, pasteurization, freezing 		
3.3.3	Milk and milk products <ul style="list-style-type: none"> Composition of milk Types of milk: <ol style="list-style-type: none"> Buffalo milk Cow milk (A1 &A2) Whole milk and toned milk Milk products 		

	SEMESTER III		
	USZOE2303 (COURSE-VIIB) – ELECTIVE 2		
	Maintenance of Aquarium, Agricultural and Household pests and their control , Amazing animals	15L	26hrs
	Objectives: <ul style="list-style-type: none"> ➤ <i>To develop skills for maintenance of aquarium and budgeting for setting up an aquarium and ornamental fish farm.</i> ➤ <i>To study the biology of ornamental fishes, its food and feeding and their transportation.</i> 		
	Desired Outcome: <ul style="list-style-type: none"> ➤ <i>Learner will develop skills for maintenance of aquarium and become familiar with the budgeting aspects for setting up an ornamental fish farm.</i> ➤ <i>Learner will derive knowledge about the biology of ornamental fishes, its food and feeding habits and their transportation.</i> 		
	Unit.1 Maintenance of Aquarium		
1.1	Introduction and scope.	02L	04hrs
1.2	Exotic and Endemic species.	02L	06hrs
1.3	Biology of aquarium fishes: <ul style="list-style-type: none"> • Guppy • Molly • Gold fish 	02L	08hrs
1.4	Common characters and sexual dimorphism of marine fishes: <ul style="list-style-type: none"> • Anemone fish • Butterfly fish 	02L	06hrs

1.5	Food and feeding: <ul style="list-style-type: none"> • Live fish feed • Formulated fish feed 	02L	04hrs
1.6	Fish transportation: i) Handling ii) Packing iii)Transport	03L	05hrs
1.7	General maintenance of aquarium and budget for setting up an ornamental fish farm.	02L	04hrs
	Unit: 2 Agricultural pests and their control	15L	27hrs
	Objectives: <ul style="list-style-type: none"> ➤ To study different types of pests. ➤ To comprehend various aspects of agricultural and household pests and their economic implications. ➤ To learn about the different pest control measures and plant protection appliances. 		
	Desired Outcome: <ul style="list-style-type: none"> ➤ Learner will gain information on the different types of pests and comprehend various aspects of agricultural and household pests and its economic implications. ➤ Learner will derive knowledge of pest control measures and appliances used for plant protection against pests. 		
2.1	Introduction and concept of pest	02L	06hrs
2.1.1	Types of pests: <ul style="list-style-type: none"> • Agricultural: Locust • Household: Bed bug • Stored grains: Flour beetle • Structural: Termites • Veterinary: Tick • Forestry: Grasshopper 	03L	06hrs

2.2	Major insect pests of agricultural importance (Life cycle, nature of damage and control measures). a) Jowar stem borer b) Brinjal fruit borer c) Aphids d) Rice weevil e) Pink bollworm	03L	06hrs
2.3	Other pests: Rats, bandicoots, crabs, snails, slugs, birds and squirrels	02L	06hrs
2.4	Pest control measures: i) Cultural control ii) Physical control iii) Mechanical control iv) Chemical control v) Biological control, vi) Concept of IPM	03L	03hrs
2.5	Plant protection appliances: Rotary duster, knapsack sprayer and cynogas pump, hazards of pesticides and antidotes.	02L	03hrs
	Unit 3 Amazing animals	15L	24hrs
	Objectives: ➤ To comprehend the concept of life timeline, and the natural history of some amazing animals. ➤ To kindle interest and yearning to study amazing animals.		
	Desired Outcome: ➤ Learner would understand the concept of life time-line. ➤ Learner will gain knowledge of and develop various skills while studying amazing animals.		
3.1	Natural History a) Introduction and life timeline b) Butterflies the flying jewels- Blue Mormon, Striped tiger c) Herpetofauna of India- Flying frog, Fan Throated	04L	08hrs

	<p>lizard and Gharial</p> <p>d) Feathered Biped: Kingfisher, Drongo</p> <p>e) Mammals of India: Malabar giant squirrel</p>		
3.2	<p>The world's most amazing animals (emphasis should be given only on amazing aspects)</p> <p>a) Octopus</p> <p>b) Spider</p> <p>c) Mudskipper</p> <p>d) Flying fish</p> <p>e) Pebble toad</p> <p>f) Strawberry poison frog</p> <p>g) Komodo dragon</p> <p>h) Lesser flamingo</p> <p>i) Great white pelican</p> <p>j) Spatule-tailed hummingbird</p> <p>k) Cheetah</p>	05L	10hrs
3.3	<p>Five most incredible animals discovered within the last decade</p> <p>a) The Purple (joker) crab,</p> <p>b) The African dwarf saw-shark (stabbing shark),</p> <p>c) The Psychedelic (crime fighting) gecko,</p> <p>d) The Matilda viper</p> <p>e) The Myanmar snub-nosed monkey</p>	03L	5hrs
3.4	<p>Marvels of Animals</p> <p>a) Mantis shrimp: Fastest punch</p> <p>b) Homing in Pacific salmon</p> <p>c) Sperm whale: Mechanism of deep sea diving.</p>	03L	08hrs

	PRACTICAL SEMESTER III
	Practical USZOP3 (Course - V)
1	Extraction and detection of DNA
2	Extraction and detection of RNA
3	Mounting of Barr bodies
4	Study of polytene chromosome
5	Study of mitosis- temporary squash preparation of Onion root tip
6	Detection of blood groups and Rh factor
7	Problems in Genetics a) Monohybrid/ Dihybrid Cross: b) X- linked inheritance: c) Multiple Alleles
8	Chromosome morphology: (photograph to be provided)
9	Pedigree analysis
10	Problems based on molecular biology

	SEMESTER III
	Practical USZOP3 (Course - VI)
1	Urine analysis—Normal and Abnormal constituents
2	Detection of ammonia excreted by fish from aquarium water
3	Detection of uric acid from excreta of birds
4	Study of striated and non-striated muscle fibre
5	Study of nutritional apparatus (Amoeba, Hydra, Earthworm, Pigeon, Ruminant stomach)
6	Study of respiratory structures: a. Gills of bony fish and cartilaginous fish b. Lungs of frog c. Lungs of mammal d. Accessory respiratory structure in <i>Anabas</i> / <i>Clarius</i> e. Air sacs of Pigeon
7	Study of locomotory organs (Amoeba, Bivalve, Cockroach, Starfish, Fish, and Bird).
8	Study of different types of hearts (Cockroach, Shark, Frog, Garden lizard, Crocodile and Mammal).
9	Study of permanent slides on Reproduction: (a) Sponge gemmules, (b) Hydra budding, (c) T.S. of mammalian testis, (d) T.S. of mammalian ovary.

	SEMESTER III
	Practical USZOE1P3 (Course - VIIA) Elective I
1	Extraction of casein from milk and its qualitative estimation
2	Preparation of paneer from given milk sample
3	Measurement of density of milk using different samples by Lactometer
4	Study of Honey Bee: a) Life Cycle of Honey Bee and Bee Hive b) Mouthparts of Honey Bee c) Legs of Honey Bee d) Sting Apparatus of Honey Bee
5	Study of ethological aspects: a) Warning colouration b) Animal instinct c) Imprinting d) Communication in animals: Chemical signals and Sound signals e) Displacement activities in animals: Courtship and mating behaviour in animals and Ritualization
6	Study of Protozoan parasites: a. <i>Trypanosoma gambiense</i> b. <i>Giardia intestinalis</i>
7	Study of Helminth parasites: a. <i>Ancylostoma duodenale</i> b. <i>Dracunculus medinensis</i>
8	Parasitic adaptations: Scolex and mature proglottid of Tapeworm
9	Study of Ectoparasites: a) Leech b) Tick c) Mite
10	Project- Suggested topics on economic zoology (e.g. Apiculture/ Sericulture/ Lac culture / Vermicompost technique / Construction of artificial beehives /Animal husbandry/ Aquaculture / any other)

	SEMESTER III
	Practical USZOE2P3 (Course - VIIB) Elective 2
1	Maintenance of Aquarium– Equipments required for setting up of aquarium – types of filter, type of gravel, aerator pump, lighting, nets, different species of aquatic plants and ornamental fishes.
2	Types of pest – Agricultural-aphids, Household-cockroaches, housefly, Structural-termites, Stored grains- borer, Veterinary- fleas, Forestry- caterpillar.
3	Other pests- a) Invertebrates -nematodes, leech, snails, slugs. b) Vertebrates- rats, birds
4	Types of pest control –a) Physical b) Biological c) Electronic d) Insecticides, Rodenticides and Special Treatments
5	Hybrid animals- a) Liger b) Wholphin c) Zebroid d) Savannah cat
6	Most incredible animals in last decades – a) Joker crab b) Snub nose monkey c) Matilda viper
7	Endangered animals of India – a) Amboli bush frog b) Indian egg- eating snake (Wester mann’s snake) c) Spoon- billed sandpiper d) Snow leopard
8	A project on aquarium setting in laboratory / vermicomposting.
9	A field visit to study the natural flora and fauna; and submission of report with photographs.

***Note-** The practicals may be conducted by using preserved specimens/permanent slides authorized by the wild life and such other regulating bodies though it is strongly recommended that the same should be taught by using photographs/audio-visual aids/simulations/ models etc. as recommended by the UGC and as envisaged in the regulations of the relevant monitoring bodies. No new specimens, however, shall be procured for conducting practicals mentioned here in above.

N.B:

- I) It is pertinent to note that we have to adhere strictly to the directions as given in the UGC Circular F14-4/2006 (CPP-II).
- II) Apart from the Institutional Animal Ethics Committee (IAEC) and any other Committee appointed by a Competent Authority/Body from time to time, every college should constitute the following Committees:
 - 1) A Committee for the Purpose of Care and Supervision of Experimental Animals (CPCSEA)
 - 2) A Dissection Monitoring Committee (DMC) to ensure that no dissections or mountings are done, using animals

Composition of DMC shall be as follows:

- i) Head of the Concerned Department (Convener/Chairperson)
- ii) Two Senior Faculty Members of the concerned Department
- iii) One Faculty of related department from the same College
- iv) One or two members of related department from neighboring colleges.

<p>USE OF ANIMALS FOR ANY EXPERIMENT/DISSECTION/MOUNTING IS BANNED. SIMULATIONS, AUTHORISED PERMANENT SPECIMENS/SLIDES, CHARTS, MODELS AND OTHER INNOVATIVE METHODS ARE ENCOURAGED.</p>
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Semester –III

REFERENCE BOOKS AND ADDITIONAL READING

USZO301 (COURSE-V)

1. Principles of Genetics. Gardner, E. J., Simmons, M.J and Snustad, D.P. John Wiley and Sons
2. Concepts of Genetics. Klug, W. S., Cummings M. R., Spencer, C.A. Benjamin Cummings
3. Genetics- A Molecular Approach. Russell, P. J Benjamin Cummings
4. Genetics: Analysis of Genes and Genomes. Daniel L., Hartl, Elizabeth W. Jones Jones & Bartlett Publishers
5. Introduction to Genetic Analysis. Griffiths, A. J. F., Wessler. S.R., Lewontin, R.C. and Carroll, S. B. W. H. Freeman and Co
6. Cell Biology Genetics, Molecular Biology Evolution and Ecology Verma P. S. and Agrawal P.K., 9th edition, S. Chand Publication, New Delhi
7. Principles of Genetics – Eight edition- Eldon John Gardner, Michael J. Simmons, D. Peter Snustad
8. Genetics- Weaver, Hedrick, third edition, McGraw Hill Education
9. Genetics A Mendelian approach Peter J. Russel, Pearson Benjamin Cummings
10. Genetics A conceptual approach, Benjamin A. Pierce, Southwestern University, W.H. Freeman and company, New York
11. Genetics, Third Edition, Monroe W. Strickberger
12. Genetics from gene to genome, third edition, Leeland H. Hartwell, Leeroy Hood, Michael 7. L. Goldberg, Ann E. Reynolds, Lee M. Silver, McGraw Hill Education

USZO302 (COURSE-VI)

1. Vertebrate Zoology Volume I- Jordan and Verm , S. Chand and Co.
2. Invertebrate Zoology Volume II- Jordan and Verma , S. Chand and Co.
3. Invertebrate Zoology- Majupuria T. C., NaginS.and Co.
4. Chordate Zoology- Dhami P. S. and Dhami J. K., R. Chand and Co.
5. Invertebrate Zoology- Dhami P. S. and Dhami J. K., R. Chand and Co.
6. Introduction to Vertebrates- Moore Cambridge University- Low Priced Edition.
7. Zoology- Miller S. A. and Harley J. B., Tata McGraw Hill.
8. Modern Textbook of Zoology, Invertebrates, Kotpal R. L

9. Biological Science, Taylor D.J., Stout G.W., Green N.P.O, Soper R., Cambridge University Press.

USZOE1303 (COURSE-VIIA)

1. Animal Behaviour- David McFarland
2. Animal Behaviour- Mohan Arora
3. Animal Behaviour- Reena Mathur
4. An introduction to Animal Behaviour- Dawkins
5. Animal Behaviour-Agarwal
6. Animal Behaviour- Tinbergen
7. Biology of Insects- 1992 Saxena S. C. Oxford and IBH Publishing Co New Delhi. Bombay. Calcutta
8. Bee and Bee Keeping- Roger A. Morse, Cornell University Press London
9. Vermiculture Technology - Clive A. Edwards, Norman Q. Arancon and Rhonda Sherman
10. Parasitology- Chatterjee K. D., Chatterjee Medical Publishers.
11. Medical Parasitology- Arora
12. Textbook of Medical Parasitology-.C.K Jayaram Paniker, Jaypee Brothers.
13. A text book of Parasitology- Kochhar S. K. Dominant Pub. & Dis, New Delhi.
14. Essentials of Parasitology- Gerald D. Schmidt: Universal Bookstall, New Delhi.
15. Introduction to Parasitology- Sharma P. N. and Ratnu L.S., Chand S & Co. Pvt. Ltd.
16. Introduction to Parasitology- Chandler and Read John Wiley & Sons
17. Economic Zoology Biostatistics and Animal behaviour – S. Mathur, Rastogi Publications.
18. Economic Zoology- Shukla G.S. & Upadhyay V. B., Rastogi Publications.
19. A handbook on Economic Zoology, S. Chand & Co.

USZOE2303 (COURSE-VIIB)

1. A General textbook of entomology -- A D Imms. Asia Publication.
2. Agricultural insect pests and their control. V.B. Awasthi. Scientific Publication.
3. A manual of practical entomology. – M. M. Trigunayat. Scientific Publication.
4. Applied Entomology – Alaka Prakash and Fennemore. New Age Publishers.
5. Applied Entomology – Awasthi. Scientific Publication.
6. A Text book of insect morphology, physiology and endocrinology – Tembhare D. B.– Chand Publication
7. Entomology and Pest Management –Larry P. Pedigo. Pearson Education.

8. Forensic Entomology-The utility of Arthropods in legal investigations. –Jason H. Byrd and James L. Castner. CRC Press.
9. General and applied Entomology – David and Ananthakrishnan. Tata McGraw Hill
10. Insect endocrinology and physiology – Tembhare D B – S Chand publication.
11. Insect Jewelry by Roger D. Akre., Laurel D. Hansen, and Richards S. Zack: in Summer (1991). (Online available as research article).
12. Insect Year Book of Agriculture- American Agriculture Department Publication.
13. Economic Zoology- Shukla G.S. & Upadhyay V. B., Rastogi Publications.
14. A handbook on Economic Zoology, S. Chand & Co.
15. Candler, W., & Kumar, N. (1998). India: The dairy revolution: The impact of dairy development in India and the World Bank's contribution. World Bank Publications.
16. Milk and dairy products in human nutrition: production, composition and health. John Wiley & Sons, Park, Y. W., & Haenlein, G. F. (Eds.). (2013).
17. Dairy development in India: An appraisal of challenges and achievements. Concept Publishing Company, Venkatasubramanian, V., Singh, A. K., & Rao, S. V. N. (2003).
18. Dairy Development in The New Millennium (The Second White Revolution). Deep and Deep Publications, Shrivastava, J. S. M. (2008).
19. <http://listverse.com/2012/12/03/10-amazing-animal-abilities/>
20. www.toptenz.net/top-10-amazing-animals-discovered-within-the-last-decade.php
21. dailynewsdig.com/top-10-amazing-animal-hybrids.
22. <https://www.pinterest.com/pin/16044142395584735/>
23. www.naturalhistorymag.com/
24. <https://naturalhistory.si.edu/>.

SEMESTER IV

Sr. No	USZO401 (COURSE-VIII)	No. of lect allotted	Learning pleasure
	Origin and Evolution of Life, Population Genetics and Evolution, Scientific Attitude, Methodology, Scientific Writing and Ethics in Scientific Research		
	Unit 1: Origin and Evolution of Life	15L	30hrs
	Objective: <ul style="list-style-type: none"> ➤ <i>To impart scientific knowledge about how life originated on our planet</i> 		
	Desired outcomes: <ul style="list-style-type: none"> ➤ <i>Learner will gain insights into the origin of life.</i> ➤ <i>Learner will analyse and critically view the different theories of evolution.</i> 		
1.1	Introduction <ul style="list-style-type: none"> • Origin of the Universe • Chemical evolution - Miller-Urey experiment, Haldane and Oparin theory • Origin of life • Origin of eukaryotic cell 	05L	10hrs
1.2	Evidences in favour of organic evolution <ul style="list-style-type: none"> • Evidences from geographical distribution, palaeontology, anatomy, embryology, physiology and genetics 	04L	08hrs
1.3	Theories of organic evolution <ul style="list-style-type: none"> • Theory of Lamarck • Theory of Darwin and Neo- Darwinism • Mutation Theory • Modern synthetic theory • Weismann's Germplasm theory 	06L	12hrs

	Unit: 2: Population Genetics and Evolution	15L	28hrs
	Objective: <ul style="list-style-type: none"> ➤ <i>To develop an understanding of genetic variability within a population and learn as to how the change in the gene pool leads to evolution of species</i> 		
	Desired outcomes: <ul style="list-style-type: none"> ➤ <i>Learner would understand the forces that cause evolutionary changes in natural populations</i> ➤ <i>Learner would comprehend the mechanisms of speciation</i> ➤ <i>Learner will be able to distinguish between microevolution, macroevolution and megaevolution</i> 		
2.1	Introduction to Population genetics <ul style="list-style-type: none"> • Definition • Brief explanation of the following terms: Population, Gene pool, Allele frequency, Genotype frequency, Phenotype frequency, Microevolution 	01L	03hrs
2.2	Population genetics <ul style="list-style-type: none"> • Hardy- Weinberg Law • Factors that disrupt Hardy Weinberg equilibrium: Mutation, Migration (gene flow), Non-random mating (inbreeding, inbreeding depression, assortative mating(positive and negative), disassortative mating, Genetic drift (sampling error, fixation, bottleneck effect and founder effect) • Natural Selection: Patterns of Natural Selection-Stabilizing selection, Directional selection (examples: peppered moth, antibiotic resistance in bacteria, pesticide resistance) and Disruptive selection 	05L	08hrs
2.3	Evolutionary genetics <ul style="list-style-type: none"> • Genetic variation: Genetic basis of variation-mutations and recombination (crossing over during meiosis, independent assortment of chromosomes during meiosis and random union of gametes during fertilization) • Nature of genetic variations: Genetic polymorphism, Balanced polymorphism, Mechanisms that preserve balanced polymorphism- 	07L	13hrs

	<p>Heterozygote advantage and frequency dependent selection,</p> <ul style="list-style-type: none"> • Neutral variations • Geographic variation (Cline) • Species concept: Biological species concept and evolutionary species concept • Speciation and Isolating mechanisms: Definition and modes of speciation (allopatric, sympatric, parapatric and peripatric) • Geographical isolation • Reproductive isolation and its isolating mechanisms (prezygotic and postzygotic) 		
2.4	Macroevolution and megaevolution: Concept and Patterns of macroevolution (stasis, preadaptation /exaptation, mass extinctions, adaptive radiation and coevolution), Megaevolution	02L	04hrs
	Unit: 3 Scientific Attitude Methodology, Scientific Writing and Ethics in Scientific Research	15L	32hrs
	<p>Objective:</p> <p>➤ <i>To inculcate scientific temperament in the learner</i></p>		
	<p>Desired outcome:</p> <p>➤ <i>The learner would develop qualities such as critical thinking and analysis</i></p> <p>➤ <i>The learner will imbibe the skills of scientific communication and he/she will understand the ethical aspects of research</i></p>		
3.1	<p>Process of science:</p> <ul style="list-style-type: none"> • A dynamic approach to investigation: The Scientific method, Deductive reasoning and inductive reasoning, Critical thinking, Role of chance in scientific discovery (serendipity) • Scientific research: Definition, difference between method and methodology, characteristics, types • Steps in the Scientific method: Identification of research problem, formulation of research hypothesis, testing the hypothesis using experiments or surveys, preparing research/study design including 	04L	10hrs

	<p>methodology and execution (appropriate controls, sample size, technically sound, free from bias, repeat experiments for consistency), documentation of data, data analysis and interpretation, results and conclusions</p> <ul style="list-style-type: none"> • Dissemination of data: Reporting results to scientific community (publication in peer- reviewed journals, thesis, dissertation, reports, oral presentation, poster presentation) • Application of knowledge: Basic research, Applied research and Translational research 		
3.2	<p>Scientific writing:</p> <ul style="list-style-type: none"> • Structure and components of a research paper: preparation of manuscript for publication of research paper- title, authors and their affiliations, abstract, keywords and abbreviations, introduction, material and methods, results, discussion, conclusions, acknowledgement, bibliography; figures, tables and their legends 	04L	10hrs
3.3	<p>Writing a review paper</p> <ul style="list-style-type: none"> • Structure and components of review • Report writing and types of report • Computer application: Plotting of graphs, Statistical analysis of data. Internet and its application in research-Literature survey, online submission of manuscript for publication 	03L	05hrs
3.4	<p>Ethics</p> <ul style="list-style-type: none"> • Ethics in animal research: The ethical and sensitive care and use of animals in research, teaching and testing, approval from Dissection Monitoring Committee (DMC) • Ethics in clinical research: Approval from clinical research ethics committee or/and informed consent 	03L	05hrs
3.5	Plagiarism	01L	02hrs

	SEMESTER IV		
Sr. No.	USZO402 (Course - IX)	No. of lectures allotted	Learning pleasure
	Unit 1: Cell Biology	15L	24hrs
	Objective: <ul style="list-style-type: none"> ➤ <i>To study the structural and functional organization of cell with an emphasis on nucleus, plasma membrane and cytoskeleton.</i> 		
	Desired outcome: <ul style="list-style-type: none"> ➤ <i>Learner would acquire insight into the composition of the transport mechanisms adopted by the cell and its organelles for its maintenance and composition of cell</i> 		
1.1	Introduction to cell biology <ul style="list-style-type: none"> • Definition and scope • Cell theory • Generalized prokaryotic, eukaryotic cell: size, shape and structure 	02L	04hrs
1.2	Nucleus <ul style="list-style-type: none"> • Size, shape, number and position • Structure and functions of interphase nucleus • Ultrastructure of nuclear membrane and pore complex • Nucleolus: general organization, chemical composition & functions • Nuclear sap/ nuclear matrix • Nucleocytoplasmic interactions 	05L	06hrs
1.3	Plasma membrane <ul style="list-style-type: none"> • Fluid Mosaic Model • Junctional complexes • Membrane receptors • Modifications: Microvilli and Desmosomes 	04L	08hrs
1.4	Transport across membrane <ul style="list-style-type: none"> • Diffusion and Osmosis • Transport: Passive and Active • Endocytosis and Exocytosis 	02L	04hrs
1.5	Cytoskeletal structures <ul style="list-style-type: none"> • Microtubules: Composition and functions • Microfilaments: Composition and functions 		

	Unit: 2: Endomembrane System	15L	28hrs
	Objective: ➤ <i>To acquaint the learner with ultrastructure of cell organelles and their functions</i>		
	Desired outcome: ➤ <i>Learner would appreciate the intricacy of endomembrane system.</i> ➤ <i>Learner would understand the interlinking of endomembrane system for functioning of cell</i>		
2.1	Endoplasmic reticulum (ER): General morphology of endomembrane system, ultrastructure, types of ER and biogenesis of ER • Functions of Rough Endoplasmic Reticulum (RER) and Smooth Endoplasmic Reticulum (SER)	01L	03hrs
2.2	Golgi complex: Ultrastructure of Golgi complex, functions of Golgi complex (protein glycosylation, lipid and polysaccharide metabolism, protein sorting and secretion, Golgi Anti-Apoptotic Protein -GAAP)	06L	10hrs
2.3	Lysosomes: Origin, occurrence, polymorphism and functions; Peroxisomes: Origin, morphology & functions	03L	5hrs
2.4	Mitochondria: Ultrastructure, chemical composition, functions of mitochondria and bioenergetics (Chemical energy & ATP, Krebs' cycle, respiratory chain and oxidative phosphorylation)	05L	10hrs
	Unit: 3 Biomolecules	15L	30hrs
	Objective: ➤ <i>To give learner insight into the structure of biomolecules and their role in sustenance of life.</i>		
	Desired outcome: ➤ <i>The learner will realize the importance of biomolecules and their clinical significance.</i>		
3.1	Biomolecules: Concept of micromolecules and macromolecules	02L	05hrs

3.2	Carbohydrates: <ul style="list-style-type: none"> • Definition classification, properties and isomerism, glycosidic bond • Structure of Monosaccharides (glucose and fructose); Oligosaccharides (lactose and sucrose); Polysaccharides (cellulose, starch, glycogen and chitin) • Biological role and clinical significance 	04L	08hrs
3.3	Amino Acids and Proteins: <ul style="list-style-type: none"> • Basic structure, classification of amino acids, • Essential and Non-essential amino acids, Peptide bond, • Protein conformation: Primary, Secondary, Tertiary, Quaternary • Types of proteins – Structural (collagen) and functional proteins (haemoglobin) • Biological role and clinical significance 	05L	08hrs
3.4	Lipids: <ul style="list-style-type: none"> • Definition, classification of lipids with examples, ester linkage • Physical and chemical properties of lipids • Saturated and unsaturated fatty acids • Essential fatty acids; Triacylglycerols; Phospholipids (lecithin and cephalin); Steroids (cholesterol) • Biological role and clinical significance 	04L	05hrs
3.5	Vitamins: <ul style="list-style-type: none"> • Water soluble vitamins (e.g. Vit C, Vit B₁₂) • Lipid soluble vitamins (e.g. Vit A, Vit D) • Biological role and clinical significance 	02L	04hrs

	SEMESTER IV		
	USZOE1403 (Course-XA) Elective 1		
	Comparative Embryology, Aspects of Human Reproduction, Pollution and its effect on organisms		
	UNIT 1: Comparative Embryology	15L	25hrs
	Objective: ➤ <i>To acquaint the learner with key concepts of embryology.</i>		
	Desired Outcome: ➤ <i>Learner will be able to understand and compare the different types of eggs and sperms</i> ➤ <i>Learner will be able to understand and compare the different pre- embryonic stages</i>		
1.1	Types of Eggs- Based on amount and distribution of yolk	03L	4hrs
1.2	Structure and Types of Sperm	02L	4hr
1.3	Types of Cleavages	02L	4hrs
1.4	Types of Blastulae	02L	4hrs
1.5	Types of Gastrulae	02L	4hrs
1.6	Coelom -Formation and types	04L	6hrs
	UNIT 2: Aspects of Human Reproduction	15L	30 hrs
	Objectives: ➤ <i>To acquaint the learners with different aspects of human reproduction.</i> ➤ <i>To make them aware of the causes of infertility, techniques to overcome infertility and the concept of birth control</i>		
	Desired Outcome: ➤ <i>Learners will be able to understand human reproductive physiology</i> ➤ <i>Learners will become familiar with advances in ART and related ethical issues.</i>		
2.1	Human reproductive system and hormonal regulation <ul style="list-style-type: none"> Anatomy of human male and female reproductive system 	02L	4hrs

	<ul style="list-style-type: none"> Hormonal regulation of reproduction and impact of age on reproduction - menopause and andropause 		
2.2	Contraception & birth control <ul style="list-style-type: none"> Difference between contraception and birth control Natural Methods: Abstinence, rhythm method, temperature method, cervical mucus or Billings method, coitus interruptus, lactation amenorrhea Artificial methods : Barrier methods, hormonal methods, intrauterine contraceptives, sterilization, termination, abortion 	02L	4hrs
2.3	Infertility Female infertility: <ul style="list-style-type: none"> Causes - Failure to ovulate; production of infertile eggs; damage to oviducts (oviduct scarring and Pelvic inflammatory disease -PID, TB of oviduct), Uterus (TB of uterus and cervix) Infertility associated disorders - Endometriosis, Polycystic Ovarian Syndrome (PCOS), Primary ovarian failure (POF), Sexually Transmitted Infections (STIs) - gonorrhoea, chlamydia, syphilis and genital herpes; Antibodies to sperm; Genetic causes- recurrent abortions Role of endocrine disruptors 	04L	8hrs
2.5	Treatment of infertility <ul style="list-style-type: none"> Removal /reduction of causative environmental factors Surgical treatment Hormonal treatment- fertility drugs Assisted Reproductive Technology (ART) - <i>In vitro</i> fertilization (IVF); Embryo transfer (ET); Intra-Fallopian transfer (IFT), Gamete Intra-Fallopian Transfer (GIFT) & Intra-Zygote Transfer (ZIFT); Intra-cytoplasmic Sperm Injection (ICSI) with ejaculated sperm and sperm retrieved from testicular biopsies; Testicular sperm extraction (TESE). 	04L	8hrs

	<ul style="list-style-type: none"> • Sperm bank, cryopreservation of gametes and embryos • Surrogacy 		
	UNIT3: Pollution and its effect on organisms	15L	27hrs
	Objective: ➤ <i>To provide a panoramic view of impact of human activities leading to pollution and its implications.</i>		
	Desired Outcome: ➤ <i>The learners will be sensitized about the adverse effects of pollution and measures to control it.</i>		
3.1	Air Pollution <ul style="list-style-type: none"> • Types and sources of air pollutant • Effects of air pollution on organisms, its control and abatement measures 	03L	6hrs
3.2	Water Pollution <ul style="list-style-type: none"> • Types and sources of water pollutant • Effects of water pollution on organisms, its control and abatement measures 	03L	6hrs
3.3	Soil Pollution <ul style="list-style-type: none"> • Types and sources of soil pollutant • Effects of soil pollution on organisms, its control and abatement measures 	03L	4hrs
3.4	Sound pollution <ul style="list-style-type: none"> • Different sources of sound pollution • Effects of sound pollution on organisms, its control and abatement measures 	01L	3hrs
3.5	Pollution by radioactive substances	01L	2hrs
3.6	Pollution by solid wastes <ul style="list-style-type: none"> • Types and sources, • Effects of solid waste pollution, its control and abatement measures 	02L	4hrs
3.7	Pollution – Climate Change and Global Warming	02L	2hrs

	USZOE2403 (Course-XB) Elective 2		
	Dairy Industry, Sericulture and Aquaculture		
	UNIT 1: Dairy Industry	15L	30hrs
	<p>Objectives:</p> <ul style="list-style-type: none"> ➤ <i>To comprehend the functioning of various aspects of dairy industry.</i> ➤ <i>To study different indigenous and exotic cattle breeds including buffalo breeds of India.</i> ➤ <i>To develop an understanding of the different systems of breeding and various aspects dealing with housing of dairy animals.</i> 		
	<p>Desired Outcome:</p> <ul style="list-style-type: none"> ➤ <i>Learner would gain knowledge on the functioning of various aspects of dairy industry, indigenous, exotic cattle and buffalo breeds in India.</i> ➤ <i>Learner will study different systems of breeding and gain information regarding various aspects pertaining to housing of dairy animals.</i> 		
1.1	<p>Indian Cattle breeds – Origin, distribution, distinguishing characters and economic uses:</p> <ul style="list-style-type: none"> • Malvi • Hariyana • Deoni • Red sindhi • Khillari 	02L	4hrs
1.2	<p>Exotic breeds - Origin, distribution, distinguishing characters and economic uses:</p> <ul style="list-style-type: none"> • Jersey • Holstein 	02L	4hr
1.3	Indian buffalo breeds - Origin, distribution, distinguishing	02L	4hrs

	characters and economic uses: <ul style="list-style-type: none"> • Nagpuri • Bhadawari • Murrah • Jafrabadi 		
1.4	Systems of inbreeding and crossbreeding	03L	6hrs
1.5	Maintenance of dairy farm	02L	4hrs
1.6	Weaning of calf, castration and dehorning	02L	4hrs
1.7	Diseases and control	02L	4hrs
	UNIT 2: Sericulture	15L	30 hrs
	Objectives: <ul style="list-style-type: none"> ➤ <i>To comprehend the functioning of sericulture industry and its scope in India.</i> ➤ <i>To study the varieties of silk-worms and host plants.</i> ➤ <i>To critically study the life history and rearing of <i>Bombyx mori</i>, harvesting, processing of cocoon, production of silk and diseases afflicting silk-worms.</i> 		
	Desired Outcome: <ul style="list-style-type: none"> ➤ <i>Learner would understand the basics of the functioning of sericulture industry and its scope in India.</i> ➤ <i>Learner shall gain knowledge on the varieties of silk-worms, host-plants and aspects on silk extraction and the diseases afflicting silk-worms.</i> 		
2.1	Introduction and scope of sericulture	02L	4hrs
2.2	Varieties of silk worm, host plants	02L	4hrs
2.3	Life history and rearing of <i>Bombyx mori</i>	02L	8hrs
2.4	Harvesting and processing of cocoon	02L	4hrs

2.5	Reeling and extraction of silk	03L	4hrs
2.6	Diseases and control measures	03L	4hrs
	UNIT3: Aquaculture	15L	27hrs
	Objectives: <ul style="list-style-type: none"> ➤ <i>To comprehend various kinds of aquaculture practices and its scope as fishery resource in India.</i> ➤ <i>To study various techniques employed in aquaculture practices</i> 		
	Desired Outcome: <ul style="list-style-type: none"> ➤ <i>Learner shall understand the aquaculture practices and the scope of fishery in India.</i> ➤ <i>Learner would gain knowledge of various techniques employed in aquaculture practices.</i> 		
3.1	Pisciculture: <ul style="list-style-type: none"> • Definition and scope of fishery resources in India • Finfish culture – monoculture and polyculture • Role of exotic fishes in polyculture • Cage culture • Fish seed transport • Fish diseases -- symptoms and control 	05L	6hrs
3.2	Prawn/shrimp culture: Sources, seed, culture methods – <ul style="list-style-type: none"> • Giant fresh water prawn (<i>Macrobrachium rosenbergii</i>) • White shrimp (<i>Penaeus vannamei</i>) 	05L	6hrs
3.3	Pearl culture: <ul style="list-style-type: none"> • Pearl producing species and their distribution • Pearl culture methods • Composition of pearl 	05L	4hrs

	SEMESTER IV
	Practical USZOP4 (Course - VIII)
1	Study of population density by Line transect method & Quadrant method and calculate different diversity indices. <ul style="list-style-type: none"> • Index of Dominance • Index of frequency • Rarity Index • Shannon Index • Index of species diversity
2	Study of prokaryotic cells (bacteria) by Crystal violet staining technique
3	Study of eukaryotic cells (WBCs) from blood smear by Leishman's stain
4	Identification and study of fossils: <ul style="list-style-type: none"> • Arthropods: Trilobite • Mollusca: Ammonite • Aves: Archaeopteryx
5	Identification of : <ul style="list-style-type: none"> • Allopatric speciation (Cyprinodont species) • Sympatric speciation (Hawthorn fly and Apple maggot fly) • Parapatric speciation (Snail)
6	Bibliography/ Abstract writing
7	Preparation of Power Point Presentation based on research paper.

	SEMESTER IV
	Practical USZOP4 (Course - IX)
1	Study of permeability of cell through plasma membrane (osmosis in blood cells)
2	Measurement of cell diameter by occulometer (by using permanent slide)
3	Qualitative tests for carbohydrates (Molisch's test, Benedicts test, Barfoed's test, Anthrone test)
4	Qualitative tests for protein (Ninhydrin test, Biuret test, Millon's test, Xanthoproteic test)
5	Qualitative test for lipids (Solubility test, Sudan III test)
6	Study of rancidity of lipids by titrimetric method
7	Ultrastructure of cell organelles (Electron micrographs) of: <ul style="list-style-type: none"> • Nucleus • Endoplasmic reticulum (Smooth and Rough) • Mitochondria. • Golgi apparatus • Lysosomes
8.	Study of clinical disorders due to carbohydrates, proteins and lipid imbalance (Photograph to be provided / symptoms to be given and disorder to be identified): <ul style="list-style-type: none"> • Hyperglycemia • Hypoglycemia • Anemia • Kwashiorkar • Marasmus • Fatty Liver

	SEMESTER IV
	Practical USZOE1P4 (Course - XA)
1	Study of air microflora.
2	Estimation of dissolved oxygen from the given water sample.
3	Estimation of salinity by refractometer from the given water sample.
4	Estimation of conductivity by conductometer from the given water sample.
5	Study of physical properties of soil: temperature, moisture and texture
6	Study of chemical properties of soil- pH, organic matter
7	Study of sound pollution monitoring device
8	Detection of pregnancy from given sample of urine
9	Study of birth control measures applicable to humans – IUD, condom and hormonal pills.
10	Study of the following permanent slides, museum specimens and materials <ul style="list-style-type: none"> • Mammalian sperm and ovum • Types of Egg– fish, frog and hen • Cleavage, blastula and gastrula (Amphioxus, Frog and Bird)
11	Review writing based on programmes telecast by Doordarshan, Gyandarshan, UGC programmes or other media sources
12	Study of natural ecosystem and field report of the visit

	SEMESTER IV
	Practical USZOE2P4 (Course - XB) – Elective 2
1	Estimation and comparison of protein content in Cow and Buffalo milk sample
2	Estimation and comparison of fat content in Cow and Buffalo milk sample
3	Preparation of falooda
4	Preparation of caramel custard
5	Restraining devices used in cattle farming- Halters, gags, bull-rings, muzzles, cradle, crush and ropes.
6	Study of life cycle of <i>Bombyx mori</i>
7	Study of commercially important fishery. (Catla, Rohu, Catfish, Mackeral, Pomfret, Bombay duck, Prawn/Shrimp, Crab, Lobster, Edible oyster)
8	Study of Crustacean fishery – common characters and sexual dimorphism in lobster (<i>Panulirus spp.</i>), prawn (<i>Penaeus spp.</i>), crab (<i>Scylla spp.</i>)
9	Visit to dairy farm /aquaculture/ fish landing centre/fishery institute and submit report of the same

For Additional and Latest Information on the topics, various Web Sites can be visited.

Note: The practicals may be conducted by using specimens authorised by the wildlife and such other regulating authorities though it is strongly recommended that the same should be taught by using photographs/audio-visual aids/ simulations / models, etc. as recommended by the UGC and as envisaged in the regulations of the relevant monitoring bodies. No new specimens, however, shall be procured for conducting practicals mentioned here in above.

There shall be at least one excursion / field trip.

N. B:

I) It is pertinent to note that we have to adhere strictly to the directions as given in the UGC Circular F14-4/2006 (CPP-II).

II) Apart from the Institutional Animal Ethics Committee (IAEC) and any other Committee appointed by a Competent Authority/Body from time to time, every college should constitute the following Committees:

- 1) A Committee for the Purpose of Care and Supervision of Experimental Animals (CPCSEA) and
- 2) A Dissection Monitoring Committee (DMC)

Composition of DMC shall be as follows:

- i) Head of the Concerned Department (Convener/Chairperson)
- ii) Two Senior Faculty Members of the concerned Department
- iii) One Faculty of related department from the same College

One or two members of related department from neighboring colleges

<p>USE OF ANIMALS FOR ANY EXPERIMENT/DISSECTION/MOUNTING IS BANNED. SIMULATIONS, AUTHORISED PERMANENT SPECIMENS/SLIDES, CHARTS, MODELS AND OTHER INNOVATIVE METHODS ARE ENCOURAGED.</p>
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Semester IV

References and additional reading

USZO401 (COURSE-VIII)

1. Theory of Evolution- Smith, Cambridge Press, and Low price Ed
2. Evolution - Strickberger, CBS publication
3. Evolution- P. S. Verma and Agarwal
4. Introduction to Evolution by Moody
5. Biology. E. P. Solomon, L. R. Berg, D. W. Martin, Thompson Brooks/Cole
6. Biology -The Unity and Diversity of Life. C. Starr, R. Taggart, C. Evers, L. Starr, Brooks/Cole Cengage learning International Edition
7. Research Methodology, Methods and Techniques- by C.R. Kothari, Wiley Eastern Ltd. Mumbai
8. Practical research planning and design 2nd edition- Paul D Leedy, Macmilan Publication

USZO402 (COURSE - IX)

1. Cell Biology, Singh and Tomar, Rastogi Publication.
2. Cell and Molecular Biology, E.D.P De Robertis and E.M.R Robertis, CBS Publishers and Distributors.
3. The cell, A molecular approach, Goeffrey M. Coper ASM Press Washington D.C.
4. A textbook of cytologym Suruchi Tyagi Dominant Publishers and Distributors New Delhi.
5. Cell and molecular biology, Gupta P. K., Rastogi Publication, India.
6. Cell Biology, Pawar C.B. Himalaya publication
7. Molecular Biology of the cell, (6th ed) by the Insertus
8. Principles of Biochemistry, 2005, 2nd and 3rd edn. Lehninger A.L. Nelson D.L. and Cox M.M ,
9. Biochemistry, Dushyant Kumar Shrma, 2010, Narosa Publishing house PVT.Ltd.
10. Fundamentals of Biochemistry, Dr AC Deb, 1983, New Central Book Agency Ltd.
11. A Textbook of Biochemistry, 9th edition, Dr. Rama Rao A.V.S.S and Dr A Suryalakshmi.
12. Biochemistry- G Zubay, Addison Wesley, 1983
13. Biochemistry, L Stryer, 3rd/4th/5th ed, 1989, Freeman and Co. NY
14. Harper's Biochemistry, 1996, 26th edition, Murray R.K. Granner D.K. Mayes P.A. Rodwell V.M. Hall international USA
15. Outline of Biochemistry, 1976, E.E. Conn and P.K. Stumpf. John Wiley and Sons USA

USZOE1403 (COURSE-XA)

References of Elective 1

1. Developmental Biology- 5th Edition, Scot F. Gilbert, Sinauer Associates Inc.
2. Developmental Biology- Subramoniam T., Narosa Publishers.
3. Developmental Biology-BerrilN.J., Tata McGraw –Hill Publication.
4. Essential Reproduction-Martin H. Johnson, Wiley-Blackwell Publication.
5. Chick Embryology- Bradley M. Pattern.
6. Embryology-Mohan P. Arora.
7. Chordate Embryology-Dalela, Verma and Tyagi
8. Human Anatomy and Physiology. E. L. Marieb, Pearson Education Low Price Edition
9. Biological Science. Taylor, Green and Stout. Cambridge Publication
10. Biology. E. P. Solomon, L. R. Berg, D. W. Martin, Thompson Brooks/Cole
11. Human Biology-Daniel D. Chiras Jones and Bartlett
12. The Physiology of Reproduction Vol I & II - E. K. Nobil and JU. D. Neil, Raven Press, New York.
13. Air Pollution, Kudesia V. P. Pragati Prakasan, Meerut
14. Fundamentals of Air Pollution Daniel A. Vallero, Academic press 5th Edition
15. Principles and Practices of Air Pollution Control and Analysis J. R. MudakaniI K International Pub. House Pvt. Ltd.
16. Text Book of Air Pollution and its Control, S. C. Bhatia Atlantic
17. Water Pollution, Kudesia V. P., Pragati Prakasan, Meerut
18. A text book of Environmental Chemistry and Pollution Control, S. S. Dogra, Swastic Pub, New Delhi
19. Practical Methods for water and Air Pollution Monitoring, S. K. Bhargava, New Age International
20. Hand Book of Water and waste water Analysis, Kanwaljit Kaur, Atlantic
21. Aquatic Pollution by Edward A. Laws
22. Environmental Science and Technology, Stanely E. Manahan
23. Environmental Chemistry, A. K. De, New Age International
24. A Text Book of Environmental Studies, Gurdeep R. Chatwal, Harish Sharma, Madhu Arora,

USZOE2403 (COURSE-XB)

References of Elective 2

1. Principles of Dairy Chemistry R. Jenness, S. Patton John Wiley and Sons Inc.
2. Fundamentals of dairy chemistry B.H. Webb, A.H. Johnson, J.A. Alford Avi Pub. Co.
3. Food Chemistry Owen R. Fennema CRC Press
4. Food Chemistry John M. De Man Springer
5. Technology of Dairy Products Early, Ralph. Academic & Professional, 1998
6. Quality of milk production and processing technology D.K. Thompson and lathasabikhi
New India Publishing agency, New delhi
7. Outlines of Dairy Technology Sukumar De Oxford University Press, New delhi
8. Food Microbiology William C. Frazier, dennis C. Westoff Tata Mcgrew Hill publishing
Company Ltd. New Delhi
9. Applied Dairy Microbiology Elmer H. Marth, James L. Steele CRC Press
10. Dairy plant engineering and management Tufail Ahmed Kitab Mahal
11. Latest Aquaculture, Principles and Practices by Pillay T.V.R. – Fishing New Books (1988).
12. Course Manual in Fishing Technology by Latha Shenoy, CIFE, Versova, Mumbai.
13. Prawn and Prawn Fisheries by Kurian and Sebastian

MARKING SCHEME OF EXAMINATION (THEORY)

- (a) External assessment of one hundred (100) marks per course per semester should be conducted as per the following skeleton question paper pattern.
- (c) One practical examination of fifty (50) marks per course each should be conducted at the end of every semester.

SKELETON- EXAMINATION PATTERN FOR THE ABOVE SYLLABUS

All Questions are compulsory

Figures to the right indicate full marks

Draw neat and labeled diagrams wherever necessary

Time: 3 hours

Total Marks: 100

Q1	Objective questions*	20 marks
Q.2.	UNIT 1 a. Answer any one of the two (10 marks) b. Answer any two out of the four (5 marks each)	20 marks
Q.3.	UNIT 2 a. Answer any one of the two (10 marks) b. Answer any two out of the four (5 marks each)	20 marks
Q.4.	UNIT 3 a. Answer any one of the two (10 marks) b. Answer any two out of the four (5 marks each)	20 marks
Q.5.	Answer any four out of six Unit 1 - (Two notes of five marks each) Unit 2 - (Two notes of five marks each) Unit 3- (Two notes of five marks each)	20 marks

***Note:** For Question No. 01 it is recommended to have objective questions on all units, such as –

- (a) Match the column
- (b) MCQ
- (c) Give one word for
- (d) True and False
- (e) Define the term
- (f) Answer in one sentence

PRACTICAL (SEMESTER III)
USZOP3 (Course - V)
Skeleton-Practical Examination Question Paper Pattern

Time: 2hrs 30 min

Marks: 50

Major Question

15

Q1. Extraction and detection of DNA

OR

Q1. Extraction and detection of RNA

Minor Question

07

Q2. Mounting of Barr bodies / Polytene chromosomes

OR

Q2. Study of mitosis-Temporary squash preparation of Onion root tip

OR

Q2. Detection of blood groups and Rh factor

Q3. Problems based on Genetics and Molecular biology

(Transcription /Genetic code) (01 problem each)

10

Q4. Identification

08

A. Chromosome morphology

B. Pedigree analysis

Q5. Viva

05

Q6. Journal

05

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PRACTICAL (SEMESTER III)

USZOP3 (Course - VI)

Skeleton-Practical Examination Question Paper Pattern

Time: 2hrs 30 min**Marks: 50**

Major Question

15

Q1. Urine analysis—Normal and abnormal constituents

Minor Question

10

Q2. Detection of ammonia excreted by fish in aquarium water

OR

Q2. Detection of uric acid from excreta of Birds

OR

Q2. Mounting of striated and non-striated muscle fibre

Q3. Identification

15

a. Nutritional apparatus

b. Respiratory structures

c. Locomotory organs

d. Study of hearts

e. Permanent slides on reproduction

Q4. Viva

05

Q5. Journal

05

[illegible]

Skeleton -Practical Examination Question Paper Pattern

Marks: 50

12

OR

OR

08

OR

OR

OR

15

- 06

- 04

05

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Q.7. Journal. 05

PRACTICAL (SEMESTER IV)

USZOP4 (Course - IX)

Skeleton -Practical Examination Question Paper Pattern

Time: 2 hrs 30 min

Marks: 50

Major Question

15

Q1. Study of osmosis in R.B.Cs.

OR

Q1. Measurement of cell diameter by occulometer using permanent slide.

Minor Question

10

Q2. Qualitative tests for carbohydrates (Molisch's test, Benedicts test, Fehling's test, Anthrone test)

OR

Q2. Qualitative tests for protein (Ninhydrin test, Biuret test, Millon's test, Xanthoprotein test)

OR

Q2. Qualitative test for lipid (Solubility test, Sudan III test)

OR

Q2. Estimation of rancidity of lipids by titrimetric method

Q3. Identify and describe as per instructions

15

- Ultrastructure of cell organelles (a, b & c)
- Clinical disorders (d & e)

Q4. Viva

05

Q5. Journal

05

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PRACTICAL(SEMESTER IV)
USZOE1P4 (Course - XA) – Elective 1
Skeleton -Practical Examination Question Paper Pattern

Time: 2 hrs 30 min

Marks: 50

Major Question 12

Q1. Estimation of Dissolved Oxygen from the given water sample.

OR

Q1. Detection of pregnancy from given sample of urine.

OR

Q1. Determination of organic matter from the given soil sample.

Minor Question 08

Q2. Estimation of salinity by refractometer from the given water sample

OR

Q2. Estimation of conductivity by conductometer from the given water sample

OR

Q2. Determination the pH of the given soil sample

OR

Q2. Determine the texture of the given soil sample

Q3. Identify and describe as per instructions 15

- Permanent slides (a &b)
- Birth control measure (c)
- Fishery (d & e)

Q4. a) Field report submission 06

b)Viva based on field report 04

Q5. Journal 05

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PRACTICAL (SEMESTER IV)
USZOE2P4 (Course - XB) Elective 2
Skeleton -Practical Examination Question Paper Pattern

Time: 2 hrs 30 min

Marks: 50

Major Question 15

Q1.Comparison of protein content from cow and buffalo milk

OR

Q.1 Comparison of fat content from cow and buffalo milk

Minor Question 08

Q.2 Preparation of falooda

OR

Q.2 Preparation of caramel custard

Q.3 Identification (3 marks each) 12

- a) Restraining device
- b) Any stage of life cycle of *Bombyx mori*
- c) Commercial fishery
- d) Crustacean fishery

Q4. a) Project submission 06

b) Viva based on project 04

Q5. Journal 05

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MODEL QUESTION BANK SEMESTER III

Question bank is suggestive. The paper setters are free to modify the questions or include new questions to the best of their perception

USZO301 (COURSE - V)

Unit1 (10 Marks)

1. Define genetics and explain its scope and importance.
2. Explain Mendel's laws of inheritance
3. Describe in detail the monohybrid cross and state the Mendelian principle of inheritance derived from it. Add a note on Co-dominance
4. Describe in detail dihybrid cross and state the Mendelian principles of inheritance derived from it
5. Discuss in brief inheritance of Mendelian phenotypic traits in humans.
6. Describe incomplete dominance with a suitable example
7. Describe Co-dominance with a suitable example
8. What is epistasis? Give a detailed account of double dominant epistasis
9. What is epistasis? Give a detailed account of recessive epistasis
10. What is epistasis? Give a detailed account of dominant epistasis
11. What is epistasis? Give a detailed account of double recessive epistasis
12. Explain the pattern of inheritance of recessive and dominant lethal alleles
13. Explain the inheritance of multiple alleles with the help of a suitable example
14. Describe polygenic inheritance with reference to skin colour and eye colour in man
15. Compare pleiotropy and polygenic inheritance
16. Explain the phenomenon of linkage with respect to Morgan's Experiment. Add a note on the differences between complete and incomplete linkage
17. Describe the pattern of inheritance of blood group and Rh factor in man
18. Explain the cytological basis and molecular mechanisms of crossing over
19. Explain pedigree analysis of X-linked recessive traits

Unit1 (5 Marks)

1. Describe the classical concept of gene
2. Explain the modern concept of gene
3. Differentiate between (Any two):
 - (a) Genotype and phenotype of an organism
 - (b) Dominant and recessive traits
 - (c) Gene and genome
 - (d) Homozygous and heterozygous
 - (e) Monohybrid and Dihybrid cross
 - (f) Incomplete Dominance and Co-dominance
 - (g) Multiple alleles and Polygenes
 - (h) Test cross and Backcross
4. Write a note on the chromosome theory of inheritance
5. Describe co-dominance with a suitable example
6. Give an account of the symbols used in human Pedigree analysis
7. Characteristics of autosomal dominant traits
8. Characteristics of X-linked recessive traits
9. Characteristics of autosomal recessive traits
10. Characteristics of X-linked dominant traits
11. Intermediate lethal alleles
12. Explain the inheritance of skin colour in humans
13. Write a note on pleiotropy.

Unit 2 (10 Marks)

1. Explain the structure of eukaryotic chromosome
2. Classify chromosomes on the basis of the position of centromere
3. Explain any two mechanisms of chromosomal basis of sex determination
4. Explain the inheritance of colour blindness in man
5. Explain sex determination in honey bee and *Drosophila*

Unit 2 (5 Marks)

1. Describe the terms euchromatin and heterochromatin
2. Write a note on polytene chromosomes
3. Write a note on Lampbrush chromosomes
4. Write a note on salivary gland chromosome of *Drosophila*
5. Write a note on Balbiani rings
6. Explain endomitosis
7. Write a note on Gynandromorphs
8. Explain the role of environment on sex determination
9. Explain the role of hormones in sex determination
10. Explain hypertrichosis
11. Differentiate between sex limited and sex influenced genes
12. Differentiate between human X and Y chromosomes
13. Differentiate between autosomes and sex chromosomes
14. Write a note on Lyons hypothesis
15. What are Barr bodies? Give a scientific reason that Barr bodies are present only in women and not in men
16. Give a scientific reason that Y chromosome is a sex determining chromosome in man
17. Explain parthenogenesis
18. Give scientific reason that the X-linked genes affect males more than females in human being

Unit 3 (10 marks)

1. Describe Griffith's transformation experiment
2. Explain Avery, Macleod, McCarty's experiment
3. Give an account of Hershey Chase experiment of bacteriophage infection
4. Write a note on types of DNA
5. Explain RNA as a genetic material
6. Describe the process of DNA replication
7. Explain in detail the process of transcription
8. Explain in detail the process of translation
9. What is gene expression? Describe the regulation of genes with lac *operon* model

Unit 3 (5 Marks)

1. Chemical composition of nucleic acid
2. A and B DNA
3. Plasmid
4. Function of rRNA
5. Function of mRNA
6. Function of tRNA
7. Genetic code
8. One gene-one enzyme hypothesis
9. Concept of operon
10. ZDNA
11. H DNA
12. Chromosomal DNA in prokaryotes
13. Mitochondrial DNA
14. DNA in chloroplast

MODEL QUESTION BANK SEMESTER – III

Question bank is suggestive. The paper setters are free to modify the questions or include new questions to the best of their perception.

USZO302 (COURSE-VI)

Unit 1 (10 Marks)

1. Explain in detail the digestive system of cockroach.
2. Describe the digestive system of pigeon.
3. With the help of a labeled diagram describe the structure and functions of ruminant stomach.
4. Explain the physiology of digestion in cockroach.
5. Give an account of the enzymes involved in the process of digestion in cockroach.
6. With the help of a labeled diagram describe the structure of mammalian kidney.
7. Give a detailed account of process of urine formation in man.

Unit 1 (5 Marks)

1. Write a note on nutritional apparatus in amoeba.
2. Describe briefly gastrovascular cavity in hydra.
3. Write a note on wheel-organ of Amphioxus.
4. Write a note on structure of ruminant stomach.
5. Write short note on digestion of proteins with respect to man.
6. Write short note on digestion of carbohydrates with respect to man
7. Write short note on digestion lipids with respect to man
8. Write short note contractile vacuoles in protozoa.
9. Write a note on flame cells.
10. Describe briefly excretory and osmoregulatory structures in cockroach.
11. Diagrammatic representation of structure of mammalian kidney.
12. Write a note on Ammonotelic organisms.
13. Write a note on Ureotelic organisms.
14. Write a note on Uricotelic organisms.
15. Schematic diagram of ultrafiltration in mammalian kidney.

Unit 2 (10 Marks)

1. Describe briefly air sacs in pigeon.
2. Describe briefly the process of cellular respiration in human
3. Describe briefly the process of respiration in human
4. Give a brief account of types of circulating fluids present in animals.
5. Describe briefly mechanism of working of heart.
6. Describe briefly the heart of shark/fish.
7. Describe briefly the heart of frog.
8. Describe briefly heart of crocodile.
9. Give a brief account of heart of man.

Unit 2 (5 Marks)

1. Write short note on cutaneous respiration.
2. Write a note on book lungs in spider.
3. Explain the structure of gills of bony fish
4. Describe briefly lungs as respiratory organs in frog.
5. Describe briefly lungs as respiratory organs in man.
6. Write short note on open circulation.
7. Write short note on closed circulation.
- 8 Write a note on heart of cockroach
10. Write a note on heart of earthworm

Unit 3(10 Marks)

1. Describe different types of neurons on the basis of structure and function.
2. Explain conduction of nerve impulse.
3. Briefly describe synaptic transmission.
4. Explain Sol-Gel theory of amoeboid movement.
5. Describe ciliary movement in *Paramecium*.
6. Give an account on types of wings in insects.
7. Describe different types of fins in fishes.
8. Describe sliding filament theory.
9. Describe briefly asexual reproduction in animals.
10. Describe the structure and function of tube feet.

11. Describe spermatogenesis.
12. Describe oogenesis.
13. Describe briefly the structure of mammalian gametes.
14. Give a brief on types of fertilization.

Unit 3 (5 Marks)

1. Write a note on irritability in *Paramecium*.
2. Write a note on resting potential of nerve membrane.
3. Write a note on action potential of nerve membrane.
4. Describe different types of neurons on the basis of structure.
5. Describe briefly different types of neurons on the basis of functions.
6. Describe the structure of synapse.
7. Describe striated muscle fibre.
8. Describe the structure of cilia.
9. Give an account on types of legs in insects.
10. Write a note on ovo-viviparity.
11. Write a note on viviparity.
12. Write a note on oviparity.
13. Describe the structure of mammalian egg.
14. Describe the structure of mammalian sperm.
15. Describe the formation of gemmule in sponges.
16. Write a note on budding as asexual reproduction in animals.

MODEL QUESTION BANK SEMESTER – III

Question bank is suggestive. The paper setters are free to modify the questions or include new questions to the best of their perception.

USZOE1303 (COURSE - VIIA) – Elective 1

Unit 1 (10 marks each)

1. How do honey bees communicate for foraging?
2. What is classical conditioning? Explain with an example.
3. What is imprinting? Explain different types of imprinting.
4. What do you mean by animal learning? Describe any two types of learning.
5. Describe the various ways in which ants communicate.
6. What is the significance of mimicry and warning coloration?
7. What is mimicry? Explain different types of mimicry with examples.
8. What is displacement activity? In what situations do displacement activities occur?
Explain with examples.
9. Comment on any two aspects of non-human primate social behaviour.

Unit 1 (5 marks)

- i. Mimicry
- ii. Innate learning
- iii. Acquired learning
- iv. Warning colouration
- v. Imprinting
- vi. Classical Conditioning
- vii. Territorial behaviour
- viii. Schooling behaviour
- ix. Altruism
- x. Kinship
- xi. Displacement activities
- xii. Ritualization

Unit 2 (10 Marks)

1. Give an account of the life history and pathogenecity of the parasite causing amoebic dysentery.
2. Describe the life history of *Taenia solium*.
3. Give an account of parasitic adaptive features of *Taenia solium*.
4. Give an account of the life history of *Fasciola hepatica*.
5. Give an account of the life history of filarial worm and discuss its pathogenic effects.
6. Describe the life history of bedbug and suggest some control measures.
7. Give an account of the life history of *Sarcoptes scabiei*.
8. Give an account of the life history of head louse *Pediculus*.
9. What is bird flu? How it spreads and what are its symptoms?
10. How would you control the transmission of anthrax among humans?
11. How is anthrax transmitted to man?

Unit 2 (5 Marks)

1. Describe the structure of *E. histolytica*.
2. Write a brief note on amoebiasis.
3. Write a short note on pathogenecity of *E. histolytica*.
4. Briefly describe the life cycle of *E. histolytica*.
5. Illustrate the complete life history of *T. solium* with the help of diagram only.
6. What is the effect of *Fasciola* on the hosts?
7. Describe the life cycle of *Wuchereria bancrofti*.
10. What is host specificity?
11. What are the signs and symptoms of bird flu?
12. How is rabies transmitted in human?
13. What are the preventive measures to be taken to prevent infection of rabies virus?
14. What is toxoplasmosis and what are its causes?
15. Write notes on:
 - i. Parasitic adaptations in endoparasites
 - ii. Cysticercus or bladder worm.
 - iii. Pathogenecity of *Wuchereria*
 - iv. Control measures of bedbug.
 - v. Types of hosts

Unit 3 (10 Marks)

1. What does the modern method of apiculture include? Explain in brief.
2. How is an artificial bee hive constructed?
3. How do you select the flora and bee species for apiculture?
4. Enumerate the advantages of vermiculture
5. Describe any two methods of vermiculture.
6. Describe the processing of raw milk.
7. Write a brief note on Type A1 and A2 cow milk.

Unit 3 (5 Marks)

1. State the economic importance of honey and beeswax.
2. What are the disadvantages of the indigenous method of apiculture?
3. How does the wax moth cause damage to the honey comb?
4. Name any two bee enemies and explain how they harm the bees.
5. Give an account of the commonly found species of honey bee in India.
6. What are the advantages of the modern method of apiculture?
7. Which type of flora is beneficial for apiculture?
8. Which type of bee is suitable for apiculture?
9. What is the chemical composition of honey?
10. What is the suitable material for culturing earthworms?
11. What are the advantages of processing dairy products?
12. What is whole milk and toned milk? How is toned milk prepared?

MODEL QUESTION BANK SEMESTER – III

Question bank is suggestive. The paper setters are free to modify the questions or include new questions to the best of their perception.

USZOE2303 (COURSE - VIIB)

Unit 1 10 mark each

1. Give a brief account on exotic species used in aquarium.
2. Give a brief account on endemic species used in aquarium.
3. Give sexual dimorphism in fresh water fishes along with examples.
4. Give sexual dimorphism in marine water fishes along with examples.
5. Give a brief account on feed used in aquarium.
6. Give a brief account on fish transportation in aquarium.

Unit 2 (10 mark each)

1. Explain agricultural pests along with suitable example.
2. Explain household pests along with suitable example.
3. Explain stored grains pests along with suitable example.
4. Explain structural pests along with suitable example.
5. Explain veterinary pests along with suitable example.
6. Explain forestry pests along with suitable example.

Unit 3(10 mark questions):

1. Give a brief account on Blue Mormon butterfly and Striped Tiger butterfly
2. Describe the behaviour of Octopus and spider as most dedicated mothers in the world.
3. Describe marvellous characters of fan throated lizard and flying frog.
4. Describe marvellous characters of Mantis shrimp.
5. Give a brief account on Malabar giant squirrel
6. Describe marvellous characters of the Purple (Joker) crab and lesser flamingo.
7. Describe marvellous characters of the Stabbing Shark and Crime fighting gecko.
8. Describe marvellous characters of the Gharial and the Matilda Viper

Unit 1 (5 Marks)

Write short note on:-

1. Budgeting for setting up of an aquarium
2. Fish packing
3. Formulated fish feed
4. Gold fish
5. Molly
6. Guppy

Unit 2(5 Marks)

Write short note on:-

1. Jowar stem borer
2. Brinjal fruit borer
3. Aphids
4. Rice weevil.
5. Non-insect pests
6. Cultural control of pests
7. Physical control of pests
8. Mechanical control of pests
9. Chemical control of pests
10. Biological control of pests
11. Concept of IPM

Unit 3(5 Marks)

Write short note on the amazing characters in following amazing animals.

1. Blue Mormon butterfly
2. Striped Tiger butterfly
3. Mudskipper
4. Komodo dragon
5. Pebble toad
6. Lesser flamingo
7. Great white pelican
8. Drongo

9. Malabar giant squirrel

10. Cheetah

11. Octopus

MODEL QUESTION BANK SEMESTER - IV

Question bank is suggestive. The paper setters are free to modify the questions or include new questions to the best of their perception

USZO401 (COURSE - VIII)

Unit 1 (10 Marks)

1. Write explanatory notes on: 1. Lamarckism 2. Darwinism and Neo Darwinism
3. Mutation Theory 4. Modern Synthetic theory 5. Weismann's germplasm theory
2. Discuss evidences in favour of organic evolution by giving examples of geographical distribution
3. Discuss evidences in favour of organic evolution by giving examples based on genetic studies.
4. Discuss evidences in favour of organic evolution by giving examples based on physiological studies.
5. Give a brief account on the origin of eukaryotic cell

Unit 1 (5 Marks)

1. Describe Miller-Urey experiment simulating Chemical evolution.
2. Describe chemical evolution as postulated by the Haldane and Oparin theory
3. Write short notes on: 1. Mutation Theory 2. Modern Synthetic theory

Unit 2 (10 Marks)

1. Define the term 'population genetics'. Describe in brief the various evolutionary forces that tend to disturb genetic equilibrium and introduce changes in the gene pool of a population
2. State Hardy Weinberg's law of equilibrium and discuss its salient features
3. Give an account of the different factors involved in speciation
4. Describe the different types of speciation
5. Explain the role of geographic isolation in the development of new species
6. Explain the role of reproductive isolation in the development of new species
7. Discuss the pre-zygotic barriers responsible for reproductive isolation

8. Discuss the post-zygotic barriers which lead to reproductive isolation
9. Describe the sources of genetic variation in natural populations
10. Explain the nature and extent of genetic variation within populations
11. Describe the mechanisms that preserve balanced polymorphisms
12. Describe the salient features of microevolution
13. Compare and contrast microevolution and macroevolution
14. Explain the salient features of macroevolution
15. Give an account of the different patterns of macroevolution
16. Elaborate on the role of adaptive radiation and extinction in macroevolution
17. What do you understand by the term natural selection? Describe the different types of natural selection with suitable examples
18. What is megaevolution? Explain the mechanism of megaevolution using a suitable example

Unit 2(5 Marks)

1. Explain the term 'gene pool'. How does evolution operate via the gene pools of populations?
2. Differentiate between:
 - a. Allopatric and Sympatric speciation
 - b. Biological and evolutionary species
 - c. Microevolution and macroevolution
 - d. Stabilizing selection and disruptive selection
3. Explain stabilizing selection with the help of a suitable example
4. How does the example of sickle cell allele illustrate heterozygote advantage?
5. How does frequency-dependent selection affect genetic variation within a population over time?
6. Write short notes on:
 - a. Role of mutations in evolution
 - b. Role of migration in evolution
 - c. Non-random mating
 - d. Role of natural selection in evolution
 - e. Genetic drift

- f.** Bottleneck effect
 - g.** Founder effect
 - h.** Directional evolution in peppered moth
 - i.** Evolution of Antibiotic resistance in bacteria
 - j.** Geographic variation
 - k.** Genetic polymorphism
 - l.** Parapatric speciation
 - m.** Adaptive radiation
7. What is the biological species concept? What are its limitations? How does it differ from the evolutionary species concept?
 8. Explain the concept of coevolution using suitable examples

Unit 3 (10 Marks)

1. Describe briefly, the steps towards preparing a research design
2. Describe literature survey, collection of data and its analysis
3. What is a patent and how is it obtained?
4. Write an account on application of statistics in research

Unit 3 (5 Marks)

1. Define research. State the difference between research method and research methodology
2. Write a note on computer application in research
3. Describe briefly identification of research problem and formulation of research hypothesis
4. Write a note on abstract writing?
5. Write a note on plagiarism?
6. Write a note on bibliography?
7. Write a short note on ethics in scientific research

MODEL QUESTION BANK SEMESTER - IV

Question bank is suggestive. The paper setters are free to modify the questions or include new questions to the best of their perception

USZO402 (COURSE - IX)

Unit 1 (10 Marks)

1. Explain prokaryotic cell.
2. Explain Eukaryotic cell.
3. Give an account of cell theory.
4. Describe the ultrastructure of nuclear membrane.
5. State the chemical composition and functions of nucleolus.
6. Describe nucleocytoplasmic interactions.
7. Describe fluid mosaic model of plasma membrane.
8. Give an account of active and passive transport
9. Describe various modifications of plasma membrane
11. Explain endocytosis and exocytosis
12. Give an account on cell permeability
13. Differentiate prokaryotic and eukaryotic cell

Unit 1 (5 Marks)

Write a short note on:

1. Virus
2. Nuclear matrix
3. Number and position of nucleus.
4. Nucleolus
5. Membrane receptors

Unit 2 (10 Marks)

1. Write a note on structural organization & importance of endomembrane system.
2. Describe ultrastructure of Endoplasmic Reticulum
3. Describe the types and functions of ER.
4. Give an account of ultrastructure and functions of Golgi complex.
5. Write an essay on functions of Golgi complex.

6. Give an account of polymorphism in lysosomes.
7. Write an essay on peroxisomes.
8. Describe the structure and chemical composition of mitochondria.
9. Write a note on mitochondria as powerhouse of the cell.
10. Describe the major functions of mitochondria.

Unit 2 (5 Marks)

1. Importance of endomembrane system
2. Write a short note on biogenesis of endomembrane system
3. Functions of Rough Endoplasmic Reticulum
4. Functions of Smooth Endoplasmic Reticulum
5. Structure of Golgi complex
6. Chemical composition of Golgi complex
7. Lipid & polysaccharide metabolism in Golgi complex
8. Secretion and protein sorting by Golgi complex
9. Write a brief note on GAAP
10. Write a brief note on protein glycosylation by Golgi complex
11. Origin and functions of lysosomes
12. Write a short note on peroxisomes
13. Structure of mitochondria
14. Chemical composition of mitochondria
15. Write a short note on ATP
16. Write a short note on glycolysis
17. Write a short note on Krebs's cycle
18. Write a short note on oxidative phosphorylation

Unit 3 (10 Marks)

1. Explain the concept of micromolecules and macromolecules.
2. Define carbohydrate. Add a note on its classification.
3. What are carbohydrates? Classify carbohydrate with suitable examples.
4. Explain with suitable example monosaccharide and disaccharide.
5. Discuss the properties of carbohydrates.
6. Explain oligosaccharides with suitable examples.

7. What are polysaccharides? How are they classified? Write the structures of glycogen and heparin/ chitin and heparin.
8. Discuss about chemical structure of the monosaccharides / disaccharides.
9. What are amino acids? Classify amino acids based on functional group.
10. Give an account of primary and secondary structure of proteins.
11. Write an account on tertiary and quaternary structure of proteins.
12. Describe the structure of saturated and unsaturated fatty acids.
13. What are fatty acids? Add a note on types of fatty acids.
14. Describe the structure and functions of water soluble vitamins.
15. Describe the structure and functions of lipid soluble vitamins.

Unit 3 (5 Marks)

1. Write a short note on monomers and polymers.
2. Write note on properties of carbohydrates.
3. Give an account of polysaccharides.
4. With suitable example explain glycosidic bond.
5. Explain the linkage in lactose and sucrose.
6. Give the biological importance of carbohydrates.
7. What are essential and nonessential amino acids?
8. Give an account of properties of amino acids.
9. Define and explain peptide bond with suitable example.
10. Explain the different types of proteins with suitable examples.
11. Explain the biological role of proteins.
12. Peptide bond
13. Types of fatty acids.
14. Biological role of lipids
15. Sterols
17. Describe properties of lipids.
18. Discuss the clinical significance of protein / carbohydrate.
19. Write short note on clinical significance of lipids.
20. Write a note on isomerism in carbohydrates/amino acids.
21. Describe the structure and functions of vitamin A/ vitamin B/ vitamin C/ vitamin D.

MODEL QUESTION BANK SEMESTER - IV

Question bank is suggestive. The paper setters are free to modify the questions or include new questions to the best of their perception

USZOE1403 (COURSE - XA) – Elective 1

Unit-1 (10 Marks)

- 1) Classify the different types of eggs.
- 2) Briefly explain types and structure of sperms (any two animals).
- 3) Define cleavage Explain types of cleavages.
- 4) Give brief account on various types of blastulae.
- 5) What is gastrulation? Explain gastrulation in frog.
- 6) Give an account of process of coelom formation and its types

Unit-1 (5 Marks)

- 1) Draw neat labeled diagram and explain any one of the following:
(Microlecithal, Alecithal, Homolecithal, Heterolecithal, Isolecithal, Telolecithal, Centrolecithal, Discoidal).
- 2) Explain structure of sperm of frog/ reptile/ bird/ mammal.
- 3) Short note on holoblastic cleavage/ meroblastic cleavage.
- 4) Short note on equal or unequal cleavage.
- 5) Short note on discoblastula /coeloblastula.
- 6) Short note on centroblastula /amphiblastula /stereoblastula,
- 7) Explain the process of coelom formation
- 8) Explain the process of gastrulation.

Unit 2 (10 Marks)

1. Describe male reproductive system and its hormonal regulation.
2. Describe female reproductive system and its hormonal regulation.
3. Define reproduction. Explain the hormonal regulation of reproduction.
4. What is contraception? Explain different methods of contraception.
5. Explain the various measures of birth control.
6. Define infertility and explain the causes of female infertility.
7. What are the causes of male infertility?
8. Explain the hormonal treatment for infertility using drugs.

9. Describe the methods of treatment of infertility.
10. Give a brief account of infertility related disorders.
11. What are sperm banks? Add a note on cryopreservation of sperms.
12. What is testicular biopsy? Explain Testicular sperm extraction (TESE), Pronuclear stage transfer (PROST).
13. What are the steps involved in Embryo transfer (ET) and / Intra-fallopian transfer (IFT)/IVF? Add a note on its ethics.

Unit 2 (5 Marks)

1. Write a note on impact of age on reproductive stage –
 - a. Menopause
 - b. Andropause
2. Write a note on amenorrhea.
3. How does sterilization act as a method of contraception?
4. Write a note on birth control.
5. What is the difference between natural and artificial methods of contraception?
6. How is T.B. a cause of female infertility?
7. What are the genetic causes of infertility?
8. Write a note on STD's as infertility related disorders?
9. What are the roles of endocrine disruptions in infertility?
10. Explain the role of the following in infertility:
 - a. Gonorrhoea
 - b. Syphilis
 - c. Genital Herpes
 - d. Chlamydia
11. Write a note on treatment of infertility by removal of causative environmental factors.

Unit 3 (10 Marks)

1. What are the causes, effects and control measures for air pollution?
2. What are the causes, effects and control measures for water pollution?
3. What are the causes, effects and control measures for soil pollution?
4. What are the causes, effects and control measures for sound pollution?
5. Define air pollution and give an account of hazardous air pollutants.

6. What is ocean littering? Explain in detail the causes and control measures for ocean littering?
7. Describe the alteration of metabolism of micro-organisms due to soil pollution.
8. Explain sound pollution along with its measurement and permissible limits.
9. Give a brief account of methods to control gaseous / particulate matters.
10. What is pollution? Add notes on:
 - a. Effect of air pollution on vegetation.
 - b. Effect of sound pollution on animals.

Unit 3 (5 Marks)

1. Explain the effects of air pollution on human beings.
2. What are different types of pollutants that cause air pollution?
3. Write short notes on:
 - a. Ozone depletion
 - b. Green house gases
 - c. Global warming
 - d. Acid rain
 - e. Sonic boom
 - f. Acoustic zoning
4. Explain the effect of thermal pollution on biodiversity.
5. Write a note on ionizing radiation
6. How is oil spill becomes a cause of water pollution / ocean littering?
7. How do pesticides and fertilizers contaminate water?
8. How can oil be retracted back from sea / ocean?
9. What are the effects of soil pollution on food chain?
10. What are the auditory / non – auditory effects of sound pollution?

MODEL QUESTION BANK SEMESTER - IV

Question bank is suggestive. The paper setters are free to modify the questions or include new questions to the best of their perception

USZOE2403 (COURSE - XB) – Elective 2

Unit 1 (10 Marks)

1. Give in brief different indigenous breed of cattle with a suitable example.
2. Give in brief different exotic breeds of cattle with a suitable example.
3. Give in brief different breed of buffalo with a suitable example.
4. Give in brief different housing types in dairy farm.
5. Explain different types of diseases in cattle and add a note on its control.

Unit 1(05 Marks)

Write short note on

1. Malvi
2. Hariyana
3. Deoni
4. Red sindhi
5. Khillari
6. Jersy
7. Holstein
8. Nagpuri
9. Bhadawari
10. Murrah
11. Jafrabadi
12. Weaning of calf
13. Castration
14. Dehorning
15. Cleaning and sanitation.

Unit 2 (10 Marks)

1. Give in brief life history of silkworm.
2. Give in brief reeling and extraction of silk.
3. Give in brief diseases and control measures in sericulture.

4. Give in brief harvesting and processing of cocoon.

Unit 2 (5 Marks)

1. Varieties of silkworm
2. Rearing of silkworm
3. Silk extraction
4. Host plants for sericulture

Unit 3 (10 Marks)

1. Give an account on pisciculture, add a note on finfish culture
2. Explain monoculture with respect to aquaculture
3. Explain polyculture with respect to polyculture
4. Give an account on fresh water prawn culture
5. Give an account on pearl culture.

Unit 3 (5 Marks)

Write short notes on:-

1. Composition of pearl
2. White shrimp culture
3. Cage culture
4. Fish diseases
5. Symptoms of diseases
6. Control of diseases

-----*The End*-----

PREFACE

For the development of any modern society Science play a key role. Progress in various fields of Science and Technology has become the tools to understand life processes. Since knowledge in all branches and fields is growing globally at a fast pace with new disciplines emerging. This approach has necessitated the revision of the present curriculum. At the undergraduate level effectual science education can be communicated only by restructuring the curriculum. To achieve this goal, it is, therefore, imperative to update the existing syllabus accordingly, taking into account the broader perspective of Curriculum. Effort is taken to make the syllabi compatible with other universities and at the same time it is ensured that the syllabus is not very intense. The present curriculum will expose students to various fields in Zoology. Curricula with basic as well as advanced concepts in the Zoology at the third year shall inspire the students for pursuing higher studies in Zoology. It is foreseen that students will have more avenue to pursue their own interests and chosen field of courses, it will also enable students to get employed in the Biological research Institutes, Industries, Educational Institutes and in the range of concerning departments based on subject Zoology. The syllabus contains different components and learning outcomes specified. The other major components of the new syllabus is project. The aim of introducing project is to provide experiential learning through active participation that enables the student to develop and demonstrate analytical, judgmental, presentation and communication skills. Format provided along with the syllabus gives guidelines to engrave the project systematically. Committee comprising senior teachers were nominated from degree colleges after several interactive session and discussion the syllabus was prepared. On behalf of the Board Members, I place on record the endeavor by the committee and help rendered by one and all, It is hoped that this curriculum document, prepared would provide the level of competency.

From

Dr Anita S. Jadhav
Chairperson Ad-hoc BoS in Zoology

T. Y. B. Sc. Zoology
Semester based Credit and Grading System
(To be implemented from Academic Year 2017-18)
Semester V

Theory				
Course	Unit	Topic	Credits	Lectures/week
USZO501	I	Levels of organization	2.5	1
	II	Taxonomy of Phylum Protozoa to Phylum Nematelminthes		1
	III	Taxonomy of Phylum Annelida to Phylum Echinodermata		1
	IV	Type study : Sepia		1
USZO502	I	Basic Hematology	2.5	1
	II	Applied Hematology		1
	III	Basic Immunology		1
	IV	Applied Immunology		1
USZO503	I	Molecular Biology	2.5	1
	II	Genetic engineering		1
	III	Human Genetics		1
	IV	Tissue Culture		1
USZO504	I	Integumentary system and derivatives	2.5	1
	II	Endocrine glands and regulation		1
	III	Human Osteology		1
	IV	Experimental and Chick Embryology		1
			10	16
Practical				
USZOP05		Practicals of Course USZO501 and Practicals of Course USZO502	3	8
USZOP06		Practicals of Course USZO503, USZO504 and Project Component	3	8
			6	16
Total			16	32

**T. Y. B. Sc. Zoology
Semester V (Theory)**

**Course 11
Course Code: USZO501**

Unit 1: Levels of organization

(15 lectures)

Learning objectives:

To comprehend, compare and distinguish the levels of organisation in the animal kingdom.

Learning outcome:

Learners will develop conceptual clarity with regard to the anatomy of animals at different levels.

Learners shall comprehend the evolutionary perspective of each level of organisation. Learners will know the importance of the significance and advantages of each level of organisation.

1.1: Levels of Organization

(3 lectures)

1.1.1: Unicellularity, multicellularity, colonization

1.1.2: Cellular grade of organization, tissue grade of organization, formation of germ layers

1.2: Symmetry

(4 lectures)

1.2.1: Evolutionary perspective and definition

1.2.2: Types -

a. Asymmetry – e.g. *Amoeba*

b. Radial – e.g. Bi-radial - *Aurelia* (Jellyfish); Penta-radial - *Asterais* (Starfish)

c. Bi-lateral – e.g. Simple – *Planaria*; Complex - *Mus* (Rat)

1.2.3: Significance and Advantages

1.3: Coelom

(4 lectures)

1.3.1: Evolutionary perspective and definition

1.3.2: Development of Coelom -

a. Organization of tissues

b. Diploblastic and Triploblastic organization

1.3.3: Types -

a. Acoelomate – e.g. Platyhelminthes - *Planaria*

b. Pseudocoelomate – e.g. Nematoda - *Ascaris* (Round worm)

c. Coelomate – e.g. Annelida - *Pheretima* (Earthworm)

1.3.4: Significance and Advantages

1.4: Segmentation/ Metamerism

(4 lectures)

1.4.1: Evolutionary perspective and definition

1.4.2: Theories of segmentation

1.4.3: Types -

a. Homonymous – e.g. Annelida - *Pheretima* (Earthworm)

b. Heteronomous – e.g. Crustacean - *Panulirus* (Lobster)

c. Cephalization – e.g. Insecta - *Periplanata* (Cockroach)

d. Tagmatization – e. g. *Panulirus* (Lobster)

e. Cephalothorax – e.g. *Penaeus* (Prawn)

1.4.4: Significance and Advantages

Unit 2: Taxonomy of Phylum Protozoa to Phylum Nematoda

(15 lectures)

Learning objectives:

To introduce the learners to the modern system of animal classification. To describe the distinguishing characters of major invertebrate phyla and their adaptive features with reference to their habitat.

Learning outcome:

Learners will understand that scientific classification of animals is based on certain characteristics they have in common. Learners will be able to recall characteristics features and examples of each phylum. Learners will be familiar with protozoan and helminth parasites.

2.1: Principles of Taxonomy**(1 lecture)**

Linnaean Hierarchy, Binomial Nomenclature,
Five Kingdom classification

2.2: Phylum Protozoa**(5 lectures)**

2.2.1: General characters and classification
2.2.2: Locomotion in Protozoa - amoeboid, flagellar, ciliary, gliding
2.2.3: Reproduction in Protozoa - asexual and sexual
2.2.4: Morphology, life cycle, pathogenicity and control measures:
Plasmodium, Entamoeba

2.3: Phylum Porifera**(3 lectures)**

2.3.1: General organization and classification
2.3.2: Skeleton in sponges
2.3.3: Canal system in sponges

2.4: Phylum Cnidaria**(2 lectures)**

2.4.1: General characters and classification
2.4.2: *Obelia* - Polymorphism, life cycle and alternation of generations

2.5: Phylum Platyhelminthes**(2 lectures)**

2.5.1: General characters and classification
2.5.2: Life history of *Fasciola hepatica*

2.6: Phylum Nematoda**(2 lectures)**

2.6.1: General characters and classification
2.6.2: Life history of *Ascaris lumbricoides* and its parasitic adaptations

Unit 3: Taxonomy of Phylum Annelida to Phylum Hemichordata**(15 lectures)****Learning objectives:**

To introduce basic concepts of invertebrate classification in animal kingdom from phylum Annelida to Echinodermata. To study general characteristics and salient features of animals belonging to phylum Annelida to Hemichordata.

Learning outcome:

Learners will get an idea of higher groups of invertebrate animal life and their classification.

- 3.1: Phylum Annelida** (3 lectures)
3.1.1: General characters and classification
3.1.2: Diversity in habit and habitat
3.1.3: Adaptive radiation in Class Polychaeta
- 3.2: Phylum Arthropoda** (4 lectures)
3.2.1: General characters and classification
3.2.2: Larval forms of Crustacea; social life, moulting and metamorphosis in Insecta;
Vision in Arthropoda
3.2.3: Affinities of Onychophora
- 3.3: Phylum Mollusca** (3 lectures)
3.3.1: General characters and classification
3.3.2: Torsion and detorsion
- 3.4: Phylum Echinodermata** (2 lectures)
3.4.1: General characters and classification
3.4.2: Water vascular system
- 3.5: Hemichordates** (2 lectures)
General characters and classification, e.g. Balanoglossus
- 3.6: Basic concepts of phylogeny** (1 lecture)
- Unit 4: Type study - Sepia** (15 lectures)

Learning objectives:

To study one invertebrate type animal, e.g. Sepia

Learning outcome:

Learners will get an idea of general characteristics and details of invertebrate animal systems.

- 4.1:**
General characters and classification; Habit and habitat; External characters; Mantle cavity; locomotion; economic importance (5 lectures)
- 4.2:**
Digestive system, Respiratory system, Circulatory system, Excretory system, Nervous system, Sense organs and Reproductive system (10 lectures)

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**T. Y. B. Sc. Zoology
Semester V (Theory)**

**Course 12
Course Code: USZO502**

Unit 1: Basic Hematology

(15 lectures)

Learning objectives:

To introduce the learners to composition of blood. To acquaint the learners with the physiology of blood clotting, transport of gases and clinical aspects of haematology.

Learning outcome:

Learners would be able to realize the fundamental concepts in haematology.

- 1.1: Composition of blood** (1 lecture)
Plasma & formed elements
- 1.2: Blood volume** (2 lectures)
Total quantity and regulation; haemorrhage
- 1.3: Plasma proteins** (2 lectures)
Inorganic constituents, respiratory gases, organic constituents other than proteins
(include internal secretions, antibodies and enzymes)
- 1.4: RBCs** (2 lectures)
Structure and functions, abnormalities in structure, total count, variation in number; types
of anaemia and genetic disorders; ESR
- 1.5: Hemoglobin** (3 lectures)
Structure, formation and degradation, role in transport of oxygen and carbon dioxide
(Chloride shift and Bohr's effect); types of hemoglobin (foetal, adult and sickle)
- 1.6: WBCs** (2 lectures)
Types of leukocytes and function; total count and variation in number; leucopoiesis and
leukemia and its types
- 1.7: Blood clotting** (3 lectures)
Thrombocytes; factors and mechanism of coagulation; anticoagulants; formation of blood
platelets (thrombopoiesis); clotting mechanism; bleeding and clotting time; failure of
clotting mechanism; haemophilia and purpura

Unit 2: Applied Hematology (15 lectures)

Learning objectives:

To introduce the learners to basics of applied hematology. To impart knowledge of basic diagnostic techniques used in pathology.

Learning outcome:

Learners will be familiar with different terminologies and diagnostic tests performed in a pathological laboratory. Learners will be better equipped for taking any further pathological course or working in a diagnostic laboratory.

- 2.1: Introduction to Applied Hematology** (3 lectures)
Definition, scope and brief introduction of basic branches: clinical, microbiological,
oncological and forensic hematology
- 2.2: Diagnostic techniques used in hematology**
- 2.2.1: Microscopic examination of blood: For detection of blood cancers (Lymphoma, Myeloma); infectious diseases (Malaria, Filariasis, Leishmaniasis); hemoglobinopathies (Sickle cell, Thalassemia) (2 lectures)
- 2.2.2: Coagulopathies: Diagnostic methods (hemophilia and purpura) (1 lecture)
- 2.2.3: Microbiological examination: Blood culture: Method and application in diagnosis of infectious diseases (Typhoid and TB) (1 lecture)
- 2.2.4: Biochemical examinations of blood for: (5 lectures)
Liver function tests: Albumin, AST, ALT, AST:ALT ratio, Total bilirubin, Direct bilirubin, Prothrombin time / International normalized ratio (PT/INR), Serum glucose, LDH and Alkaline phosphatase
Kidney function tests: Serum creatinine, blood urea nitrogen

Carbohydrate metabolism tests: Blood sugar, Glucose tolerance test, Glycosylated hemoglobin test

Other biochemical tests: Blood hormones (Thyroid, FSH, LH), Cancer Antigen test (CA124 or CA125)

2.2.5: Blood Bank: Collection, storage, preservation of its components (1 lecture)

2.2.6: Blood transfusion: Crossing matching, Transfusion of blood and bone marrow transplant (2 lectures)

Unit 3: Basic Immunology (15 lectures)

Learning objectives:

To introduce the topic of immunology by emphasizing the basic concepts to build a strong foundation. To give an overview of the immune system that plays an important role in disease resistance.

Learning outcome:

Learners would comprehend the types of immunity and the components of immune system. Learners would realize the significant role of immune system in giving resistance against diseases.

3.1: Overview of Immunology (1 lecture)
Definition and scope

3.2: Components of immune system:

3.2.1: Innate immunity – Definition, Factors affecting innate immunity, Mechanisms of innate immunity – physical barriers, chemical barriers and cellular barriers (2 lectures)

3.2.2: Adaptive or Acquired immunity – Active Acquired immunity – Natural and Artificial; Passive Acquired immunity – Natural and Artificial (1 lecture)

3.3: Cells and Organs of immune system

3.3.1: Cells of immune system – B cells, T cells and null cells, macrophages, dendritic cells and mast cells (1 lecture)

3.3.2: Organs of immune system – Primary – Thymus and bone marrow; Secondary - Lymph node and spleen (2 lectures)

3.4: Antigens

Definition, properties of antigens; haptens (1 lecture)

3.5: Antibodies

Definition, basic structure, classes of antibodies – IgG, IgA, IgM, IgD and IgE (2 lectures)

3.6: Hypersensitivity, Autoimmunity and Immunodeficiency (3 lectures)

3.6.1: Definition of Hypersensitivity; Classification of hypersensitivity reactions: Type-I, Type-II, Type-III and Type-IV (one example of each type)

3.6.2: Introduction and a brief account of autoimmunity and example, Rheumatoid arthritis

3.6.3: Introduction to immunodeficiency – Congenital, e.g. SCID; Acquired, e.g. AIDS

Learning objectives:

To introduce the learners to immune related pathologies. To make the learners understand the concept of vaccines and vaccination. To familiarise the learners to immunological perspectives of organ transplant and tumour treatment.

Learning outcome:

Learners would understand immune related pathologies. Learners would understand the principle and applications of vaccines. Learners would develop basic understanding of immunology of organ transplantation and cancer treatment.

4.1: Antigen-Antibody interaction (5 lectures)

General features of antigen-antibody interaction; Precipitation reaction: Definition, characteristics and mechanism, precipitation in gels (slide test) - Radial immunodiffusion (Mancini method), Double immunodiffusion (Ouchterlony method); Agglutination reaction: definition, characteristics and mechanism, Haemagglutination (slide and micro-tray agglutination), passive agglutination, Coomb's test and ELISA

4.2: Vaccines and Vaccination (5 lectures)

Brief history of vaccination, principles of vaccines, Active and Passive immunization; Routes of vaccine administration

Classification of Vaccines: Live attenuated, Whole-Killed or inactivated, Sub-unit vaccines: Toxoids, Protein vaccines, Viral-like particles, DNA vaccines

Adjuvants: Introduction and application; Adjuvants used for human vaccines (Alum, Virosomes and Liposomes, Saponins, Water-in-oil emulsions)

Vaccines against human pathogens: Polio; Hepatitis A and B; Rotavirus; Tuberculosis (BCG); Diphtheria, Tetanus and Pertussis (DPT); Typhoid (TAB) vaccines

4.3: Transplantation and Tumour immunity (5 lectures)

Transplantation: Introduction to transplantation; Types of grafts; Immunologic basis of graft rejection: MHC compatibility in organ transplantation, Lymphocyte mediated graft rejection, Antibody mediated graft rejection; Prevention of graft rejection; Immunosuppressive therapy

Tumour immunology (Cancer immunology): Introduction to cellular transformation and cancer; Tumour antigens and immune surveillance; Immunotherapy: Antigen-independent cytokine therapy, Stimulation of cell-mediated immune responses, Passive immunotherapy

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**T. Y. B. Sc. Zoology
Semester V (Theory)**

**Course 13
Course Code: USZO503**

Unit 1: Molecular Biology

(15 lectures)

Learning objectives:

Introduce the learners to chemical and molecular processes that affect genetic material. It also intends to make them understand the concept of DNA damage and repair, and how gene control is necessary for cell survival.

Learning outcome:

The course will prepare learners to recognize the significance of molecular biology as a basis for the study of other areas of biology and biochemistry. Moreover, it will also assist them in understanding related areas in relatively new fields of genetic engineering and biotechnology.

1.1: Types of mutation

(4 lectures)

1.1.1: Point mutations – substitution, deletion and insertion mutations

Substitution mutations – silent (same-sense), missense and nonsense mutations, transition and transversion

Deletion and Insertion mutations – frameshift mutations

1.1.2: Trinucleotide repeat expansions – fragile X syndrome, Huntington disease

1.1.3: Spontaneous mutation – tautomeric shifts, spontaneous lesions

1.2: Induced mutations/mutagens/mutagenic agents/DNA damage

(4 lectures)

1.2.1: Physical agents – ionizing radiation (X-rays, α , β and γ rays), non-ionizing radiation (UV light)

1.2.2: Chemical agents – base analogs (5-bromouracil, 2-aminopurine), intercalating agents (acridine dyes, ethidium bromide and ICR compounds), deaminating agents (bisulfite compounds and nitrous acid), hydroxylating agents (hydroxylamine), alkylating agents (ethylmethanesulphonate, ethylethane sulphonate, mustard gas, nitrogen mustard, polycyclic aromatic hydrocarbons), aflatoxin (aflatoxin B₁)

1.3: Preventative and repair mechanisms for DNA damage (5 lectures)

- 1.3.1: Mechanisms that prevent DNA damage – superoxide dismutase and catalase
- 1.3.2: Mechanisms that repair damaged DNA – direct DNA repair (alkyltransferases, photoreactivation, excision repair)
- 1.3.3: Postreplication repair – recombination repair, mismatch repair, SOS repair, transcription - repair coupling

1.4: Eukaryotic gene expression (2 lectures)

- 1.4.1: Regulatory proteins – zinc fingers, helix-turn-helix domain and leucine zipper
- 1.4.2: DNA methylation

Unit 2: Genetic Engineering (15 lectures)

Learning objectives:

To introduce learners to a set of techniques to modify an organism's genome to produce improved or novel genes and organisms.

Learning outcome:

The learners will get acquainted with the vast array of techniques used to tamper genes which can be applied in numerous fields like medicine, research, etc. for human benefit.

2.1: Tools in Genetic Engineering

- 2.1.1: Enzymes involved in Genetic Engineering: (2 lectures)
Introduction, nomenclature and types with examples, working mechanism, Ligases – E.coli DNA ligase, T4 DNA ligase, polynucleotide kinase, phosphatases, DNA and RNA polymerases, reverse transcriptase, terminal transferase
- 2.1.2: Vectors for gene cloning: (2 lectures)
General properties, advantages and disadvantages of cloning vectors - plasmid vectors, phage vectors, cosmid vectors, phasmid vectors, BAC vectors
- 2.1.3: Cloning techniques: (2 lectures)
Cloning after restriction digestion - blunt and cohesive end ligation, creation of restriction sites using linkers and adapters, cloning after homopolymer tailing, cDNA synthesis (Reverse transcription), genomic and cDNA libraries
- 2.1.4: Transfection techniques: (2 lectures)
Liposome mediated gene transfer, calcium phosphate precipitation method, electroporation, virus mediated gene transfer - Retrovirus

2.2: Techniques in Genetic Engineering

- 2.2.1: PCR techniques: (1 lecture)
Principle of polymerase chain reaction (PCR), Variants in PCR, Applications of PCR
- 2.2.2: Sequencing techniques: (2 lectures)
DNA sequencing: Maxam-Gilbert method, Sanger's method – Manual and automated methods
Protein sequencing: Sanger's method, Edman's method, Applications of sequencing techniques
- 2.2.3: Separation and detection techniques: (4 lectures)
Blotting techniques: Southern blotting, Northern blotting and Western blotting
Applications of blotting techniques
Microarray techniques: ESTs, DNA Microarray and Applications

Unit 3: Human Genetics

(15 lectures)

Learning objectives:

To introduce learners with genetic alterations in human genome and their diagnosis.

Learning outcome:

The learners will become aware of the impact of changes occurring at gene level on human health and its diagnosis.

3.1: Non-disjunction during mitosis and meiosis

(5 lectures)

3.1.1: Chromosomal Aberrations:

Structural: Deletion: types, effects and disorders; Translocation: types: robertsonian and non-robertsonian, disorders; Inversion: types, effects and significance; Duplication and their evolutionary significance (multigene families)
Numerical: Aneuploidy and Polyploidy (Autoploidy and Allopolyploidy)

3.2: Genetic Disorders

(5 lectures)

3.2.1: Inborn Errors of Metabolism: Phenylketonuria, G-6-PD deficiency, Alkaptonuria, Albinism, Niemann Pick syndrome

3.2.2: Single gene mutation: Cystic fibrosis, Muscular dystrophy

3.2.3: Multifactorial: Breast Cancer, Diabetes mellitus, Ischemic heart

3.2.4: Uniparental Disomy: Angelman Syndrome and Prader Willi Syndrome

3.3: Diagnosis

(5 lectures)

3.3.1: Prenatal Diagnosis (Amniocentesis) and chorio-villus sampling - Ultrasound scanning and Fetoscopy, Banding techniques (G, C, Q), FISH and M-FISH, Protein truncation test (PTT), Single Nucleotide Polymorphism and its applications

3.3.2: Applications: Principles and strategies in identifying the abnormal genes (position independent and dependent), use of abnormalities, confirming a candidate gene

3.3.3: Genetic counselling: Psycho-social aspects for the individual and the family in connection with genetic investigations

Unit 4: Tissue Culture

(15 lectures)

Learning objectives:

Introduce the learners to fundamental concepts of cell culture and guide them progressively to certain areas which now-a-days are basic to the performance of animal cell culture.

Learning outcome:

The course will prepare learners to understand significance of cell culture as a tool in specialized areas of research and its applications in industries like biotechnology, in fields such as in vitro fertilization and replacement of animals in medical and toxicology experiments.

4.1: Introduction to animal cell culture

(2 lectures)

- 4.1.1: Advantages of tissue culture – control of the environment, characterization and homogeneity of sample, economy, scale and mechanization, *in vitro* modeling of *in vivo* conditions
- 4.1.2: Limitations of tissue culture – expertise, quantity, dedifferentiation and selection, origin of cells, instability

4.2: Aseptic techniques

(3 lectures)

- 4.2.1: Objectives of aseptic techniques – maintaining sterility
- 4.2.2: Sterilization – basic principles of sterilization, importance of sterility in cell culture
- 4.2.3: Sterile handling – swabbing, capping, flaming, handling bottles and flasks, pipetting, pouring

4.3: Culture media

(5 lectures)

- 4.3.1: Physicochemical properties – pH, CO₂ and bicarbonate, buffering, O₂, osmolality, temperature, viscosity, surface tension and foaming
- 4.3.2: Types of media – Natural and Artificial media
- 4.3.3: Serum – protein, growth factors, hormones, nutrients and metabolites, lipids, minerals and inhibitors
- 4.3.4: Balanced Salt Solutions
- 4.3.5: Complete Media– amino acids, vitamins, salts, glucose, oxygen supplements, hormones and growth factors, antibiotics

4.4: Primary culture and establishment of cell lines

(5 lectures)

- 4.4.1: Establishment of primary cultures from various sources – normal ‘versus’ tumour, adult ‘versus’ embryo, human ‘versus’ animal, source of material
- 4.4.2: Isolation of cells – enzyme digestion, perfusion, mechanical disaggregation, explants cultures
- 4.4.3: Substrate for attachment
- 4.4.4: Culture conditions – selection against some cell types, conditioned medium, feeder cells

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**T. Y. B. Sc. Zoology
Semester V (Theory)**

Course 14

Unit 1: Integumentary system and derivatives

(15 lectures)

Learning objectives:

To introduce the learners to understand different integumentary structures and derivatives in the vertebrates and to acquaint learners with special derivatives of epidermis.

Learning outcome:

Learners will be able to understand the importance of epidermal and dermal derivatives and their functions.

1.1: Basic structure of integument

(2 lectures)

Epidermis and dermis; classification of keratinized and non-keratinized derivatives

1.2: Epidermal derivatives of Vertebrates

(5 lectures)

Hair, hoof, horn, claw, teeth, beak, epidermal scales (large scales, small scales, modified scales - spine), glands - types and functions (mucous, serous, ceruminous, poison, uropygial, salt), feathers

1.3: Dermal derivatives of vertebrates

(3 lectures)

Scales in fish; scutes in reptiles and birds; dermal scales in mammals - Armadillo, Antler - Caribou

1.4: Special derivatives of integument (Epidermal)

(5 lectures)

Wart in toad; rattle in snake; horny beak in turtle, birds, monotremes; spur in male birds - jacana, fowl; whale bone - baleen whale; liliac callosities – African mandrill; kneepads - camel

Unit 2: Endocrine glands and regulation

(15 lectures)

Learning objectives:

To introduce the learners about the details of endocrine glands and their regulation.

Learning outcome:

Learners will be able to understand the types & secretions of endocrine glands and their functions.

2.1:

(2 lectures)

General organization of mammalian endocrine system

2.2:

(6 lectures)

Hormones: Classification, properties, mechanism of hormone action, hormone secretion and transport

2.3:

(7 lectures)

Histology, functions and disorders of the following endocrine glands: Pituitary, Thyroid, Parathyroid, Pancreas, Adrenal, Testis and Ovaries

Unit 3: Human Osteology

(15 lectures)

Learning objectives:

To introduce the learners about different bones of human skeleton and their importance.

Learning outcome:

Learners will be able to understand the structure, types and functions of human skeleton.

3.1: Introduction

(2 lectures)

Cartilage & Bone Structure

Physical properties, chemical composition & functions of bones

3.2: Axial skeleton

(7 lectures)

3.2.1: Skull: general characteristics of skull bones

1) cranial bones 2) facial bones

3.2.2: Vertebral column: General characteristics of a vertebra, structure of different types of vertebrae (cervical, thoracic, lumbar, sacrum & coccyx)

3.2.3: Ribs & sternum (Thorax): General skeleton of ribs & sternum

3.2.4: Hyoid bone: General structure

3.3: Appendicular skeleton

(4 lectures)

3.3.1: Pectoral girdle and Pelvic girdle

3.3.2: Forelimbs and Hindlimbs

3.4: Sexual dimorphism of human skeleton

(2 lectures)

3.4.1: Sternum

3.4.2: Sacrum

3.4.3: Pelvis

Unit 4: Experimental and Chick embryology

(15 lectures)

Learning objectives:

To introduce to the learners the basics of developmental biology with reference to chick as a model and also understand experiments related to it.

Learning outcome:

Learners will be able to understand the processes involved in embryonic development and its application.

4.1: Introduction to experimental embryology

(5 lectures)

Germplasm theory, Mosaic theory, Regulative theory, Gradient theory, Spemann's theory of organizers

Basic concept and principles of experimental embryology - brief idea of morphogenesis and organogenesis, fate maps, cell adhesion, cell affinity and differentiation

4.2: Development of Chick

(5 lectures)

Structure of chick embryo - 24 hours, 36 hours, 48 hours, 72 hours

4.3: Signaling pathways and intercellular communication during development (2 lectures)

Induction and competence, epithelial-mesenchymal interaction

4.4: Recent trends in developmental biology

(3 lectures)

Methods to determine the role of genes during development (transgenic and chimeric mouse, “knockout” experiments), Genes contributing to developmental defects (oncogenes), multipotent and pluripotent stem cells and their niche

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**T. Y. B. Sc. Zoology
Semester V (Practical)**

**Course 11
Course Code: USZO501**

1. Levels of organization

- a. Symmetry:
 - i. Asymmetry, e.g. Sponge
 - ii. Radial: Bi-radial, e.g. Comb jelly
Penta-radial, e.g. Adult Brittle star
 - iii. Bi- lateral, e.g. Larva of Brittle star and human
- b. Coelom:
 - i. Acoelomate, e.g. Tapeworm
 - ii. Pseudocoelomate, e.g. Ascaris
 - iii. Coelomate, e.g. Frog
- c. Segmentation:
 - i. Homonymous, e.g. Nereis
 - ii. Heteronomous, e.g. Cockroach
- d. Cephalization:
 - i. Cephalization, e.g. Honey bee
 - ii. Cephalothorax, e.g. Crab

2. Taxonomy of Protozoa to Hemichordata

- a. Phylum Protozoa:
 - i. Class Rhizopoda, e.g. Amoeba - amoeboid locomotion, asexual reproduction – binary fission
 - ii. Class Ciliophora, e.g. Vorticella - ciliary locomotion, sexual reproduction - conjugation
 - iii. Class Flagellata, e.g. Noctiluca - flagellar locomotion
 - iv. Class Sporozoa, e.g. Monocystis - gliding locomotion
- b. Phylum Porifera:
 - i. Class Calcarea - Canal system, e.g. Scypha - Sycon type
Leucosolenia - Ascon type
 - ii. Class Demospongia - Canal system, e.g. Spongilla larva - Rhagon type
Adult - Leuconoid type
 - iii. Class Hexactinellida - Observation of sponge spicules (permanent slide/photograph),
e.g. Hyalonemma
- c. Phylum Cnidaria:
 - i. Class Hydrozoa, e.g. Vellela
 - ii. Class Scyphozoa, e.g. Rhizostoma
 - iii. Class Anthozoa, e.g. Corallium (Red coral)
- d. Phylum Platyhelminthes:
 - i. Class Turbellaria, e.g. Planaria
 - ii. Class Trematoda, e.g. Liverfluke
 - iii. Class Cestoda, e.g. Taenia solium
- e. Phylum Nematelminthes, e.g. Trichinella
- f. Phylum Annelida:
 - i. Class Polychaeta, e.g. Arenicola/ Nereis
 - ii. Class Oligochaeta, e.g. Tubifex/ Earthworm
 - iii. Class Hirudinea, e.g. Pontobdella/ Leech

- g. Phylum Arthropoda:
 - i. Class Merostomata, e.g. Limulus (King crab)
 - ii. Class Arachnida, e.g. Scorpion
 - iii. Class Crustacea, e.g. Balanus
 - iv. Class Myriapoda, e.g. Scolopendra (Centipede)
 - v. Class Insecta, e.g. Coccinella (Ladybird beetle)
 - vi. Class Onychophora, e.g. Peripatus
 - vii. Observation and identification of planktonic crustaceans
 - viii. Types of Metamorphosis in insects
- h. Phylum Mollusca:
 - i. Class Aplacophora, e.g. Chaetoderma
 - ii. Class Polyplacophora, e.g. Tonicella/ Chiton
 - iii. Class Monoplacophora, e.g. Neopilina
 - iv. Class Gastropoda, e.g. Achatina
 - v. Class Pelycypoda, e.g. Donax/ Unio
 - vi. Class Scaphopoda, e.g. Dentalium
 - vii. Class Cephalopoda, e.g. Octopus
- i. Phylum Echinodermata:
 - i. Class Asteroidea, e.g. Starfish
 - ii. Class Ophiuroidea, e.g. Brittle star
 - iii. Class Echinoidea, e.g. Echinus
 - iv. Class Holothuroidea, e.g. Holothuria (Sea cucumber)
 - v. Class Crinoidea, e.g. Crinoid (Sea lily)
- j. Phylum Hemichordata (Acorn worms):
 - i. Class Enteropneusta, e.g. Saccoglossus/ Balanoglossus
 - ii. Class Pterobranchia, e.g. Rhabdopleura
 - iii. Class Planctosphaeroidea, e.g. Planctosphaera

Note: Visit to local fish market to study available invertebrates

**T. Y. B. Sc. Zoology
Semester V (Practical)**

**Course 12
Course Code: USZO502**

1. Enumeration of erythrocytes - Total count
2. Erythrocyte Sedimentation Rate by suitable method – Westergren or Wintrobe method
3. Estimation of haemoglobin by Sahli's acid haematin method
4. Enumeration of leucocytes –Total Count
5. Differential count of WBC

6. Determination of Serum LDH
7. Estimation of total plasma proteins by Folin's method
8. Estimation of serum/ plasma total triglycerides by Phosphovanillin method
9. Latex agglutination test - Rheumatoid Arthritis

**T. Y. B. Sc. Zoology
Semester V (Practical)**

**Course 13
Course Code: USZO503**

1. Isolation & Estimation of RNA by Orcinol method (formula method and standard graph)
2. Isolation & Estimation of DNA by Diphenylamine method (formula method and standard graph)
3. Separation of proteins by SDS-PAGE from the given sample (plasma proteins)
4. Colorimetric estimation of proteins from given sample by Bradford's method
5. Karyotype (Idiogram) analysis for the following syndromes with comments on numerical & structural variations in chromosomes (no cutting of chromosomes):
 - a. Turner's syndrome
 - b. Klinefelter's syndrome
 - c. Down's syndrome
 - d. Cri-du-chat syndrome
 - e. D-G translocation
 - f. Edward's syndrome
 - g. Patau's syndrome
6. Problems in genetics based on abnormalities in chromosomes:
 - a. Interpret the following formula:
46, XY, t (2;5) (q21; q31)
Answer:
Total number of chromosomes present = 46, male.

Reciprocal translocation between chromosomes 2 and 5. Breakage and reunion has occurred between long arm of 2nd chromosome, band 21 and long arm of 5th chromosome, band 31

b. Duplication:

46, XX, dup (1) (q22q25)

Total number of chromosomes = 46, female. Duplication on chromosome number 1, long arm between band 1q22 and 1q25

c. Turner's Syndrome:

45, X

d. Klinefelter's Syndrome:

47, XXY

7. Stained preparation of Onion root tip and calculation of Mitotic index (permanent slide to be provided)
8. Survey of human traits following Mendelian inheritance:
(Hair on back of hand, Bent little finger, widows peak, tongue rolling, ear lobe, Cephalic index)
Preparation of report
9. Identification of contrasting traits in drosophila using photographs
10. Culture of drosophila, crossing based on traits, study of inheritance pattern (demonstration only)
11. Sterilization technique (Workplace, Glassware, Chemicals, Biological fluids or samples)
12. Use of autoclave for sterilization of equipments for tissue culture
13. Packaging of glassware
14. Trypsinization and vital staining using Trypan blue stain
15. Tissue culture media preparation, aseptic transfer & inoculation of culture
16. Streaking of butt, slant and plate (continuous and discontinuous methods) with E.coli
(Demonstration only)

**T. Y. B. Sc. Zoology
Semester V (Practical)**

**Course 14
Course Code: USZO504**

1. To study T.S. of integument: amphibian, reptilian, avian, mammalian
2. To study horns, antlers
3. To study different types of scales: dermal, epidermal
4. To study epidermal glands: mucous, sebaceous, sweat, poison, uropygial
5. To study special integumentary derivatives
6. To study the histology of glands: T.S. of pituitary, thyroid, pancreas, adrenal, ovary, testis
7. To study human skeleton: study of axial skeleton
 1. Skull bone
 2. Ossicles of middle ear
 3. Hyoid bone
 4. Rib cage
 5. Sternum
 6. Vertebral column -
 - I. Cervical vertebrae
 - a. Typical cervical vertebrae (3-6)
 - b. Atlas or 1st cervical vertebra

- c. Axis or 2nd cervical vertebra
- d. 7th cervical vertebra
- II. Thoracic vertebrae (8-19)
- III. Typical lumbar vertebra (20-24)
- IV. Sacral vertebrae and coccyx (synsacrum)
 - Sacrum (25-29)
 - Coccyx (30-33)
- 8. Observation of developing chick embryo -18 hours, 24 hours, 36 hours, 48 hours, 72 hours
- 9. To prepare temporary mounting of chick embryo up to 72 hours
- 10. To study the effect of temperature in the development of chick embryo upto 48 hours/ 72

Theory

hours

T. Y. B.Sc. Zoology
Semester based Credit and Grading System
(To be implemented from Academic Year 2017-18)
Semester VI

Course	Unit	Topic	Credits	Lectures/week
USZO601	I	Minor Phyla and Protochordata	2.5	1
	II	Taxonomy – Pisces and Amphibia		1
	III	Taxonomy – Reptilia, Aves and Mammals		1
	IV	Type study : Shark		1
USZO602	I	Enzymology	2.5	1
	II	Homeostasis (Temperature and Ionic regulation)		1
	III	Histology		1
	IV	General Pathology		1
USZO603	I	Zoogeography	2.5	1
	II	Toxicology		1
	III	Biostatistics		1
	IV	Bioinformatics		1
USZO604	I	Environment management	2.5	1
	II	Wildlife management		1
	III	Bioethics, Bioprospecting and Zoopharmacognosy		1
	IV	General Entomology		1
			10	16
Practical				
USZOP07		Practicals of Course USZO601 and Practicals of Course USZO602	3	8
USZOP08		Practicals of Course USZO603, USZO604 and Project Component	3	8
			6	16
Total			16	32

**T. Y. B. Sc. Zoology
Semester VI (Theory)**

**Course 15
Course Code: USZO601**

Unit 1: Minor Phyla and Protochordata

(15 lectures)

Learning objectives:

To introduce classification, general characters and phylogeny of minor phyla and protochordates.

Learning outcome:

Learners will get an idea of basic morphological and physiological details of minor phyla and protochordates. Study of phylogeny will help learners to understand the evolutionary relationships between organisms.

1.1: Minor phyla (6 lectures)

1.1.1: General features

a. Acoelomate – Phylum Acanthocephala, e.g.s. *Macracanthorhynchus*,
Moniliformis (3 lectures)

b. Coelomate – Phylum Chaetognatha, e.g. *Sagitta* (3 lectures)

1.2: The Protochordates (9 lectures)

1.2.1: General overview, characteristics and salient features of Urochordates and Cephalochordates (2 lectures)

a. Urochordata, e.g. *Ascidia* (2 lectures)

b. Cephalochordata, e.g. *Branchiostoma* (2 lectures)

1.2.2: Retrogressive metamorphosis in Ascidian (1 lecture)

1.2.3: Phylogeny of Urochordates and Cephalochordates (2 lectures)

Unit 2: Taxonomy - Pisces and Amphibia (15 lectures)

Learning objectives:

To describe general features and classify fish and amphibians.

Learning outcome:

Learners will be able to identify classes of fish and amphibians by their anatomical features.

Learners will be able to compare and contrast characters of fishes and amphibians. Learners will be able to describe evolutionary trends implied by their classification.

2.1: Division - Agnatha (3 lectures)

2.1.1: Classification of living Agnatha up to classes

2.1.2: General characters of the jawless fishes, e.g.s. *Petromyzon* (lamprey) and *Myxine* (hagfish)

2.2: Division - Gnathostomata – Superclass - Pisces (6 lectures)

2.2.1: General characters and classification up to order Placoderms, Chondrichthyes and Osteichthyes

Examples: a. Sharks, e.g. *Sphyrna* (Hammer headed shark)

b. Skates and rays, e.g.s. *Pristis* (Saw fish), *Dasyatis* (Sting ray)

c. Chimeras, e.g. *Hydrolagus* (Spotted rat fish)

d. Lung fish, e.g. *Lepidosiren* (Australian lungfish)

e. Flying fish, e.g. *Exocoetus*

2.3: Superclass Tetrapoda; Class Amphibia (6 lectures)

2.3.1: General overview, classification, characteristics and salient features up to orders

Examples of each order namely -

a. Limb-less amphibian, e.g. *Ichthyophis*

- b. Tailed amphibian, e.g. *Amphiuma*
 - c. Tail-less amphibian, e.g. *Hyla*
- 2.3.2: Neoteny in Amphibia, e.g. Axolotl larva

Unit 3: Taxonomy - Reptilia, Aves and Mammals

(15 lectures)

Learning objectives:

To introduce the learners to the modern system of animal classification. To describe the distinguishing characters of classes Reptilia, Aves and Mammalia and their adaptive features with reference to their habitat.

Learning outcome:

Learners will understand that scientific classification of animals is based on certain characteristics they have in common. Learners will be able to recall characteristic features and examples of each class of Reptilia, Aves and Mammalia.

3.1: Class Reptilia

(3 lectures)

3.1.1: General overview, classification, characteristics and salient features of subclasses and orders

Examples of each order namely -

- a. Aquatic reptile, e.g. *Chelone*
- b. Extinct reptile, e.g. *Ichthyosaurus*
- c. Living fossil, e.g. *Sphenodon*
- d. Arboreal reptile, e.g. *Chamaeleon*

3.2: Class Aves

(6 lectures)

3.2.1: General overview, classification, characteristics and salient features of orders

Examples of each order in accordance to groups -

- a. Arboreal birds, e.g. *Treron* (Green pigeon)
- b. Terrestrial birds, e.g. *Gallus* (Jungle fowl)
- c. Swimming / diving birds, e.g. *Pelicanus* / *Phalacrocoracidae* (Pelican/Cormorant)
- d. Shore birds and wading birds, e.g. *Scolopacidae* (Sandpiper), *Ardeola grayii* (Pond heron)
- e. Birds of prey, e.g. *Strigiformes* (Owl), *Accipitriformes* (Eagle)

3.3: Class Mammalia

(6 lectures)

3.3.1: General overview, classification, characteristics and salient features of orders

Examples of each order in accordance to groups -

- a. Egg-laying mammals, e.g. *Ornithorhynchus anatinus* (Duck-billed platypus)
- b. Pouched mammals, e.g. *Macropus* (Kangaroo)
- c. Insect eating mammals, e.g. *Sorex araneus* (Common shrew)
- d. Toothless mammals, e.g. *Folivora* (Sloth)
- e. Gnawing mammals, e.g. *Sciuridae* (Squirrel)
- f. Aquatic mammals, e.g. *Delphinus* (Dolphin)
- g. Primates, e.g. *Lemuroidea* (Lemur)

Unit 4: Type study - Shark

(15 lectures)

Learning objectives:

To study general characteristics and salient features of animal type - shark. To study in depth one vertebrate animal type.

Learning outcome:

Learners will get an idea of vertebrate animal life and its classification.

4.1: (3 lectures)

Habit & habitat, distribution, external characters and classification, and economic importance

4.2: (12 lectures)

Skin, exoskeleton, endoskeleton, digestive system, respiratory system, blood vascular system, nervous system, receptor organs, urinogenital system, copulation, fertilization and development

REFERENCES

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**T. Y. B. Sc. Zoology
Semester VI (Theory)**

**Course 16
Course Code: USZO602**

Unit 1: Enzymology (15 lectures)

Learning objectives:

To introduce the learners to the basic concepts of enzyme biochemistry. To make the learners realize the power and application of enzymes in basic and applied science.

Learning outcome:

Learners must be able to understand basics of enzyme structure and function. Learners must comprehend variations in enzyme activity and kinetics. Learners must appreciate the enzyme assay procedures and the therapeutic application of enzymes.

1.1: (3 lectures)

Definition, nomenclature and classification (based on Enzyme Commission) of enzymes, cofactors and coenzymes, the concept and properties of active site

1.2: (3 lectures)

Factors affecting enzyme activity - pH and temperature; concept of activation energy;
Enzyme structure (lysozyme and serine protease)

1.3: (3 lectures)

Enzyme kinetics, Concept of steady state, Derivation of Michaelis-Menton equation and Lineweaver-Burk plot, Enzyme assay, concept and significance of k_m , V_{max} and k_{cat} , modulation of enzyme activity with reference to GDH

1.4: (2 lectures)

Enzyme inhibitors, competitive and non-competitive inhibitors and their kinetics; therapeutic applications of enzyme inhibitors

1.5: (2 lectures)

Regulation of enzyme activity; Hill equation; allosteric regulation and regulation by covalent modification of enzymes; Zymogen (pepsinogen and proelastase); Isozymes (LDH)

1.6: (2 lectures)

Clinical significance and industrial applications of enzymes

Unit 2: Homeostasis (Temperature and Ionic regulation) (15 lectures)

Learning objectives:

To introduce the learners to the concept of homeostasis. To familiarize the learners with thermoregulation, osmoregulation and feedback mechanism.

Learning outcome:

Learners would be able to understand the concept of positive and negative feedback mechanisms. Learners would comprehend the adaptive responses of animals to environmental changes.

2.1: Homeostasis (5 lectures)

External and internal environment; Acclimation and acclimatization; Control systems in biology: Feedback mechanism - negative feedback and positive feedback with suitable examples

2.2: Thermoregulation (5 lectures)

Endothermy, ectothermy (relation between temperature and biological activities); temperature balance; heat production - shivering and non shivering thermogenesis; brown fat - special thermogenic tissue in mammals, mechanisms of heat loss; adaptive response to temperature - daily torpor, hibernation, aestivation

2.3: Osmotic and Ionic regulation (5 lectures)

Maintaining water and electrolyte balance; ionic regulation in iso-osmotic environment; living in hypo-osmotic and hyper-osmotic environment; problems of living in terrestrial environment: water absorption, salt water ingestion and salt excretion, salt glands, role of kidney in ionic regulation, metabolic water

Unit 3: Histology (15 lectures)

Learning objectives:

To familiarize the learners with the cellular architecture of the various organs in the body. To make the learners understand the need and importance of different types of tissues in the vital organs and their functions.

Learning outcome:

Learners would appreciate the well planned organization of tissues and cells in the organ systems.

3.1: Vertical section (V.S.) of skin (3 lectures)

Layers and cells of epidermis; papillary and reticular layers of dermis; sweat glands, sebaceous glands and skin receptors

3.2: Digestive System

3.2.1: Vertical Section (V.S.) of tooth – hard tissue – dentine and enamel; soft tissue – dentinal pulp and periodontal ligaments (2 lectures)

3.2.2: Transverse section (T.S.) of tongue – mucosal papillae and taste buds (2 lectures)

3.2.3: Alimentary Canal – basic histological organization with reference to transverse section (T.S.) of oesophagus, stomach, duodenum, ileum and rectum of mammal (3 lectures)

3.2.4: Glands associated with digestive system - histology with reference to transverse section (T.S.) of salivary glands, liver, pancreas (3 lectures)

3.3:

Respiratory organs – transverse section (T.S.) of trachea and lung (2 lectures)

Unit 4: General pathology

Learning objectives:

To introduce the learners to basics of general pathology. To impart knowledge of retrogressive, necrotic, circulatory neoplastic pathological conditions in the body. To explain repair mechanism of the body.

Learning outcome:

Learners will gain knowledge of various infective agents and diseases caused by them. Learners will be familiar with various medical terminology pertaining to pathological condition of the body caused due to disease.

4.1: (2 lectures)

Infectious diseases: aetiology, infectious agents, viruses - hepatitis, bacteria - tuberculosis, fungi - skin diseases

4.2: Retrogressive changes (2 lectures)

Definition, cloudy swelling, degeneration: fatty, mucoid and amyloid (causes and effects)

4.3: Disorders of pigmentation (1 lecture)

Endogenous: Brief ideas about normal process of pigmentation, melanosis, jaundice (causes and effects)

4.4: Necrosis (1 lecture)

Definition and causes; nuclear and cytoplasmic changes; Types: Coagulative, Liquefactive, Caseous, Fat and Fibroid

4.5: Gangrene

Definition and types (dry, moist and gas gangrene)

(1 lecture)

4.6: Circulatory disturbances

(2 lectures)

Causes and effects of Hyperaemia, Ischaemia, Thrombosis, Embolism, Oedema and Infarction

4.7: Inflammation

(2 lectures)

Definition and causes (pathogenic and immune), cardinals of inflammation; acute and chronic inflammation

4.8: Applied pathology

(2 lectures)

Anatomical, clinical and molecular; investigating methods: biopsy and surgery (for pathological examination of tissue)

4.9: Forensic pathology

(2 lectures)

Autopsy, post mortem changes - Algor mortis - body cooling, Rigor mortis - stiffening of limbs, state of decomposition - autolysis (process of self-digestion) and putrefaction

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General pathology

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- Clinical Pathology; Guru G.; NCERT; 1988
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- Essentials of General Pathology - Dr. Sudha Shivraj, Dr. Satish Kumar Amarnath, Dr. Sheela Devi; Exclusively distributed by CBS Publishers & Distributors
- Textbook of Pathology; Harsh Mohan; JAPYEE publishers

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T. Y. B. Sc. Zoology Semester VI (Theory)

Course 17

Course Code: USZO603

Unit 1: Zoogeography

(15 lectures)

Learning objectives:

To introduce learners to a branch of science dealing with the geographic distribution of animals.

Learning outcome:

The learners will become acquainted with how and why different animal species are distributed around the globe.

1.1: Introduction

(2 lectures)

- 1.1.1: Origin of oceans and continents
- 1.1.2: Plate tectonics and continental drift

1.2: Distribution of animals in space and time

(5 lectures)

- 1.2.1: In space – horizontal or superficial
- 1.2.2: In time – geological or durational
- 1.2.3: Patterns of animal distribution – continuous, discontinuous, isolation and bipolarity
- 1.2.4: Theories of animal distribution

1.3: Barriers of distribution of animals

(3 lectures)

- 1.3.1: Topographic, climatic, vegetative, large water masses, land mass, lack of salinity and special characteristic habits like homing instinct, etc.
- 1.3.2: Means of dispersal – land bridges, natural rafts and drift wood, favouring gales, migration by host, accidental transportation and by human agencies

1.4: Zoogeographical realms

(5 lectures)

- 1.4.1: Palearctic, Ethiopian, Oriental, Australian, Neotropical, Nearctic and Antarctic

Unit 2: Toxicology

(15 lectures)

Learning objectives:

Introduce the learners to principles of toxicology with particular emphasis on toxic responses to chemical exposures, nature and effect of toxicity and toxicity testing. It also intends to develop amongst students an introductory understanding of regulatory affairs in toxicology.

Learning outcome:

The course will prepare learners to develop broad understanding of the different areas and significance of toxicology. Moreover, it will also develop critical thinking and assist students in preparation for employment in pharmaceutical industry and related areas.

2.1: Basic toxicology**(10 lectures)**

- 2.1.1: Introduction to toxicology – brief history, different areas of toxicology, principles and scope of toxicology
- 2.1.2: Toxins and Toxicants – Phytotoxins (caffeine, nicotine), Mycotoxins (aflatoxins), Zootoxins (cnidarian toxin, bee venom, scorpion venom, snake venom)
- 2.1.3: Characteristics of Exposure – Duration of exposure, Frequency of exposure, Site of exposure and Routes of exposure
- 2.1.4: Types of toxicity – Acute toxicity, subacute toxicity, subchronic toxicity, chronic toxicity, immediate toxicity, delayed toxicity, reversible toxicity, irreversible toxicity, local toxicity, systemic toxicity
- 2.1.5: Concept of LD₅₀, LC₅₀, ED₅₀
- 2.1.6: Dose Response relationship – Individual/ Graded dose response, Quantal dose response, shape of dose response curves, Therapeutic index, Margin of safety
- 2.1.7: Dose translation from animals to human – Concept of extrapolation of dose, NOAEL (No Observed Adverse Effect Level), Safety factor, ADI (Acceptable Daily Intake)

2.2: Regulatory toxicology**(5 lectures)**

- 2.2.1: OECD guidelines for testing of chemicals (an overview)
- 2.2.2: CPCSEA guidelines for animal testing centre, ethical issues in animal studies
- 2.2.3: Animal models used in regulatory toxicology studies
- 2.2.4: Alternative methods in toxicology (*in vitro* tests)

Unit 3: Biostatistics**(15 lectures)****Learning Objectives:**

To make learners familiar with biostatistics as an important tool of analysis and its applications.

Learning outcome:

The learners will be able to collect, organize and analyze data using parametric and non-parametric tests. They will also be able to set up a hypothesis and verify the same using limits of significance.

3.1: Probability Distributions**(3 lectures)**

- Normal, Binomial, Poisson distribution, Z-transformation, p-value
- Probability - Addition and multiplication rules and their applications

3.2: Measures of Central Tendency and Dispersion (2 lectures)

Variance, standard deviation, standard error

3.3: Parametric and non-parametric tests (4 lectures)

Parametric tests: two-tailed Z-test and t-test

Non-parametric test: Chi-square test and its applications

3.4: Regression and Correlation (3 lectures)

Simple linear regression: main features, applications

Correlation coefficient and its significance

3.5: Testing of Hypothesis (3 lectures)

Basic concepts, types of hypothesis: Null hypothesis and Alternate hypothesis

Levels of significance and testing of hypothesis

Unit 4: Bioinformatics (15 lectures)

Learning objectives:

To introduce learners to bioinformatics – a computational approach to learning the structure and organization of genomes, phylogeny, metabolism and immunology.

Learning outcome:

The learners will become aware of the computational point of view of studying the genomes.

4.1: Introduction (2 lectures)

4.1.1: Introduction to Bioinformatics and Bioinformatics web resource (NCBI, EBI, ExPASy, OMIM, PubMed, OMIA)

4.1.2: Applications of Bioinformatics

4.2: Databases – Tools and their uses (4 lectures)

4.2.1: Biological databases:

Primary sequence databases:

Nucleic acid sequence databases (GenBank, EMBL-EBI, DDBJ)

Protein sequence data bases (UniProtKB, PIR, PDB)

Secondary sequence databases:

Derived databases - PROSITE, BLOCKS, Pfam/ Prodom, Structure databases and bibliographic databases

4.3: Sequence alignment methods (4 lectures)

4.3.1: BLAST, FASTA

4.3.2: Significance of sequence alignment

4.3.3: Pairwise sequence alignment (Needleman & Wunsch, Smith & Waterman methods)

4.3.4: Multiple sequence alignment (PRAS, CLUSTALW)

4.4: Predictive applications using DNA and protein sequences (5 lectures)

4.4.1: Evolutionary studies: Concept of phylogenetic trees, Parsimony and Bayesian approaches, synonymous and non-synonymous substitutions, convergent and parallel evolution

4.4.2: Pharmacogenomics: Discovering a drug: Target identification

4.4.3: Protein Chips and Functional Proteomics: Different types of protein chip, detecting and quantifying; applications of Proteomics

4.4.4: Metabolomics: Concept and applications

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T. Y. B. Sc. Zoology

Semester VI (Theory)

Course 18 Course Code: USZO604

Unit 1: Environment management

(15 lectures)

Learning objectives:

To introduce the learners to understand the importance of factors governing environment and its management.

Learning outcome:

Learners will be able to understand the different factors affecting environment, its impact and laws governing environmental management.

1.1: Natural resources and their classification (2 lectures)

Forest resources, water resources (surface and ground), mineral resources, food resources, energy resources: Renewable and non-renewable resources

1.2: Exploitation and modification of natural resources (2 lectures)

Impact on climate, flora, fauna & mineral resources

1.3: Sustainable development (3 lectures)

Ex-situ conservation (zoos, botanical gardens, cryogenics, seedbank, germplasm, gene bank), in-situ conservation (Bio-reserves, Sanctuaries & National parks)

1.4: Waste Management (2 lectures)

3 Rs (Reduce, Reuse & Recycle) of solid waste, e-waste, hazardous waste

1.5: Water management (2 lectures)

Rain water harvesting, watershed management, effluent treatment, recycling plants, control and treatment of water

1.6: Laws governing environment (4 lectures)

(Environment Protection Act), Air (Prevention and Control of Pollution) Rules - 1982, Water (Prevention and Control of Pollution) Rules - 1978, Hazardous Wastes (Management and Handling) Rules - 1989. EIA (Environmental Impact Assessment), ISO18001
Role of government, NGOs, International treaties and conventions in environmental protection & conservation

Unit 2: Wildlife Management

(15 lectures)

Learning objectives:

To introduce the learners to the importance of wildlife conservation.

Learning outcome:

Learners will be able to understand the wildlife habitat projects for animal protection.

2.1: Habit, habitat, territory & niche of animals (3 lectures)

Herbivores, carnivores; solitary, pack and herd

2.2: Threats to wildlife (6 lectures)

Diseases (zoonosis and reverse zoonosis), competition, hunting, poaching, encroachment, deforestation, tourism, overgrazing, human animal conflict and climate change

2.3: Techniques and methods of wildlife conservation (6 lectures)

Wildlife Census, conservation of wildlife - frozen zoo, schedules, rules, national and international conservation bodies; IUCN UNDP, FAO, ESA, INCPEN, CITES, CEEDS, WWF

Unit 3: Bioethics, Bioprospecting and Zoopharmacognosy (15 lectures)

Learning objectives:

To introduce the learners to understand the concept of ethics and prospecting in biology and importance of pharmacognosy.

Learning outcome:

Learners will be able to understand paradigms of discovery and commercialization of biological resources and knowledge gained by self medication by animals.

3.1: Bioethics (4 lectures)

Intellectual property rights and patenting, forms of protection, patents, copyrights, trade secrets, trademarks, patenting biological materials, live forms, genes and DNA sequences

3.2: Bioprospecting (4 lectures)

Traditional, modern bioprospecting, Chemical prospecting, Genetic prospecting, Bionic prospecting, Economic value and benefit sharing, Bioprospecting and conservation, pros and cons of bioprospecting

3.3: Zoopharmacognosy (7 lectures)

3.3.1: Definition, history and types

3.3.2: Self-medication and its mechanism

3.3.3: Methods of self-medication through - Ingestion – ants and mammals, Geophagy – invertebrates and birds

3.3.4: Absorption and adsorption

3.3.5: Topical application – birds and mammals

3.3.6: Applications of zoopharmacognosy - Social and transgenerational zoopharmacognosy

3.3.7: Value to humans

Unit 4: General Entomology (15 lectures)

Learning objectives:

To introduce the learners about the importance of insects and their application in different fields of human life.

Learning outcome:

Learners will be able to understand the role of useful and harmful insects in human life.

4.1: Introduction (1 lecture)

Definition, distinguishing features of insects, harmful and useful insects

- 4.2: Importance & Scope of Entomology, Branches of Entomology** (1 lecture)
Agricultural, Medical, Forest, Forensic & Industrial
- 4.3: Metamorphosis in insects** (3 lectures)
Definition, types, hormones
- 4.4: Insect pheromones, bioluminescence, sound production** (3 lectures)
Definitions, types, significance
- 4.5: General body structure of insects** (3 lectures)
a) Mouth parts - cutting, chewing, lapping, sucking, sponging
b) Modification of legs in insects - e.g. honey bee, cockroach, beetle
- 4.6: Significance of insects as biological tool** (4 lectures)
Biological weapon; tissue culture; gene study; Productive insects - honey bee, silk worm, lac insect; insect products; insects pests (general): bollworm, rice weevil, tribolium, flour moth, locust

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T. Y. B. Sc. Zoology Semester VI (Practical)

Course 15 Course Code: USZO601

1. Levels of organization

Minor Phyla

a. Acoelomate:

Phylum Acanthocephala (Spiny headed worms), e.g. Echinorhyncus

b. Coelomate:

Phylum Chaetognatha (Arrow worms), e.g. Sagitta

2. Taxonomy of phylum Chordata

a. Subphylum Urochordata (Sea squirts)

1. Class Larvaceae, e.g. Oikopleura

2. Class Ascidiacea, e.g. Ciona/ Herdmania

3. Class Thaliacea, e.g. Salpa/ Doliolum

b. Subphylum Cephalochordata:

Class Leptocardii, e.g. Branchiostoma (Amphioxus)

c. Subphylum Vertebrata:

I. Group Agnatha

1. Class Ostracodermi, e.g. Pharyngolepis
2. Class Cyclostomata, e.g. Petromyzon

II. Group Gnathostomata

i. Superclass - Pisces:

1. Class Placodermi (Armoured fishes), e.g. Bothriolepis
2. Class Elasmobranchi (Chondrichthyes), e.g. Rhinobatos
3. Class Holocephali (Chimaera), e.g. Rabbit fish / Rat fish
4. Class Dipnoi (Lung fishes), e.g. Protopterus (African lungfish)
5. Class Teleostomi, e.g. Latimera (Coelacanth), Catfish

ii. Superclass - Tetrapoda :

1. Class Amphibia

- a. Order Apoda, e.g. Siphonops/ Ichthyophis
- b. Order Anura, e.g. Alytes (Midwife toad)
- c. Order Urodela, e.g. Triton (Semi-aquatic salamander)

2. Class Reptilia:

- a. Order Synapsida, e.g. Dimetrodon
- b. Order Parapsida, e.g. Chasmosaurus (Dinosaur)
- c. Order Anapsida, e.g. Geochelone (Indian star tortoise)
- d. Order Diapsida, e.g. Mabuya (Skink)

3. Class Aves:

a. Subclass Archaeornithes, e.g. Archaeopteryx

b. Subclass Neornithes

- Superorder Paleognathae (Flightless birds), e.g. Emu, Penguin
- Superorder Neognathae (Flying birds), e.g. Flamingo, Vulture

4. Class Mammalia:

a. Subclass Prototheria (Egg laying mammals), e.g. Duck-billed platypus

b. Subclass Theria

- Infraclass- Metatheria (Marsupials/ Pouched mammals), e.g. Dasyurus (Tiger cat)
- Infraclass – Eutheria (Placental mammals), e.g. Gangetic Dolphin, Gorilla

3. Study of endoskeleton of shark:

- a. Axial (skull and vertebral column)
- b. Appendicular (pelvic and pectoral fins, pelvic and pectoral girdle)

Note: Visit to local fish market to study available vertebrates

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**T. Y. B. Sc. Zoology
Semester VI (Practical)**

**Course 16
Course Code: USZO602**

1. Effect of pH on activity of enzyme Acid Phosphatase
2. Effect of varying enzyme concentration on activity of enzyme Acid Phosphatase
3. Effect of varying substrate concentration on activity of enzyme Acid Phosphatase
4. Effect of inhibitor on the activity of enzyme Acid Phosphatase
5. Study of separation of LDH isozymes by agarose gel electrophoresis
6. To study the effect of enzymes in detergents
7. Study of mammalian tissues:
 - i. V. S. of Skin
 - ii. V.S. of Tooth
 - iii. T.S. of Stomach
 - iv. T.S. of Ileum
 - v. T.S. of Liver
 - vi. T.S. of Pancreas
 - vii. T.S. of Lung
8. i. Identification of following diseases or conditions (from slides or pictures) – Melesma, Vitiligo, Psoriasis, Bed sores, Necrosis, Oedema, Malaria, Filariasis, Leishmaniasis
 ii. Vidal's Test

T. Y. B. Sc. Zoology
Semester VI (Practical)

Course 17
Course Code: USZO603

1. To estimate phosphate phosphorus from sample water
2. To estimate BOD from sample water
3. To estimate COD from sample water
4. To estimate Nitrite Nitrogen and Nitrate Nitrogen from sample water
5. To study the intensity of sound by Decibel meter & prepare a survey report
6. To study acidity and alkalinity of sample water by methyl orange and phenolphthalein
7. To study the effect of CCl₄ on the level of enzyme activity in liver on aspartate and alanine amino transferase (*in vitro* approach)
8. To study the effect of paracetamol on the level of enzyme activity in liver on aspartate and alanine amino transferase (*in vitro* approach)
9. Following biostatistics practicals will be done using data analysis tool of Microsoft Excel (DEMONSTRATION in regular practicals) & manually:
 1. From the given data derive mean, standard deviation
 2. Correlation, regression analysis using given data
 3. Problems based on Z test
 4. Problems based on t test
 5. Problems based on Chi square test
 6. Problems based on ANOVA
10. Exploring the integrated database system at NCBI server and querying (Querying a nucleotide sequence, querying a protein sequence, use of operators (AND, OR & NOT))

11. Exploring tools on ExPASy
(Querying a nucleotide sequence, querying a protein sequence, use of operators (AND, OR & NOT))
12. Exploring BLAST tool (nucleotide sequence comparison)
13. Exploring Uniprot tool (protein sequence comparison)
14. Exploring bibliographic database PubMed (Data mining - Downloading a research paper on subject of interest, use of operators (AND, OR & NOT))
15. Indicate the distribution of genus/species/subspecies in the given world map w.r.t. to its realm and comment on the pattern of distribution
16. Indicate the realms and the fauna found in that realm on the given world map, justify

**T. Y. B. Sc. Zoology
Semester VI (Practical)**

**Course 18
Course Code: USZO604**

1. To estimate phosphate phosphorus from sample water
2. To estimate COD, BOD from sample water
3. To estimate Nitrite Nitrogen and Nitrate Nitrogen from sample water
4. To study the intensity of sound by Decibel meter
5. To study acidity and alkalinity of sample water by methyl orange and phenolphthalein
6. To observe the animals in the chart and place them in endangered, vulnerable category
7. To study different types of mouth parts: cutting, chewing, lapping, sucking, sponging
8. To study metamorphosis in insects: ametabolic - lepidoptera, hemimetabolic - cicada, holometabolic - butterfly, mosquito
9. To study mechanism of bioluminescence in insects (Need to design practical)
10. Insect pests and control: rice weevil, flour moth, aphids, tribolium

**T. Y. B. Sc. Zoology
Semester V (Practical)**

**Course 11
Course Code: USZO501**

Skeleton of Practical Examination Question Paper

Time: 9:30 a.m. to 2:30 p.m.

Total Marks: 50

- | | |
|---|-----------|
| Q.1 Identify and describe- | 06 |
| a. Symmetry / Coelom/ Segmentation / Cephalization (Any two) | |
| b. Observe the animal (photo/existing preserved specimen) and state its phylum giving reasons | |
| Q.2 Identify and classify giving reasons- | 12 |
| a. Protozoa / Porifera / Cnidaria | |
| b. Platyhelminthes / Nematelminthes | |
| c. Annelida / Arthropoda | |
| d. Mollusca / Echinodermata | |
| Q.3 Identify, classify and describe - | 03 |
| a. Phylum Hemichordata | |
| Q.4 Identify and describe- | 09 |
| a. Locomotion / Reproduction in Protozoa | |
| b. Canal system in Sponges / Metamorphosis in insects | |
| c. Spicules in sponges / Planktonic crustaceans | |
| Q.5 Field Report and Viva based on theory paper | 10 |
| Q.6 Journal | 10 |

**T. Y. B. Sc. Zoology
Semester V (Practical)**

**Course 12
Course Code: USZO502**

Skeleton of Practical Examination Question Paper

Time: 9:30 a.m. to 2:30 p.m.

Total Marks: 50

Q.1 Enumeration of erythrocytes - Total count	15
OR	
Q.1 Enumeration of leucocytes - Total count	
OR	
Q.1 Differential count of leucocytes	
Q.2 Estimation of serum /plasma total proteins by Folin's method	10
OR	
Q.2 Estimation of serum/plasma total triglycerides by Phosphovanillin method	
Q.3 Estimation of haemoglobin by Sahli's acid haematin method	10
OR	
Q.3 Estimate Erythrocyte Sedimentation Rate by suitable method	
OR	
Q.3 Determination of serum LDH	
Q.4 Latex agglutination test - Rheumatoid Arthritis	05
Q.5 Viva voce	05
Q.6 Journal	05

**T. Y. B. Sc. Zoology
Semester V (Practical)**

**Course 13 and Course 14
Course Code: USZO503 and USZO504**

Skeleton of Practical Examination Question Paper

Time: 9:30 a.m. to 2:30 p.m.

Total Marks: 50

- | | |
|---|-----------|
| Q.1 Isolation & Estimation of RNA by Orcinol method | 15 |
| OR | |
| Q.1 Isolation & Estimation of DNA by Diphenylamine method | |
| OR | |
| Q.1 Trypsinization and vital staining using Trypan blue stain | |
| | |
| Q.2 Separation of proteins by SDS-PAGE from the given sample | 10 |
| OR | |
| Q.2 Demonstrate transfer of liquids between burners aseptically | |
| OR | |
| Q.2 Demonstrate packaging of glassware for sterilization | |
| | |
| Q.3 Problems in genetics (Idiogram - 2 marks, Calculations - 3 marks) | 05 |
| | |
| Q.4 Identification | 15 |
| Spot a) Based on histology | |
| Spot b) Based on histology | |
| Spot c) Based on osteology - human axial skeleton | |
| Spot d) Based on osteology - human appendicular skeleton | |
| Spot e) Based on chick embryology | |
| | |
| Q.5 Submission of report (based on human traits following Mendelian inheritance) | 05 |

**T. Y. B. Sc. Zoology
Semester VI (Practical)**

**Course 15
Course Code: USZO601**

Skeleton of Practical Examination Question Paper

Time: 9:30 a.m. to 2:30 p.m.

Total Marks: 50

- Q.1** a. Identify, classify and describe **06**
(Any one example from Urochordates/ Cephalochordates / Ostracodermi / Cyclostomata/ Minor Phyla)
b. Observe the animal (photo/existing preserved specimen) and state its class giving reasons
(Any one example from superclass Pisces and Tetrapoda)
- Q.2** Identify and classify giving reasons - **15**
a. Pisces
b. Amphibia / Reptilia
c. Aves / Mammalia
- Q.3** Identify, sketch and label/ Identify and label marked portion in given diagram - **09**
a. Skull or Vertebra of shark
b. Fin of shark (Pectoral / Pelvic)
c. Girdle of shark (Pectoral / Pelvic)
- Q.4** Field Report and Viva based on theory paper **10**
- Q.5** Journal **10**

**T. Y. B. Sc. Zoology
Semester VI (Practical)**

**Course 16
Course Code: USZO602**

Skeleton of Practical Examination Question Paper

Time: 9:30 a.m. to 2:30 p.m.

Total Marks: 50

Q.1 Demonstrate the effect of _____ on the activity of acid phosphatase **15**
(Substrate concentration/pH variation/Enzyme concentration/Inhibitor concentration)

Q.2 Study of separation of LDH isozymes by agarose gel electrophoresis **10**
OR

Q.2 To study the effect of enzymes in detergents

OR

Q.2 Perform Vidal's Test and give the clinical significance of the result

Q.3 Identify and describe a, b, c, d, e **15**

a and b - Study of mammalian tissues (V. S. of Skin, V.S. of Tooth,
T.S. of Stomach, T.S. of Ileum, T.S. of Liver, T.S. of Pancreas
T.S. of Lung)

c and d - Identification of following diseases or conditions (from slides or pictures) –
Melesma, Vitiligo, Psoriasis, Bed sores, Necrosis, Oedema, Malaria, Filariasis,
Leishmaniasis

e – Interpret the pathological report – blood / urine / stool

Q.4 Viva voce **05**

Q.5 Journal **05**

**T. Y. B. Sc. Zoology
Semester VI (Practical)**

**Course 17 and Course 18
Course Code: USZO603 and USZO604**

Skeleton of Practical Examination Question Paper

Time: 9:30 a.m. to 2:30 p.m.

Total Marks: 50

Q.1 Demonstrate the effect of CCl₄ on the level of enzyme activity of aspartate/alanine amino transferase in liver (*in vitro* approach) **15**

OR

Q.1 Demonstrate the effect of paracetamol on the level of enzyme activity of aspartate/ alanine amino transferase in liver (*in vitro* approach)

Q.2 Estimate Phosphate Phosphorus/ Nitrite Nitrogen and Nitrate Nitrogen /acidity /alkalinity /COD /BOD from sample water **10**

OR

Q.2 Demonstrate the use of bioinformatics tools to explore DNA, Protein sequence

Q.3 Indicate the distribution of genus/species/subspecies in the given world map w.r.t. to its realm and comment on the pattern of distribution **05**

OR

Q.3 Indicate the realms and the fauna found in that realm on the given world map, justify

Q.4 Problems in Biostatistics **06**

Q.5 Identification **06**

Spot a) Based on types of mouth parts

Spot b) Based on types of metamorphosis

Spot c) Based on insect pest

Q.6 Submission of report (based on sound/ noise measurements using sound meter) and journal (Report submission – 3 marks; Journal – 5 marks) **08**

TYBSc proposed practical pattern for revised syllabus in the subject of Zoology

For students opting for 6 units of Zoology to be effective from academic year 2017-2018

Practical pattern for Semester V

Course Code	Practicals	Marks
US ZO P05	Practicals based on US ZO 501 (Paper 1)	50
US ZO P05	Practicals based on US ZO 502 (Paper 2)	50
US ZO P06	Practicals based on US ZO 503 and US ZO 504 (Papers 3 and 4)	50
US ZO P06	Project component * (kindly refer to the note below for details)	50
		Total marks = 200

Details of Project component* for Semester V are as follows:

1. In semester V the students will submit an outline / scheme of the project proposal.
2. Actual execution/practical work of this project to be done only in semester VI.
3. The project proposal will be prepared by a group of students (not more than 5 in a group).
4. The project proposal will involve study of topic (covered in the UG syllabi) / interdisciplinary topic.
5. Each group to be mentored by one teacher from the department.
6. The concerned teacher will mentor the group by giving orientation/instructions about writing the project proposal.
7. The outline / scheme of the project proposal will include literature search/survey, introduction, objectives, purpose and rationale, materials and methods, expected outcomes/results, relevance of the project and bibliography.
8. The student will prepare a hard copy of the project proposal which will have titles discussed in point no. 7.

Evaluation of Project Proposal during practical examination for Semester V will be as follows:

1. Although the students would have prepared the project proposal as a group in Semester V, however, they are expected to submit the project proposal individually.

- Each student will submit a project proposal (hard copy) during practical examination.
- The soft copy of this project proposal can be kept in the department for documentation and record.
- The project proposal will be evaluated by **internal examiner** (preferably the mentor) and external examiner as per the evaluation criteria given below:

Title	Marks
Literature search/survey	04 marks
Objectives, Purpose and Rationale	04 marks
Materials and Methods	04 marks
Expected outcome/ hypothesis	03 marks
Work plan with milestones/ Timeline	03 marks
Overall approach and conduct	07 marks
Total	25 marks

- The **external examiner** will evaluate the hard copy of the project proposal as per the evaluation criteria given below:

Title	Marks
Literature search/survey	04 marks
Objectives, Purpose and Rationale	04 marks
Materials and Methods	04 marks
Expected outcome/ hypothesis	03 marks
Bibliography	03 marks
Viva voce based on the proposal	07 marks
Total	25 marks

Practical pattern for Semester VI

Course Code	Practicals	Marks
US ZO P07	Practicals based on US ZO 601 (Paper 1)	50
US ZO P07	Practicals based on US ZO 602 (Paper 2)	50
US ZO P08	Practicals based on US ZO 603 and US ZO 604 (Papers 3 and 4)	50

US ZO P08	Project component * (refer to the note below for details)	50
		Total marks = 200

Details of Project component* for Semester VI are as follows:

1. In semester VI the students will actually execute their respective project submitted in Semester V.
2. Actual execution may involve laboratory/table work and or field work and or survey as per the specifications mentioned in their project proposal.
3. The mentor for the respective group will keep a track of the actual execution of the project.
4. After completion of the practical work the student will prepare a '**Dissertation**' which will have an abstract/synopsis, brief introduction, materials and methods, observations, interpretation of results, conclusion and discussion, future plans/extension of work.
5. The student will also give a '**Power point presentation**' about the project (not more than 7 slides and not more than 7 minutes per presentation).

Evaluation of Project Proposal during practical examination for Semester VI will be as follows:

1. The external examiner will evaluate the '**Dissertation**' carrying **30** marks as per the evaluation criteria given below:

Title	Marks
Abstract/synopsis	05 marks
Materials and Methods	05 marks
Observations	05 marks
Interpretation of results	05 marks
Conclusion and Discussion	05 marks
Relevance of work	05 marks

Total	30 marks
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2. The external examiner will evaluate the ‘**Power point presentation**’ carrying **20** marks as per the evaluation criteria given below:

Title	Marks
Content of the presentation	05 marks
Quality of the presentation	05 marks
Presentation skills	05 marks
Viva /Question- Answer session	05 marks
Total	20 marks

Document prepared by:

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UNIVERSITY OF MUMBAI



Program: B.Sc.

(Credit Based Semester and Grading System)

Course: Environmental Science
(Applied Component)

Syllabus for Semester V & VI

(with effect from the academic year 2017-18)

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PREFACE

Applied Component was introduced for T. Y. B. Sc. class in the academic year 1979-80 with a view to enhance the essence for employability. The syllabus is a blend of concepts with four electives. It gives me immense pleasure to present these four applied component courses namely Marine Science, Fishery Biology, Economic Entomology and Environmental Science under the umbrella of BOS in Zoology.

In the syllabi of these applied components, applied topics having commercial propositions have been incorporated that further adds to the enhancement of entrepreneurial potential and skills amongst the learners. In the past our syllabus focused mainly on theory as a way of providing knowledge base and preparation for students. We have attempted to go beyond this tradition, while doing so; equal emphasis is laid on theory and corroborative practicals. From the academic year 2011-12, the University has introduced Credit Based Semester and Grading System (CBSGS). Accordingly the existing syllabi of these applied components were restructured to fit into the CBSGS pattern. The concept of flexi syllabus was introduced offering opportunity to learners to study any four out of a total of eight units in each course. Now that the syllabus is restructured and to be introduced from the academic year 2017-2018, we have included a novel concept of open unit and case studies. This approach, I'm sure will enhance the critical and analytical thinking abilities of the students.

I take this opportunity to thank the experts in various fields for giving valuable, beneficial and constructive suggestions during framing of the syllabus. The syllabus committee under the convenorship of Mr. Vinayak Dalvie has done a commendable job of timely framing the syllabus with a highest degree of precision and accuracy. While appreciating the efforts, I also express my thanks and heartfelt gratitude to the entire team.

– Dr. Anita Jadhav
Chairperson,
Ad-hoc BOS in Zoology

PREAMBLE

As a convener when I mooted the concept of flexi-syllabus, first of its kind, in the academic year 2009-10 it was grossly misconstrued. To add to it I also placed an idea of including case studies and introducing a new concept of 'Open Unit'. Both were rejected then. I had also proposed a new subject 'Entrepreneurial and Industrial Biology' in place of the existing Applied Components usually offered by the students of Biological Sciences. Twenty workshops in different districts with teachers and students of various subjects were conducted to explain these four concepts. A twenty one days refresher course for teachers, sponsored by UGC was also conducted in the new subject of 'Entrepreneurial and Industrial Biology' which was much appreciated by the then Director of NAAC, Prof H. A. Ranganath, who is from Biological Sciences, understanding the potential of the subject. However, implementation was postponed for technical reasons thus permitting innovation limited to the flexi-syllabus, implemented in 2010-11, which has inherent capacity to cater to the diverse needs of the region and the industry by allowing students and teachers to choose a desired capsule of eight topics, with various permutations and combinations from the menu of sixteen based on the interest, resources, expertise and need. It took care of a range of students by also providing learners' space to high IQ students. Yet the possibility of exclusion of some important topics cannot be ruled out apart from some new avenues developed during the lag phase of revision of syllabi. Open unit will permit a good teacher to keep pace with the development and adopt latest topics instantly without waiting till it becomes obsolete in the gap of 5 years that the University generally takes to revise the syllabus. It may also allow students to learn the existing topic in more details and depth under the open unit thus making them specialized in need based areas enhancing employability. Assignments would add to their understanding of Government schemes, regulations and market, while projects will augment Business Sense or Scientific Acumen, as the case may be. Case studies and simulations, introduced for the first time in Zoology, would pose challenge for true application of knowledge to real life situations with thought provoking questions demanding analytical solutions. Pedagogy of such dynamic syllabus will range from use of ICT in the class to teaching directly in the field with a blend of participative and experiential learning with group dynamics gaining true knowledge apart from developing personality of the students and above all making them apply 'Common Sense' which is the essence of life. I am sure dedicated team of Zoologists which has placed the subject on top in the past 5 years is poised to make it a success in every college befitting the purpose of introducing applied component by the University in the academic year 1979-80.

- VINAYAK DALVIE
Convener,
Syllabus Committee

PEDAGOGY

The concept of having a flexi syllabus is a unique feature of this syllabus and implementing it creatively and diligently would be a meaningful exercise. The concept of flexi syllabus would ensure that learner and facilitator have the liberty to select any four units out of eight which can be decided by both the stake-holders collectively. While selecting, both shall ensure that it is done systematically, maintaining the relevance of topics in every unit taught in the semester. An exciting aspect adding a new dimension to the flexi-syllabus concept is the idea of making various permutations and combinations of the units in every semester that would take into consideration the need, resources and the expertise that the department, college possesses/ provides or can make available.

A major thrust should be to direct the learner to maximize the use of ICT, watch films related to the topics, You-tube clippings and extra read material in the form of articles and magazines for all the topics, 'Buzz sessions' should be held after showing films, short video clippings etc, whereby the learner is encouraged to summarize the contents, or debate or ask questions related to the topics. This exercise would initiate a 'thought process' with respect to the subject, ensuring that the learner develops a habit of ruminating over the information to gain conceptual clarity and insights.

It is recommended that the facilitator employs a variety of approaches in teaching learning methods that are necessarily active and participatory in nature. These may include debate and discussions, field trips, study tours and industrial visits, both short and long, to places of environmental concerns relevant to the units prescribed and selected for teaching so as to provide desired exposure. For e.g. Units on Biodiversity Conservation and Ecotourism, Industrial Consultancy, Business Analytics of Environment testing, Neo avenues should not be taught only in class-rooms but, on locations, to promote experiential learning.

'Case studies' should be conducted through discussion in a group of 10 students for every case. A case study approach to investigate an environmental issue would help the learner to appreciate the importance of gathering relevant evidence, evaluating its quality and interpreting the results. It must be developed and presented by the facilitator (teacher) with thought provoking approaches expecting students to think analytically and derive an appropriate solution after critically evaluating all the solutions, given within the group.

The inclusion of the concept of 'open unit' encourages the creative teacher-facilitator to choose a topic from the existing units which needs to be further elucidated or taught or researched so as to gain in depth knowledge on the topic and can hence be covered extensively. On the other hand the topic taught could also be a 'need based' one either comprehensively covered by the syllabus or totally ignored. If the facilitator has the ability to include a newly developed area, within the vicinity, then it may be included in the open unit with the consent of the Head of the Department and the Principal of the institution.

This new syllabus takes into consideration the applied approach, and therefore the topics chosen are practical although few theory based topics are retained. All the practical experiments are application oriented and simple since the learners have had exposure to them while performing them in the former years or in their mainstream subject covered under the science streams. While performing them the learner develops the aptitude of putting them into practice scientifically, logically and appropriately for studying various aspects of the environment and the pollution caused due to anthropogenic activities. Facilitators must encourage the learners to comprehend and generate ideas for the applicative value of these experiments.

Furthermore the syllabus has also incorporated the skeleton question paper for the practical examination and the model question paper for the theory units so as to resolve any doubts and ensure uniformity in the drafting of the question paper pattern for the semester end examination.

Co-Convenors,

Syllabus Committee

T. Y. B. Sc.
 Credit Based Semester and Grading system
Environmental Science & Pollution (Applied Component)
Syllabus
 (to be implemented from the academic year 2017-18)

Semester V
Applied Environmental Sciences

Applied Environmental Sciences				
Theory (Any four units to be opted)				
Course	Unit	TOPIC	Credits	L/Week
USACEVS501	1	Introduction to Environment and Pollution	2	4
	2	Green Chemistry and Sustainability		
	3	Alternate Energy Resources		
	4	Applications of Analytical methods		
	5	Green/Environmental Audit		
	6	Industrial Consultancy		
	7	Neo-avenues		
	8	Case Study and Simulation		
Practical				
USACEVS5P1		Practicals based on CourseUSACEVS501	2	4

Semester VI
Environmental Management

Theory (Any four units to be opted)				
Course	Unit	TOPIC	Credits	L/Week
USACEVS601	1	Business Analytics of Environment Testing	2	4
	2	Ecological Restoration		
	3	Impact Assessment through Ecological modeling		
	4	Finance		
	5	Biodiversity Conservation and Ecotourism		
	6	Climate Change		
	7	Environmental Education and Legislation		
	8	Open Unit		
Practical				
USACEVS6P1		Practicals based on Course USACEVS601	2	4

Semester V: Theory
Applied Environmental Sciences
Course code: USACEVS501
(Any four units to be opted)

Lectures 60
Credits 2

Unit 1: Introduction to Environment and Pollution

Objective:

- *To revise the important concepts of environment and its impact on the inter-relationship between various components of the environment.*
- *To recognise and realise, the harmful effects of pollutants on the environment, when their balance shifts as a result of anthropogenic activities.*

Desired Outcome:

- *Learner shall comprehend the impact of the interrelationship between various components of environment.*
- *Learner will apply the knowledge of pollutants to undertake research projects/studies.*

1.1 Components of environment; biotic and abiotic. Composition of various segments of environment—atmosphere, hydrosphere, lithosphere, biosphere (with respect to composition and interrelationship).

1.2 Types of pollution

1.2.1 Water pollution: Pesticides and heavy metals.

1.2.2 Air pollution: Challenges posed by present day pollutants.

1.2.3 Others- Noise and nuclear pollution.

Unit 2: Green chemistry and Sustainability

Objective:

- *To direct the learner's aptitude and skills to develop innovative chemical technology, aimed to reduce or eliminate the use or generation of hazardous substances.*

Desired Outcome:

- *Learner would be critical and creative during the designing, manufacturing and utilization of chemical products, which would reduce or eliminate the use or generation of hazardous substances.*

2.1 The Twelve Principles of Green Chemistry.

2.2 Sustainable Development- Principles and sustainable development indicators.

2.3 Areas highlighted by Agenda 21.

2.4 Transition from Industrial economy to Green economy.

Unit 3: Alternate Energy Resources

Objective:

- *To comprehend, the importance of alternative energy resources.*
- *To emphasise the need, to conserve the energy resources.*

Desired Outcome:

- *Learner shall value the alternative energy resources and hence follow the 4 R's (Reduce, Reuse, Recycle & Reinvent).*
- *Learner may discover and design products, operations or processes, which conserve the energy resources.*

3.1 Solar energy, wind energy, tidal energy, nuclear energy.

3.2 Biomass & bio-fuels, petro crops.

3.3 Use of wastes: Water-based biomass, energy from waste & solid waste.

Unit 4: Applications of Analytical Methods**Objective:**

- *To re-familiarise the principles, methods as also develop perspectives on the application of analytical methods to the study of environment.*

Desired outcome:

- *Learner shall develop skills in instrumentation used for the study and analysis of various substances related to the environment.*

4.1 Sampling: Various methods for gases, liquids and solids (Principles and applications only)

4.2 Analysis:

4.2.1 Classical Methods-Volumetric (Acid-Base; Redox, Complexometric titrations), Gravimetric.

4.2.2 Modern Methods -Spectroscopy

a) Absorption Methods-Colorimetry and Spectrophotometry, Turbidometry, Nephelometry, Atomic Absorption Spectroscopy, Fluorescence Spectrometry, X-Ray Absorption Spectroscopy, X-Ray Diffraction.

b) Emission Methods: Flame Photometry, Atomic Emission Spectroscopy.

4.2.3 Separation Methods

a) Extraction Techniques- Distillation, Solvent Extraction and Column Chromatography.

b) Chromatography- Gas Chromatography (GSC, GLC) HPLC.

c) Electrophoresis.

4.3 Interpretation and presentation- Introduction to the application of statistical tools and software.

Unit 5: Green / Environmental Audit**Objective:**

- *To introduce the learner to the concept of green environmental audit.*

Desired outcome:

- *Learner and facilitator both will develop conceptual clarity on pollution control and green environmental auditing, besides gaining knowledge about these programmes in the Indian scenario.*

5.1 Concept & economics of pollution control.

5.2 Environmental accounting: definition, concept & issues.

5.3 Concept of environmental audit.

5.4 Benefits of environmental auditing.

5.5 Environmental audit programmes in India.

Unit 6: Industrial consultancy

Objective:

- *To expose and augment the avenues of employability and entrepreneurship in the arena of industrial consultancy.*
- *To ensure that the learner applies the learning gained during the undergraduate days for enhancing his skills and employability quotient in relevant industries.*
- *To develop an understanding of the MPCB norms and procedure for liaison.*

Desired outcome:

- *Learner and facilitator both will be exposed to the various areas and facets of industrial consultancy, and shall also develop competency and confidence to explore it.*
- *Learner will be able to grasp the importance of various norms required for MPCB permits and procedure for liaison.*

6.1 Types of consultancies.

6.2 Calculating consultancy fees.

6.3 Industrial marketing.

6.4 Logistic services for medical, microbiological, carcinogenic, toxic, nuclear waste.

6.5 MPCB and CPCB norms and liaison.

Unit 7: Neo Avenues

Objective:

- *To expose the learner to the array of environmental related domestic products with a view to develop, market and discover their application for the purpose of a better environment.*

Desired Outcome:

- *Learner will develop an acumen to tap the potential for entrepreneurship with respect to environment related products and indoor plants.*

7.1 Understanding market niche of domestic pollution control devices –air purifiers, smoke absorbers and chimneys, Heating, Ventilation and A.C. Systems (HVAC).

7.2 Green marketing:

7.2.1 Greenhouse gas reduction market.

7.2.2 LOHAS (Lifestyle Of Health and Sustainability) and Green Washing.

7.3 Indoor Plants to Reduce Pollution:

7.3.1 Radiation absorbing plant, example – *Adiantum capillus-veneris* (Venus or Black Maiden hair fern), *Ocimum sanctum* (Holy basil or Tulsi), *Hedera helix* (Ivy).

7.3.2 Natural air filtering system, example – *Chlorophytum comosum* (Spider plant), *Monstera deliciosa* (Swiss cheese plant)

7.3.3 Smoke absorbing plant, example – *Philodendron bipinnatifidum* (Lacy tree philodendron or Selloum), *Dracena reflexa* (Song of India), *Dendranthema grandiflora* (Chrysanthemum or Shevanthi), *Gerbera jamesonii* (Transvaal daisy)

Unit 8: Case Studies and Simulations

Case Studies and Simulations is one of the eight units and hence may or may not be opted by the college. If opted, teachers in consultation with the students shall select the case studies for this unit every year, if required, and shall seek endorsement of the Head and the Principal.

Colleges/institutes have to select the topics as per their needs and available resources. It is pertinent to note that the case studies and simulations shall be operational and available in the syllabus only until it comes under the scope of internal assessment.

Objective:

- *To encourage abilities of learner to better understand the concepts.*
- *To develop better analytical abilities to assess varying dimensions while making decisions.*

Desired outcome:

- *Learner will comprehend and develop better acumen so as to, take wise and necessary decisions while participating in environment related projects or framing policies/assessing environmental damages/carrying out entrepreneurial activities beneficial to environment.*
- *Learner shall primarily learn to tackle real life situations with common sense.*

(Any eight from suggested below or more, developed by teacher)

8.1 Avhan- Disaster management model of the Chancellor.

8.2 Shirpur model of water conservation.

8.3 Powai lake conservation, Mumbai.

8.4 Fukushima Daiichi nuclear disaster, Japan.

8.5 Itai-itai disease for cadmium toxicity.

8.6 Chernobyl disaster.

8.7 Environmental Education in Finland – A Case Study of Environmental Education in Nature Schools.

8.8 An international environmental law case study: Bhopal Gas Tragedy.

8.9 Case Study on Green Building, Hotel Orchid- Ecotel.

8.10 Mumbai rain disaster of 26th July 2005.

8.11 Serial bomb blasts.

8.12 Tsunami at Andamans.

8.13 Govardhan Eco Village.

8.14 Planning development of prescribed land with constraint (Simulation).

8.15 Ralegan Siddhi / Hiware bazaar as model of environment conservation.

Semester V Practicals
Course Code USACEVS5P1

2 Credits

- 1) Study of Physico-chemical properties of sewage/ effluent water: conductivity, turbidity, dissolved oxygen, salinity & total hardness.
- 2) Estimation of Pollution: BOD & COD.
- 3) Microbiological parameters: MPN and Gram staining
- 4) Study of air micro flora.
- 5) Measurement of intensity of light by Lux meter.
- 6) Bioassay studies using water hyacinth or any suitable material.
- 7) Study of types of pollution: water, air, land.
- 8) Study of product derived by application of green chemistry (Laundry detergents, Polylactic acid packaging, Green paints, Pharmaceutical drugs- Ibuprofen)
- 9) Study of application of alternative energy resources (Solar panel, Biogas plant, Photovoltaic cell, Windmill, Nuclear reactor, Harnessing tidal energy)
- 10) Study of applications of various Spectroscopy (any 4), Chromatography and Electrophoresis instruments.
- 11) Study of logistic services for medical, toxic waste (Containers, Incinerator, Autoclave).
- 12) Study of indoor plants for reduction of pollution (*Adiantum*, *Ocimum sanctum*, *Ivy*, *Chlorophytum*, *Monstera*, *Philodendron*, *Dracena*, *Chrysanthemum*, *Gerbera*).
- 13) Photographic documentation of environment related issues/ conservation
Submission of soft & hard copy of 5 original photographs taken by the learner (Exif details required)
- 14) Assignment (may be submitted in a group not exceeding three students).

Please refer to Annexure- I for suggested topics for assignment.

***Note-** The practicals may be conducted by using preserved specimens/permanent slides authorised by the wild life and such other regulating bodies though it is strongly recommended that the same should be taught by using photographs/audio-visual aids/simulations/ models etc. as recommended by the UGC and as envisaged in the regulations of the relevant monitoring bodies. No new specimens, however, shall be procured for the purpose of conducting practicals mentioned here-in above.

N.B:

- I) It is pertinent to note that we have to adhere strictly to the directions as given in the UGC Circular F14-4/2006 (CPP-II).
- II) Apart from the institutional Animal Ethics Committee (IAEC) and any other Committee appointed by a Competent Authority/Body from time to time, every college should constitute the following Committees:

- 1) A Committee for the Purpose of Care and Supervision of Experimental Animals (CPCSEA) and
- 2) A Dissection Monitoring Committee (DMC) to ensure that no dissections or mountings are done, using animals.

Composition of DMC shall be as follows:

- i) Head of the Concerned Department (Convener/Chairperson)
- ii) Two Senior Faculty Members of the concerned Department
- iii) One Faculty of related department from the same College
- iv) One or two members of related department from neighbouring colleges.

<p>USE OF ANIMALS FOR ANY EXPERIMENT/DISSECTION/MOUNTING IS BANNED. SIMULATIONS, AUTHORISED PERMANENT SPECIMENS/SLIDES, CHARTS, MODELS AND OTHER INNOVATIVE METHODS ARE ENCOURAGED.</p>
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Semester VI: Theory
Environmental Management
Course code: USACEVS601
(Any four units to be opted)

Lectures 60
Credits 2

Unit 1: Business Analytics of Environmental Testing

Objective:

- *To explore business analytics of environmental testing and monitoring laboratories for research purposes and as career ventures.*

Desired outcome:

- *Learner will gain knowledge about environmental testing and monitoring laboratories, air, water quality and noise exposure standards and methods of physico-chemical and bacteriological sampling.*
- *Learner will be exposed to the know-how regarding establishing environmental testing and monitoring laboratories.*

1.1 Establishing environmental testing laboratory.

1.2 Methods of monitoring and control of air pollution. Air quality standards.

1.3 Physico–chemical and bacteriological sampling and analysis of water quality standards.

1.4 Measurement of noise and its indices. Noise exposure levels and standards.

Unit 2: Ecological restoration

Objective:

- *To focus the learner towards the immediate need to develop and practise the present and future systems, processes, technologies used for treatment of domestic waste water and industrial effluents.*
- *To seek and explore alternatives to conventional resources.*

Desired outcome:

- *Learner will study and comprehend the treatment practices applied for domestic waste water and industrial effluents.*
- *Learner will be equipped with the knowledge of some alternatives to conventional resources.*

2.1 Domestic waste water treatment.

2.2 Effluent treatment of Industrial waste.

2.3 Bioremediation.

2.4 Alternatives to conventional resources: biodegradable plastic, biodiesel, bio ethanol& bio pesticides.

2.5 Developing effluent treatments.

Unit 3: Impact Assessment through Ecological Modelling

Objective:

- *To introduce the learner to the concept of statistical modelling and neural networking.*
- *To direct and broaden the perspective of the learner to comprehend the importance of modelling while summarising the findings of research and survey data, or while accepting new applications in systems and processes.*

Desired outcome:

- *Learner will develop an understanding on the concept, application and limitation of modelling as a tool for summarising or applying the research and survey findings.*
- *Learner will develop skills on the application of neural networking and statistical modelling.*

3.1 Concept, applications and limitations.

3.2 Impact prediction with physical models.

3.3 Introduction to the concept of Artificial Neural Networking (ANN) and statistical modelling.

Unit 4: Finance

Objective:

- *To introduce the various concepts of costing, book keeping and final accounts.*

Desired outcome:

- *Learner will gain an insight into the basics of costing, book keeping and accountancy.*
- *Learner will be equipped to apply the concepts in his entrepreneurial ventures.*

4.1. Costing

4.1.1. Basic concept: Types of cost (historical, standard and managerial).

4.1.2. Budget: Budgetary control (process, batch, job and service).

4.1.3. Variances: Material, labor and overheads.

4.2. Basic accountancy:

4.2.1. Basic terms, golden rules in accounts, types of accounts (Indian), journal entry, ledger posting, subsidiary book, single column cash book, double column cash book.

4.2.2. Depreciation: fixed installment, reducing balance method.

4.2.3. Bank reconciliation.

4.2.4. Rectification of error.

4.2.5. Final account.

Unit 5: Biodiversity Conservation & Ecotourism

Objective:

- *To sensitize the learner towards the importance of conserving the existing biodiversity.*
- *To explore possibilities within learners to be nature enthusiasts, passionate naturalists, adventurers and eco friendly tourists.*

- *To tap the ecotourism avenues within and outside the country.*

Desired outcome:

- *Learner will develop aptitude to examine and assess the outcome of the framework of current biodiversity hotspots and biosphere reserves.*
- *Learner will be able to list the different aspects of wildlife photography and inspect the positive and negative aspects of it, also be able to recommend how wildlife photography can support biodiversity conservation.*
- *Learner will be able to assess the future challenges that ecotourism can generate for biodiversity conservation.*

5.1 Hotspots of biodiversity and biosphere reserve.

5.2 Strategies for biodiversity conversation (in-situ and ex-situ).

5.3 Commercial wildlife photography.

5.4 Ecotourism—definition, policies and practices.

Unit 6: Climate Change

Objective:

- *To awaken the learner towards focussing on the critical issue of climate change.*
- *To establish the impact of climate change, the greatest destabilizing force that undermines global economy, and threatens our health.*

Desired outcomes:

- *Learner will ponder upon and find out the what, why, where, whom and which of climate change and global warming.*
- *Learner will be able to identify and evaluate the effects of the different sources of greenhouse substances.*

6.1 Introduction to climate change, global warming and its effects.

6.2 Greenhouse substances: Sources & effects.

6.3 Geospatial technology- Remote Sensing & GIS.

6.4 Role of IPCC in climate change monitoring; Kyoto Protocol, Montreal Protocol, Earth Summit & UN Convention on Climate Change.

Unit 7: Environmental Education & Legislation

Objective:

- *To develop the knowledge and thinking ability regarding environmental issues. To help the learner to acquire a set of values for environment protection.*

Desired outcome:

- *Learner will imbibe positive changes in attitudes, commitments and civic actions required to combat harmful effects of anthropogenic activities and development on environment.*
- *Learner would inculcate ethical values and responsibilities towards protection of environment.*
- *Learner will be equipped to implement goals of environment protection.*

- 7.1 Goals, objectives & principles of environmental education.
- 7.2 Environmental education programmes in India.
- 7.3 Environmental organizations & agencies-CITES, EPA, IUCN & MAB.
- 7.4 Environmental laws in India: Wild life Protection Act, 1972, Water Prevention & Control of Pollution Act, 1974, Air Prevention & Control of Pollution Act, 1981, Environment Protection Act, 1986 & Biological Diversity Act, 2002.

Unit 8: Open Unit

Open unit is one of the eight units that may or may not be opted by the college. Teachers in consultation with the students shall define syllabus under this unit every year, if required, and shall seek endorsement of the Head and the Principal.

Colleges/institutes have to select the topics as per their needs and available resources. It is pertinent to note that the open unit shall be operational and available in the syllabus only until it comes under the scope of internal assessment.

Objectives:

- *To teach any one of the units prescribed in the syllabus with more details and in depth leading to specialization in the capsule of units selected.*
- *To incorporate the topics of special need of the area, that is otherwise not covered in the syllabus.*
- *To give scope to creativity and wisdom of a teacher who wants to deal with the latest developments in the subject without waiting for the university to revise the syllabus.*

Semester VI Practicals

Course Code USACEVS6P1

2 Credits

- 1) Study of soil microflora and determination of sedimentation rate.
- 2) Study of physical properties of soil: Temperature, moisture, & texture of soil.
- 3) Study of chemical properties of soil: pH, Organic matter and Calcium carbonate.
- 4) Detection of heavy metal cations : Zinc, Cadmium, Lead from soil sample.
- 5) Population analysis by Quadrant method & Line transect method.
- 6) Observation & study of indicator species.
- 7) Study of air & noise pollution monitoring device, geospatial instrument.
- 8) Study of any five biodiversity hotspots, bio reserves of India.
- 9) Study of any four effects of global warming and climate change.
- 10) Study of ANN chart and statistical model.
- 11) Study the role of environmental organisations and agencies (CITES, EPA, IUCN & MAB).
- 12) Study of environmental laws of India.
- 13) Problems on accounting/costing.
- 14) Study of microbes & plants used in bioremediation.
- 15) Study of biodegradable plastic products, bio pesticides brands.
- 16) Visit to any industry/laboratory/plant/national park and submission of report.
- 17) Project and submission of report (Project report may be submitted in a group not exceeding three students).

Please refer to Annexure- II for suggested Field Visits and Annexure III for suggested topics for projects for Course code USACEVS6P1.

***Note- The practicals may be conducted by using preserved specimens/ permanent slides authorised by the wild life and such other regulating bodies though it is strongly recommended that the same should be taught by using photographs/audio-visual aids/simulations/ models etc. as recommended by the UGC and as envisaged in the regulations of the relevant monitoring bodies. No new specimens, however, shall be procured for the purpose of conducting practicals mentioned here-in above.**

N.B:

- I) It is pertinent to note that we have to adhere strictly to the directions as given in the UGC Circular F14-4/2006 (CPP-II).
- II) Apart from the institutional Animal Ethics Committee (IAEC) and any other Committee appointed by a Competent Authority/Body from time to time, every college should constitute the following Committees:
 - 1) A Committee for the Purpose of Care and Supervision of Experimental Animals (CPCSEA) and
 - 2) A Dissection Monitoring Committee (DMC) to ensure that no dissections or mountings are done, using animals.

Composition of DMC shall be as follows:

- i) Head of the Concerned Department (Convener/Chairperson)
- ii) Two Senior Faculty Members of the concerned Department
- iii) One Faculty of related department from the same College
- iv) One or two members of related department from neighbouring colleges.

<p>USE OF ANIMALS FOR ANY EXPERIMENT/DISSECTION/MOUNTING IS BANNED. SIMULATIONS, AUTHORISED PERMANENT SPECIMENS/SLIDES, CHARTS, MODELS AND OTHER INNOVATIVE METHODS ARE ENCOURAGED.</p>
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References and Additional Reading

USACEVS501 & USACEVS601

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- 2) An Advanced Textbook on Biodiversity, K.V. Krishnamurthy, Oxford & IBH Publishing Co. Pvt. Ltd. 2009.
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- 5) Concepts of Ecology, E. J. Kormandy, Prentice Hall of India (Pvt.) Ltd.
- 6) Ecological Methods of Field & Laboratory Investigations, P. Michael, Tata Mc Graw Hill.
- 7) Ecology & Quality of our Environment, Charles H. Southwid, D. Van Nostrand Co. N.Y. 1976.
- 8) Ecotourism, Ecorestoration & Development, Solomon Raju, New Central book agency, 2007.
- 9) Environment, e-book, Shankar A.G.
- 10) Environmental Accounting, N. Das, S. Chand & Company. 1997.
- 11) Environmental Biology, P.D. Sharma, Rastogi Publications 1996.
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- 13) Environmental Impact Assessment Methodologies, Anjaneyulu Y., B.S Publication, Hyderabad. 2002.
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- 16) Environmental Pollution & Health Hazards in India, R. Kumar, Abhish Publ. House, New Delhi 1987.
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- 23) Environmental Studies: From crisis to cure, Rajagopalan R., Oxford Higher Education.
- 24) Fundamentals of Ecology, E. P. Odum, W.B. Saunders Company.
- 25) Global Environmental Issues – A Climatological Approach, David D. Kemp, Roul Ledge & Company, London & N. Y. 1990.
- 26) Indicator of Environmental Quality, Williams A. Thomas, Plenum Press, N.Y. & London 1971.
- 27) Industrial Hygiene & Chemical Safety, Fulekar .M.H., I. K. International Pvt Ltd, 2006.
- 28) Introduction to Climatology for the Tropics, J.O. Ayoade, J. Wiley & Sons 1983.

- 29) Management of Municipal solid waste; Environmental Engineering Series, T. V. Ramchandra, Publ.Commonwealth of Learning, Indian Institute of Science (IISCBangalore.2011.
- 30) Pollution Control in Process Industries, S.P. Mahajan, TMH 1988.
- 31) Practical Methods in Ecology & Environmental Science,Trivedi, Goel & Trisal, Environmental Publications,Karad1987.
- 32) Text book of Environmental Chemistry & Pollution Control. Revised edition,Dara S.S. & Mishra D.D.,S. Chand Publications.
- 33) Waste Water Treatment for Pollution Control, Soli J. Arcivala, TMH 1986.
- 34) Water & Water Pollution Handbook, L.L. Caccio, Marcel Dekker Inc. N.Y. 1971.
- 35) Wildlife photography- Advanced field techniques for amazing images, Classen, Joe.

SCHEME OF EXAMINATION (THEORY & PRACTICAL)

(a) Internal assessment of twenty five (25) marks per course per semester should be conducted according to the guidelines given by University of Mumbai vide circular number UG/04 of 2014 Dated 5th June 2014 to be implemented from academic year 2014-15.

(b) External assessment of seventy five (75) marks per course per semester should be conducted as per the following skeleton question paper pattern.

(c) One practical examination of one hundred (100) marks per course each should be conducted at the end of every semester.

Modality of Assessment: Theory Examination Pattern:

A) Internal Assessment - 25% marks

25

Theory 25 marks

Sr. No.	Evaluation type	Marks
1.	Class test to be conducted as per following pattern	20
	a. Match the column/Fill in the blanks/Multiple Choice Questions(1/2 mark each)	05
	b. Answer in 1 or 2 lines(Concept based questions) (1 mark each)	05
	c. Answer in brief (Attempt any 2 out of the 3) (5 marks each)	10
2.	Overall conduct as a responsible student, manners, attentive and inquisitiveness, skill in articulation, leadership qualities demonstrated through organizing co curricular activities, etc.	05

B) External examination - 75 %

Semester End Theory Assessment - 75% marks

75

1) Duration - The examination shall be of two and half hours duration.

2) Theory question paper pattern:

a. Q1 shall comprise of 16 short notes (14 if case studies/open unit is not opted) representing all the units in the syllabus equally, of which students are expected to solve any five.

b. Q2 to Q9 (Q8 if case study/open unit is not opted) will be based on unit I to unit VIII of the syllabus respectively.

c. Q2 to Q9 (Q8if case studies/ open unit is not opted) shall have the following pattern.

A)

15 marks

OR

B) i)

7 marks

ii)

8 marks

Practical Skeleton Paper Course code: USACEVS5P1

Duration: 04 hrs

Maximum Marks: 100

Q1. Identification:

20

Identify spots 'a' to 'e' as per instructions

- a) Identify and describe the type of pollution.
- b) Identify and describe the product derived by application of green chemistry.
- c) Identify and describe the applications of bio analytical instrument / energy resource.
- d) Identify and describe the type of logistic service.
- e) Identify and describe the plant and its role in reducing pollution.

Major Experiment

Q2. Estimate Biological Oxygen Demand/Chemical Oxygen Demand from the given water samples (2) and submit the report. **25**

OR

Q2. Estimate the total acidity and total alkalinity of the given samples (2) and compare the results.

25

Minor Experiment

Q3. Estimate total hardness and turbidity/ conductivity of the given sample and submit a report. **15**

OR

Q3. Estimate total acidity/ alkalinity/ salinity of the given sample and submit a report. **15**

OR

Q3. Estimate Dissolved Oxygen from the given water sample and submit the report. **15**

OR

Q3. a. Determine the intensity of light using Lux meter. **08**

Q3. b. Estimate the conductivity of the given sample. / Determine the MPN of the given water sample. **07**

Q4. a. Submission of five environment related original photographs. **10**

Q4. b. Submission of assignment & viva based on it. **20**

Q5. Certified journal. **10**

Practical Skeleton Paper Course code: USACEVS6P1

Duration: 04 hrs

Maximum Marks: 100

Q1. Identification: 20

Identify spots 'a' to 'e' as per instructions

- Identify and describe air / noise pollution monitoring device / geospatial instrument.
- Identify and describe biodiversity hotspots / bio reserve marked on the map.
- Give the full form of and describe the role of CITES/EPA/IUCN/MAB.
- Identify the act from the given clause and comment on it / Identify and describe the effect of global warming or climate change.
- Identify and describe ANN chart/ statistical model or solve the given problem.

Major experiment

Q2. Estimate organic matter content from the given sample and submit a report. 25

OR

Q2. Estimate calcium carbonate content from the given sample and submit a report. 25

OR

Q2. Investigate the given sample and report about the presence of any (or all) of the following heavy metal cations:- Zn (II)/Cd (II)/ Pb (II) from the given soil sample. 25

Minor experiment

Q3. Analyse the texture and moisture content of the given soil sample and submit a report. 15

OR

Q3. Analyse the texture and pH (pH paper, pH meter and universal indicator) of the given soil sample and submit a report. 15

Q4. Project and viva based on it. 20

Q5. Field report. 10

Q6. Certified journal. 10

ANNEXURES

Annexure I: Suggested topics for assignment USACEVS5P1

(Teachers are expected to develop additional innovative topics, varying every year, to be assigned to the students).

1. List out the instruments or funding agencies or permits required for setting up an environment testing laboratory.
2. Survey of NGO's working in the environmental field in your area.
3. Preparation of proposal for green building and sustainable development.
4. Prepare a cost sheet for setting up a bio degradable plastic unit.
5. Make an inventory of the water bodies presently existing/which existed in the urban/rural area of about 5kms.
6. Find out information regarding pollution testing booths that the Government proposes to set up.(List out the personnel who will man the booths and the indigenous equipment that these booths will have).
7. Make a report on amenities, trees, dimensions of open spaces in your locality. Assess their role in maintaining the ecological balance in the region.
8. Survey housing societies/institutions/organisations to find out whether they are converting household/kitchen waste into anything utilisable like vermicomposting etc.
9. Meet entrepreneurs involved with manufacture of eco-friendly products/best out of waste etc. Make a report regarding how the entrepreneur decided to pursue such an initiative, its need, the process and benefits to the environment.
10. Calculate carbon footprint of your family/class-room or laboratory/housing society by visiting the appropriate site on internet.
11. Visit architectural /horticulturist firms that deal with vertical gardening /urban farming and prepare a first-hand report on the concept, where implemented and the advantages.

All topics mentioned above are suggestive, more creative and innovative topics are expected from the students, under the able guidance of the concerned teacher, to suit the expertise, human resources, infrastructure and local needs as also the interest of the students.

The assignment may be submitted in a group not exceeding three students.

Annexure II: Suggested Field Visits USACEVS6P1

- There shall be various short and long excursions / study tours / field visits / industrial visits in every semester, at least one of which shall be financially affordable to every student in the class; and that assessment and marks of field trips shall be solely based upon such where no student was restrained for financial limitations.
 - Field visits are to be organized to facilitate students to have firsthand experience & exposure to technology/production/functioning of organization/units or witness a relevant activity.
 - Each student must make at least 01 (one) such visit to the units/treatment plants/aquatic or terrestrial habitat organized by the College.
 - The list is suggestive and not exhaustive.
1. Visit to Sewage treatment plant.
 2. Visit to Vermicomposting unit.
 3. Visit to Air Monitoring Laboratory.
 4. Visit to Environment Pollution Detecting Laboratory.
 5. Visit to Cooling towers in industries.
 6. Visit to Rain Water Harvesting System.
 7. Visit to Biogas Plant.
 8. Visit to Green Building/Ecotel Hotel.
 9. Visit to Water Filtration Plant.
 10. Visit to office of Pollution Control Board.
 11. Visit to Greenhouse.
 12. Visit to Solid Waste Management Plant.
 13. Visit to hydro/thermal power plants.
 14. Visit to Environmental Agencies-CITES
 15. Visit to National Parks, Sanctuaries, Biosphere Reserves etc. in Maharashtra/India/abroad.
 16. Visit to NEERI.
 17. Visit to Enviro Vigil, CSM Hospital Campus, Kalwa (W), Thane.

Annexure III: Suggested Topics for Projects USACEVS6P1

(Teachers are expected to develop additional innovative topics, varying every year, to be assigned to the students).

- 1) Effects of anthropogenic activities on different ecosystems; for example mangroves/ wetlands.
- 2) Effect of tourism activities on different ecosystems.
- 3) Assessment of ecotourism potential-SGNP, different sanctuaries.
- 4) Water audit in your area.
- 5) Costing, accounting & budgeting of eco-friendly idols during festivals.
- 6) Costing, accounting & budgeting for paper making from waste.
- 7) Study the role of microbes in biodegradation of: plastic, pesticides, heavy metals, hydrocarbons, etc.
- 8) Preparation of feasibility Report of eco-friendly products.
- 9) Preparation of feasibility report of environment testing laboratory.
- 10) Preparation of feasibility report for manufacture of any domestic pollution control device.

The project may be submitted in a group not exceeding three students.

Annexure IV: Learners' space

When the education system today has identified special needs of slow learners we are still silent about needs of high IQ students. Teachers are therefore recommended to identify and encourage such students to undertake research with a view to publish paper/s in peer reviewed International Indexed Journals with high impact factor thus providing 'learners' space'.

Some of the suggestive avenues are listed below which are certainly not exhaustive since the said students under the guidance of teachers can identify latest areas of research. Needless to say that 'learners' space' is an optional additional activity which may not be undertaken by college if not befitting.

1. Effluent analysis for heavy metals with speciation.
2. Environmental impact due to monsoon runoff from farms containing pesticides.
3. Ecological modelling of a water body.
4. Environment impact assessment of human activities.
5. Heavy metals accumulation and transfer to all three trophic levels.

Annexure V: Play and Ponder

While learner's space is for high IQ Students, 'Play and Ponder' could be a general activity creating interest in the subject and could also be a part of pedagogy wherein it may be considered as innovative teaching methodology. Needless to say that 'Play and Ponder' again is not mandatory and is an additional activity if desired by the students.

Following are some suggestive activities though of course teachers can creatively develop more, each year, to be assigned to the students.

1. Make a compost heap for your garden by recycling household wastes.
2. Make a bird feeder from waste plastic bottles.
3. Create your own organic garden.
4. Make a model of a natural cooling system and study its effectiveness.
5. Make your own recycled paper and create handmade crafts from it.
6. Make a self-sustaining closed ecosystem viz. bottle garden/aquarium ecosphere.
7. Make a model for harvesting rain water in your house/building.
8. Prepare your own solar oven.
9. Place a bird feeder in your garden and evaluate whether it really helps birds that need conservation?

Model Question Paper USACEVS501

Duration 2.5 hrs

Maximum Marks: 75

N.B.: 1. Q 1 is compulsory.

2. Attempt any four questions from Q 2 to Q 9.

3. Draw neat and labelled diagrams wherever necessary.

Q1. Write short notes on any five of the following (Mixed questions from all units):
15

- a. Zones of atmosphere
- b. Soil profile
- c. Significance of green chemistry
- d. Concept of sustainable development
- e. Sources of noise pollution
- f. Petro crops
- g. Application of flame photometry
- h. Application of gas chromatography
- i. Concepts of environmental accounting
- j. Concept of environmental auditing
- k. Logistics services for medical waste
- l. MPCB norms
- m. *Adiantum*, as a radiation absorbing plant
- n. Green washing
- o. _____ (from case study, if opted)
- p. _____ (from case study, if opted)

Q 2. Question based on Unit 1

Describe the various segments of lithosphere and biosphere. Comment on their composition and inter-relationship.

15

OR

2a. Describe the various sources of water pollution. Add a note on effect of pesticides on aquatic ecosystem.

8

2b. Explain the challenges posed by present day gaseous air pollutants on environment.

7

Q3. Question based on Unit 2

What are the principles of sustainable development? Give a detailed account of sustainable development indicators

15

OR

3 a. Comment on the areas highlighted in Agenda 21.

8

3 b. Comment on green economy.

7

Q4. Question based on Unit 3

Give a detailed account on solar energy, wind energy and tidal energy as an

15 alternative energy resource.

OR

4 a. Nuclear energy, a boon or a curse. Discuss. 8

4 b. Explain the use of solid waste as a source of energy. 7

Q5. Question based on Unit 4

Explain different types of Spectroscopy. Discuss the application of X-ray diffraction.

15

OR

5 a. Describe the application of statistical tools and software in field of environmental science. 8

5 b. Discuss the application of electrophoresis as separation technique. 7

Q6. Question based on Unit 5

Explain the concept and economics of pollution control. Add a note on Environmental accounting.

15

OR

6 a. Write a note on Environmental audit programmes in India. 8

6 b. Comment on the benefits of environmental auditing. 7

Q7. Question based on Unit 6

Explain the types of industrial consultancies and add a note on industrial marketing. 15

OR

7 a. Discuss the criteria for calculating industrial consultancy fees? 8

7 b. Describe the norms and procedures related to MPCB liasioning. 7

Q 8. Question based on Unit 7

Explain the marketing of Heating, Ventilation and A.C. systems and air purifiers as domestic pollution control devices.

15

OR

8 a. Discuss the concept of Green washing giving suitable examples. 8

8 b. Describe *Chlorophytum* as a natural air filtering system. 7

Q 9. Question based on Unit 8

Question based on case study/ simulation (if opted).

15

A paper on disaster management was presented at the International Conference on 'Urban Planning and Environment Strategies and Challenges' organized by Elphinstone College, Mumbai in the year 2007. It was picked up by the then DDG, Maharashtra NCC, Brigadier Shard who contacted the author, Vinayak Dalvie, Joint secretary to the Governor through an ANO, insisting him to implement the model through NCC. The then Secretary to the Governor, Shri Sitaram Kunte convened a meeting of NCC officials with the Governor H.E. Shri S.M.Krishna for presentation on Avhan by Shri Dalvie. The Governor immediately issued necessary orders integrating NCC, universities and the government disaster management agencies. Based on the modalities, Colonel Samuel from Pune worked out the first training camp at Shivaji University, Kolhapur.

The said model proposes a self-sufficient and strategic training and capacity building of University students, mainly NCC cadets, for disaster management, who can, on call reach any nook and corner of the State instantaneously along with equipment and resources of their own from a self-generated fund.

A platoon of 30 cadets (20 boys+10 girls), preferably from first year NCC to make the said trained force available for two more years, selected from each district of the State shall be trained by the host University from 22nd May to 5th June (Paryavaran Diwas) every year in the areas of administration, medical and operations simulating various natural and manmade disasters with an emphasis on practical approach. Each heading has twelve modules. 36 specialised resource persons would be deputed in the camp for 12 days, each addressing a district platoon at a given point of time in rotation as per the scheduled time table. Three cadets from each district, portraying the best performance; one each in administration, medical and operations respectively will be selected for Phase II training during the Diwali vacation. Thus three platoons of 36 cadets each are formed to receive special inputs at places like Yashada and JBIMS for administration; INS Ashwini, AFMC, MUHS for medical; Home guards, Civil defence establishments and Army for operations respectively. After Phase II training each district has a platoon of 30 cadets with three section I/C to take a lead role equipped with special training in administration, medical and operations. This platoon can reach the site of disaster within an average of two hours on receiving communication from the concerned ANO. During the academic year, every platoon will perform practice drills in each taluka to raise awareness in the common man, who is the first responder in any disastrous situation. Further, manpower of trained 1000 cadets can reach within a day from the remaining districts of Maharashtra. One Associate NCC officer from each district will also be trained in the course who can take charge of the situation.

This trained force called Chancellor's brigade would come into operation only on call from a disaster management authority playing a complimentary role and coming into action immediately since funds are made available by the local Vice Chancellor within an hour.

Each University can purchase basic necessary equipment and build infrastructure from the interest earned on the corpus fund collected for last few years by charging Rs. 10/- to each student as disaster management fund every year. The host University can

arrange for the training of 1000 cadets also from the same funds. The host University may also receive approximately Rs.60 lakhs @ Rs.2/- per student out of Rs.20/- collected each year as Ashwamedh fund from all students. The local Vice Chancellor, concerned ANO and NCC officer shall prepare a budget based on estimated need. Financial decisions can be taken by a committee of three Vice Chancellors i.e. of the previous, the current and the next host University over telephone/e-mail/fax to be endorsed by the Secretary to Governor or in his absence the next officer in hierarchy for easy disbursement, on call, to the Vice Chancellor in whose jurisdiction falls the district facing the disaster. The Vice Chancellor of host University shall reimburse the said amount from surplus in Rs. 60 lakhs after the cost of training camp which is about Rs.30 lakhs.

Since the concerned ANO and NCC officer are empowered to purchase ration, medicine and utilities as per the pre sanctioned rate charts, Chancellors brigade comes into action instantaneously with no financial burden on the Government thus befitting the motto 'Swayam purna Swayamsiddha Samarth'.

Q1.The present model is not being effectively implemented in real life situations. What are your suggestions?

Q2. Plan a training schedule for 12 days in all the modules.

Q3. Enlist possible modules under each head.

OR

Shirpur Model- 'Angioplasty in Water Conservation'

Shirpur model gets its name from the place Shirpur, a taluka in Dhule district of North-East Maharashtra. Once an obscure and drought-hit region, it is now referred to as 'Green taluka'. Shirpur taluka has a geographical area of 837.39 sq.km. About 78.07% of this is cultivable of which only 12.94% is under irrigation. This area receives an annual rainfall of 617 mm in over 36 days with most water draining into the river Tapi. The distribution of rainfall is highly erratic and the surface water resources are hence unevenly distributed. As a result of this, the use of groundwater for irrigation, drinking, and industrial purposes has increased many fold. The main cash crops in Shirpur are sugarcane, cotton and banana which rely heavily on ground water for irrigation. The soil in Shirpur is partly of Tapi alluvium type and partly Deccan Basalt type. Alluvium consists of alternate layers of clay and sand, gravel and boulders of variable thickness. The effective porosity of sand bed in Tapi Alluvium is about 30%. In Basalt, alternate layers of weathered basalt and hard massive basalt is observed. The porosity in the Basalt is about 2-3% and wells dug in Basalt hardly saturate. The saturated sand beds cater to the needs of drinking water and irrigated agriculture mainly cash crops. Indiscriminate withdrawal and overexploitation of this source to meet these needs resulted in the decline of ground water level and led to acute water shortage. All the dug wells in Tapi alluvium in Shirpur became dry by 1990. Even tube wells having a depth of about 200-500 meters became dry. Alternate layers of silt transmit very little water and the wells remain dry in heavy rainfall also. In the Basalt area, due to heavy

rainfall within short duration, there was only run off with hardly any percolation. That is why dug wells and bore wells in Deccan Basalt hardly yielded water maximum up to December. There was severe scarcity after December for drinking water as well as for irrigation. As a result, the huge amount invested on dug wells, pump sets and other development works by the individual farmers became futile. The most affected were the bore wells drilled for drinking water and situated in the elevated regions. With increased use of groundwater for irrigation, bore wells were drilled in the close proximity of the drinking water bore wells. This resulted in drying up of drinking water wells in many parts of the taluka. Thus, drying of wells and tube wells in alluvial area and insufficient availability of water after December in the Deccan Basalt area were the main problems of Shirpur Taluka. There was an urgent need to take suitable measures to augment groundwater resources and to make the existing groundwater structures sustainable.

Troubled by acute water shortage crisis, the local MLA Shri Amrish Patel wanted to use rain water conservation methods to meet the water demands of the taluka. He along with geologist Shri Suresh Khanapurkar devised a plan to trap this rain water and started the project in 2004. Patel set aside Rs 3 crore every year for this ambitious project. To overcome the water shortage it was necessary to ensure that the ground water levels were fully saturated in spite of erratic rainfall and impervious layers in Alluvium and Deccan Basalt. The plan included three measures:

1. Building of cement structures (bundhs) on streams, with weirs (water blocking walls on streams) without gates, so that water flows downstream, only when the dam is full. The volume of water that percolates down in this method is eight times the storage capacity of a check dam.
2. To deepen the stream up to 15 to 20 metres and widen up to 30 metres in Deccan Basalt and Alluvium.
3. To recharge the deeper layers in the Alluvial area using the surplus water of the dams in the Deccan Basalt area artificially through the dry dug wells having depth of about 40 to 50 metres.

To ensure the success of the plan, a novel method to build the check dam was adopted. The Deccan Basalt rock that lies below the top soil is impermeable and not much water percolates down. Below this, is the layer of red gravel that holds water. It is this water that is drawn from wells and bore wells. The rock layer below the streams was blasted and removed so that water could percolate into the gravel. Since the stream was also widened, the increased volume of water exerted greater pressure on the soil. The volume of water that percolates down in this method is eight times the storage capacity of a check dam. Shri Khanapurkar calls this 'Angioplasty of streams', as it is recharging groundwater by removing obstructions through pressure.

The methods adopted proved to be successful and yielded encouraging results. The water level in Basalt area which had depleted up to 150 metres has risen by 140 metres. Water level in alluvial area which had depleted up to 150 metres has risen by 110 metres. A minimum of 5 crore litres and a maximum of 15 crore litres of water has been stored because of stream widening and deepening. As a result of this the water level in the bore wells on either bank of the stream up to two km distance

went up by about 150 feet. Drinking water problem has been solved. The area for irrigation has increased and farmers started growing two crops per year. The average per capita income has increased at least by Rs one lakh/Ha. After completion of the 6th year of the project, sufficient water for irrigation, drinking and for industries is available even in summer.

Shri Amrish Patel (MLC), former Minister of Education, Govt of Maharashtra, and President of Shri Vile Parle Kelvani Mandal feels that Shirpur pattern has innumerable advantages, "There is no need to displace people. The capital cost is low. So far, we have built 91 check dams at a cost of Rs 15 crore. Total water conserved due to these dams is 400 million cubic feet (mcf). If a medium scale dam with this much storage capacity was to be built, it would cost Rs 61 crore." 'If Angioplasty In Water Conservation' is practised on all small streams in all the mini and micro watersheds, entire Maharashtra will be tanker free and water will be available for second crop" claims Mr Amarishbhai, who has a legacy of belonging to the family of Vallabhbhai Patel.

However, Dr. Mukund Ghare, a groundwater expert in Maharashtra, Sourabh Gupta, scientist with the Central Groundwater Board, and Suresh Khandale, Additional Director of GSDA, Pune, felt that the width and depth of a stream gets decided as per the hydro-geology of that area and that deepening the stream bed by 15-20 meters exposes the aquifers which come in contact with muddy rain waters, clogging the aquifers and stopping the flow. Dr Ghare mentioned in his report submitted to the Govt of Maharashtra that deepening the stream beds more than what is required can lead to environmental problems and in basalt areas, the aquifers have become exposed; water has come to surface and is getting evaporated. Shirpur model, however, got support from the Government of Maharashtra which issued a Government Resolution (GR) on 9 May 2013 to replicate the Shirpur model all over Maharashtra.

Himanshu Kulkarni of ACWADAM, a premier NGO working on groundwater, warns that if the Shirpur model is taken up for large scale replication then it can lead to short and long term negative impacts, and some of them could be irreversible. It can play havoc with the hydro-geology of the region threatening the sustainability of stream/river flows. It also raises questions of equity and access to downstream.

While it is true that we need to understand the concept of groundwater well, it is also a fact that sustainable agriculture needs water. If there is no water for years together, any option that will work and give water in the immediate future, even though it could potentially cause harm many years later, is employed by farmers. By now Shirpur model has been accepted by many villages in Maharashtra. A local organisation called Jan Kalyan Samiti operates in the area of Latur-Beed and has implemented Shirpur pattern structures through Gram Panchayats of several villages in the area. People are coming together and are willing to be monetary stakeholders.

Q1. Elucidate the main features of water conservation based on the Shirpur pattern.

Q2. Is the Shirpur model a viable solution in your opinion? Discuss.

Note: Questions of the model question paper are not exhaustive, but suggestive, and teachers have liberty to reframe, modify and add other questions as deemed fit.

Model Question Paper USACEVS601

Duration 2.5 hrs

Maximum Marks: 75

N.B.: 1. Q 1 is compulsory.

2. Attempt any four questions from Q 2 to Q 9.

3. Draw neat and labelled diagrams wherever necessary.

Q1. Write short notes on any **five** of the following (Mixed questions from all units): **15**

- a. Air quality standards
- b. Most Probable Number (MPN) Count
- c. Bioremediation
- d. Bio pesticides
- e. Concept of ecological modelling
- f. Applications of ecological modelling
- g. Depreciation.
- h. Fixed and Variable cost giving 2 examples each.
- i. Importance of biosphere reserve
- h. Western Ghats as biodiversity hotspot
- k. Remote sensing and its types
- l. Kyoto protocol
- m. Wildlife Protection Act, 1972
- n. IUCN
- o. _____ (from open unit, if opted)
- p. _____ (from open unit, if opted)

Q 2. Question based on Unit 1

Give a detailed account on the methods of monitoring and control of air pollutants.

15

OR

2 a. Discuss the noise levels generated from various sources.

8

- 2 b. Discuss the factors to be considered while establishing an environmental testing laboratory.

7

Q3. Question based on Unit 2

Discuss any two alternatives to conventional resources studied by you. **15**

OR

- 3a. Describe the process to treat domestic effluents.

8

- 3 b. Explain the process of developing effluent treatment plants.

7

Q 4. Question based on Unit 3

Explain the concept of ANN (Artificial Neural Networking) and Statistical modelling.

15

OR

- 4 a. Comment on the application of physical models for impact prediction.

8

- 4 b. Discuss the limitations of ecological modelling.

7

Q5. Question based on Unit 4

From the books of accounts of M/s Avdhoot Enterprises, the following details have been extracted for the Quarter ending December, 2016:

Particulars	Rs.
Stock of Materials – Opening	2,70,000
Stock of Materials – Closing	3,00,000
Purchase of materials	12,48,000
Direct Wages	3,57,600
Direct Expenses	1,20,000
Indirect Wages	24,000
Salaries to Administrative Staff	60,000
Carriage Inward	48,000
Carriage Outward	37,500
Manager's Salary	72,000
General Expenses	37,200
Legal Expenses for criminal suit	20,000
Commission on sales	28,000
Fuel	96,000
Electricity charges (factory)	72,000
Directors' fees	36,000
Repairs to plant and machinery	63,000
Rent, rates and taxes – factory	18,000
Rent, rates and taxes – office	9,600

Depreciation on Plant & Machinery	45,000
Depreciation on Furniture	3,600
Salesmen's Salary	50,000
Audit fees	18,000

- 1) The Manager's time is shared between the factory and office in the ratio of 20:80
- 2) Carriage Outward includes an amount of Rs. 7,500/- carriage inward on Plant & Machinery.
- 3) Selling price is 120% of cost price.

From the above details prepare the detailed cost sheet for the quarter ended December, 2016 and ascertain sales.

OR

5 a. Write briefly on types of costing, viz; job, batch, process, operating and contract costing. 8

5b. Write short notes on: 7

- i. Types of accounts and the accounting rules applicable to each of them.
- ii. Concepts of accounting.

Q6. Question based on Unit 5

What is Biodiversity? Explain in situ and ex situ strategies for biodiversity conservation. 15

OR

6 a. Comment on wildlife photography as a tool for biodiversity data collection. 8

6 b. Elucidate with an illustration the ecotourism policy in India. 7

Q7. Question based on Unit 6

Discuss climate change. Give a detailed note on global warming and its effects on environment.

15

OR

7 a. Explain the principles and applications of GIS. 8

7 b. Comment on the UN convention on Climate change. 7

Q 8. Question based on Unit 7

Discuss environmental education programmes in India. 15

OR

8 a. Explain the goals and principles of environmental education. 8

8 b. Discuss the Water (Prevention and Control of Pollution) Act, 1974. 7

Q9. Question based on Unit 8

Question based on open unit (if opted) 15

OR

9 a. _____ 8

9b. _____ 7

Note: Questions of the model question paper are not exhaustive, but suggestive, and teachers have liberty to reframe, modify and add other questions as deemed fit.

UNIVERSITY OF MUMBAI



Revised Syllabus for F.Y.B.Sc. (Physics)

**Semester: I & II
(CBCS)**

(With effect from the academic year 2022-23)

UNIVERSITY OF MUMBAI



Syllabus for Approval

Sr. No.	Heading	Particulars
1	Title of the Course	F.Y.B.Sc. (Physics)
2	Eligibility for Admission	
3	Passing Marks	
4	Ordinances / Regulations (if any)	
5	No. of Years / Semesters	06 Semesters
6	Level	UG
7	Pattern	Semester
8	Status	Revised
9	To be implemented from Academic Year	From Academic Year: 2022-2023

Date:

Signature:

Name
Chairman of BOS of Physics

Dr. Anuradha Majumdar
Dean, Science and Technology

Syllabus for B.Sc. Physics (Theory & Practical)
As per Choice Based and Credit System
First Year B.Sc 2022-2023

The revised syllabus in Physics as per Choice Based and Credit System for the First Year B.Sc Course will be implemented from the academic year 2022-2023.

Preamble:

The systematic and planned curricula from these courses shall motivate and encourage learners to understand basic concepts of Physics.

Objectives:

- To develop analytical abilities towards real world problems
- To familiarize with current and recent scientific and technological developments
- To enrich knowledge through problem-solving, hands-on activities, study visits, projects etc

Course Code	Title	Credits
	Semester I	
USPH101	Classical Physics	02
USPH102	Modern Physics	02
USPHPI	Practical I	02
		Total = 06
	Semester II	
USPH201	Optics I	02
USPH202	Electricity and Electronics	02
USPHPII	Practical II	02
		Total = 06

Scheme of Examination:

- Each theory paper of each semester will have 20% Internal Assessment (IA) and 80% External Assessment (EA). All external examinations will be held at the end of each semester and will be conducted by the University as per existing norms
- There will be no internal assessment for practical. A candidate will be allowed to appear for the semester end practical examination only if the candidate submits a certified journal at the time of practical examination of the semester or a certificate from the Head of the Department/Institute to the effect that the candidate has completed the practical course of that

semester of F.Y.B.Sc Physics as per the minimum requirement. The duration of the practical examination will be two hours per experiment. There will be two experiments (one from each group) through which the candidate will be examined in practical. The questions on slips for the same should be framed in such a way that candidate will be able to complete the task and should be evaluated for its skill and understanding of physics.

SEMESTER-I

Name of the Programme	Duration	Semester	Subject
B.Sc.in Physics	Six semesters	I	Physics
Course Code	Title	Credits	
USPH101	Classical Physics	2	

Learning Objectives:

1. Understand Newton's laws and applications in daily life.
2. Understand the concepts of friction
3. Understand Work and Energy Equivalence
4. Understand the concepts of Elasticity, Viscosity and Fluid dynamics
5. Understand behavior of real gases in relation to their thermo dynamical response.

Learning Outcomes:

On successful completion of this course students will be able to:

1. Apply Newton's laws for the calculations of the motion of simple systems.
2. Use Work and Energy equivalence and its applications through suitable numerical.
3. Use Elasticity, Viscosity and Fluid dynamics in daily life.
4. Understand Real gases and validity of the laws of thermodynamics.
5. Demonstrate quantitative problem solving skills in all the topics covered

Unit I

15 Lectures

1. Newton's Laws of Motion: Newton's first, second and third laws of motion, interpretation and applications, pseudo forces, inertial and non-inertial frames of reference

Worked out examples (with friction present)

HCV: 5.1 to 5.5

2. Friction: Advantages & disadvantages of friction in daily life, Friction as the component of Contact force, Kinetic Friction, Static friction, laws of friction, Understanding friction at Atomic level.

HCV: 6.1 to 6.5

3. Work and Energy: Kinetic Energy, Work and Work-energy theorem, Potential Energy, Conservative and Non Conservative Forces, Different forms of Energy: Mass Energy Equivalence

Worked out Examples

HCV: 8.1, 8.2, 8.5, 8.6, 8.11

Unit II

15 Lectures

1. Elasticity: An introduction to Elasticity, Stress, Strain, Hooke's Law and Moduli of Elasticity and relation between them

HCV: 14.2, 14.3, 14.4, 14.5

2. Viscosity: An introduction to Viscosity, Flow through a Narrow Tube: Poiseuille's Equation, Stokes' Law, Terminal velocity, Measuring Coefficient of Viscosity by Stokes' method, Critical velocity and Reynolds number. Worked out Examples

HCV: 14.15, 14.16, 14.17, 14.18, 14.19, 14.20

3. Fluid Mechanics: Streamline and Turbulent flow, Equation of Continuity, Bernoulli's equation, Applications of Bernoulli's equation. Worked out Examples

HCV: 13.8, 13.10, 13.11, 13.12

Unit III

15 lectures

1. Behavior of real gases: An introduction, Van der Waals equation of state

BSH: 2.8

2. Laws of Thermodynamics: Thermodynamic Systems, Zeroth law of thermodynamics, Concept of heat, Thermodynamic Equilibrium, Work: A Path dependent function, Internal energy, First law of Thermodynamics, Internal Energy as a state function, Specific heat of gases, Applications of First Law of thermodynamics, The indicator diagram, Work done during Isothermal and Adiabatic processes

BSH: 4.1 to 4.13

3. Heat engine: Definition of Efficiency of heat engine, Carnot's Ideal heat engine, and Numerical examples

BSH: 4.21, 4.22, 4.23

Note: A good number of numerical examples are expected to be covered during the prescribed lectures.

Main References:

1. HCV: H. C. Verma, Concepts of Physics – Part I, (Second Reprint of 2020) Bharati Bhavan Publishers and Distributers
2. BSH: BrijLal, Subrahmanyam and Hemne, Heat Thermodynamics and Statistical Physics, S. Chand , Revised, Multi-coloured, (Reprint 2019)

Additional References:

1. Halliday, Resnick and Walker, Fundamental of Physics (extended) – (6th Ed.), John Wiley & Sons.
2. D.S Mathur, P.S Hemne, Mechanics, 2012, S. Chand
3. M. W Zemansky and R. H Dittman, Heat and Thermodynamics, McGraw Hill.
4. Thornton and Marion, Classical Dynamics (5th Ed.)
5. D. S Mathur, Element of Properties of Matter, S. Chand & Co.
6. R. Murugesan and K. Shivprasath, Properties of Matter and Acoustics, S. Chand.
7. D. K Chakrabarti, Theory and Experiments on Thermal Physics,(2006 Ed.), Central books.
8. Hans and Puri, Mechanics, (2nd Ed.) Tata McGraw Hill

SEMESTER-I

Name of the Programme	Duration	Semester	Subject
B.Sc.in Physics	Six semesters	I	Physics
Course Code	Title	Credits	
USPH102	Modern Physics	2	

Learning Objectives:

1. To grasp and understand the basic concepts of Modern Physics

Learning Outcomes:

On successful completion of this course students will be able to:

1. Understand nuclear properties, nuclear behavior and various types of nuclear reactions
2. Understand the concept of radioactivity, its applications and different types of equilibria in radioactive elements
3. Understand various types of nuclear detectors and their applications
4. Demonstrate and understand the quantum mechanical concepts.
5. Demonstrate quantitative problem solving skills in all the topics covered.

Unit I

15 Lectures

1. Basic properties of nuclei: Composition, Charge, Size, density, Spin and Magnetic dipole moment, Rutherford's experiment and estimation of nuclear size, mass defect and binding energy, BE/A vs A plot and its interpretation, stability of nuclei (N vs Z plot)

Problems

AB: 11.1, 11.2, 11.3, 11.4

SBP: 4.1.2

2. Radioactivity: Review of properties of α , β and γ -rays.

Law of Radioactive decay, half-life and mean life (derivation required), units of radioactivity, statistical nature of radioactivity, successive radioactive disintegration- A to B to C (stable) type, natural radioactive series, radioactive equilibria, artificial radioactivity, determination of the age of the Earth, Carbon dating, radioisotopes and its applications, radiation hazards.

Problems

SBP: 2.3, 2.4, 2.6, 2.7, 2.8, 2.9, 2.11, 2.12, 2.13

DCT: 2.13 Page No.86 and 87

AB: 12.1 Page No. 422,423

Additional Reference: <https://dae.gov.in/node/191>

Unit II

15 Lectures

1. Radiation Detectors: Interaction between particles and matter, plot of variation of ionization current with applied voltage, Gas filled radiation detectors- Ionization chamber (qualitative), Proportional Counter and GM Counter

Problems

SBP: 1.I.1, 1.I.2, 1.I.3 (i, ii)

SNG: Figure: 7.3 (exclude mode of operation), 7.4

2. Nuclear Reactions: Introduction, types of nuclear reactions, conservation laws (mass, energy and charge), concept of compound and direct reaction, Q value equation and solution of the Q equation, threshold energy

Problems

SBP: 3.1, 3.2, 3.3, 3.4, 3.5

Unit III

15 Lectures

Review (Photoelectric effect, Black body, Black Body spectrum, Wien's displacement law)

1. Origin of Quantum theory: Matter waves: De Broglie waves, Concept of wave packet, phase velocity, group velocity and relation between them, wave particle duality, Davisson-Germer experiment, Heisenberg's Uncertainty Principle

AB: 3.1, 3.2, 3.3, 3.4, 3.5, 3.7, 3.8, 3.9

2.X-Rays: Production and properties, X-Ray spectra, X-Ray Diffraction, Bragg's Law, Compton Effect, Pair production, Photons and Gravity, Gravitational Red Shift, Black holes

AB: 2.5, 2.6, 2.7, 2.8, 2.9

Note: A good number of numerical examples are expected to be covered during the prescribed lectures

Main References:

1. AB: Arthur Beiser, Concepts of Modern Physics, 6th Edition
2. SBP: S.B. Patel, Nuclear Physics: An Introduction, New Age International Publishers, 2nd Edition
3. SNG: S.N, Ghoshal, Nuclear Physics
4. DCT: D.C. Tayal, Nuclear Physics, Himalaya Publishing House, 5th Edition

Additional References:

1. S.L Kakani and Shubhra Kakani, Nuclear and Particle Physics, Viva Books, 2nd Edition
 2. Kenneth S. Krane, Modern Physics, 4th Edition, Wiley.
 4. Ronald Gautreau, Schaum's Outline of Modern Physics, Second Edition, McGraw Hill
- Besides reference books, Standard websites are expected to be referred

SEMESTER-I

Name of the Programme	Duration	Semester	Subject
B.Sc.in Physics	Six semesters	I	Physics
Course Code	Title	Credits	
USPHP1	Practical I	2	

Instructions:

1. All the measurements and readings should be written with proper units in SI system only.
2. After completing all the required number of experiments in the semester and recording them in journal, student will have to get their journal certified and produce the certified journal at the time of practical examination.
3. While evaluating practical, weightage should be given to circuit/ray diagram, observations, tabular representation, experimental skills and procedure, graph, calculation and result.
4. Skill of doing the experiment and understanding physics concepts should be more important than the accuracy of final result.

Learning Outcome:

1. On successful completion of this course students will be able to:
2. Understand & practice the skills while performing experiments.
3. Understand the use of apparatus and their use without fear & hesitation.
4. Correlate the physics theory concepts to practical application.
5. Understand the concept of errors and their estimation.

Note: Exemption of two experiments from section A and / or B and / or C may be given if student carries out any one of the following activity.

- Collect the information of at least five Physicists with their work or any three events on physics, report that in journal.
- Execute a mini project to the satisfaction of teacher in-charge of practical.
- Participate in a study tour or visit & submit a study tour report.
- For practical examinations, the learner will be examined in two experiments (one from each group).
- Each experiment will be of three lecture hours' duration.

- A Minimum 4 from each group and in all minimum 8 experiments must be reported in journal.
- All the skill experiments are required to be completed compulsorily. Students are required to report all these experiments in the journal. Evaluation in viva voce will be based on regular experiments and skill experiments.

A learner will be allowed to appear for the semester and practical examination only if he submits a certified journal of Physics or a certificate that the learner has completed the practical course of Physics Semester I as per the minimum requirements.

A. Regular Experiment:

Sr No	Name of the Experiment
GROUP A	
1	Torsional Oscillation: To determine modulus of rigidity η of a material of wire by Torsional oscillations
2	Bifilar Pendulum: Determination of moment of inertia of rectangular and cylindrical bar about an axis passing through its centre of gravity
3	Moment of inertial of Flywheel
4	Constant volume air thermometer
5	Frequency of AC Mains: To determine frequency of AC mains (Sonometer wire)
6	LDR Characteristics: To study the dependence of LDR resistance on intensity of light
GROUP B	
7	Study of Logic gates & To verify De Morgan's Theorems
8	To study EX-OR Gate and verify its truth table
9	To study half adder and full adder and verify their truth table Ex-OR Gate
10	To study load regulation of a Bridge Rectifier
11	To study Zener Diode as Regulator
12	Study of LASER Beam Divergence

GROUP C:Skill Experiment	
1	Use of Vernier Callipers, Micrometer Screw Gauge and Travelling Microscope
2	Graph plotting (Plot BE/A verses A graph for 30 atoms, Plot Packing Fraction graph for 30 atoms)
3	Spectrometer: Schuster's Method
4	To determine the Resistance & Capacitance using Color code/Number & verify using Multimeter (Analog/Digital)
5	Use of digital multimeter
6	Absolute and relative error calculation

Note: Minimum **8** experiments (Four From each group) and **4** Skill experiments should be completed and reported in the journal, in the first semester. **Certified Journal is a must**, to be eligible to appear for the semester end practical examination.

SEMESTER-II

Name of the Programme	Duration	Semester	Subject
B.Sc.in Physics	Six semesters	II	Physics
Course Code	Title	Credits	
USPH201	Optics I	2	

Learning Objectives:

To acquire knowledge of fundamental optics

Learning Outcomes:

After successful completion of the course, the student will be able to:

1. Understand the concept of lens, lens defects and their minimization.
2. Significance of combination of lenses implied to eyepiece of optical instrument.
3. Understand interference of light with few well known daily life examples.
4. Understand Lasers and Optical fibers, their applications in day to day life.

UI Geometrical Optics

(15 lectures)

1. Lenses and Lens Maker's Equation: Introduction to lenses, Terminology and sign conventions, Introduction to Thin lenses and Lens equation for single convex lens, Lens maker's equation: Positions of the Principal Foci and Newton's Lens equation.

SBA: 4.1, 4.2, 4.3, 4.7, 4.8, 4.9, 4.10, 4.10.1, 4.11

2. Magnification by a lens and power of lens: Lateral, Longitudinal and Angular magnification, Deviation by a thin lens and its power, Necessity to combine the lenses & equivalent focal length & power of two thin lenses, Concept of cardinal points and their significance

SBA: 4.12, 4.12.1, 4.12.2, 4.12.3, 4.15, 4.16, 4.17, 4.17.1, 4.17.2, 4.17.3, 4.17.4, 5.2

3. Introduction to Aberration in lenses: Spherical aberration & reduction, chromatic aberration & reduction (Qualitative)

SBA: 9.2, 9.5, 9.5.1, 9.10

Suitable numerical with appropriate difficulty level.

U2 Introduction to Optical Instruments and Interference in Thin Films (15 lectures)

1. **Optical Instruments and Eyepieces:** Human Eye as an optical instrument, Camera and Lenses of Camera, Simple Microscope & Compound Microscope, Concept of eyepiece & its significance: Huygens Eyepiece and Ramsden Eyepiece (Principle, Construction, Expression for Equivalent Focal Length, Merits and Demerits), Comparison of Huygens Eyepiece and Ramsden Eyepiece, Gauss Eyepiece, Refracting Astronomical Telescope (Construction and Working), Reflecting Telescope (Qualitative)

SBA: 10.2, 10.3, 10.3.1, 10.5, 10.8, 10.10, 10.11, 10.12, 10.13, 10.14, 10.15, 10.15.1, 10.16

2. **Interference in Thin Films:** Interference due to reflected and transmitted light in plane thin films, Conditions for Maxima and Minima, Interference pattern in wedge-shaped film & Newton's rings

SBA: 15.1, 15.2, 15.2.1, 15.2.2, 15.5, 15.6

Suitable numerical with appropriate difficulty level.

U3 Lasers and Fiber Optics (15 lectures)

1. **An Introduction to LASERS:** Absorption and Emission, Spontaneous and Stimulated Emission, Components of laser, Ruby laser, He-Ne Laser, Laser Beam Characteristics, Applications of Laser

SBA: 22.1, 22.4.1, 22.4.2, 22.8, 22.8.1, 22.8.2, 22.8.3, 22.14.1, 22.14.3, 22.16, 22.19

2. **An Introduction to Optical Fiber:** Total Internal Reflection, Propagation of light through an Optical fiber, Numerical Aperture, Classification of Optical fibers, Single Mode Step Index Fiber, Multimode Step Index Fiber, Graded Index Fiber, Optical Fiber applications (Optical fiber based communication system & Optical Fiber based Temperature sensor)

SBA: 24.2, 24.3, 24.4, 24.6, 24.10, 24.11.1, 24.11.2, 24.11.3, 24.21, 24.23.1

Main Reference:

SBA: Dr. N. Subrahmanyam, Brijlal, and Dr. M. N. Avadhanulu, A Textbook of Optics, 25th Revised Edition 2012(Reprint 2016), S. Chand and Company Pvt. Ltd.

Additional References:

1. Jenkins and White, Fundamentals of Optics by (4th Ed.), McGraw Hill International
2. Ajoy Ghatak, Optics, 6th Edition, Mc Graw Hill Education (India) Private Limited

SEMESTER II

Name of the Programme	Duration	Semester	Subject
B.Sc.in Physics	Six semesters	II	Physics
Course Code	Title	Credits	
USPH202	Electricity and Electronics	2	

Learning Outcomes:

On successful completion of this course students will be able to:

1. Understand the basic concepts of Alternating current theory, AC bridges and Circuit Theorems
2. Understand the basics of Analog and Digital Electronics and apply them in real life situations
3. Demonstrate quantitative problem solving skills in all the topics covered

Unit I: Electricity

15 lectures

1. Alternating current theory: (Review: Concept of L, R, and C)

AC circuit containing pure R, pure L and pure C, representation of sinusoids by complex numbers, Series L-R, C-R and LCR circuits, Resonance in LCR circuit (both series and parallel), Power in ac circuit. Q- Factor.

TT: 11.29, 11.30, 11.32, 12.5, 12.6, 13.1, 13.7, 13.9, 13.10, 13.11, 13.12, 13.13, 13.14, 13.17, 13.19, 14.2

2. AC bridges: General AC Bridge, Maxwell's Inductance Bridge, Maxwell's L/C Bridge, De Sauty Bridge, Wien Bridge.

(Bridge diagram, balancing condition derivation, applications)

TT: 16.1, 16.2, 16.3, 16.9, 16.11

3. Circuit Theorems: (Review: Ohm's law, Kirchhoff's laws) Ideal Current and Voltage Sources, Thevenin's Theorem, Norton's Theorem, Maximum Power Transfer Theorem.

Problems related to circuit analysis using the above theorems.

TT: 2.15, 2.16, 2.18, 2.25, 2.30

Unit II: Analog Electronics

15 lectures

1. **DC Power Supply:** Block diagram of a dc power supply – concept of a transformer, (Review: Half wave rectifier, Full wave rectifier) Bridge rectifier, PIV, Efficiency and Ripple factor of full wave rectifier, Capacitor Filter, Need for voltage regulation - Zener diode as voltage stabilizer, Clipper and Clampers (Basic diode based circuits only).

BN: 1.15, 2.6, 2.7, 2.8, 2.9, 2.10, 15.2, 15.3

AD: 4.2, 22.1

2. **Transistor dc Biasing:** (Review: transistor structure and characteristics), Definition of gains α , β (dc and ac) and relation between them, load line analysis, operating point, cut-off and saturation points, Inherent Variations of transistor Parameters, Stabilization, Necessity of a Transistor Biasing Circuit, Stability Factor, Methods of Transistor Biasing, Base Resistor or fixed bias, Emitter Bias and Voltage Divider Bias Methods (Qualitative Analysis only, No mathematical derivation), Stability factor for Potential Divider Bias.

Transistor as a switch: circuit and working, Transistor as an Amplifier: CE, CB and CC modes, Practical circuit of an amplifier and its operation and phase reversal.

BN: 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 4.1, 4.2, 4.17, 4.18 (Transistor Switch)

Unit III: Digital Electronics

15 lectures

1. **Number Systems** – Binary number system: Binary to decimal and Decimal to binary conversion, Hexadecimal number system: Hexadecimal to decimal Conversion, Decimal to hexadecimal conversion, Hexadecimal to binary conversion, Binary to hexadecimal conversion.

LMS: 5.1 to 5.5

2. **Derived Gates** (Review: Basic Logic gates), NAND and NOR as Universal Building blocks, Ex-OR gate: logic expression, logic symbol, truth table, Implementation using basic gates and its applications – Parity generator and checker, Half adder and Full adder.

LMS: 2.1, 2.2

Tokheim: 3.6, 3.8, 10.2, 10.3

3. **Boolean Algebra:** Boolean theorems, De-Morgan theorems, Sum of Product (SOP) and Product of sum (POS) methods, Simplification of logical expressions.

LMS: 3.1, 3.2, 3.7, 3.8

References:

1. TT: B.L. Theraja and A.K. Theraja, A Textbook of Electrical Technology Vol. I, S. Chand Publication

2. BN: R. L. Boylestad and L. Nashelsky, Electronic devices and Circuit Theory - 10th Edition, Pearson

3. LMS: Leach, Malvino, Saha, Digital Principles and Applications – 6th Edition. Tata McGraw Hill

5. Tokheim: Digital Electronics, Principles and Applications, 6th Edition, McGraw Hill Edition.

6. AD: Albert Malvino, David Bates, Electronic Principles, 8th Edition, Tata McGraw Hill

SEMESTER-II

Name of the Programme	Duration	Semester	Subject
B.Sc.in Physics	Six semesters	II	Physics
Course Code	Title	Credits	
USPHP2	Practical II	2	

Instructions:

1. All the measurements and readings should be written with proper units in SI system only.
2. After completing all the required number of experiments in the semester and recording them in journal, student will have to get their journal certified and produce the certified journal at the time of practical examination.
3. While evaluating practical, weightage should be given to circuit/ray diagram, observations, tabular representation, experimental skills and procedure, graph, calculation and result.
4. Skill of doing the experiment and understanding physics concepts should be more important than the accuracy of final result.

Learning Outcome:

On successful completion of this course students will be able to:

1. Understand & practice the skills while performing experiments.
2. Understand the use of apparatus and their use without fear & hesitation.
3. Correlate the physics theory concepts to practical application.
4. Understand the concept of errors and their estimation.

Note: Exemption of two experiments from section A and / or B and / or C may be given if student carries out any one of the following activity.

- Collect the information of at least five Physicists with their work or any three events on physics, report that in journal.
- Execute a mini project to the satisfaction of teacher in-charge of practical.
- Participate in a study tour or visit & submit a study tour report.
- For practical examinations, the learner will be examined in two experiments (one from each group).

- Each experiment will be of three lecture hours' duration.
- A Minimum 4 from each group and in all minimum 8 experiments must be reported in journal.
- All the skill experiments are required to be completed compulsorily. Students are required to report all these experiments in the journal. Evaluation in viva voce will be based on regular experiments and skill experiments.

A learner will be allowed to appear for the semester and practical examination only if he submits a certified journal of Physics or a certificate that the learner has completed the practical course of Physics Semester II as per the minimum requirements.

A. Regular Experiment:

Sr No	Name of the Experiments
GROUP A	
1	Young's Modulus of a wire material by method of vibrations
2	Spectrometer: To determine of angle of Prism
3	Spectrometer: To determine refractive index of prism material
4	Combination of Lenses: To determine equivalent focal length of a lens system by magnification method
5	Newton's Rings: To determine radius of curvature of a given convex lens using Newton's rings.
6	Determination of diameter of thin wire using Wedge Shaped Film
GROUP B	
7	To study NAND/NOR gates as Universal Building Blocks
8	LR Circuit: To determine the value of given inductance and phase angle
9	CR Circuit: To determine value of given capacitor and Phase angle
10	Transistor configurations : CB/CE/CC (study of input-output characteristics)

11	LCR series Resonance: To determine resonance frequency of LCR series circuit
12	To study Thermistor characteristics: Resistance vs. Temperature
GROUP C: DEMONSTRATION EXPERIMENT	
1	Radius of ball bearings (single pan balance)
2	Use of Oscilloscope: Wave forms at output of half wave , bridge rectifiers with and without Capacitor filter, Ripple
3	Use of PC for graph plotting
4	I-V Characteristics of LED
5	Testing of components (Resistors , Diode , Transistor , capacitor)
6	Study of I-V characteristics of solar cell

Note: Minimum **8** experiments (Four From each group) and **4** Demo experiments should be completed and reported in the journal, in the first semester. **Certified Journal is a must**, to be eligible to appear for the semester end practical examination.

University of Mumbai



No. UG/17 of 2020-21

CIRCULAR:-

Attention of the Principals of the Affiliated Colleges and Directors of the recognized Institutions in Humanities, Science & Technology Faculty is invited to this office circular No.UG/57 of 2018-19, dated 6th July, 2018 relating to the revised syllabus for the F.Y.B.Sc/F.Y.B.A. in Mathematics (Sem. I & II).

They are hereby informed that the recommendations made by the Board of Studies in Mathematics at its meeting held on 11th March, 2020 vide item No.1 and subsequently made by the Board of Deans at its meeting held on 20th July, 2020 vide item No.54 have been accepted by the Academic Council at its meeting held on 23rd July, 2020 vide item No. 4.106 and that in accordance therewith, the revised syllabus practical book of F.Y. B.Sc./ F.Y.B.A. in Mathematics under the (CBCS) in 75:25 pattern has been brought into force with effect from the academic year 2020 -21 accordingly. (The same is available on the University's website www.mu.ac.in).

MUMBAI - 400 032
17th November, 2020
To


(Dr. Vinod Patil)
I/c REGISTRAR

The Principals of the affiliated Colleges and Directors of the recognized Institutions in Humanities, Science & Technology Faculty. (Circular No.UG/334 of 2017-18 dated 9th January, 2018.)

A.C/4.106/23/07/2020


No. UG/17 -A of 2020-21

MUMBAI-400 032

17th November, 2020

Copy forwarded with Compliments for information to:-

- 1) The Dean, Faculty of Humanities, Science & Technology,
- 2) The Chairman, Board of Studies in Mathematics,
- 3) The Director, Board of Examinations and Evaluation,
- 4) The Director, Board of Students Development,
- 5) The Co-ordinator, University Computerization Centre,


(Dr. Vinod Patil)
I/c REGISTRAR

Copy to :-

1. The Director of Board of Student Development.,
2. The Deputy Registrar (Eligibility and Migration Section)
3. The Director of Students Welfare,
4. The Executive Secretary to the to the Vice-Chancellor,
5. The Pro-Vice-Chancellor
6. The Registrar and
- 7 The Assistant Registrar, Administrative sub-centers, Ratnagiri, Thane & Kalyan, for information.

1. The Director of Board of Examinations and Evaluation
2. The Finance and Accounts Officers
3. Record Section
4. Publications Section
5. The Deputy Registrar, Enrolment, Eligibility and Migration Section
6. The Deputy Registrar (Accounts Section), Vidyanagari
7. The Deputy Registrar, Affiliation Section
8. The Professor-cum- Director, Institute of Distance and Open Learning Education,
9. The Director University Computer Center (IDE Building), Vidyanagari,
10. The Deputy Registrar (Special Cell),
11. The Deputy Registrar, (PRO)
12. The Deputy Registrar, Academic Authorities Unit (1 copies) and
13. The Assistant Registrar, Executive Authorities Unit

They are requested to treat this as action taken report on the concerned resolution adopted by the Academic Council referred to in the above circular and that on separate Action Taken Report will be sent in this connection.

1. The Assistant Registrar Constituent Colleges Unit
2. BUCTU
3. The Deputy Accountant, Unit V
4. The In-charge Director, Centralize Computing Facility
5. The Receptionist
6. The Telephone Operator
7. The Secretary MUASA
8. The Superintendent, Post-Graduate Section
9. The Superintendent, Thesis Section

for information.

UNIVERSITY OF MUMBAI

Sr. No.	Heading	Particulars
1	Title of the Course	Mathematics (F.Y.B.Sc / F.Y.B.A)
2	Eligibility for Admission	<u>XII</u> th Science with Maths
3	Passing Marks	40/100
4	Ordinances / Regulations (if any)	-
5	No. of Years / Semesters	Two Semesters
6	Level	<input checked="" type="checkbox"/> P.G. / <input checked="" type="checkbox"/> U.G. / <input checked="" type="checkbox"/> Diploma / <input checked="" type="checkbox"/> Certificate (Strike out which is not applicable)
7	Pattern	<input checked="" type="checkbox"/> Yearly / <input checked="" type="checkbox"/> Semester (Strike out which is not applicable)
8	Status	<input checked="" type="checkbox"/> New / <input checked="" type="checkbox"/> Revised (Strike out which is not applicable)
9	To be implemented from Academic Year	From Academic Year <u>2020-2021</u>

Date:

20/03/2020

Signature:

Name of BOS Chairperson / Dean:

Prof. Dr. R.P. Deore

UNIVERSITY OF MUMBAI

Syllabus

for F. Y. B. Sc. / F. Y. B. A. Semester I & II
(CBCS)

Program: B. Sc. / B. A.

Course: Mathematics

with effect from the academic year 2020-
2021

F. Y. B. Sc. (CBCS) SEMESTER I

CALCULUS I				
Course Code	UNIT	TOPICS	Credits	L/Week
USMT 101	I	Real Number System	2	3
	II	Sequences in \mathbb{R}		
	III	First Order First Degree Differential Equations		
ALGEBRA I				
USMT 102	I	Integers and Divisibility	2	3
	II	Functions, Relations and Binary Operations		
	III	Polynomials		
PRACTICALS				
USMTP01	-	Practicals based on USMT101, USMT102	2	2

F. Y. B. A. (CBCS) SEMESTER I

CALCULUS I				
Course Code	UNIT	TOPICS	Credits	L/Week
UAMT 101	I	Real Number System	3	3
	II	Real Sequences		
	III	First Order First Degree Differential Equations		
Tutorials				
	-	Tutorials based on UAMT101		

F. Y. B. Sc. (CBCS) SEMESTER II

CALCULUS II				
Course Code	UNIT	TOPICS	Credits	L/Week
USMT 201	I	Limits and Continuity	2	3
	II	Differentiability of functions		
	III	Applications of Differentiability		
DISCRETE MATHEMATICS				
USMT 202	I	Preliminary Counting	2	3
	II	Advanced Counting		
	III	Permutations and Recurrence Relation		
PRACTICALS				
USMTP02	-	Practicals based on USMT201, USMT202	2	2

F. Y. B. A. (CBCS) SEMESTER II

CALCULUS II				
Course Code	UNIT	TOPICS	Credits	L/Week
UAMT 201	I	Limits and Continuity	3	3
	II	Differentiability of functions		
	III	Applications of Differentiability		
TUTORIALS				
	-	Tutorials based on UAMT201		

Revised Syllabus in Mathematics
Choice Based Credit System
F. Y. B. Sc. / B. A. 2020-2021

Preamble:

The University of Mumbai has brought into force the revised syllabi as per the Choice Based Credit System (CBCS) for the First year B. Sc/ B. A. Programme in Mathematics from the academic year 2020-2021.

Mathematics has been fundamental to the development of science and technology. In recent decades, the extent of application of Mathematics to real world problems has increased by leaps and bounds. Taking into consideration the rapid changes in science and technology and new approaches in different areas of mathematics and related subjects like Physics, Statistics and Computer Sciences, the board of studies in Mathematics with concern of teachers of Mathematics from different colleges affiliated to University of Mumbai has prepared the syllabus of F.Y.B. Sc. / F. Y. B. A. Mathematics. The present syllabi of F. Y. B. Sc. for Semester I and Semester II has been designed as per U. G. C. Model curriculum so that the students learn Mathematics needed for these branches, learn basic concepts of Mathematics and are exposed to rigorous methods gently and slowly. The syllabi of F. Y. B. Sc. / F. Y. B. A. would consist of two semesters and each semester would comprise of two courses for F. Y. B. Sc. Mathematics and one course for each semester for F. Y. B. A. Mathematics. Course I is 'Calculus I and Calculus II'. Calculus is applied and needed in every conceivable branch of science. Course II, 'Algebra I and Discrete Mathematics' develops mathematical reasoning and logical thinking and has applications in science and technology.

Aims:

- (1) Give the students a sufficient knowledge of fundamental principles, methods and a clear perception of innumerable power of mathematical ideas and tools and know how to use them by modeling, solving and interpreting.
- (2) Reflecting the broad nature of the subject and developing mathematical tools for continuing further study in various fields of science.
- (3) Enhancing students' overall development and to equip them with mathematical modeling abilities, problem solving skills, creative talent and power of communication necessary for various kinds of employment.
- (4) A student should get adequate exposure to global and local concerns that explore them many aspects of Mathematical Sciences

Course outcomes:

1. Calculus (Sem I & II): This course gives introduction to basic concepts of Analysis with rigor and prepares students to study further courses in Analysis. Formal proofs are given lot of emphasis in this course which also enhances understanding of the subject of Mathematics as a whole. The portion on first order, first degree differentials prepares learner to get solutions of so many kinds of problems in all subjects of Science and also prepares learner for further studies of differential equations and related fields.
2. Algebra I (Sem I) & Discrete Mathematics (Sem II): This course gives expositions to number systems (Natural Numbers & Integers), like divisibility and prime numbers and

their properties. These topics later find use in advanced subjects like cryptography and its uses in cyber security and such related fields.

Teaching Pattern for Semester I

- [1.] Three lectures per week per course.
- [2.] One Practical per week per batch for each of the courses USMT101, USMT 102 (the batches to be formed as prescribed by the University).
- [3.] One Tutorial per week per batch for course UAMT101 (the batches to be formed as prescribed by the University).

Teaching Pattern for Semester II

- [1.] Three lectures per week per course.
- [2.] One Practical per week per batch for each of the courses USMT201, USMT 202. (the batches to be formed as prescribed by the University).
- [3.] One Tutorial per week per batch for the course UAMT201 (the batches to be formed as prescribed by the University).

F.Y.B.Sc. / F.Y.B.A. Mathematics
SEMESTER I
USMT 101 / UAMT 101: CALCULUS I

Note: All topics have to be covered with proof in details (unless mentioned otherwise) and examples.

Unit 1 : Real Number System (15 Lectures)

- (1) Real number system \mathbb{R} and order properties of \mathbb{R} , absolute value $||$ and its properties.
- (2) AM-GM inequality, Cauchy-Schwarz inequality, Intervals and neighbourhoods, interior points, limit point, Hausdorff property.
- (3) Bounded sets, statements of I.u.b. axiom and its consequences, supremum and infimum, maximum and minimum, Archimedean property and its applications, density of rationals.

Unit II: Sequences in \mathbb{R} (15 Lectures)

- (1) Definition of a sequence and examples, Convergence of sequences, every convergent sequence is bounded. Limit of a convergent sequence and uniqueness of limit, Divergent sequences.
- (2) Convergence of standard sequences like $\left(\frac{1}{1+na}\right) \forall a > 0$, $(b^n) \forall b, 0 < b < 1$, $(c^{\frac{1}{n}}) \forall c > 0$, & $(n^{\frac{1}{n}})$.
- (3) Algebra of convergent sequences, sandwich theorem, monotone sequences, monotone convergence theorem and consequences as convergence of $\left(1 + \frac{1}{n}\right)^n$.
- (4) Definition of subsequence, subsequence of a convergent sequence is convergent and converges to the same limit, definition of a Cauchy sequences, every convergent sequences is a Cauchy sequence and converse.

Unit III: First order First degree Differential equations (15 Lectures)

Review of Definition of a differential equation, order, degree, ordinary differential equation and partial differential equation, linear and non linear ODE. Solution of homogeneous and non-homogeneous differential equations of first order and first degree. Notion of partial derivatives.

- (1) Exact Equations: General solution of Exact equations of first order and first degree. Necessary and sufficient condition for $Mdx + Ndy = 0$ to be exact. Non-exact equations: Rules for finding integrating factors (without proof) for non exact equations, such as :

i) $\frac{1}{Mx + Ny}$ is an I.F. if $Mx + Ny \neq 0$ and $Mdx + Ndy = 0$ is homogeneous.

ii) $\frac{1}{Mx - Ny}$ is an I.F. if $Mx - Ny \neq 0$ and $Mdx + Ndy = 0$ is of the form $f_1(x, y) y dx + f_2(x, y) x dy = 0$.

iii) $e^{\int f(x) dx}$ (resp $e^{\int g(y) dy}$) is an I.F. if $N \neq 0$ (resp $M \neq 0$) and $\frac{1}{N} \left(\frac{\partial M}{\partial y} - \frac{\partial N}{\partial x} \right)$ (resp $\frac{1}{M} \left(\frac{\partial M}{\partial y} - \frac{\partial N}{\partial x} \right)$) is a function of x (resp y) alone, say $f(x)$ (resp $g(y)$).

iv) Linear and reducible linear equations of first order, finding solutions of first order differential equations of the type for applications to orthogonal trajectories, population growth, and finding the current at a given time.

(2) Reduction of order :

- (i) If the differential equation does not contain only the original function y , that is equations of Type $F(x, y', y'') = 0$.
- (ii) If the differential equation does not contain the independent variable x that is, equations of Type $F(y, y', y'') = 0$.

Reference Books:

1. R. R. Goldberg, Methods of Real Analysis, Oxford and IBH, 1964.
2. K. G. Binmore, Mathematical Analysis, Cambridge University Press, 1982.
3. R. G. Bartle- D. R. Sherbert, Introduction to Real Analysis, John Wiley & Sons, 1994.
4. Sudhir Ghorpade and Balmohan Limaye, A course in Calculus and Real Analysis, Springer International Ltd, 2000.
5. G. F. Simmons, Differential Equations with Applications and Historical Notes, McGraw Hill, 1972.
6. E. A. Coddington , An Introduction to Ordinary Differential Equations. Prentice Hall, 1961.
7. W. E. Boyce, R. C. DiPrima, Elementary Differential Equations and Boundary Value Problems, Wiley, 2013.

Additional Reference Books

1. T. M. Apostol, Calculus Volume I, Wiley & Sons (Asia) Pte, Ltd.
2. Richard Courant-Fritz John, A Introduction to Calculus and Analysis, Volume I, Springer.
3. Ajit kumar and S. Kumaresan, A Basic Course in Real Analysis, CRC Press, 2014.
4. James Stewart, Calculus, Third Edition, Brooks/ cole Publishing Company, 1994.
5. D. A. Murray, Introductory Course in Differential Equations, Longmans, Green and Co., 1897.
6. A. R. Forsyth, A Treatise on Differential Equations, MacMillan and Co., 1956.

ALGEBRA I USMT 102

Prerequisite :

Set Theory: Set, subset, union and intersection of two sets, empty set, universal set, complement of a set, De Morgan's laws, Cartesian product of two sets, Relations, Permutations nP_r and Combinations nC_r .

Complex numbers: Addition and multiplication of complex numbers, modulus, amplitude and conjugate of a complex number.

Unit I : Integers & Divisibility (15 Lectures)

- (1) Statements of well-ordering property of non-negative integers, Principle of finite induction (first and second) as a consequence of Well-Ordering Principle.
- (2) Divisibility in integers, division algorithm, greatest common divisor (g.c.d.) and least common multiple (l.c.m.) of two non zero integers, basic properties of g.c.d. such as existence and uniqueness of g.c.d. of two non zero integers a and b and that the g.c.d. can be expressed as $ma + nb$ for some $m, n \in \mathbb{Z}$, Euclidean algorithm.
- (3) Primes, Euclid's lemma, Fundamental Theorem of arithmetic, The set of primes is infinite, there are arbitrarily large gaps between primes, there exists infinitely many primes of the form $4n - 1$ or of the form $6n - 1$.
- (4) Congruence, definition and elementary properties, Results about linear congruence equations. Examples.

Unit II : Functions, Relations and Binary Operations (15 Lectures)

- (1) Definition of relation and function, domain, co-domain and range of a function, composite functions, examples, Direct image $f(A)$ and inverse image $f^{-1}(B)$ for a function f , injective, surjective, bijective functions, Composite of injective, surjective, bijective functions when defined, invertible functions, bijective functions are invertible and conversely, examples of functions including constant, identity, projection, inclusion, Binary operation as a function, properties, examples.
- (2) Equivalence relation, Equivalence classes, properties such as two equivalence classes are either identical or disjoint, Definition of partition, every partition gives an equivalence relation and vice versa.
- (3) Congruence is an equivalence relation on \mathbb{Z} , Residue classes and partition of \mathbb{Z} , Addition modulo n , Multiplication modulo n , examples.

Unit III: Polynomials (15 Lectures)

- (1) Definition of a polynomial, polynomials over F where $F = \mathbb{Q}, \mathbb{R}$ or \mathbb{C} , Algebra of polynomials, degree of polynomial, basic properties.
- (2) Division algorithm in $F[X]$ (without proof), and g.c.d of two polynomials and its basic properties, Euclidean algorithm (proof of the above results may be given only in the case of $\mathbb{Q}[X]$ with a remark that the results as well as the proofs remain valid in the case of $\mathbb{R}[X]$ or $\mathbb{C}[X]$).

- (3) Roots of a polynomial, relation between roots and coefficients, multiplicity of a root. Elementary consequences such as the following.
- (i) Remainder theorem, Factor theorem.
 - (ii) A polynomial of degree n has at most n roots.
 - (iii) Complex and non-real roots of a polynomials in $\mathbb{R}[X]$ occur in conjugate pairs.
- (Emphasis on examples and problems in polynomials with real coefficients).
- (4) Necessary condition for a rational number $\frac{p}{q}$ to be a root of a polynomial with integer coefficients (viz. p divides the constant coefficient and q divides the leading coefficient), corollary for monic polynomials (viz. a rational root of monic polynomial with integer coefficients is necessarily an integer). Simple consequence such as the irrationality is necessarily of \sqrt{p} for any prime number p . Irreducible polynomials in $\mathbb{Q}[x]$, Unique Factorisation Theorem. Examples.

Reference Books:

1. David M. Burton, Elementary Number Theory, Seventh Edition, McGraw Hill Education (India) Private Ltd.
2. Norman L. Biggs, Discrete Mathematics, Revised Edition, Clarendon Press, Oxford 1989.

Additional Reference Books

1. I. Niven and S. Zuckerman, Introduction to the theory of numbers, Third Edition, Wiley Eastern, New Delhi, 1972.
2. G. Birkoff and S. MacLane, A Survey of Modern Algebra, Third Edition, Mac Millan, New York, 1965.
3. N. S. Gopalkrishnan, University Algebra, Ne Age International Ltd, Reprint 2013.
4. I .N. Herstein, Topics in Algebra, John Wiley, 2006.
5. P. B. Bhattacharya S. K. Jain and S. R. Nagpaul, Basic Abstract Algebra, New Age International, 1994.
6. Kenneth Rosen, Discrete Mathematics and its applications, Mc-Graw Hill, International Edition, Mathematics Series.

PRACTICALS FOR F.Y.B.Sc
USMTP01 – Practicals

A. Practicals for USMT101/ UAMT 101:

- (1) Algebraic and Order Properties of Real Numbers and Inequalities
- (2) Hausdorff Property and LUB Axiom of \mathbb{R} , Archimedian Property.
- (3) Convergence and divergence of sequences, bounded sequences, Sandwich Theorem.
- (4) Cauchy sequences, monotonic sequences, non-monotonic sequences.
- (5) Solving exact and non-exact, linear, reducible to linear differential equations.
- (6) Reduction of order of Differential Equations, Applications of Differential Equations.
- (7) Miscellaneous Theoretical Questions based on full paper.

B. Practicals for USMT102:

- (1) Mathematical induction ,Division Algorithm, Euclidean algorithm in \mathbb{Z} , Examples on expressing the gcd. of two non zero integers a & b as $ma + nb$ for some $m, n \in \mathbb{Z}$,
- (2) Primes and the Fundamental theorem of Arithmetic, Euclid's lemma, there exists infinitely many primes of the form $4n - 1$ or of the form $6n - 1$.
- (3) Functions, Bijective and Invertible functions, Compositions of functions.
- (4) Binary Operation, Equivalence Relations, Partition and Equivalence classes.
- (5) Polynomial (I)
- (6) Polynomial (II)
- (7) Miscellaneous Theoretical Questions based on full paper.

TUTORIALS FOR F.Y.B.A

Tutorials for UAMT101 :

- (1) Algebraic and Order Properties of Real Numbers and Inequalities
- (2) Hausdorff Property and LUB Axiom of \mathbb{R} , Archimedian Property.
- (3) Convergence and divergence of sequences, bounded sequences, Sandwich Theorem.
- (4) Cauchy sequences, monotonic sequences, non-monotonic sequences.
- (5) Solving exact and non-exact, linear, reducible to linear differential equations.
- (6) Reduction of order of Differential Equations, Applications of Differential Equations.
- (7) Miscellaneous Theoretical Questions based on full paper.

Semester II
USMT 201 / UAMT201: CALCULUS II

Unit-I: Limits and Continuity (15 Lectures)

{Brief review: Domain and range of a function, injective function, surjective function, bijective function, composite of two functions (when defined), Inverse of a bijective function. Graphs of some standard functions such as $|x|$, e^x , $\log x$, ax^2+bx+c , $\frac{1}{x}$, x^n $n \geq 3$), $\sin x$, $\cos x$, $\tan x$, $\sin\left(\frac{1}{x}\right)$, $x^2 \sin\left(\frac{1}{x}\right)$ over suitable intervals of \mathbb{R} . No direct questions to be added.}

- (1) $\varepsilon - \delta$ definition of Limit of a function, uniqueness of limit if it exists, algebra of limits, limits of composite function, sandwich theorem, left-hand-limit $\lim_{x \rightarrow a^-} f(x)$, right-hand-limit $\lim_{x \rightarrow a^+} f(x)$, non-existence of limits, $\lim_{x \rightarrow -\infty} f(x)$, $\lim_{x \rightarrow \infty} f(x)$ and $\lim_{x \rightarrow a} f(x) = \pm\infty$.
- (2) Continuous functions: Continuity of a real valued function at a point and on a set using $\varepsilon - \delta$ definition, examples, Continuity of a real valued function at end points of domain using $\varepsilon - \delta$ definition, f is continuous at a if and only if $\lim_{x \rightarrow a} f(x)$ exists and equals to $f(a)$, Sequential continuity, Algebra of continuous functions, discontinuous functions, examples of removable and essential discontinuity.
- (3) Intermediate Value theorem and its applications, Bolzano-Weierstrass theorem (statement only): A continuous function on a closed and bounded interval is bounded and attains its bounds.

Unit-II: Differentiability of functions (15 Lectures)

- (1) Differentiation of real valued function of one variable: Definition of differentiability of a function at a point of an open interval, examples of differentiable and non differentiable functions, differentiable functions are continuous but not conversely, algebra of differentiable functions.
- (2) Chain rule, Higher order derivatives, Leibniz rule, Derivative of inverse functions, Implicit differentiation (only examples)

Unit-III: Applications of differentiability (15 Lectures)

- (1) Rolle's Theorem, Lagrange's and Cauchy's Mean Value Theorems, applications and examples, Monotone increasing and decreasing functions, examples.
- (2) L-Hospital rule (without proof), examples of indeterminate forms, Taylor's theorem with Lagrange's form of remainder with proof, Taylor polynomial and applications.
- (3) Definition of critical point, local maximum/minimum, necessary condition, stationary points, second derivative test, examples, concave/convex functions, point of inflection.
- (4) Sketching of graphs of functions using properties.

Reference books:

1. R. R. Goldberg, Methods of Real Analysis, Oxford and IBH, 1964.
2. James Stewart, Calculus, Third Edition, Brooks/ Cole Publishing company, 1994.
3. T. M. Apostol, Calculus, Vol I, Wiley And Sons (Asia) Pte. Ltd.

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4. Sudhir Ghorpade and Balmohan Limaye, A course in Calculus and Real Analysis, Springer International Ltd, 2000.

Additional Reference:

1. Richard Courant and Fritz John, A Introduction to Calculus and Analysis, Volume-I, Springer.
2. Ajit Kumar and S. Kumaresan, A Basic course in Real Analysis, CRC Press, 2014.
3. K. G. Binmore, Mathematical Analysis, Cambridge University Press, 1982.
4. G. B. Thomas, Calculus, 12th Edition 2009

USMT 202: DISCRETE MATHEMATICS

Unit I: Preliminary Counting (15 Lectures)

- (1) Finite and infinite sets, countable and uncountable sets examples such as \mathbb{N} , \mathbb{Z} , $\mathbb{N} \times \mathbb{N}$, \mathbb{Q} , $(0, 1)$, \mathbb{R} .
- (2) Addition and multiplication Principle, counting sets of pairs, two ways counting.
- (3) Stirling numbers of second kind. Simple recursion formulae satisfied by $S(n, k)$ for $k = 1, 2, \dots, n-1, n$.
- (4) Pigeonhole principle simple and strong form and examples, its applications to geometry.

Unit II: Advanced Counting (15 Lectures)

- (1) Permutation and combination of sets and multi-sets, circular permutations, emphasis on solving problems.
- (2) Binomial and Multinomial Theorem, Pascal identity, examples of standard identities such as the following with emphasis on combinatorial proofs.

$$\begin{aligned}
 & \bullet \sum_{k=0}^r \binom{m}{k} \binom{n}{r-k} = \binom{m+n}{r} & \bullet \sum_{i=0}^k \binom{k}{i}^2 = \binom{2k}{k} \\
 & \bullet \sum_{i=r}^n \binom{i}{r} = \binom{n+1}{r+1} & \bullet \sum_{i=0}^n \binom{n}{i} = 2^n
 \end{aligned}$$

- (3) Non-negative integer solutions of equation $x_1 + x_2 + \dots + x_k = n$.
- (4) Principal of inclusion and exclusion, its applications, derangements, explicit formula for d_n , deriving formula for Euler's function $\phi(n)$.

Unit III: Permutations and Recurrence relation (15 lectures)

- (1) Permutation of objects, S_n , composition of permutations, results such as every permutation is a product of disjoint cycles, every cycle is a product of transpositions, signature of a permutation, even and odd permutations, cardinality of S_n , A_n .

- (2) Recurrence Relations, definition of homogeneous, non-homogeneous, linear, non-linear recurrence relation, obtaining recurrence relations of Tower of Hanoi, Fibonacci sequence, etc. in counting problems, solving homogeneous as well as non homogeneous recurrence relations by using iterative methods, solving a homogeneous recurrence relation of second degree using algebraic method proving the necessary result.

Recommended Books:

1. Norman Biggs, Discrete Mathematics, Oxford University Press.
2. Richard Brualdi, Introductory Combinatorics, John Wiley and sons.
3. V. Krishnamurthy, Combinatorics-Theory and Applications, Affiliated East West Press.
4. Discrete Mathematics and its Applications, Tata McGraw Hills.
5. Schaum's outline series, Discrete mathematics,
6. Allen Tucker, Applied Combinatorics, John Wiley and Sons.
7. Sharad Sane, Combinatorial Techniques, Springer.

**PRACTICALS FOR F.Y.B.Sc
USMTP02-Practicals**

A. Practicals for USMT201 :

- (1) Limit of a function and Sandwich theorem, Continuous and discontinuous function.
- (2) Algebra of limits and continuous functions, Intermediate Value theorem, Bolzano-Weierstrass theorem.
- (3) Properties of differentiable functions, derivatives of inverse functions and implicit functions.
- (4) Higher order derivatives, Leibnitz Rule.
- (5) Mean value theorems and its applications, L'Hospital's Rule, Increasing and Decreasing functions.
- (6) Extreme values, Taylor's Theorem and Curve Sketching.
- (7) Miscellaneous Theoretical Questions based on full paper.

B. Practicals for USMT202:

- (1) Counting principles, Two way counting.
- (2) Stirling numbers of second kind, Pigeon hole principle.
- (3) Multinomial theorem, identities, permutation and combination of multi-set.
- (4) Inclusion-Exclusion principle. Euler phi function.
- (5) Composition of permutations, signature of permutation, inverse of permutation.
- (6) Recurrence relation.
- (7) Miscellaneous Theoretical Questions based on full paper.

TUTORIALS FOR F.Y.B.A

Tutorials for UAMT201 :

- (1) Limit of a function and Sandwich theorem, Continuous and discontinuous function.
- (2) Algebra of limits and continuous functions, Intermediate Value theorem, Bolzano-Weierstrass theorem.
- (3) Properties of differentiable functions, derivatives of inverse functions and implicit functions.
- (4) Higher order derivatives, Leibnitz Rule.
- (5) Mean value theorems and its applications, L'Hospital's Rule, Increasing and Decreasing functions.
- (6) Extreme values, Taylor's Theorem and Curve Sketching.
- (7) Miscellaneous Theoretical Questions based on full paper.

Scheme of Examination (75:25)

The performance of the learners shall be evaluated into two parts. The learner's performance shall be assessed by Internal Assessment with 25 percent marks in the first part and by conducting the Semester End Examinations with 75 percent marks in the second part. The allocation of marks for the Internal Assessment and Semester End Examinations are as shown below:-

I. Internal Evaluation of 25 Marks:

F.Y.B.Sc. :

- (i) One class Test of 20 marks to be conducted during Practical session.

Paper pattern of the Test:

Q1: Definitions/ Fill in the blanks/ True or False with Justification (04 Marks).

Q2: Multiple choice 5 questions. (10 Marks: 5×2)

Q3: Attempt any 2 from 3 descriptive questions. (06 marks: 2×3)

- (ii) Active participation in routine class: 05 Marks.

F.Y.B.A. :

- (i) One class Test of 20 marks to be conducted during Tutorial session.

Paper pattern of the Test:

Q1: Definitions/ Fill in the blanks/ True or False with Justification (04 Marks).

Q2: Multiple choice 5 questions. (10 Marks: 5×2)

Q3: Attempt any 2 from 3 descriptive questions. (06 marks: 2×3)

- (ii) Journal : 05 Marks.

- II. **Semester End Theory Examinations :** There will be a Semester-end external Theory examination of 75 marks for each of the courses USMT101/UAMT101, USMT102 of Semester I and USMT201/UAMT201, USMT202 of semester II to be conducted by the college.

1. Duration: The examinations shall be of 2 and $\frac{1}{2}$ hours duration.
2. Theory Question Paper Pattern:
 - a) There shall be FOUR questions. The first three questions Q1, Q2, Q3 shall be of 20 marks, each based on the units I, II, III respectively. The question Q4 shall be of 15 marks based on the entire syllabus.
 - b) All the questions shall be compulsory. The questions Q1, Q2, Q3, Q4 shall have internal choices within the questions. Including the choices, the marks for each question shall be 25-27.
 - c) The questions Q1, Q2, Q3, Q4 may be subdivided into sub-questions as a, b, c, d & e, etc and the allocation of marks depends on the weightage of the topic.

3. Semester End Examinations Practicals:

At the end of the Semesters I & II Practical examinations of three hours duration and 100 marks shall be conducted for the courses USMTP01, USMTP02.

In semester I, the Practical examinations for USMT101 and USMT102 are held together by the college.

In Semester II, the Practical examinations for USMT201 and USMT202 are held together by the college.

Paper pattern: The question paper shall have two parts A and B. Each part shall have two Sections.

Section I Objective in nature: Attempt any Eight out of Twelve multiple choice questions (04 objective questions from each unit) ($8 \times 3 = 24$ Marks).

Section II Problems: Attempt any Two out of Three (01 descriptive question from each unit) ($8 \times 2 = 16$ Marks).

Practical Course	Part A	Part B	Marks out of	duration
USMTP01	Questions from USMT101	Questions from USMT102	80	3 hours
USMTP02	Questions from USMT201	Questions from USMT202	80	3 hours

Marks for Journals and Viva:

For each course USMTP01 (USMT101, USMT102) and USMTP02 (USMT201, USMT202):

1. Journal: 10 marks (5 marks for each journal).
2. Viva: 10 marks.

Each Practical of every course of Semester I and II shall contain at least 10 objective questions and at least 6 descriptive questions.

A student must have a certified journal before appearing for the practical examination.

In case a student does not possess a certified journal he/she will be evaluated for 80 marks. He/she is not qualified for Journal + Viva marks.

XXXXXXXX

University of Mumbai



No. AAMS(UG)/ 97 of 2021-22

CIRCULAR:-

Attention of the Principals of the Affiliated Colleges and Directors of the Recognized Institutions in Faculties of Humanities and Science & Technology.

They are hereby informed that the recommendations made by the Board of Studies in Mathematics at its online meeting held on 23rd April, 2021 vide Item No. 1 (i) and subsequently passed by the Board of Deans at its online meeting held on 11th June, 2021 vide item No. 6.17 (R) have been accepted by the Academic Council at its meeting held on 29th June, 2021 vide item No. 6.17(R) and that in accordance therewith, Finalize the proposed syllabus of S.Y.B.Sc./S.Y.B.A. (Sem-III & IV) in Mathematics under (CBCS) in 75:25 pattern has been brought into force with effect from the academic year 2021-22 accordingly. (The same is available on the University's website www.mu.ac.in).

MUMBAI – 400 032

8th October, 2021

(Dr. B.N.Gaikwad)
I/c REGISTRAR

To

The Principals of the Affiliated Colleges and Directors of the Recognized Institutions in Faculties of Humanities and Science & Technology.

A.C/6.17 (R) 29/06/2021

No. AAMS(UG)/ 97 -A of 2021-22

MUMBAI-400 032

8th October, 2021

Copy forwarded with Compliments for information to:-

- 1) The Dean, Faculties of Humanities and Science & Technology
- 2) The Chairman, Board of Studies in Mathematics,
- 3) The Director, Board of Examinations and Evaluation,
- 4) The Director, Board of Students Development,
- 5) The Co-ordinator, University Computerization Centre,

(Dr. B.N.Gaikwad)
I/c REGISTRAR

Copy to :-

- 1. The Deputy Registrar, Academic Authorities Meetings and Services (AAMS),**
- 2. The Deputy Registrar, College Affiliations & Development Department (CAD),**
- 3. The Deputy Registrar, (Admissions, Enrolment, Eligibility and Migration Department (AEM),**
- 4. The Deputy Registrar, Research Administration & Promotion Cell (RAPC),**
- 5. The Deputy Registrar, Executive Authorities Section (EA),**
- 6. The Deputy Registrar, PRO, Fort, (Publication Section),**
- 7. The Deputy Registrar, (Special Cell),**
- 8. The Deputy Registrar, Fort/ Vidyanagari Administration Department (FAD) (VAD), Record Section,**
- 9. The Director, Institute of Distance and Open Learning (IDOL Admin), Vidyanagari,**

They are requested to treat this as action taken report on the concerned resolution adopted by the Academic Council referred to in the above circular and that on separate Action Taken Report will be sent in this connection.

- 1. P.A to Hon'ble Vice-Chancellor,**
- 2. P.A Pro-Vice-Chancellor,**
- 3. P.A to Registrar,**
- 4. All Deans of all Faculties,**
- 5. P.A to Finance & Account Officers, (F.& A.O),**
- 6. P.A to Director, Board of Examinations and Evaluation,**
- 7. P.A to Director, Innovation, Incubation and Linkages,**
- 8. P.A to Director, Board of Lifelong Learning and Extension (BLLE),**
- 9. The Director, Dept. of Information and Communication Technology (DICT) (CCF & UCC), Vidyanagari,**
- 10. The Director of Board of Student Development,**
- 11. The Director, Department of Students Welfare (DSD),**
- 12. All Deputy Registrar, Examination House,**
- 13. The Deputy Registrars, Finance & Accounts Section,**
- 14. The Assistant Registrar, Administrative sub-Campus Thane,**
- 15. The Assistant Registrar, School of Engg. & Applied Sciences, Kalyan,**
- 16. The Assistant Registrar, Ratnagiri sub-centre, Ratnagiri,**
- 17. The Assistant Registrar, Constituent Colleges Unit,**
- 18. BUCTU,**
- 19. The Receptionist,**
- 20. The Telephone Operator,**
- 21. The Secretary MUASA**

for information.

UNIVERSITY OF MUMBAI



Syllabus
for the
Program : S.Y.B.Sc./ S.Y.B.A Sem. III
& IV (CBCS)
Course : Mathematics

(Choice Based and Credit System with effect from
the academic year 2021-22)

AC 29/6/2021
Item No. 6.17

UNIVERSITY OF MUMBAI



Syllabus for Approval

Sr. No.	Heading	Particulars
1	Title of the Course	S. Y. B. Sc. /B. A. Mathematics, Sem III & IV
2	Eligibility for Admission	As per university regulations
3	Passing Marks	40% (Internal 10/25 Marks and External 30/75)
4	Ordinances / Regulations (if any)	-
5	No. of Years / Semesters	Three Years / Six Semesters Programme (Syllabus for sem III & IV)
6	Level	UG
7	Pattern	Semester
8	Status	Revised
9	To be implemented from Academic Year	From Academic Year : 2021-2022

Date: 19.05.2021

Name: Prof. R. P. Deore

Signature: 

Chairman of BoS of Mathematics

19.05.2021

Dr. Anuradha Majumdar (Dean, Science and Technology)
Prof. Shivram Garje (Associate Dean, Science)
Prof. R. P. Deore , Chairman (BoS) Member(BoS)
Prof. P. Veeramani, Member
Prof. S. R. Ghorpade , Member
Prof. Ajit Diwan, Member
Dr. Sushil Kulkarni, Member
Dr. S. A. Shende, Member
Prof. V. S. Kulkarni
Dr. Sanjeevani Gharge, Member
Dr. Mittu Bhattacharya, Member
Dr. Abhaya Chitre, Member
Dr. S. Aggarwal, Member
Dr. Amul Desai, Member

CONTENTS

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2. Programme Outcomes
3. Course Outcomes
4. Course structure with minimum credits and Lectures/ Week
5. Teaching Pattern for semester III & IV
6. Consolidated Syllabus for semester III& IV
7. Scheme of Evaluation

1. Preamble

The University of Mumbai has brought into force the revised syllabi as per the Choice Based Credit System (CBCS) for the Second year B. Sc / B. A. Programme in Mathematics from the academic year 2021-2022. Mathematics has been fundamental to the development of science and technology. In recent decades, the extent of application of Mathematics to real world problems has increased by leaps and bounds. Taking into consideration the rapid changes in science and technology and new approaches in different areas of mathematics and related subjects like Physics, Statistics and Computer Sciences, the board of studies in Mathematics with concern of teachers of Mathematics from different colleges affiliated to University of Mumbai has prepared the syllabus of S.Y.B. Sc. / S. Y. B. A. Mathematics. The present syllabi of S. Y. B. Sc. for Semester III and Semester IV has been designed as per U. G. C. Model curriculum so that the students learn Mathematics needed for these branches, learn basic concepts of Mathematics and are exposed to rigorous methods gently and slowly. The syllabi of S. Y. B. Sc. / S. Y. B. A. would consist of two semesters and each semester would comprise of three courses and one practical course for S. Y. B. Sc Mathematics and two courses and one practical course for each semester for S. Y. B. A. Mathematics.

Aims and Objectives :

- (1) Give the students a sufficient knowledge of fundamental principles, methods and a clear perception of innumerable power of mathematical ideas and tools and know how to use them by modeling, solving and interpreting.
- (2) Reflecting the broad nature of the subject and developing mathematical tools for continuing further study in various fields of science.
- (3) Enhancing students' overall development and to equip them with mathematical modeling abilities, problem solving skills, creative talent and power of communication necessary for various kinds of employment.
- (4) A student should get adequate exposure to global and local concerns that explore them many aspects of Mathematical Sciences

2. Programme Outcomes:

- (1) Enabling students to develop positive attitude towards mathematics as an interesting and valuable subject
- (2) Enhancing students overall development and to equip them with mathematical modeling, abilities, problem solving skills, creative talent and power of communication.
- (3) Acquire good knowledge and understanding in advanced areas of mathematics and statistics.

3. Course outcomes:

1. Calculus (Sem III) & Multivariable Calculus I(Sem IV): This course gives introduction to basic concepts of Analysis with rigor and prepares students to study further courses in

Analysis. Formal proofs are given lot of emphasis in this course which also enhances understanding of the subject of Mathematics as a whole.

2. Linear Algebra I (Sem III) & Linear Algebra II (Sem IV): This course gives expositions to system of linear equations and matrices, Vector spaces, Basis and dimension, Linear Transformation, Inner product space, Eigen values and eigenvectors.
3. Ordinary Differential Equations (Sem III) prepares learner to get solutions of so many kinds of problems in all subjects of Science and also prepares learner for further studies of differential equations and related fields.
4. Numerical Methods and Statistical Methods: Lerner will learn different types of Numerical methods and statistical methods to apply in different fields of Mathematics.

(UNIVERSITY OF MUMBAI)

Syllabus for: S.Y.B.Sc./S.Y.B.A.

Program: B.Sc./B/A.

Course: Mathematics

Choice based Credit System (CBCS)

with effect from the
academic year 2021-22

4. Course structure with minimum Credits and Lectures/ Week

SEMESTER III

Calculus III				
Course Code	UNIT	TOPICS	Credits	L/Week
USMT 301, UAMT 301	I	Infinite Series	2	3
	II	Riemann Integration		
	III	Applications of Integrations and Improper Integrals		
Linear Algebra I				
USMT 302 ,UAMT 302	I	System of Equations and Matrices	2	3
	II	Vector Spaces over IR		
	III	Determinants, Linear Equations (Revisited)		
ORDINARY DIFFERENTIAL EQUATIONS				
USMT 303	I	Higher Order linear Differential Equations	2	3
	II	Systems of First Order Linear differential equations		
	III	Numerical Solutions of Ordinary Differential Equations		
PRACTICALS				
USMTP03		Practicals based on USMT301, USMT 302 and USMT 303	3	5
UAMTP03		Practicals based on UAMT301, UAMT 302	2	4

SEMESTER IV

Multivariable Calculus I				
Course Code	UNIT	TOPICS	Credits	L/Week
USMT 401, UAMT 401	I	Functions of several variables	2	3
	II	Differentiation of Scalar Fields		
	III	Applications of Differentiation of Scalar Fields and Differentiation of Vector Fields		
Linear Algebra II				
USMT 402 ,UAMT 402	I	Linear transformation, Isomorphism, Matrix associated with L.T.	2	3
	II	Inner product spaces		
	III	Eigen values, eigen vectors, diagonalizable matrix		
Numerical methods (Elective A)				
USMT 403A	I	Solutions of algebraic and transcendental equations	2	3
	II	Interpolation, Curve fitting, Numerical integration		
	III	Solutions of linear system of Equations and eigen value problems		
Statistical methods an their applications(Elective B)				
USMT 403B	I	Descriptive Statistics and random variables	2	3
	II	Probability Distribution and Correlation		
	III	Inferential Statistics		
PRACTICALS				
USMTP04		Practicals based on USMT401, USMT 402 and USMT 403	3	5
UAMTP04		Practicals based on UAMT401, UAMT 402	2	4

5. Teaching Pattern for Semester III & IV

Teaching Pattern for Semester III

1. Three lectures per week per course. Each lecture is of 48 minutes duration.
2. One Practical (2L) per week per batch for courses USMT301, USMT 302 combined and one Practical (3L) per week for course USMT303 (the batches to be formed as prescribed by the University. Each practical session is of 48 minutes duration.)

Teaching Pattern for Semester IV

1. Three lectures per week per course. Each lecture is of 48 minutes duration.
2. One Practical (2L) per week per batch for courses USMT301, USMT 302 combined and one Practical (3L) per week for course USMT303 (the batches to be formed as prescribed by the University. Each practical session is of 48 minutes duration.)

6. Consolidated Syllabus for Semester III & IV

Semester-III

Note: Unless indicated otherwise, proofs of the results mentioned in the syllabus should be covered.

USMT301/ UAMT301: Calculus III

Unit I. Infinite Series (15 Lectures)

1. Infinite series in \mathbb{R} . Definition of convergence and divergence. Basic examples including geometric series. Elementary results such as if $\sum_{n=1}^{\infty} a_n$ is convergent, then $a_n \rightarrow 0$ but converse not true. Cauchy Criterion. Algebra of convergent series.
2. Tests for convergence: Comparison Test, Limit Comparison Test, Ratio Test (without proof), Root Test (without proof), Abel Test (without proof) and Dirichlet Test (without proof). Examples. The decimal expansion of real numbers. Convergence of $\sum_{n=1}^{\infty} \frac{1}{n^p}$ ($p > 1$).
Divergence of harmonic series $\sum_{n=1}^{\infty} \frac{1}{n}$.
3. Alternating series. Leibnitz's Test. Examples. Absolute convergence, absolute convergence implies convergence but not conversely. Conditional Convergence.

Unit II. Riemann Integration (15 Lectures)

1. Idea of approximating the area under a curve by inscribed and circumscribed rectangles. Partitions of an interval. Refinement of a partition. Upper and Lower sums for a bounded real valued function on a closed and bounded interval. Riemann integrability and the Riemann integral.

2. Criterion for Riemann integrability. Characterization of the Riemann integral as the limit of a sum. Examples.
3. Algebra of Riemann integrable functions. Also, basic results such as if $f : [a, b] \rightarrow \mathbb{R}$ is integrable, then (i) $\int_a^b f(x) dx = \int_a^c f(x) dx + \int_c^b f(x) dx$. (ii) $|f|$ is integrable and $\left| \int_a^b f(x) dx \right| \leq \int_a^b |f|(x) dx$ (iii) If $f(x) \geq 0$ for all $x \in [a, b]$ then $\int_a^b f(x) dx \geq 0$.
4. Riemann integrability of a continuous function, and more generally of a bounded function whose set of discontinuities has only finitely many points. Riemann integrability of monotone functions.

Unit III. Applications of Integrations and Improper Integrals (15 lectures)

1. Area between the two curves. Lengths of plane curves. Surface area of surfaces of revolution.
2. Continuity of the function $F(x) = \int_a^x f(t) dt, x \in [a, b]$, when $f : [a, b] \rightarrow \mathbb{R}$ is Riemann integrable. First and Second Fundamental Theorems of Calculus.
3. Mean value theorem. Integration by parts formula. Leibnitz's Rule.
4. Definition of two types of improper integrals. Necessary and sufficient conditions for convergence.
5. Absolute convergence. Comparison and limit comparison tests for convergence.
6. Gamma and Beta functions and their properties. Relationship between them (without proof).

Reference Books

1. Sudhir Ghorpade, Balmohan Limaye; A Course in Calculus and Real Analysis (second edition); Springer.
2. R.R. Goldberg; Methods of Real Analysis; Oxford and IBH Pub. Co., New Delhi, 1970.
3. Calculus and Analytic Geometry (Ninth Edition); Thomas and Finney; Addison-Wesley, Reading Mass., 1998.
4. T. Apostol; Calculus Vol. 2; John Wiley.

Additional Reference Books

1. Ajit Kumar, S.Kumaresan; A Basic Course in Real Analysis; CRC Press, 2014
2. D. Somasundaram and B.Choudhary; A First Course in Mathematical Analysis, Narosa, New Delhi, 1996.
3. K. Stewart; Calculus, Booke/Cole Publishing Co, 1994.
4. J. E. Marsden, A.J. Tromba and A. Weinstein; Basic Multivariable Calculus; Springer.

5. R.G. Brtles and D. R. Sherbert; Introduction to Real Analysis Second Ed. ; John Wiley, New York, 1992.
6. M. H. Protter; Basic Elements of Real Analysis; Springer-Verlag, New York, 1998.

USMT/UAMT 302: Linear Algebra I

Unit I. System of Equations, Matrices (15 Lectures)

1. Systems of homogeneous and non-homogeneous linear equations, Simple examples of finding solutions of such systems. Geometric and algebraic understanding of the solutions. Matrices (with real entries), Matrix representation of system of homogeneous and non-homogeneous linear equations. Algebra of solutions of systems of homogeneous linear equations. A system of homogeneous linear equations with number of unknowns more than the number of equations has infinitely many solutions.
2. Elementary row and column operations. Row equivalent matrices. Row reduction (of a matrix to its row echelon form). Gaussian elimination. Applications to solving systems of linear equations. Examples.
3. Elementary matrices. Relation of elementary row operations with elementary matrices. Invertibility of elementary matrices. Consequences such as (i) a square matrix is invertible if and only if its row echelon form is invertible. (ii) invertible matrices are products of elementary matrices. Examples of the computation of the inverse of a matrix using Gauss elimination method.

Unit II. Vector space over \mathbb{R} (15 Lectures)

1. Definition of a vector space over \mathbb{R} . Subspaces; criterion for a nonempty subset to be a subspace of a vector space. Examples of vector spaces, including the Euclidean space \mathbb{R}^n , lines, planes and hyperplanes in \mathbb{R}^n passing through the origin, space of systems of homogeneous linear equations, space of polynomials, space of various types of matrices, space of real valued functions on a set.
2. Intersections and sums of subspaces. Direct sums of vector spaces. Quotient space of a vector space by its subspace.
3. Linear combination of vectors. Linear span of a subset of a vector space. Definition of a finitely generated vector space. Linear dependence and independence of subsets of a vector space.
4. Basis of a vector space. Basic results that any two bases of a finitely generated vector space have the same number of elements. Dimension of a vector space. Examples. Bases of a vector space as a maximal linearly independent sets and as minimal generating sets.

Unit III. Determinants, Linear Equations (Revisited) (15 Lectures)

1. Inductive definition of the determinant of a $n \times n$ matrix (e. g. in terms of expansion along the first row). Example of a lower triangular matrix. Laplace expansions along an arbitrary row or column. Determinant expansions using permutations

$$\left(\det(A) = \sum_{\sigma \in S_n} \text{sign}(\sigma) \prod_{i=1}^n a_{\sigma(i),i} \right).$$

2. Basic properties of determinants (Statements only); (i) $\det A = \det A^T$. (ii) Multilinearity and alternating property for columns and rows. (iii) A square matrix A is invertible if and only if $\det A \neq 0$. (iv) Minors and cofactors. Formula for A^{-1} when $\det A \neq 0$. (v) $\det(AB) = \det A \det B$.
3. Row space and the column space of a matrix as examples of vector space. Notion of row rank and the column rank. Equivalence of the row rank and the column rank. Invariance of rank upon elementary row or column operations. Examples of computing the rank using row reduction.
4. Relation between the solutions of a system of non-homogeneous linear equations and the associated system of homogeneous linear equations. Necessary and sufficient condition for a system of non-homogeneous linear equations to have a solution [viz., the rank of the coefficient matrix equals the rank of the augmented matrix $[A|B]$]. Equivalence of statements (in which A denotes an $n \times n$ matrix) such as the following.
 - (i) The system $A\mathbf{x} = \mathbf{b}$ of non-homogeneous linear equations has a unique solution.
 - (ii) The system $A\mathbf{x} = \mathbf{0}$ of homogeneous linear equations has no nontrivial solution.
 - (iii) A is invertible.
 - (iv) $\det A \neq 0$.
 - (v) $\text{rank}(A) = n$.
5. Cramers Rule. LU Decomposition. If a square matrix A is a matrix that can be reduced to row echelon form U by Gauss elimination without row interchanges, then A can be factored as $A = LU$ where L is a lower triangular matrix.

Reference books

- 1 Howard Anton, Chris Rorres, Elementary Linear Algebra, Wiley Student Edition).
- 2 Serge Lang, Introduction to Linear Algebra, Springer.
- 3 S Kumaresan, Linear Algebra - A Geometric Approach, PHI Learning.
- 4 Sheldon Axler, Linear Algebra done right, Springer.
- 5 Gareth Williams, Linear Algebra with Applications, Jones and Bartlett Publishers.
- 6 David W. Lewis, Matrix theory.

USMT303: Ordinary Differential Equations

Unit I. Higher order Linear Differential equations (15 Lectures)

1. The general n -th order linear differential equations, Linear independence, An existence and uniqueness theorem, the Wronskian, Classification: homogeneous and non-homogeneous, General solution of homogeneous and non-homogeneous LDE, The Differential operator and its properties.
2. Higher order homogeneous linear differential equations with constant coefficients, the auxiliary equations, Roots of the auxiliary equations: real and distinct, real and repeated, complex and complex repeated.

3. Higher order homogeneous linear differential equations with constant coefficients, the method of undermined coefficients, method of variation of parameters.
4. The inverse differential operator and particular integral, Evaluation of $\frac{1}{f(D)}$ for the functions like e^{ax} , $\sin ax$, $\cos ax$, x^m , $x^m \sin ax$, $x^m \cos ax$, $e^{ax}V$ and xV where V is any function of x ,
5. Higher order linear differential equations with variable coefficients:
 The Cauchy's equation: $x^3 \frac{d^3y}{dx^3} + x^2 \frac{d^2y}{dx^2} + x \frac{dy}{dx} + y = f(x)$ and
 The Legendre's equation: $(ax+b)^3 \frac{d^3y}{dx^3} + (ax+b)^2 \frac{d^2y}{dx^2} + (ax+b) \frac{dy}{dx} + y = f(x)$.

Reference Books

1. Units 5, 6, 7 and 8 of E.D. Rainville and P.E. Bedient; Elementary Differential Equations; Macmillan.
2. Units 5, 6 and 7 of M.D. Raisinghania; Ordinary and Partial Differential Equations; S. Chand.

Unit II. Systems of First Order Linear Differential Equations (15 Lectures)

- (a) Existence and uniqueness theorem for the solutions of initial value problems for a system of two first order linear differential equations in two unknown functions x, y of a single independent variable t , of the form
$$\begin{cases} \frac{dx}{dt} = F(t, x, y) \\ \frac{dy}{dt} = G(t, x, y) \end{cases} \quad (\text{Statement only}).$$
- (b) Homogeneous linear system of two first order differential equations in two unknown functions of a single independent variable t , of the form
$$\begin{cases} \frac{dx}{dt} = a_1(t)x + b_1(t)y, \\ \frac{dy}{dt} = a_2(t)x + b_2(t)y. \end{cases}.$$
- (c) Wronskian for a homogeneous linear system of first order linear differential equations in two functions x, y of a single independent variable t . Vanishing properties of the Wronskian. Relation with linear independence of solutions.
- (d) Homogeneous linear systems with constant coefficients in two unknown functions x, y of a single independent variable t . Auxiliary equation associated to a homogenous system of equations with constant coefficients. Description for the general solution depending on the roots and their multiplicities of the auxiliary equation, proof of independence of the solutions. Real form of solutions in case the auxiliary equation has complex roots.
- (e) Non-homogeneous linear system of linear system of two first order differential equations in two unknown functions of a single independent variable t , of the form
$$\begin{cases} \frac{dx}{dt} = a_1(t)x + b_1(t)y + f_1(t), \\ \frac{dy}{dt} = a_2(t)x + b_2(t)y + f_2(t). \end{cases}$$

 General Solution of non-homogeneous system. Relation between the solutions of a system

of non-homogeneous linear differential equations and the associated system of homogeneous linear differential equations.

Reference Books

1. G.F. Simmons; Differential Equations with Applications and Historical Notes; Taylor's and Francis.

Unit III. Numerical Solution of Ordinary Differential Equations (15 lectures)

1. Numerical Solution of initial value problem of first order ordinary differential equation using:
 - (i) Taylor's series method,
 - (ii) Picard's method for successive approximation and its convergence,
 - (iii) Euler's method and error estimates for Euler's method,
 - (iv) Modified Euler's Method,
 - (v) Runge-Kutta method of second order and its error estimates,
 - (vi) Runge-Kutta fourth order method.
2. Numerical solution of simultaneous and higher order ordinary differential equation using:
 - (i) Runge-Kutta fourth order method for solving simultaneous ordinary differential equation,
 - (ii) Finite difference method for the solution of two point linear boundary value problem.

Reference Books

1. Units 8 of S. S. Sastry, Introductory Methods of Numerical Analysis, PHI.

Additional Reference Books

1. E.D. Rainville and P.E. Bedient, Elementary Differential Equations, Macmillan.
2. M.D. Raisinghania, Ordinary and Partial Differential Equations, S. Chand.
3. G.F. Simmons, Differential Equations with Applications and Historical Notes, Taylor's and Francis.
4. S. S. Sastry, Introductory Methods of Numerical Analysis, PHI.
5. K. Atkinson, W.Han and D Stewart, Numerical Solution of Ordinary Differential Equations, Wiley.

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USMT P03 / UAMT P03: Practicals

Suggested Practicals for USMT 301/ UAMT 301

1. Examples of convergent / divergent series and algebra of convergent series.
2. Tests for convergence of series.
3. Calculation of upper sum, lower sum and Riemann integral.
4. Problems on properties of Riemann integral.
5. Problems on fundamental theorem of calculus, mean value theorems, integration by parts, Leibnitz rule.
6. Convergence of improper integrals, different tests for convergence. Beta Gamma Functions.
7. Miscellaneous Theoretical Questions based on full paper.

Suggested Practicals for USMT302 / UAMT 302

1. Systems of homogeneous and non-homogeneous linear equations.
2. Elementary row/column operations and Elementary matrices.
3. Vector spaces, Subspaces.
4. Linear Dependence/independence, Basis, Dimension.
5. Determinant and Rank of a matrix.
6. Solution to a system of linear equations, LU decomposition
7. Miscellaneous Theory Questions.
8. Miscellaneous theory questions from units I, II and III.

Suggested Practicals For USMT 303

1. Finding the general solution of homogeneous and non-homogeneous higher order linear differential equations.
2. Solving higher order linear differential equations using method of undetermined coefficients and method of variation of parameters.
3. Solving a system of first order linear ODES have auxiliary equations with real and complex roots.
4. Finding the numerical solution of initial value problems using Taylor's series method, Picard's method, modified Euler's method, Runge-Kutta method of fourth order and calculating their accuracy.
5. Finding the numerical solution of simultaneous ordinary differential equation using fourth order Runge-Kutta method.
6. Finding the numerical solution of two point linear boundary value problem using Finite difference method.

Semester-IV

Note: Unless indicated otherwise, proofs of the results mentioned in the syllabus should be covered.

USMT 401/ UAMT 401: Multivariable Calculus I**UNIT I. Functions of Several Variables (15 Lectures)**

1. Review of vectors in \mathbb{R}^n [with emphasis on \mathbb{R}^2 and \mathbb{R}^3] and basic notions such as addition and scalar multiplication, inner product, length (norm), and distance between two points.
2. Real-valued functions of several variables (Scalar fields). Graph of a function. Level sets (level curves, level surfaces, etc). Examples. Vector valued functions of several variables (Vector fields). Component functions. Examples.
3. Sequences, Limits and Continuity: Sequence in \mathbb{R}^n [with emphasis on \mathbb{R}^2 and \mathbb{R}^3] and their limits. Neighbourhoods in \mathbb{R}^n . Limits and continuity of scalar fields. Composition of continuous functions. Sequential characterizations. Algebra of limits and continuity (Results with proofs). Iterated limits.
Limits and continuity of vector fields. Algebra of limits and continuity vector fields. (without proofs).
4. Partial and Directional Derivatives of scalar fields: Definitions of partial derivative and directional derivative of scalar fields (with emphasis on \mathbb{R}^2 and \mathbb{R}^3). Mean Value Theorem of scalar fields.

UNIT II. Differentiation of Scalar Fields (15 Lectures)

1. Differentiability of scalar fields (in terms of linear transformation). The concept of (total) derivative. Uniqueness of total derivative of a differentiable function at a point. Examples of functions of two or three variables. Increment Theorem. Basic properties including (i) continuity at a point of differentiability, (ii) existence of partial derivatives at a point of differentiability, and (iii) differentiability when the partial derivatives exist and are continuous.
2. Gradient. Relation between total derivative and gradient of a function. Chain rule. Geometric properties of gradient. Tangent planes.
3. Euler's Theorem.
4. Higher order partial derivatives. Mixed Partial Theorem ($n=2$).

UNIT III. Applications of Differentiation of Scalar Fields and Differentiation of Vector Fields (15 lectures)

1. Applications of Differentiation of Scalar Fields: The maximum and minimum rate of change of scalar fields. Taylor's Theorem for twice continuously differentiable functions. Notions of local maxima, local minima and saddle points. First Derivative Test. Examples. Hessian matrix. Second Derivative Test for functions of two variables. Examples. Method of Lagrange Multipliers.

2. Differentiation of Vector Fields: Differentiability and the notion of (total) derivative. Differentiability of a vector field implies continuity, Jacobian matrix. Relationship between total derivative and Jacobian matrix. The chain rule for derivative of vector fields (statements only).

Reference books

1. T. Apostol; Calculus, Vol. 2 (Second Edition); John Wiley.
2. Sudhir Ghorpade, Balmohan Limaye; A Course in Multivariable Calculus and Analysis (Second Edition); Springer.
3. Walter Rudin; Principles of Mathematical Analysis; McGraw-Hill, Inc.
4. J. E. Marsden, A.J. Tromba and A. Weinstein, Basic Multivariable Calculus; Springer.
5. D.Somasundaram and B.Choudhary; A First Course in Mathematical Analysis, Narosa, New Delhi, 1996.
6. K. Stewart; Calculus; Booke/Cole Publishing Co, 1994.

Additional Reference Books

1. Calculus and Analytic Geometry, G.B. Thomas and R. L. Finney, (Ninth Edition); Addison-Wesley, 1998.
2. Howard Anton; Calculus- A new Horizon,(Sixth Edition); John Wiley and Sons Inc, 1999.
3. S L Gupta and Nisha Rani; Principles of Real Analysis; Vikas Publishing house PVT LTD.
4. Shabanov, Sergei; Concepts in Calculus, III: Multivariable Calculus; University Press of Florida, 2012.
5. S C Malik and Savita Arora; Mathematical Analysis; New Age International Publishers.

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USMT402/UAMT402: Linear Algebra II

UNIT I. Linear Transformations

1. Definition of a linear transformation of vector spaces; elementary properties. Examples. Sums and scalar multiples of linear transformations. Composites of linear transformations. A Linear transformation of $V \longrightarrow W$, where V, W are vector spaces over \mathbb{R} and V is a finite-dimensional vector space is completely determined by its action on an ordered basis of V .
2. Null-space (kernel) and the image (range) of a linear transformation. Nullity and rank of a linear transformation. Rank-Nullity Theorem (Fundamental Theorem of Homomorphisms).
3. Matrix associated with linear transformation of $V \longrightarrow W$ where V and W are finite dimensional vector spaces over \mathbb{R} . Matrix of the composite of two linear transformations. Invertible linear transformations (isomorphisms), Linear operator, Effect of change of bases on matrices of linear operator.

-
4. Equivalence of the rank of a matrix and the rank of the associated linear transformation. Similar matrices.

UNIT II. Inner Products and Orthogonality

1. Inner product spaces (over \mathbb{R}). Examples, including the Euclidean space \mathbb{R}^n and the space of real valued continuous functions on a closed and bounded interval. Norm associated to an inner product. Cauchy-Schwarz inequality. Triangle inequality.
2. Angle between two vectors. Orthogonality of vectors. Pythagoras theorem and some geometric applications in \mathbb{R}^2 . Orthogonal sets, Orthonormal sets. Gram-Schmidt orthogonalization process. Orthogonal basis and orthonormal basis for a finite-dimensional inner product space.
3. Orthogonal complement of any set of vectors in an inner product space. Orthogonal complement of a set is a vector subspace of the inner product space. Orthogonal decomposition of an inner product space with respect to its subspace. Orthogonal projection of a vector onto a line (one dimensional subspace). Orthogonal projection of an inner product space onto its subspace.

UNIT III. Eigenvalues, Eigenvectors and Diagonalisation

1. Eigenvalues and eigenvectors of a linear transformation of a vector space into itself and of square matrices. The eigenvectors corresponding to distinct eigenvalues of a linear transformation are linearly independent. Eigen spaces. Algebraic and geometric multiplicity of an eigenvalue.
2. Characteristic polynomial. Properties of characteristic polynomials (only statements). Examples. Cayley-Hamilton Theorem. Applications.
3. Invariance of the characteristic polynomial and eigenvalues of similar matrices.
4. Diagonalisable matrix. A real square matrix A is diagonalisable if and only if there is a basis of \mathbb{R}^n consisting of eigenvectors of A . (Statement only - $A_{n \times n}$ is diagonalisable if and only if sum of algebraic multiplicities is equal to sum of geometric multiplicities of all the eigenvalues of $A = n$). Procedure for diagonalising a matrix.
5. Spectral Theorem for Real Symmetric Matrices (Statement only). Examples of orthogonal diagonalisation of real symmetric matrices. Applications to quadratic forms and classification of conic sections.

Reference books

1. Howard Anton, Chris Rorres; Elementary Linear Algebra; Wiley Student Edition).
2. Serge Lang; Introduction to Linear Algebra; Springer.
3. S Kumaresan; Linear Algebra - A Geometric Approach; PHI Learning.
4. Sheldon Axler; Linear Algebra done right; Springer.

5. Gareth Williams; Linear Algebra with Applications; Jones and Bartlett Publishers.
6. David W. Lewis; Matrix theory.

USMT403A: Numerical Methods (Elective A)

Unit I. Solution of Algebraic and Transcendental Equations (15L)

1. Measures of Errors: Relative, absolute and percentage errors, Accuracy and precision: Accuracy to n decimal places, accuracy to n significant digits or significant figures, Rounding and Chopping of a number, Types of Errors: Inherent error, Round-off error and Truncation error.
2. Iteration methods based on first degree equation: Newton-Raphson method. Secant method. Regula-Falsi method.
Derivations and geometrical interpretation and rate of convergence of all above methods to be covered.
3. General Iteration method: Fixed point iteration method.

Unit II. Interpolation, Curve fitting, Numerical Integration(15L)

1. Interpolation: Lagrange's Interpolation. Finite difference operators: Forward Difference operator, Backward Difference operator. Shift operator. Newton's forward difference interpolation formula. Newton's backward difference interpolation formula.
Derivations of all above methods to be covered.
2. Curve fitting: linear curve fitting. Quadratic curve fitting.
3. Numerical Integration: Trapezoidal Rule. Simpson's 1/3 rd Rule. Simpson's 3/8th Rule.
Derivations all the above three rules to be covered.

Unit III. Solution Linear Systems of Equations, Eigenvalue problems(15L)

1. Linear Systems of Equations: LU Decomposition Method (Dolittle's Method and Crout's Method). Gauss-Seidel Iterative method.
2. Eigenvalue problems: Jacobi's method for symmetric matrices. Rutishauser method for arbitrary matrices.

Reference Books:

1. Kendall E. and Atkinson; An Introduction to Numerical Analysis; Wiley.
2. M. K. Jain, S. R. K. Iyengar and R. K. Jain; Numerical Methods for Scientific and Engineering Computation; New Age International Publications.
3. S. Sastry; Introductory methods of Numerical Analysis; PHI Learning.
4. An introduction to Scilab-Cse iitb.

Additional Reference Books

1. S.D. Comte and Carl de Boor; Elementary Numerical Analysis, An algorithmic approach; McGrawHill International Book Company.
2. Hildebrand F.B.; Introduction to Numerical Analysis; Dover Publication, NY.
3. Scarborough James B.; Numerical Mathematical Analysis; Oxford University Press, New Delhi.

USMT403B Statistical Methods and their Applications (Elective B)

Unit I. Descriptive Statistics and random variables (15 Lectures)

Measures of location (mean, median, mode), Partition values and their graphical locations, measures of dispersion, skewness and kurtosis, Exploratory Data Analysis (Five number summary, Box Plot, Outliers), Random Variables (discrete and continuous), Expectation and variance of a random variable.

Unit II. Probability Distributions and Correlation (15 Lectures)

Discrete Probability Distribution (Binomial, Poisson), Continuous Probability Distribution: (Uniform, Normal), Correlation, Karl Pearson's Coefficient of Correlation, Concept of linear Regression, Fitting of a straight line and curve to the given data by the method of least squares, relation between correlation coefficient and regression coefficients.

Unit III. Inferential Statistics (15 lectures)

Population and sample, parameter and statistic, sampling distribution of Sample mean and Sample Variance, concept of statistical hypothesis, critical region, level of significance, confidence interval and two types of errors, Tests of significance (t-test, Z-test, F-test, Chi-Square Test (only applications))

Reference Books

1. Fundamentals of Mathematical Statistics, 12th Edition, S. C. Gupta and V. K. Kapoor, Sultan Chand & Sons, 2020.
2. Statistics for Business and Economics, 11th Edition, David R. Anderson, Dennis J. Sweeney and Thomas A. Williams, Cengage Learning, 2011.
3. Introductory Statistics, 8th Edition, Prem S. Mann, John Wiley & Sons Inc., 2013.
4. A First Course in Statistics, 12th Edition, James McClave and Terry Sincich, Pearson Education Limited, 2018.
5. Introductory Statistics, Barbara Illowsky, Susan Dean and Laurel Chiappetta, OpenStax, 2013.
6. Hands-On Programming with R, Garrett Grolmund, O'Reilly.

USMT P04 / UAMT P04: Practicals**Suggested Practical for USMT 401/ UAMT 401**

1. Limits and continuity of scalar fields and vector fields, using "definition and otherwise" , iterated limits.
2. Computing directional derivatives, partial derivatives and mean value theorem of scalar fields.
3. Differentiability of scalar field, Total derivative, gradient, level sets and tangent planes.
4. Chain rule, higher order derivatives and mixed partial derivatives of scalar fields.
5. Maximum and minimum rate of change of scalar fields. Taylor's Theorem. Finding Hessian/Jacobian matrix. Differentiation of a vector field at a point. Chain Rule for vector fields.
6. Finding maxima, minima and saddle points. Second derivative test for extrema of functions of two variables and method of Lagrange multipliers.
7. Miscellaneous Theoretical Questions based on full paper.

Suggested Practicals for USMT402/UAMT 402

1. Linear transformation, Kernel, Rank-Nullity Theorem.
2. Linear Isomorphism, Matrix associated with Linear transformations.
3. Inner product and properties, Projection, Orthogonal complements.
4. Orthogonal, orthonormal sets, Gram-Schmidt orthogonalisation
5. Eigenvalues, Eigenvectors, Characteristic polynomial. Applications of Cayley Hamilton Theorem.
6. Diagonalisation of matrix, orthogonal diagonalisation of symmetric matrix and application to quadratic form.
7. Miscellaneous Theoretical Questions based on full paper.

Suggested Practicals for USMT403A

The Practical no. 1 to 6 should be performed either using non-programable scientific calculators or by using the software Scilab.

1. Newton-Raphson method, Secant method.
2. Regula-Falsi method, Iteration Method..
3. Interpolating polynomial by Lagrange's Interpolation, Newton forward and backward difference Interpolation.
4. Curve fitting, Trapezoidal Rule, Simpson's 1/3rd Rule, Simpson's 3/8th Rule.
5. LU decomposition method, Gauss-Seidel Iterative method.

6. Jacobi's method, Rutishauser method..
7. Miscellaneous theoretical questions from all units.

Suggested Practicals for USMT403B

All practicals should be performed using any one of the following softwares: MS Excel, R, Strata, SPSS, Sage Math to carry out data analysis and computations.

1. Descriptive Statistics.
2. Random Variables.
3. Probability Distributions.
4. Correlation and Regression.
5. Testing of hypothesis.
6. Case studies.
7. Miscellaneous Theory questions based on Unit I,II,III.

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7. Scheme of Examination (75:25)

The performance of the learners shall be evaluated into two parts.

- Internal Assessment of 25 percent marks.
- Semester End Examinations of 75 percent marks.

I. Internal Evaluation of 25 Marks:

S.Y.B.Sc. :

- (i) One class Test of 20 marks to be conducted during Practical session.

Paper pattern of the Test:

Q1: Definitions/ Fill in the blanks/ True or False with Justification (04 Marks).

Q2: Multiple choice 5 questions. (10 Marks: 5×2)

Q3: Attempt any 2 from 3 descriptive questions. (06 marks: 2×3)

- (ii) Active participation in routine class: 05 Marks.

OR

Students who are willing to explore topics related to syllabus, dealing with applications historical development or some interesting theorems and their applications can be encouraged to submit a project for 25 marks under the guidance of teachers.

S.Y.B.A. :

- (i) One class Test of 20 marks to be conducted during Tutorial session.

Paper pattern of the Test:

Q1: Definitions/ Fill in the blanks/ True or False with Justification (04 Marks).

Q2: Multiple choice 5 questions. (10 Marks: 5×2)

Q3: Attempt any 2 from 3 descriptive questions. (06 marks: 2×3)

(ii) Journal : 05 Marks.

OR

Students who are willing to explore topics related to syllabus, dealing with applications historical development or some interesting theorems and their applications can be encouraged to submit a project for 25 marks under the guidance of teachers.

II. Semester End Theory Examinations : There will be a Semester-end external Theory examination of 75 marks for each of the courses USMT301/UAMT301, USMT/USAT 302, USMT 303 of Semester III and USMT/UAMT401, USMT/UAMT 402, USMT 403 of semester IV to be conducted by the college.

1. Duration: The examinations shall be of 2 and $\frac{1}{2}$ hours duration.

2. Theory Question Paper Pattern:

- a) There shall be FOUR questions. The first three questions Q1, Q2, Q3 shall be of 20 marks, each based on the units I, II, III respectively. The question Q4 shall be of 15 marks based on the entire syllabus.
- b) All the questions shall be compulsory. The questions Q1, Q2, Q3, Q4 shall have internal choices within the questions. Including the choices, the marks for each question shall be 25-27.
- c) The questions Q1, Q2, Q3, Q4 may be subdivided into sub-questions as a, b, c, d & e, etc and the allocation of marks depends on the weightage of the topic.

III. Semester End Examinations Practicals:

At the end of the Semesters III & IV Practical examinations of three hours duration and 150 marks shall be conducted for the courses USMTP03, USMTP04.

At the end of the Semesters III & IV Practical examinations of two hours duration and 100 marks shall be conducted for the courses UAMTP03, UAMTP04.

In semester III, the Practical examinations for USMT301/UAMT301, USMT302/UAMT302 and USMT303 are held together by the college.

In Semester IV, the Practical examinations for USMT401/UAMT401, USMT402/UAMT402 and USMT403 are held together by the college.

Paper pattern: The question paper shall have two parts A and B.
Each part shall have two Sections.

Section I Objective in nature: Attempt any Eight out of Twelve multiple choice questions (04 objective questions from each unit) ($8 \times 3 = 24$ Marks).

Section II Problems: Attempt any Two out of Three (01 descriptive question from each unit) ($8 \times 2 = 16$ Marks).

Practical Course	Part A	Part B	Part C	Marks out of	duration
USMTP03	Questions from USMT301	Questions from USMT302	Questions from USMT 303	120	3 hours
UAMTP03	Questions from UAMT301	Questions from UAMT302	——	80	2 hours
USMTP04	Questions from USMT401	Questions from USMT402	Questions from USMT403	120	3 hours
UAMTP04	Questions from UAMT401	Questions from UAMT402	——	80	2 hours

Marks for Journals and Viva:

For each course USMT301/UAMT301, USMT302/UAMT302, USMT303, USMT401/UAMT401, USMT402/UAMT402, USMT3031:

1. Journal: 10 marks (5 marks for each journal).
2. Viva: 10 marks.

Each Practical of every course of Semester III and IV shall contain 10 (ten) problems out of which minimum 05 (five) have to be written in the journal. .

A student must have a certified journal before appearing for the practical examination.

In case a student does not possess a certified journal he/she will be evaluated for 120/80 marks.

He/she is not qualified for Journal + Viva marks.

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University of Mumbai



No. AAMS(UG)/ 35 of 2022-23

CIRCULAR:-


Attention of the Principals of the Affiliated Colleges, Directors of the Recognized Institutions in Faculty of Humanities is invited to this office circular No. UG/122 of 2017-18 dated 28th July, 2017 relating to T.Y.B.A./T.Y.B.Sc. Mathematics (Sem V and VI).

They are hereby informed that the recommendations made by the Board of Studies in **Mathematics** at its meeting held on 9th May, 2022 and subsequently passed in the Faculty and then by the Board of Deans at its meeting held on 17th May, 2022 vide item No. 6.1(R) have been accepted by the Academic Council at its meeting held on 17th May, 2022 vide item No. 6.9(R) and that in accordance therewith, the revised syllabus of T.Y.B.Sc./B.A. (Mathematics) (Sem V and VI) (CBCS), has been brought into force with effect from the academic year 2022-23. (The same is available on the University's website www.mu.ac.in).

MUMBAI – 400 032

16th June, 2022

To


(Dr. Vinod Patil)
I/c Director

The Principals of the Affiliated Colleges, and Directors of the Recognized Institutions in Faculty of Science & Technology/ Faculty of Humanities.

A.C/6.9/17/05/2022

No. AAMS(UG)/ 35 -A of 2022-23

16th June, 2022

Copy forwarded with Compliments for information to:-

- 1) The Dean, Faculty of Science & Technology,
- 2) The Dean, Faculty of Humanities,
- 3) The Chairman, Board of Studies Mathematics,
- 4) The Director, Board of Examinations and Evaluation,
- 5) The Director, Board of Students Development,
- 6) The Director, Department of Information & Communication Technology,
- 7) The Co-ordinator, MKCL.


(Dr. Vinod Patil)
I/c Director

UNIVERSITY OF MUMBAI



**Revised Syllabus for T.Y.B. Sc./B.A.
(Mathematics)
Sem – V & VI
(Choice Based Credit System)**

(With effect from the academic year 2022-23)



Syllabus for Approval

Sr. No.	Heading	Particulars
1	Title of the Course O. _____	T.Y.B. Sc./B.A. (Mathematics)
2	Eligibility for Admission O. _____	As per University Regulations
3	Passing Marks R. _____	40% (Internal 25 (10) Marks and External 75 (30) Marks)
4	Ordinances / Regulations (if any)	
5	No. of Years / Semesters R. _____	Three Years (Six Semester) Programme
6	Level	P.G. / U.G. / Diploma / Certificate— (Strike out which is not applicable)
7	Pattern	Yearly / Semester (Strike out which is not applicable)
8	Status	Revised / New / Amended (Strike out which is not applicable)
9	To be implemented from Academic Year	From Academic Year 2022-23

Signature
Chairman,
Board of Studies,

Dr Anuradha Majumdar
Dean,
Faculty of Science and
Technology

Dean (Science and Technology)

Prof. Anuradha Majumdar (Dean, Science and Technology)

Prof. Shivram Garje (Associate Dean, Science)

Chairperson Board of Studies of Mathematics

Prof. Vinayak Kulkarni

Members of the Board of Studies of Mathematics

Prof. R. M. Pawale

Prof. P. Veeramani

Prof. S. R. Ghorpade

Prof. Ajit Diwan

Dr. S. Aggarwal

Dr. Amul Desai

Dr. S. A. Shende

Dr. Shridhar Pawar

Dr. Sanjeevani Gharge

Dr. Abhaya Chitre

Dr. Mittu Bhattacharya

Dr. Sushil Kulkarni

Dr. Rajiv Sapre

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5. Course structure with minimum credits and Lectures/ Week
6. Teaching Pattern for semester V & VI
7. Scheme of Evaluation
8. Consolidated Syllabus for semester V & VI

1. Preamble

The University of Mumbai has brought into force the revised syllabi as per the Choice Based Credit System (CBCS) for the Third year B. Sc / B. A. Programme in Mathematics from the academic year 2022-2023. Mathematics has been fundamental to the development of science and technology. In recent decades, the extent of application of Mathematics to real world problems has increased by leaps and bounds. Taking into consideration the rapid changes in science and technology and new approaches in different areas of mathematics and related subjects like Physics, Statistics and Computer Sciences, the board of studies in Mathematics with concern of teachers of Mathematics from different colleges affiliated to University of Mumbai has prepared the syllabus of T.Y.B. Sc. / T. Y. B. A. Mathematics. The present syllabi of T. Y. B. Sc. for Semester V and Semester VI has been designed as per U. G. C. Model curriculum so that the students learn Mathematics needed for these branches, learn basic concepts of Mathematics and are exposed to rigorous methods gently and slowly. The syllabi of T. Y. B. Sc. / T. Y. B. A. would consist of two semesters and each semester would comprise of four courses and two practical courses for T. Y. B. Sc / T.Y.B.A. Mathematics.

2. Aims and Objectives:

- (i) Give the students a sufficient knowledge of fundamental principles, methods and a clear perception of innumerable power of mathematical ideas and tools and know how to use them by modeling, solving and interpreting.
- (ii) Reflecting the broad nature of the subject and developing mathematical tools for continuing further study in various fields of science.
- (iii) Enhancing students' overall development and to equip them with mathematical modeling abilities, problem solving skills, creative talent and power of communication necessary for various kinds of employment.
- (iv) A student should get adequate exposure to global and local concerns that explore them many aspects of Mathematical Sciences.

3. Programme Outcomes:

- (i) Enabling students to develop positive attitude towards mathematics as an interesting and valuable subject
- (ii) Enhancing students overall development and to equip them with mathematical modeling, abilities, problem solving skills, creative talent and power of communication.
- (iii) Acquire good knowledge and understanding in advanced areas of mathematics and physics.

4. Course outcomes:

- (i) **Multivariable Calculus II (Sem V):** In this course students will learn the basic ideas, tools and techniques of integral calculus and use them to solve problems from real-life applications including science and engineering problems involving areas, volumes, centroid, Moments of mass and center of mass Moments of inertia. Examine vector fields and define and evaluate line integrals using the Fundamental Theorem of Line Integrals and Green's Theorem; compute arc length.
- (ii) **Complex Analysis (Sem VI):** Students Analyze sequences and series of analytic functions and types of convergence, Students will also be able to evaluate complex contour integrals directly and by the fundamental theorem, apply the Cauchy integral theorem in its various versions, and the Cauchy integral formula, they will also be able to represent functions as Taylor, power and Laurent series, classify singularities and poles, find residues and evaluate complex integrals using the residue theorem.
- (iii) **Group Theory, Ring Theory (Sem V, Sem VI)** Students will have a working knowledge of important mathematical concepts in abstract algebra such as definition of a group, order of a finite group and order of an element, rings, Euclidean domain, Principal ideal domain and Unique factorization domain. Students will also understand the connection and transition between previously studied mathematics and more advanced mathematics. The students will actively participate in the transition of important concepts such homomorphisms & isomorphisms from discrete mathematics to advanced abstract mathematics.

(iv) **Topology of metric spaces (Sem V), Topology of metric spaces and real analysis (Sem VI):**

This course introduces students to the idea of metric spaces. It extends the ideas of open sets, closed sets and continuity to the more general setting of metric spaces along with concepts such as compactness and connectedness. Convergence concepts of sequences and series of functions, power series are also dealt with. Formal proofs are given a lot of emphasis in this course. This course serves as a foundation to advanced courses in analysis. Apart from understanding the concepts introduced, the treatment of this course will enable the learner to explain their reasoning about analysis with clarity and rigour.

(v) **Partial Differential equations (Sem V: Paper IV: Elective A):**

- a. Students will be able to understand the various analytical methods for solving first order partial differential equations.
- b. Students will be able to understand the classification of first order partial differential equations.
- c. Students will be able to grasp the linear and non linear partial differential equations.

(vi) **Integral Transforms (Sem VI: Paper IV- Elective A):**

- a. Students will be able to understand the concept of integral transforms and their corresponding inversion techniques.
- b. Students will be able to understand the various applications of integral transforms.

(vii) **Number Theory and its applications I and II (Sem V, Sem VI):**

The student will be able to

- a. Identify and apply various properties of and relating to the integers including primes, unique factorization, the division algorithm, and greatest common divisors.
- b. Understand the concept of a congruence and use various results related to congruences including the Chinese Remainder Theorem. Investigate Pseudo-primes, Carmichael number, primitive roots.
- c. Identify how number theory is related to and used in cryptography. Learn to encrypt and decrypt a message using character ciphers. Learn to encrypt and decrypt a message using Public-Key cryptography.
- d. Express a rational number as a finite continued fraction and hence solve a linear diophantine equation. Express a given repeated continued fraction in terms of a surd. Expand a surd as an infinite continued fraction and hence find a convergent which is an approximation to the given surd to a given degree of accuracy. Solve a Pell equation from a continued fraction expansion.
- e. Solve certain types of Diophantine equations. Represent a Primitive Pythagorean Triples with a unique pair of relatively prime integers.
- f. Identify certain number theoretic functions and their properties. Investigate perfect numbers and Mersenne prime numbers and their connection. Explore the use of arithmetical functions, the Mobius function, and the Euler function.

(viii) **Graph Theory (Sem V: Paper IV- Elective C)**

Upon successful completion of Graph Theory course, a student will be able to:

- a. Demonstrate the knowledge of fundamental concepts in graph theory, including properties and characterization of graphs and trees.
- b. Describe knowledgeably special classes of graphs that arise frequently in graph theory
- c. Describe the concept of isomorphic graphs and isomorphism invariant properties of graphs
- d. Describe and apply the relationship between the properties of a matrix representation of a graph and the structure of the underlying graph
- e. Demonstrate different types of algorithms including Dijkstra's, BFS, DFS, MST and Huffman coding.
- f. Understand the concept of Eulerian graphs and Hamiltonian graphs.
- g. Describe real-world applications of graph theory.

(ix) **Graph Theory and Combinatorics (Sem VI: Paper IV -Elective C)**

- a. Understand and apply the basic concepts of graph theory, including colouring of graph, to find chromatic number and chromatic polynomials for graphs
- b. Understand the concept of vertex connectivity, edge connectivity in graphs and Whitney's theorem on 2-vertex connected graphs.
- c. Derive some properties of planarity and Euler's formula, develop the understanding of Geometric duals in Planar Graphs
- d. Know the applications of graph theory to network flows theory.
- e. Understand different applications of system of distinct representative and matching theory.
- f. Use permutations and combinations to solve counting problems with sets and multi-sets.
- g. Set up and solve a linear recurrence relation and apply the inclusion/exclusion principle.
- h. Compute a generating function and apply them to combinatorial problems.

(x) **Basic concepts of probability and random variables (Sem V: Paper IV: Elective D)**

Students will be able to understand the role of random variables in the statistical analysis and use them to apply in the various probability distributions including Binomial distribution, Poisson distribution and Normal distribution. Moreover students will be able to apply the concepts of expectations and moments for the evaluation of various statistical measures

(xi) **Operations research (Sem VI: Paper IV: Elective D)**

Students should be able to formulate linear programming problem and apply the graphical and simplex method for their feasible solution. Moreover students should understand various alternative operation research techniques for the feasible solution of LPP.

(5) Course structure with minimum credits and Lectures/ Week

SEMESTER V

Multivariable Calculus II				
Course Code	UNIT	TOPICS	Credits	L/Week
USMT 501, UAMT 501	I	Multiple Integrals	2.5	3
	II	Line Integrals		
	III	Surface Integrals		
Group Theory				
USMT 502 ,UAMT 502	I	Groups and Subgroups	2.5	3
	II	Normal subgroups, Direct products and Cayley’s theorem		
	III	Cyclic Groups and Cyclic Subgroups Homomorphism		
Topology of Metric Spaces				
USMT 503, UAMT503	I	Metric spaces	2.5	3
	II	Sequences and Complete metric spaces		
	III	Compact Spaces		
Partial Differential Equations(Elective A)				
USMT5A4 ,UAMT 5A4	I	First Order Partial Differential Equations.	2.5	3
	II	Compatible system of first order PDE		
	III	Quasi-Linear PDE		
Number Theory and Its applications I (Elective B)				
USMT5B4 ,UAMT 5B4	I	Congruences and Factorization	2.5	3
	II	Diophantine equations and their & solutions		
	III	Primitive Roots and Cryptography		
Graph Theory (Elective C)				
USMT5C4 ,UAMT 5C4	I	Basics of Graphs	2.5	3
	II	Trees		
	III	Eulerian and Hamiltonian graphs		
Basic Concepts of Probability and Random Variables (Elective D)				
USMT5D4 ,UAMT 5D4	I	Basic Concepts of Probability and Random Variables	2.5	3
	II	Properties of Distribution function, Joint Density function		
	III	Weak Law of Large Numbers		
PRACTICALS				
USMT5P05/UAMTP05		Practicals based on USMT501/UAMT 501 and USMT 502/UAMT 502	3	6
USMT5P06/UAMTP06		Practicals based on USMT503/ UAMT 503 and USMT5A4/ UAMT 5A4 OR USMT5B4/ UAMT 5B4 OR USMT5C4/ UAMT 5C4 OR USMT5D4/ UAMT 5D4	3	6

SEMESTER VI

BASIC COMPLEX ANALYSIS				
Course Code	UNIT	TOPICS	Credits	L/Week
USMT 601, UAMT 601	I	Introduction to Complex Analysis	2.5	3
	II	Cauchy Integral Formula		
	III	Complex power series, Laurent series and isolated singularities		
Ring Theory				
USMT 602 ,UAMT 602	I	Rings	2.5	3
	II	Ideals and special rings		
	III	Factorization		
Topology of Metric Spaces and Real Analysis				
USMT 603 / UAMT 603	I	Continuous functions on Metric spaces	2.5	3
	II	Connected sets		
		Sequences and series of functions		
Integral Transforms(Elective A)				
USMT6A4 ,UAMT 6A4	I	The Laplace Transform	2.5	3
	II	The Fourier Transform		
	III	Applications of Integral Transforms		
Number Theory and Its applications II (Elective B)				
USMT6B4 ,UAMT 6B4	I	Quadratic Reciprocity	2.5	3
	II	Continued Fractions		
	III	Pell's equation, Arithmetic function & and Special numbers		
Graph Theory and Combinatorics (Elective C)				
USMT6C4 ,UAMT 6C4	I	Colourings of Graphs	2.5	3
	II	Planar graph		
	III	Combinatorics		
Operations Research (Elective D)				
USMT6D4 ,UAMT 6D4	I	Basic Concepts of Probability and Linear Programming I	2.5	3
	II	Linear Programming II		
	III	Queuing Systems		
PRACTICALS				
USMTTP07/ UAMTP07		Practicals based on USMT601/UAMT 601 and USMT 602/UAMT 602	3	6
USMTTP08/UAMTP08		Practicals based on USMT603/ UAMT 603 and USMT6A4/ UAMT 6A4 OR USMT6B4/ UAMT 6B4 OR USMT6C4/ UAMT 6C4 OR USMT6D4/ UAMT 6D4	3	6

- Note:**
- i . USMT501/UAMT501, USMT502/UAMT502, USMT503/UAMT503 are compulsory courses for Semester V.
 - ii . Candidate has to opt one Elective Course from USMT5A4/UAMT5A4, USMT5B4/UAMT5B4, USMT5C4/UAMT5C4 and USMT5D4/UAMT5D4 for Semester V.
 - iii . USMT601/UAMT601, USMT602/UAMT602, USMT603/UAMT603 are compulsory courses for Semester VI.
 - iv . Candidate has to opt one Elective Course from USMT6A4/UAMT6A4, USMT6B4/UAMT6B4, USMT6C4/UAMT6C4 and USMT6D4/UAMT6D4 for Semester VI.
 - v . Passing in theory and practical and internal exam shall be separate.

(6) Teaching Pattern for T.Y.B.Sc/B.A.

- i. Three lectures per week per course (1 lecture/period is of 48 minutes duration).
- ii. One practical of three periods per week per course (1 lecture/period is of 48 minutes duration).

(7) Consolidated Syllabus for semester V & VI

SEMESTER V
MULTIVARIABLE CALCULUS II
Course Code: USMT501/UAMT501

ALL Results have to be done with proof unless otherwise stated.

Unit I: Multiple Integrals (15L)

Definition of double (resp: triple) integral of a function and bounded on a rectangle (resp:box). Geometric interpretation as area and volume. Fubini's Theorem over rectangles and any closed bounded sets, Iterated Integrals. Following basic properties of double and triple integrals proved using the Fubini's theorem:

- (1) Integrability of the sums, scalar multiples, products, and (under suitable conditions) quotients of integrable functions. Formulae for the integrals of sums and scalar multiples of integrable functions.
- (2) Integrability of continuous functions. More generally, Integrability of functions with a "small" set of (Here, the notion of "small sets" should include finite unions of graphs of continuous functions.)
- (3) Domain additivity of the integral. Integrability and the integral over arbitrary bounded domains. Change of variables formula (Statement only). Polar, cylindrical and spherical coordinates, and integration using these coordinates. Differentiation under the integral sign. Applications to finding the center of gravity and moments of inertia.

Unit 2: Line Integrals (15L)

Review of Scalar and Vector fields on \mathbb{R}^n , Vector Differential Operators, Gradient, Curl, Divergence.

Paths (parametrized curves) in \mathbb{R}^n (emphasis on \mathbb{R}^2 and \mathbb{R}^3), Smooth and piecewise smooth paths. Closed paths. Equivalence and orientation preserving equivalence of paths. Definition of the line integral of a vector field over a piecewise smooth path. Basic properties of line integrals including linearity, path-additivity and behaviour under a change of parameters. Examples.

Line integrals of the gradient vector field, Fundamental Theorem of Calculus for Line Integrals, Necessary and sufficient conditions for a vector field to be conservative. Green's Theorem (proof in the case of rectangular domains). Applications to evaluation of line integrals.

Unit 3: Surface Integrals (15 L)

Parameterized surfaces. Smoothly equivalent parameterizations. Area of such surfaces.

Definition of surface integrals of scalar-valued functions as well as of vector fields defined on a surface. Curl and divergence of a vector field. Elementary identities involving gradient, curl and divergence. Stoke's Theorem (proof assuming the general form of Green's Theorem). Examples. Gauss' Divergence Theorem (proof only in the case of cubical domains). Examples.

Reference Books:

1. Apostol, Calculus, Vol. 2, Second Ed., John Wiley, New York, 1969 Section 1.1 to 11.8
2. James Stewart, Calculus with early transcendental Functions - Section 16.5 to 16.9

3. Marsden and Jerrold E. Tromba, Vector Calculus, Fourth Ed., W.H. Freeman and Co., New York, 1996 Section 6.2 to 6.4.

Other References :

1. T. Apostol, Mathematical Analysis, Second Ed., Narosa, New Delhi. 1947.
2. R. Courant and F. John, Introduction to Calculus and Analysis, Vol.2, Springer Verlag, New York, 1989.
3. W. Fleming, Functions of Several Variables, Second Ed., Springer-Verlag, New York, 1977.
4. M. H. Protter and C.B. Morrey Jr., Intermediate Calculus, Second Ed., Springer-Verlag, New York, 1995.
5. G. B. Thomas and R.L. Finney, Calculus and Analytic Geometry, Ninth Ed. (ISE Reprint), Addison- Wesley, Reading Mass, 1998.
6. D. V. Widder, Advanced Calculus, Second Ed., Dover Pub., New York. 1989.

Course: Group Theory
Course Code: USMT502/UAMT502

Unit 1: Groups and Subgroups (15L)

- (1) Definition and elementary properties of a group. Order of a group. Subgroups. Criterion for a subset to be a subgroup. Abelian groups. Center of a group. Homomorphisms and isomorphisms.
- (2) Examples of groups including $\mathbb{Z}, \mathbb{Q}, \mathbb{R}, \mathbb{C}$, Klein 4-group, symmetric and alternating groups, S^1 (= the unit circle in \mathbb{C}), $GL_n(\mathbb{R}), SL_n(\mathbb{R}), O_n$ (= the group of $n \times n$ nonsingular upper triangular matrices), B_n (= the group of $n \times n$ nonsingular upper triangular matrices), and groups of symmetries of plane figures.
- (3) Order of an element. Subgroup generated by a subset of the group.

Unit 2: Normal subgroups, Direct products and Cayley's Theorem (15L)

- (1) Cosets of a subgroup in a group. Lagrange's Theorem. Normal subgroups. Alternating group A_n . Listing normal subgroups of A_4, S_3 . Quotient (or Factor) groups. Fundamental Theorem of homomorphisms of groups.
- (2) External direct products of groups. Examples. Relation with internal products such as HK of subgroups H, K of a group.
- (3) Cayley's Theorem for finite groups.

Unit 3: Cyclic groups and cyclic subgroups (15L)

- (1) Examples of cyclic groups such as \mathbb{Z} and the group μ_n of the n -th roots of unity. Properties of cyclic groups and cyclic subgroups.
- (2) Finite cyclic groups, infinite cyclic groups and their generators. Properties of generators.

- (3) The group $\mathbb{Z}/n\mathbb{Z}$ of residue classes (mod n). Characterization of cyclic groups (as being isomorphic to \mathbb{Z} or $\mathbb{Z}/n\mathbb{Z}$ for some $n \in \mathbb{N}$).

Recommended Books.

1. I. N. Herstein, Topics in Algebra, Wiley Eastern Limited, Second edition.
2. P. B. Bhattacharya, S.K. Jain, S. Nagpaul. Abstract Algebra, Second edition, Foundation Books, New Delhi, 1995.
3. N. S. Gopalkrishnan, University Algebra, Wiley Eastern Limited.
4. M. Artin, Algebra, Prentice Hall of India, New Delhi.
5. J. B. Fraleigh, A first course in Abstract Algebra, Third edition, Narosa, New Delhi.
6. J. Gallian. Contemporary Abstract Algebra. Narosa, New Delhi.

Additional Reference Books

1. T. W. Hungerford. Algebra, Springer.
2. D. Dummit, R. Foote. Abstract Algebra, John Wiley & Sons, Inc.
3. I. S. Luther, I.B.S. Passi. Algebra. Vol. I and II.

Course: Topology of Metric Spaces Course Code: USMT503/UAMT503

Unit I: Metric spaces (15 L)

Definition and examples of metric spaces such as $\mathbb{R}, \mathbb{R}^2, \mathbb{R}^n$ with its Euclidean, sup and sum metrics. \mathbb{C} (complex numbers). l^1 and l^2 spaces of sequences. $C[a, b]$ the space of real valued continuous functions on $[a, b]$. Discrete metric space. Metric induced by the norm. Translation invariance of the metric induced by the norm. Metric subspaces. Product of two metric spaces. Open balls and open sets in a metric space. Examples of open sets in various metric spaces. Hausdorff property. Interior of a set. Properties of open sets. Structure of an open set in \mathbb{R} . Equivalent metrics.

Distance of a point from a set, Distance between sets. Diameter of a set. Bounded sets. Closed balls. Closed sets. Examples. Limit point of a set. Isolated point. Closure of a set. Boundary of a set.

Unit II: Sequences and Complete metric spaces (15L)

Sequences in a metric space. Convergent sequence in metric space. Cauchy sequence in a metric space. Subsequences. Examples of convergent and Cauchy sequences in different metric spaces. Characterization of limit points and closure points in terms of sequences. Definition and examples of relative openness/closeness in subspaces. Dense subsets in a metric space and Separability. Definition of complete metric spaces. Examples of complete metric spaces. Completeness property in subspaces. Nested Interval theorem in \mathbb{R} . Cantor's Intersection Theorem. Applications of Cantors Intersection Theorem:

- (i) The set of real Numbers is uncountable.
- (ii) Density of rational Numbers.

(iii) Intermediate Value theorem.

Unit III: Compact spaces (15L)

Definition of a compact metric space using open cover. Examples of compact sets in different metric spaces such as $\mathbb{R}, \mathbb{R}^2, \mathbb{R}^n$ with Euclidean metric. Properties of compact sets: A compact set is closed and bounded, (Converse is not true). Every infinite bounded subset of compact metric space has a limit point. A closed subset of a compact set is compact. Union and Intersection of Compact sets.

Equivalent statements for compact sets in \mathbb{R} with usual metric:

- (i) Sequentially compactness property.
- (ii) Heine-Borel property.
- (iii) Closed and boundedness property.
- (iv) Bolzano-Weierstrass property.

Reference books:

- 1. S. Kumaresan; Topology of Metric spaces.
- 2. E. T. Copson; Metric Spaces; Universal Book Stall, New Delhi, 1996.
- 3. P. K. Jain, K. Ahmed; Metric Spaces; Narosa, New Delhi, 1996.

Other references :

- 1. T. Apostol; Mathematical Analysis, Second edition, Narosa, New Delhi, 1974
- 2. R. R. Goldberg; Methods of Real Analysis; Oxford and IBH Pub. Co., New Delhi 1970.
- 3. D. Gopal, A. Deshmukh, A. S. Ranadive and S. Yadav; An Introduction to Metric Spaces, Chapman and Hall/CRC, New York, 2020.
- 4. W. Rudin; Principles of Mathematical Analysis; Third Ed, McGraw-Hill, Auckland, 1976.
- 5. D. Somasundaram; B. Choudhary; A first Course in Mathematical Analysis. Narosa, New Delhi
- 6. G. F. Simmons; Introduction to Topology and Modern Analysis; McGraw-Hi, New York, 1963.
- 7. Expository articles of MTTS programme.

Course: Partial Differential Equations (Elective A)
Course Code: USMT5A4/UAMT5A4

Unit I: First Order Partial Differential Equations. (15L)

Curves and Surfaces, Genesis of first order PDE, Classification of first order PDE, Classification of integrals, The Cauchy problem, Linear Equation of first order, Lagrange's equation, Pfaffian differential equations. (Ref Book: An Elementary Course in Partial Differential Equations by T. Amaranath, 2nd edition, Chapter 1: 1.1, 1.2, 1.3, Lemma 1.3.1, 1.3.2, 1.3.3, 1.4, Theorem

1.4.1, 1.4.2, 1.5, Theorem 1.5.1, Lemma 1.5.1, Theorem 1.5.2, Lemma 1.5.2 and related examples)

Unit II: Compatible system of first order Partial Differential Equations. (15L)

Definition, Necessary and sufficient condition for integrability, Charpit's method, Some standard types, Jacobi's method, The Cauchy problem. (Ref Book: An Elementary Course in Partial Differential Equations by T. Amaranath, 2nd edition, Chapter 1: 1.6, Theorem 1.6.1, 1.7, 1.8 Theorem 1.8.1, 1.9 and related examples)

Unit III: Quasi-Linear Partial Differential Equations. (15L)

Semi linear equations, Quasi-linear equations, first order quasi-linear PDE, Initial value problem for quasi-linear equation, Non linear first order PDE, Monge cone, Analytic expression for Monge's cone, Characteristics strip, Initial strip. (Ref Book: An Elementary Course in Partial Differential Equations by T. Amaranath, 2nd edition, Chapter 1: 1.10, Theorem 1.10.1, 1.11, Theorem 1.11.1, Proposition 1.11.1, 1.11.2 and related examples)

Reference Books

1. T. Amaranath; An Elementary Course in Partial Differential Equations; 2nd edition, Narosa Publishing house.
2. Ian Sneddon; Elements of Partial Differential Equations; McGraw Hill book.
3. Ravi P. Agarwal and Donal O'Regan; Ordinary and Partial Differential Equations; Springer, First Edition (2009).
4. W. E. Williams; Partial Differential Equations; Clarendon Press, Oxford, (1980).
5. K. Sankara Rao; Introduction to Partial Differential Equations; Third Edition, PHI.

Course: Number Theory and its applications I (Elective B)

Course Code: USMT5B4 / UAMT5B4

Unit I: Congruences and Factorization (15L)

Review of Divisibility, Primes and The fundamental theorem of Arithmetic.

Congruences : Definition and elementary properties, Complete residue system modulo m , Reduced residue system modulo m , Euler's function and its properties, Fermat's little Theorem, Euler's generalization of Fermat's little Theorem, Wilson's theorem, Linear congruence, The Chinese remainder Theorem, Congruences of Higher degree,

Unit II: Diophantine equations and their solutions (15L)

The linear equations $ax + by = c$. The equations $x^2 + y^2 = p$, where p is a prime. The equation $x^2 + y^2 = z^2$, Pythagorean triples, primitive solutions, The equations $x^4 + y^4 = z^2$ and $x^4 + y^4 = z^4$ have no solutions $(x; y; z)$ with $xyz \neq 0$. Every positive integer n can be expressed as sum of squares of four integers, Universal quadratic forms $x^2 + y^2 + z^2 + t^2$. Assorted examples

:section 5.4 of Number theory by Niven- Zuckermann-Montgomery.

Unit III: Primitive Roots and Cryptography (15L)

Order of an integer and Primitive Roots. Basic notions such as encryption (enciphering) and decryption (deciphering), Cryptosystems, symmetric key cryptography, Simple examples such as shift cipher, Affine cipher, Hill cipher, Vigenere cipher. Concept of Public Key Cryptosystem; RSA Algorithm. An application of Primitive Roots to Cryptography.

Reference Books:

1. Niven, H. Zuckerman and H. Montgomery; An Introduction to the Theory of Numbers; John Wiley & Sons. Inc.
2. David M. Burton; An Introduction to the Theory of Numbers; Tata McGrawHillll Edition.
3. G. H. Hardy and E.M. Wright; An Introduction to the Theory of Numbers; Low priced edition; The English Language Book Society and Oxford University Press, 1981.
4. Neville Robins. Beginning Number Theory; Narosa Publications.
5. S.D. Adhikari; An introduction to Commutative Algebra and Number Theory; Narosa Publishing House.
6. N. Koblitz; A course in Number theory and Cryptography; Springer.
7. M. Artin; Algebra; Prentice Hall.
8. K. Ireland, M. Rosen; A classical introduction to Modern Number Theory; Second edition, Springer Verlag.
9. William Stalling; Cryptology and network security.

Course: Graph Theory (Elective C)
Course Code: USMT5C4/UAMT5C4

Unit I: Basics of Graphs (15L)

Definition of general graph, Directed and undirected graph, Simple and multiple graph, Types of graphs- Complete graph, Null graph, Complementary graphs, Regular graphs Sub graph of a graph, Vertex and Edge induced sub graphs, Spanning sub graphs. Basic terminology- degree of a vertex, Minimum and maximum degree, Walk, Trail, Circuit, Path, Cycle. Handshaking theorem and its applications, Isomorphism between the graphs and consequences of isomorphism between the graphs, Self complementary graphs, Connected graphs, Connected components. Matrices associated with the graphs – Adjacency and Incidence matrix of a graph- properties, Bipartite graphs and characterization in terms of cycle lengths. Degree sequence and Havel-Hakimi theorem, Distance in a graph- shortest path problems, Dijkstra's algorithm.

Unit II: Trees (15L)

Cut edges and cut vertices and relevant results, Characterization of cut edge, Definition of a tree and its characterizations, Spanning tree, Recurrence relation of spanning trees and Cayley

formula for spanning trees of K_n , Algorithms for spanning tree-BFS and DFS, Binary and m -ary tree, Prefix codes and Huffman coding, Weighted graphs and minimal spanning trees - Kruskal's algorithm for minimal spanning trees.

Unit III: Eulerian and Hamiltonian graphs (15L)

Eulerian graph and its characterization- Fleury's Algorithm-(Chinese postman problem), Hamiltonian graph, Necessary condition for Hamiltonian graphs using $G \setminus S$ where S is a proper subset of $V(G)$, Sufficient condition for Hamiltonian graphs- Ore's theorem and Dirac's theorem, Hamiltonian closure of a graph, Cube graphs and properties like regular, bipartite, Connected and Hamiltonian nature of cube graph, Line graph of graph and simple results.

Reference Books:

1. Bondy and Murty; Graph Theory with Applications.
2. Balkrishnan and Ranganathan; Graph theory and applications.
3. Douglas B. West, Introduction to Graph Theory, 2nd Ed., Pearson, 2000

Additional Reference Book:

1. Behzad and Chartrand; Graph theory.
2. Choudam S. A.; Introductory Graph theory.

Course: Basic Concepts of Probability and Random Variables (Elective D)

Course Code: USMT5D4 / UAMT5D4

Unit I: Basic Concepts of Probability and Random Variables.(15 L)

Basic Concepts: Algebra of events including countable unions and intersections, Sigma field \mathcal{F} , Probability measure P on \mathcal{F} , Probability Space as a triple (Ω, \mathcal{F}, P) , Properties of P including Subadditivity. Discrete Probability Space, Independence and Conditional Probability, Theorem of Total Probability. Random Variable on (Ω, \mathcal{F}, P) – Definition as a measurable function, Classification of random variables - Discrete Random variable, Probability function, Distribution function, Density function and Probability measure on Borel subsets of \mathbb{R} , Absolutely continuous random variable. Function of a random variable; Result on a random variable R with distribution function F to be absolutely continuous, Assume F is continuous everywhere and has a continuous derivative at all points except possibly at finite number of points, Result on density function f_2 of R_2 where $R_2 = g(R_1)$, h_j is inverse of g over a 'suitable' subinterval $f_2(y) + \sum_{i=1}^n f_1(h_j(y))|h'_j(y)|$ under suitable conditions.

Reference for Unit 1, Sections 1.1-1.6, 2.1-2.5 of Basic Probability theory by Robert Ash, Dover Publication, 2008.

Unit II: Properties of Distribution function, Joint Density function (15L)

Properties of distribution function F , F is non-decreasing, $\lim_{x \rightarrow \infty} F(x) = 1$, $\lim_{x \rightarrow -\infty} F(x) = 0$, Right continuity of F , $\lim_{x \rightarrow x_0} F(x) = P(\{R < x_0\})$, $P(\{R = x_0\}) = F(x_0) - F(\overline{x_0})$. Joint distribution, Joint Density, Results on Relationship between Joint and Individual densities, Related

result for Independent random variables. Examples of distributions like Binomial, Poisson and Normal distribution. Expectation and k -th moments of a random variable with properties.

Reference for Unit II:

Sections 2.5-2.7, 2.9, 3.2-3.3, 3.6 of Basic Probability theory by Robert Ash, Dover Publication, 2008.

Unit III: Weak Law of Large Numbers

Joint Moments, Joint Central Moments, Schwarz Inequality, Bounds on Correlation Coefficient ρ

, Result on ρ as a measure of linear dependence, $\text{Var}\left(\sum_{i=1}^n R_i\right) = \sum_{i=1}^n \text{Var}(R_i) + 2 \sum_{i=1}^n \sum_{i=1 \leq i < j \leq n} \text{Cov}(R_i, R_j)$,

Method of Indicators to find expectation of a random variable, Chebyshev's Inequality, Weak law of Large numbers.

Reference for Unit III

Sections 3.4, 3.5, 3.7, 4.1-4.4 of Basic Probability theory by Robert Ash, Dover Publication, 2008.

Additional Reference Books. Marek Capinski, Probability through Problems, Springer.

Course: Practicals (Based on USMT501 / UAMT501 and USMT502 / UAMT502)

Course Code: USMTP05 / UAMTP05

Suggested Practicals (Based on USMT501 / UAMT501)

1. Evaluation of double and triple integrals.
2. Change of variables in double and triple integrals and applications
3. Line integrals of scalar and vector fields
4. Green's theorem, conservative field and applications
5. Evaluation of surface integrals
6. Stoke's and Gauss divergence theorem
7. Miscellaneous theory questions on units 1, 2 and 3.

Suggested Practicals (Based on USMT502 / UAMT502)

1. Examples of groups and groups of symmetries of equilateral triangle, square and rectangle.
2. Examples of determining centers of different groups. Examples of subgroups of various groups and orders of elements in a group.
3. Left and right cosets of a group and Lagrange's theorem.
4. Normal subgroups and quotient groups. Direct products of groups.
5. Finite cyclic groups and their generators

6. Infinite cyclic groups and their properties.
7. Miscellaneous Theory Questions

**Course: Practicals (Based on USMT503 / UAMT503 and USMT5A4 OR
USMT5B4 OR USMT5C4 OR USMT5D4)
Course Code: USMTP06 / UAMTP06**

Suggested Practicals USMT503 / UAMT503:

1. Examples of Metric Spaces, Normed Linear Spaces,
2. Sketching of Open Balls in \mathbb{R}^2 , Open and Closed sets, Equivalent Metrics
3. Subspaces, Interior points, Limit Points, Dense Sets and Separability, Diameter of a set, Closure.
4. Limit Points, Sequences, Bounded, Convergent and Cauchy Sequences in a Metric Space.
5. Complete Metric Spaces and Applications.
6. Examples of Compact Sets.
7. Miscellaneous Theory Questions.

Suggested Practicals on USMT5A4/UAMT5A4

1. Find general solution of Lagrange's equation.
2. Show that Pfaffian differential equation are exact and find corresponding integrals.
3. Find complete integral of first order PDE using Charpit's Method.
4. Find complete integral using Jacobi's Method.
5. Solve initial value problem for quasi-linear PDE.
6. Find the integral surface by the method of characteristics.
7. Miscellaneous Theory Questions.

Suggested Practicals based on USMT5B4/UAMT5B4

1. Congruences.
2. Linear congruences and congruences of Higher degree.
3. Linear diophantine equation.
4. Pythagorean triples and sum of squares.
5. Cryptosystems (Private Key).
6. Cryptosystems (Public Key) and primitive roots.
7. Miscellaneous theoretical questions based on full USMT5B4.

Suggested Practicals based on USMT5C4/UAMT5C4

1. Handshaking Lemma and Isomorphism.
2. Degree sequence and Dijkstra's algorithm
3. Trees, Cayley Formula
4. Applications of Trees
5. Eulerian Graphs.
6. Hamiltonian Graphs.
7. Miscellaneous Problems.

Suggested Practicals based on USMT5D4/UAMT5D4

1. Basic concepts of Probability (Algebra of events, Probability space, Probability measure, combinatorial problems)
2. Conditional Probability, Random variable (Independence of events. Definition, Classification and function of a random variable)
3. Distribution function, Joint Density function.
4. Expectation of a random variable, Normal distribution.
5. Method of Indicators, Weak law of large numbers.
6. Conditional density, Conditional expectation.
7. Miscellaneous Theoretical questions based on full paper.

SEMESTER VI
BASIC COMPLEX ANALYSIS
Course Code: USMT601/UAMT601

Unit I: Introduction to Complex Analysis (15 L)

Review of complex numbers: Complex plane, polar coordinates, exponential map, powers and roots of complex numbers, De Moivre's formula, \mathbb{C} as a metric space, bounded and unbounded sets, point at infinity-extended complex plane, sketching of set in complex plane (No questions to be asked).

convergence of sequences of complex numbers and related results. Limit of a function $f : \mathbb{C} \rightarrow \mathbb{C}$, real and imaginary part of functions, continuity at a point and algebra of continuous functions. Derivative of $f : \mathbb{C} \rightarrow \mathbb{C}$, comparison between differentiability in real and complex sense, Cauchy-Riemann equations, sufficient conditions for differentiability, analytic function, if f, g analytic then $f + g, f - g, fg$ and f/g are analytic, chain rule.

Theorem: If $f(z) = 0$ everywhere in a domain D , then $f(z)$ must be constant throughout D .
Harmonic functions and harmonic conjugate.

Unit II: Cauchy Integral Formula (15 L)

Evaluation the line integral $\int f(z) dz$ over $|z - z_0| = r$ and Cauchy integral formula.

Taylor's theorem for analytic function. Mobius transformations: definition and examples. Exponential function, its properties. trigonometric functions and hyperbolic functions.

Unit III: Complex power series, Laurent series and isolated singularities. (15 L)

Power series of complex numbers and related results. Radius of convergences, disc of convergence, uniqueness of series representation, examples.

Definition of Laurent series, Definition of isolated singularity, statement (without proof) of existence of Laurent series expansion in neighbourhood of an isolated singularity, type of isolated singularities viz. removable, pole and essential defined using Laurent series expansion, examples. Statement of Residue theorem and calculation of residue.

Reference Books:

1. J.W. Brown and R.V. Churchill, Complex analysis and Applications : Sections 18, 19, 20, 21, 23, 24, 25, 28, 33, 34, 47, 48, 53, 54, 55, Chapter 5, page 231 section 65, define residue of a function at a pole using Theorem in section 66 page 234, Statement of Cauchy's residue theorem on page 225, section 71 and 72 from chapter 7.

Other References:

1. Robert E. Greene and Steven G. Krantz, Function theory of one complex variable
2. T.W. Gamelin, Complex analysis

Course: Ring Theory **Course Code: USMT602 / UAMT602**

Unit I. Rings (15L)

- (1) Definition and elementary properties of rings (where the definition should include the existence of unity), commutative rings, integral domains and fields. Examples, including \mathbb{Z} , \mathbb{Q} , \mathbb{R} , $\mathbb{Z}/n\mathbb{Z}$, \mathbb{C} , $M_n(\mathbb{R})$, $\mathbb{Z}[i]$, $\mathbb{Z}[\sqrt{2}]$, $\mathbb{Z}[\sqrt{-5}]$, $\mathbb{Z}[X]$, $\mathbb{R}[X]$, $\mathbb{C}[X]$, $(\mathbb{Z}/n\mathbb{Z})[X]$.
- (2) Units in a ring. The multiplicative group of units in a ring R [and, in particular, the multiplicative group F^* of nonzero elements of a field F]. Description of the units in $\mathbb{Z}/n\mathbb{Z}$. Results such as: A finite integral domain is a field. $\mathbb{Z}/p\mathbb{Z}$, where p is a prime, as an example of a finite field.
- (3) Characteristic of a ring. Examples. Elementary facts such as: the characteristic of an integral domain is either 0 or a prime number.

(Note: From here on all rings are assumed to be commutative with unity).

Unit II. Ideals and special rings(15L)

- (1) Ideals in a ring. Sums and products of ideals. Quotient rings. Examples. Prime ideals and maximal ideals. Characterization of prime ideals and maximal ideals in a commutative ring in terms of their quotient rings. Description of the ideals and the prime ideals in \mathbb{Z} , $\mathbb{R}[X]$ and $\mathbb{C}[X]$.
- (2) Homomorphisms and isomorphism of rings. Kernel and the image of a homomorphism. Fundamental Theorem of homomorphism of a ring.

- (3) Construction of the quotient field of an integral domain (Emphasis on \mathbb{Z}, \mathbb{Q}). A field contains a subfield isomorphic to $\mathbb{Z}/p\mathbb{Z}$ or \mathbb{Q} .
- (4) Notions of euclidean domain (ED), principal ideal domain (PID). Examples such as $\mathbb{Z}, \mathbb{Z}[i]$, and polynomial rings. Relation between these two notions ($\text{ED} \implies \text{PID}$).

Unit III. Factorization (15L)

- (1) Divisibility in a ring. Irreducible and prime elements. Examples.
- (2) Division algorithm in $F[X]$ (where F is a field). Monic polynomials, greatest common divisor of $f(x), g(x) \in F[X]$ (not both 0). Theorem: Given $f(x)$ and $g(x) \neq 0$, in $F[X]$ then their greatest common divisor $d(x) \in F[X]$ exists; moreover, $d(x) = a(x)f(x) + b(x)g(x)$ for some $a(x), b(x) \in F[X]$. Relatively prime polynomials in $F[X]$, irreducible polynomial in $F[X]$. Examples of irreducible polynomials in $(\mathbb{Z}/p\mathbb{Z})[X]$ (p prime), Eisenstein Criterion (without proof).
- (3) Notion of unique factorization domain (UFD). Elementary properties. Example of a non-UFD is $\mathbb{Z}[\sqrt{-5}]$ (without proof). Theorem (without proof). Relation between the three notions ($\text{ED} \implies \text{PID} \implies \text{UFD}$). Examples such as $\mathbb{Z}[X]$ of UFD that are not PID. Theorem (without proof): If R is a UFD, then $R[X]$ is a UFD.

Reference Books

- 1. N. Herstein; Topics in Algebra; Wiley Eastern Limited, Second edition.
- 2. P. B. Bhattacharya, S. K. Jain, and S. R. Nagpaul; Abstract Algebra; Second edition, Foundation Books, New Delhi, 1995.
- 3. N. S. Gopalakrishnan; University Algebra; Wiley Eastern Limited.
- 4. M. Artin; Algebra; Prentice Hall of India, New Delhi.
- 5. J. B. Fraleigh; A First course in Abstract Algebra; Third edition, Narosa, New Delhi.
- 6. J. Gallian; Contemporary Abstract Algebra; Narosa, New Delhi.

Additional Reference Books:

- 1. S. Adhikari; An Introduction to Commutative Algebra and Number theory; Narosa Publishing House.
- 2. T.W. Hungerford; Algebra; Springer.
- 3. D. Dummit, R. Foote; Abstract Algebra; John Wiley & Sons, Inc.
- 4. I.S. Luthar, I.B.S. Passi; Algebra; Vol. I and II.
- 5. U. M. Swamy, A. V. S. N. Murthy; Algebra Abstract and Modern; Pearson.
- 6. Charles Lanski; Concepts Abstract Algebra; American Mathematical Society.
- 7. Sen, Ghosh and Mukhopadhyay; Topics in Abstract Algebra; Universities press.

Course: Topology of Metric Spaces and Real Analysis
Course Code: USMT603/ UAMT603

Unit I: Continuous functions on metric spaces (15 L)

Epsilon-delta definition of continuity of a function at a point from one metric space to another. Characterization of continuity at a point in terms of sequences, open sets and closed sets and examples. Algebra of continuous real valued functions on a metric space. Continuity of composite function. Continuous image of compact set is compact, Uniform continuity in a metric space, examples (emphasis on \mathbb{R}). Results such as: every continuous functions from a compact metric space is uniformly continuous. Contraction mapping and fixed point theorem. Applications.

Unit II: Connected spaces (15L)

Separated sets- Definition and examples. Connected and disconnected sets. Connected and disconnected metric spaces. Results such as: A subset of \mathbb{R} is connected if and only if it is an interval. A continuous image of a connected set is connected.

Characterization of a connected space, viz. a metric space is connected if and only if every continuous function from X to $\{1, -1\}$ is a constant function. Path connectedness in \mathbb{R}^n , definition and examples. A path connected subset of \mathbb{R}^n is connected, convex sets are path connected. Connected components. An example of a connected subset of \mathbb{R}^n which is not path connected.

Unit III : Sequence and series of functions(15 lectures)

Sequence of functions - pointwise and uniform convergence of sequences of real-valued functions, examples. Uniform convergence implies pointwise convergence, example to show converse not true, series of functions, convergence of series of functions, Weierstrass M-test (statement only). Examples. Properties of uniform convergence: Continuity of the uniform limit of a sequence of continuous function, conditions under which integral and the derivative of sequence of functions converge to the integral and derivative of uniform limit on a closed and bounded interval (statements only). Examples. Consequences of these properties for series of functions, term by term differentiation and integration (statements only). Power series in \mathbb{R} centered at origin and at some point in \mathbb{R} , radius of convergence, region (interval) of convergence, uniform convergence, term by-term differentiation and integration of power series, Examples. Uniqueness of series representation, functions represented by power series, classical functions defined by power series such as exponential, cosine and sine functions, the basic properties of these functions.

Reference books:

1. R. R. Goldberg; Methods of Real Analysis; Oxford and International Book House (IBH) Publishers, New Delhi.
2. S. Kumaresan; Topology of Metric spaces.
3. E. T. Copson; Metric Spaces; Universal Book Stall, New Delhi, 1996.
4. Robert Bartle and Donald R. Sherbert; Introduction to Real Analysis; Second Edition, John Wiley and Sons.

Other references:

1. W. Rudin; Principles of Mathematical Analysis.
2. T. Apostol; Mathematical Analysis; Second edition, Narosa, New Delhi, 1974
3. E. T. Copson; Metric Spaces; Universal Book Stall, New Delhi, 1996.
4. P. K. Jain. K. Ahmed, Metric Spaces. Narosa, New Delhi, 1996.
5. W. Rudin, Principles of Mathematical Analysis; Third Ed, McGraw-Hill, Auckland, 1976.
6. D. Somasundaram, B. Choudhary; A first Course in Mathematical Analysis. Narosa, New Delhi
7. G. F. Simmons; Introduction to Topology and Modern Analysis, McGraw-Hi, New York, 1963.
8. Sutherland. Topology.

Course: Integral Transforms(Elective A)**Course Code: USMT6A4/ UAMT6A4****Unit I: The Laplace Transform (15L)**

Definition of Laplace Transform, theorem, Laplace transforms of some elementary functions, Properties of Laplace transform, LT of derivatives and integrals, Initial and final value theorem, Inverse Laplace Transform, Properties of Inverse Laplace Transform, Convolution Theorem, Inverse LT by partial fraction method, Laplace transform of special functions: Heaviside unit step function, Dirac-delta function and Periodic function.

Unit II: The Fourier Transform

Fourier integral representation, Fourier integral theorem, Fourier Sine & Cosine integral representation, Fourier Sine & Cosine transform pairs, Fourier transform of elementary functions, Properties of Fourier Transform, Convolution Theorem, Parseval's Identity.

Unit III: Applications of Integral Transforms

Relation between the Fourier and Laplace Transform. Application of Laplace transform to evaluation of integrals and solutions of higher order linear ODE. Applications of LT to solution of one dimensional heat equation & wave equation. Application of Fourier transforms to the solution of initial and boundary value problems, Heat conduction in solids (one dimensional problems in infinite & semi infinite domain).

Reference Books:

1. Lokenath Debnath and Dambaru Bhatta, Integral Transforms and their Applications, CRC Press Taylor & Francis.
2. I. N. Sneddon, Use of Integral Transforms, Tata-McGraw Hill.

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3. L. Andrews and B. Shivamogg, Integral Transforms for Engineers, Prentice Hall of India.

Course: Number Theory and its applications II (Elective B)

Course Code: USMT6B4/ UAMT6B4

Unit I: Quadratic Reciprocity (15 L)

Quadratic residues and Legendre Symbol, Gauss's Lemma, Theorem on Legendre Symbol $\left(\frac{2}{p}\right)$, the result: If p is an odd prime and a is an odd integer with $(a, p) = 1$ then

$\left(\frac{a}{p}\right) = (-1)^t$ where $t = \sum_{k=1}^{\frac{p-1}{2}} \left[\frac{ka}{p}\right]$, Quadratic Reciprocity law. Theorem on Legendre Symbol $\left(\frac{3}{p}\right)$. The Jacobi Symbol and law of reciprocity for Jacobi Symbol. Quadratic Congruences with Composite moduli.

Unit II: Continued Fractions (15 L)

Finite continued fractions. Infinite continued fractions and representation of an irrational number by an infinite simple continued fraction, Rational approximations to irrational numbers and order of convergence, Best possible approximations. Periodic continued fractions.

Unit III: Pell's equation, Arithmetic function and Special numbers (15 L)

Pell's equation $x^2 - dy^2 = n$, where d is not a square of an integer. Solutions of Pell's equation (The proofs of convergence theorems to be omitted). Arithmetic functions of number theory: $d(n)$ (or $\tau(n)$), $\sigma(n)$, $\sigma_k(n)$, $\omega(n)$ and their properties, $\mu(n)$ and the Möbius inversion formula. Special numbers: Fermat numbers, Mersenne numbers, Perfect numbers, Amicable numbers, Pseudo primes, Carmichael numbers.

Reference Books:

1. Niven, H. Zuckerman and H. Montgomery; An Introduction to the Theory of Numbers; John Wiley & Sons. Inc.
2. David M. Burton; An Introduction to the Theory of Numbers; Tata McGraw-Hill Edition.
3. G. H. Hardy and E.M. Wright; An Introduction to the Theory of Numbers; Low priced edition; The English Language Book Society and Oxford University Press, 1981.
4. Neville Robins; Beginning Number Theory; Narosa Publications.
5. S. D. Adhikari; An introduction to Commutative Algebra and Number Theory; Narosa Publishing House
6. N. Koblitz; A course in Number theory and Cryptography. Springer.
7. M. Artin; Algebra. Prentice Hall.
8. K. Ireland, M. Rosen; A classical introduction to Modern Number Theory. Second edition, Springer Verlag.

9. William Stallings; Cryptology and network security.

Course: Graph Theory and Combinatorics (Elective C)
Course Code: USMT6C4 /UAMT6C4

Unit I: Colorings of graph (15L)

Vertex coloring- evaluation of vertex chromatic number of some standard graphs, critical graph. Upper and lower bounds of Vertex chromatic Number- Statement of Brooks theorem. Edge colouring- Evaluation of edge chromatic number of standard graphs such as complete graph, complete bipartite graph, cycle. Statement of Vizing Theorem. Chromatic polynomial of graphs- Recurrence Relation and properties of Chromatic polynomials. Vertex and edge cuts, vertex and edge connectivity and the relation between vertex and edge connectivity. Equality of vertex and edge connectivity of cubic graphs. Whitney's theorem on 2-vertex connected graphs.

Unit II: Planar graph (15L)

Definition of planar graph. Euler formula and its consequences. Non planarity of K_5 ; $K(3;3)$. Dual of a graph. Polyhedron in \mathbb{R}^3 and existence of exactly five regular polyhedron- (Platonic solids) Colorability of planar graphs- 5 color theorem for planar graphs, statement of 4 color theorem. flows in Networks, and cut in a network- value of a flow and the capacity of cut in a network, relation between flow and cut. Maximal flow and minimal cut in a network and Ford-Fulkerson theorem.

Unit III: Combinatorics (15L)

Applications of Inclusion Exclusion Principle- Rook polynomial, Forbidden position problems. Introduction to partial fractions and Newton's binomial theorem for real power series, series expansion of some standard functions. Forming recurrence relation and getting a generating function. Solving a recurrence relation using ordinary generating functions. System of Distinct Representatives and Hall's theorem of SDR.

Recommended Books.

1. Bondy and Murty; Graph Theory with Applications.
2. Balkrishnan and Ranganathan; Graph theory and applications.
3. Douglas B. West, Introduction to Graph Theory, 2nd Ed., Pearson, 2000
4. Richard Brualdi; Introduction to Combinatorics.

Additional Reference Book.

1. Behzad and Chartrand; Graph theory.
2. Choudam S. A.; Introductory Graph theory; 3 Cohen, Combinatorics.

Course: Operations Research (Elective D)
Course Code: USMT6D4 / UAMT6D4

Unit I: Linear Programming-I (15L)

Prerequisites: Vector Space, Linear independence and dependence, Basis, Convex sets, Dimension of polyhedron, Faces.

Formation of LPP, Graphical Method. Theory of the Simplex Method- Standard form of LPP, Feasible solution to basic feasible solution, Improving BFS, Optimality Condition, Unbounded solution, Alternative optima, Correspondence between BFS and extreme points. Simplex Method – Simplex Algorithm, Simplex Tableau.

Unit II: Linear programming-II (15L)

Simplex Method – Case of Degeneracy, Big-M Method, Infeasible solution, Alternate solution, Solution of LPP for unrestricted variable. Transportation Problem: Formation of TP, Concepts of solution, feasible solution, Finding Initial Basic Feasible Solution by North West Corner Method, Matrix Minima Method, Vogel's Approximation Method. Optimal Solution by MODI method, Unbalanced and maximization type of TP.

Unit III: Queuing Systems (15L)

Elements of Queuing Model, Role of Exponential Distribution. Pure Birth and Death Models; Generalized Poisson Queuing Model. Specialized Poisson Queues: Steady- state Measures of Performance, Single Server Models, Multiple Server Models, Self- service Model, Machine-servicing Model.

Reference for Unit III:

1. G. Hadley; Linear Programming; Narosa Publishing, (Chapter 3).
2. G. Hadley; Linear Programming; Narosa Publishing, (Chapter 4 and 9).
3. J. K. Sharma; Operations Research; Theory and Applications, (Chapter 4, 9).
4. J. K. Sharma, Operations Research, Theory and Applications.
5. H. A. Taha, Operations Research, Prentice Hall of India.

Additional Reference Books:

1. Hillier and Lieberman, Introduction to Operations Research.
2. Richard Broson, Schaum Series Book in Operations Research, Tata McGrawHill Publishing Company Ltd.

Course: Practicals (Based on USMT601 / UAMT601 and USMT602 / UAMT602)
Course Code: USMTP07 / UAMTP07

Suggested Practicals (Based on USMT601 / UAMT601):

1. Limit continuity and derivatives of functions of complex variables.
2. Steriographic Projection , Analytic function, finding harmonic conjugate.
3. Contour Integral, Cauchy Integral Formula ,Möbius transformations.

4. Taylors Theorem , Exponential , Trigonometric, Hyperbolic functions.
5. Power Series , Radius of Convergence, Laurents Series.
6. Finding isolated singularities- removable, pole and essential, Cauchy Residue theorem.
7. Miscellaneous theory questions.

Suggested Practicals (Based on USMT602 / UAMT602)

1. Examples of rings (commutative and non-commutative), integral domains and fields
2. Units in various rings. Determining characteristics of rings.
3. Prime Ideals and Maximal Ideals, examples on various rings.
4. Euclidean domains and principal ideal domains (examples and non-examples)
5. Examples if irreducible and prime elements.
6. Applications of division algorithm and Eisenstein's criterion.
7. Miscellaneous Theoretical questions on Unit 1, 2 and 3.

Course: Practicals (Based on USMT603 / UAMT603 and USMT6A4 / UAMT6A4 OR USMT6B4 / UAMT6B4 OR USMT6C4 / UAMT6C4 OR USMT6D4 / UAMT6D4)
Course Code: USMTP08 / UAMTP08

Suggested practicals Based on USMT603 / UAMT603:

- 1 Continuity in a Metric Spaces
- 2 Uniform Continuity, Contraction maps, Fixed point theorem
- 3 Connected Sets , Connected Metric Spaces
- 4 Path Connectedness, Convex sets, Continuity and Connectedness
- 5 Pointwise and uniform convergence of sequence functions, properties
- 6 Point wise and uniform convergence of series of functions and properties
- 7 Miscellaneous Theory Questions.

Suggested Practicals based on USMT6A4 / UAMT6A4

- 1 Find the Laplace transform of differential and integral equations.
- 2 Find the inverse Laplace transform by the partial fraction method.
- 3 Find the Fourier integral representation of given functions.
- 4 Find the Fourier Sine / Cosine integral representation of given functions.
- 5 Solve higher order ODE using Laplace transform.

6 Solve one dimensional heat and wave equation using Laplace transform. Solve initial and boundary value problems using Fourier transform.

7 Miscellaneous Theory Questions.

Suggested Practicals based on USMT6B4 / UAMT6B4

1 Legendre Symbol.

2 Jacobi Symbol and Quadratic congruences with composite moduli.

3 Finite continued fractions.

4 Infinite continued fractions.

5 Pell's equations and Arithmetic functions of number theory.

6 Special Numbers.

7 Miscellaneous Theoretical questions.

Suggested Practicals based on USMT6C4 / UAMT6C4

1 Coloring of Graphs

2 Chromatic polynomials and connectivity.

3 Planar graphs

4 Flow theory.

5 Application of Inclusion Exclusion Principle, rook polynomial. Recurrence relation.

6 Generating function and SDR.

7 Miscellaneous theoretical questions.

Suggested Practicals based on USMT6D4 / UAMT6D4

All practicals to be done manually as well as using software TORA / EXCEL solver.

1 LPP formation, graphical method and simple problems on theory of simplex method

2 LPP Simplex Method

3 Big-M method, special cases of solutions.

4 Transportation Problem

5 Queuing Theory; single server models

6 Queuing Theory; multiple server models

7 Miscellaneous Theory Questions.

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(8) Scheme of Evaluation**Scheme of Examination (75:25)**

The performance of the learners shall be evaluated into two parts.

- Internal Assessment of 25 percent marks for each paper.
- Semester End Examination of 75 percent marks for each paper.

I. Internal Evaluation of 25 Marks:**T.Y.B.Sc. :**

- (i) One class Test on unit I of 20 marks of duration one hour to be conducted during Practical session.

Paper pattern of the Test:

Q1: Definitions/ Fill in the blanks/ True or False with Justification (04 Marks).

Q2: Multiple choice 5 questions. (10 Marks: 5×2)

Q3: Attempt any 2 from 3 descriptive questions. (06 marks: 2×3)

- (ii) Active participation in routine class: 05 Marks.

OR

Students who are willing to explore topics related to syllabus, dealing with applications historical development or some interesting theorems and their applications can be encouraged to submit a project for 25 marks under the guidance of teachers.

T.Y.B.A. :

- (i) One class Test on unit I of 20 marks to be conducted during Tutorial session.

Paper pattern of the Test:

Q1: Definitions/ Fill in the blanks/ True or False with Justification (04 Marks).

Q2: Multiple choice 5 questions. (10 Marks: 5×2)

Q3: Attempt any 2 from 3 descriptive questions. (06 marks: 2×3)

- (ii) Journal : 05 Marks.

OR

Students who are willing to explore topics related to syllabus, dealing with applications historical development or some interesting theorems and their applications can be encouraged to submit a project for 25 marks under the guidance of teachers.

II. Semester End Theory Examinations : There will be a Semester-end external Theory examination of 75 marks for each of the courses USMT501/UAMT501, USMT502/UAMT502, USMT503 and USMT5A4 OR USMT5B4 OR USMT5C4 OR USMT 5D4 of Semester V and USMT601/UAMT601, USMT602/UAMT602, USMT603 and USMT6A4 OR USMT6B4 OR USMT 6C4 OR USMT 6D4 of semester VI to be conducted by the University.

1. Duration: The examinations shall be of $2\frac{1}{2}$ Hours duration.
2. Theory Question Paper Pattern:

- a) There shall be FOUR questions. The first three questions Q1, Q2, Q3 shall be of 20 marks, each based on the units I, II, III respectively. The fourth question Q4 shall be of 15 marks based on the entire syllabus.
- b) All the questions shall be compulsory. The questions Q1, Q2, Q3, Q4 shall have internal choices within the questions. Including the choices, the marks for each question shall be 30-32.
- c) The questions Q1, Q2, Q3, Q4 may be subdivided into sub-questions as a, b, c, d & e, etc and the allocation of marks depends on the weightage of the topic.

III. Semester End Practical Examinations :

There shall be a Semester-end practical examinations of three hours duration and 100 marks for each of the courses USMTP05/UAMTP05, USMTP06/UAMTP056 of Semester V and USMTP07/UAMTP07, USMTP08/UAMTP08 of semester VI.

In semester V, the Practical examinations for USMTP05/UAMTP05 and USMTP06/UAMTP06 are conducted by the college.

In semester VI, the Practical examinations for USMTP07/UAMTP07 and USMTP08/UAMTP08 are conducted by the University.

Question Paper pattern:

Paper pattern: The question paper shall have two parts A, B.
Each part shall have two Sections.

Section I Objective in nature: Attempt any Eight out of Twelve multiple choice questions. ($8 \times 3 = 24$ Marks)

Section II Problems: Attempt any Two out of Three. ($8 \times 2 = 16$ Marks)

Practical Course	Part A	Part B	Marks out of	duration
USMTP05/UAMTP05	Questions from USMT501/UAMT501	Questions from USMT502/UAMT502	80	3 hours
USMTP06/UAMTP06	Questions from USMT503/UAMT503	Questions from USMT504/UAMT504	80	3 hours
USMTP07/UAMTP07	Questions from USMT601/UAMT601	Questions from USMT602/UAMT602	80	3 hours
USMTP08/UAMTP08	Questions from USMT603/UAMT603	Questions from USMT604/UAMT604	80	3 hours

Marks for Journals and Viva:

For each course USMT501/UAMT501, USMT502/UAMT502, USMT503/UAMT503, USMT504/UAMT504, USMT601/UAMT601, USMT602/UAMT602 USMT603/UAMT603, and USMT604/UAMT604:

1. Journals: 5 marks.
2. Viva: 5 marks.

Each Practical of every course of Semester V and VI shall contain 10 (ten) problems out of which minimum 05 (five) have to be written in the certified journal.

XXXXX

AC—
Item No. _

UNIVERSITY OF MUMBAI



Syllabus for F.Y.B.Sc.

Programme: B.Sc.

Subject : Information

Technology

Semester – I and II

(CBCS)

(Choice Based Credit System with effect from the
academic year 2022-2023)

(To introduce with effect from the academic year
2022-2023)

UNIVERSITY OF MUMBAI**Syllabus for Approval**

Sr. No.	Heading	Particulars
1	Title of the Programme	F.Y.B.Sc. Sem. I & II (Information Technology)
2	Eligibility for Admission	Ordinance no. O.5051 Circular no. UG/284 of 2007 dated 16th June 2007
3	Passing Marks	40%
4	Ordinances / Regulations (if any)	As applicable for all B.Sc. Courses
5	No. of Years / Semesters	Three years – Six Semesters
6	Level	P.G. / U.G./ Diploma / Certificate- (Strike out which is not applicable)
7	Pattern	Yearly / Semester (Strike out which is not applicable)
8	Status	Revised / New / Amended (Strike out which is not applicable)
9	To be implemented from Academic Year	From Academic Year <u>2022-2023</u>

Signature

Chairman Name Dr. R. Srivaramangai

BOS Chairman in Information Technology

Dr. Anuradha Majumdar

Dean, Science and Technology

PREAMBLE

The B.Sc. Information Technology programme was started in 2001 with an aim to make the students employable and impart industry oriented training. The main objectives of the course are:

- To think analytically, creatively and critically in developing robust, extensible and highly maintainable technological solutions to simple and complex problems.
- To apply their knowledge and skills to be employed and excel in IT professional careers and/or to continue their education in IT and/or related post graduate programmes.
- To be capable of managing complex IT projects with consideration of the human, financial and environmental factors.
- To work effectively as a part of a team to achieve a common stated goal.
- To adhere to the highest standards of ethics, including relevant industry and organizational codes of conduct.
- To communicate effectively with a range of audiences both technical and non-technical.
- To develop an aptitude to engage in continuing professional development.

The new syllabus is aimed to achieve the objectives. The syllabus spanning three years covers the industry relevant courses. The students will be ready for the jobs available in different fields like:

- Software Development (Programming)
- Website Development
- Mobile app development
- Internet of Things
- Software Testing
- Networking
- Database Administration
- System Administration
- Cyber Law Consultant
- GIS (Geographic Information Systems)
- IT Service Desk
- Security
- Technical communication skills
- Green IT

And many others

Annexure I

Name of Dean (Dean, Faculty of Science and Technology) : Dr. Anuradha Majumdar

Name of Associate Dean (Associate Dean, Faculty of Science and Technology) Prof. Shivram Garje

Name of Chairperson (BoS) : Dr. Mrs. R. Srivaramangai

Member(BoS) : Dr. Hiren Dand

Member(BoS) : Dr. Abhijeet Kale

Member(BoS) : Dr. Santosh Singh

Member(BoS) : Dr. Rajendra Patil

Member(BoS) : Dr. Mandar Bhav

Annexure I

Semester 1			
Course Code	Course Type	Course Title	Credits
USIT101	Core Subject	Programming Principles with C	2
USIT102	Core Subject	Digital Logic and Applications	2
USIT103	Core Subject	Fundamentals of Database Management Systems	2
USIT104	Core Subject	Computational Logic and Discrete Structure	2
USIT105	Ability Enhancement Skill Course	Technical Communication Skills	2
USIT1P1	Core Subject Practical	Programming Principles with C Practical	2
USIT1P2	Core Subject Practical	Digital Logic and applications Practical	2
USIT1P3	Core Subject Practical	Fundamentals of Database Management Systems Practical	2
USIT1P4	Core Subject Practical	Computational Logic and Discrete structure Practical	2
USIT1P5	Ability Enhancement Skill Course Practical	Technical Communication Skills Practical	2
Total Credits			20

Semester 2			
Course Code	Course Type	Course Title	Credits
USIT201	Core Subject	Object Oriented Programming with C++	2
USIT202	Core Subject	Fundamentals of Micro Processor and Microcontrollers	2
USIT203	Core Subject	Web Applications Development	2
USIT204	Core Subject	Numerical Methods	2
USIT205	Ability Enhancement Skill Course	Green IT	2
USIT2P1	Core Subject Practical	Object Oriented Programming with C++ Practical	2
USIT2P2	Core Subject Practical	Fundamentals of Micro Processor and Microcontrollers Practical	2
USIT2P3	Core Subject Practical	Web Applications Development Practical	2
USIT2P4	Core Subject Practical	Numerical Methods Practical	2
USIT2P5	Ability Enhancement Skill Course Practical	PL/SQL Practical	2
Total Credits			20

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Annexure I

B. Sc (Information Technology)		Semester – I	
Course Name: Programming Principles with C		Course Code: USIT101	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2	75
	Internal	--	25

Course Objectives:

1. To develop the logical ability of the student.
2. Basic concepts to be cleared using suitable examples.
3. Different approach towards the problem.
4. To handle the errors and find suitable solution.
5. Debugging the code.

Unit	Details	Lectures
I	Introduction: Algorithms, History of C, Structure of C Program. Program Characteristics, Compiler, Linker and preprocessor, pseudo code statements and flowchart symbols, Desirable program characteristics. Program structure. Compilation and Execution of a Program, C Character Set, identifiers and keywords, data types and sizes , constants and its types, variables, Character and character strings, typedef, typecasting	12
II	Type of operators: Arithmetic operators, relational and logical operators, Increment and Decrement operators, assignment operators, the conditional operator, Assignment operators and expression, Precedence and order of Evaluation Block Structure, Initialization, C Preprocessor Control Flow: Statements and Blocks, If-Else, Else-If, Switch, Loops- While and For Loops- Do-while, Break and Continue, Goto and Labels	12
III	Functions and Program Structure: Basics of functions. User defined and Library functions, Function parameters, Return values, Recursion External variables, Scope Rules, Standard Input and Output, Formatted Output-printf() and Formatted Input- scanf(), Line Input and Output, Error Handling- StdErr and Exit, Header Files	12
IV	Pointer and Arrays Pointer and Addresses, Pointer and Function Arguments, Pointer and Arrays, Address Arithmetic, Character Pointers and Functions, Pointer Arrays: Pointers and Functions, Multidimensional Array, Command-line Arguments, Pointers to Functions, Dynamic memory allocation	12
V	Structures: Basics of structures, Structures and Functions, Arrays of Structures, Pointers to Structures, Unions, Bit-fields, File management in C: Defining and Opening file, Closing a file, Input / Output operations on file, Error handling in C, Random access to files, Command line arguments.	12

Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Programming Language	Brian W. Kernighan and Denis M. Ritchie.	PHI	2 nd	1988
2.	Mastering C	K R Venugopal	Tata McGraw-Hill	6 th	2007
3.	Programming with C	Byron Gottfried	Tata McGRAW-Hill	2 nd	1996
4.	Let us C	Yashwant P. Kanetkar	BPB publication		
5.	Programming in ANSI C	E.Balagurusamy	Tata McGraw-Hill	7 th	1982

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Course Outcomes:

Learners will be able to,

1. Learn the basic principles of programming.
2. Develop of logic using algorithm and flowchart.
3. Acquire the information about data types.
4. Understanding of input and output functions.
5. Enhance advanced concepts using program.

B. Sc (Information Technology)		Semester – I	
Course Name: Programming Principles with C Practical		Course Code: USIT1P1	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	--

Course Objectives:

1. To develop the logic of the student.
2. Describe loops and decision making using programs.
3. Practical use of operators.
4. Illustration of the difficult concepts using programming examples.
5. Discussion of the relevant concepts using program.

List of Practical:	
1.	a. Write an algorithm and draw flowchart for Area of circle. b. Write an algorithm and draw flowchart to print the given no. is even or odd. c. Write an algorithm and draw flowchart to print 1 to 10 numbers. d. Write an algorithm and draw flowchart for sum of 1 to 5 numbers. e. Write an algorithm and draw flowchart to compute the addition of digits of a given number.
2.	a. Write a program using while loop to reverse the digits of a number. b. Write a program to calculate the factorial of a given number. c. Write a program to find the roots of quadratic equation. d. Write a program to print the Fibonacci series.
3.	a. Write a program in C to check entered character vowel or consonant b. Write a program to C program to print day name of week using switch-case. c. Write a program to read three values from keyboard and print out the largest of them without using if statement.
4.	a. Write a program to print the pattern of asterisks as shown below : * * * * * * * * * * b. Write a program to print the pattern of asterisks as shown below : * * * * * * * * * * * * * * * c. Write a program to print Floyd's Triangle.
5.	a. Write a program to print area of square using function.

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	b. Write a program using recursive function. c. Write a program to square root, abs() value using function. d. Write a program using goto statement.
6.	a. Write a program to print rollno and names of 10 students using array. b. Write a program to read a matrix of size m*n. c. Write a program to sort the elements of array in ascending or descending order.
7.	a. Write a program to extract the portion of a character string and print the extracted part. b. Write a program to find the given string is palindrome or not. c. Write a program to using strlen(), strcmp() function.
8.	a. Write a program to display the values using different data types and its address using pointer. b. Write a program to perform addition and subtraction using pointer.
9.	a. Write a program to copy the contents of the file from one file into other. b. Write a program to print the structure using <ul style="list-style-type: none">• Title• Author• Subject• Book ID Print the details of two students.
10.	a. Create a mini project on “Bank management system” . The program should be menu driven.

Course Outcomes:

Learners will be able to,

1. Develop applications.
2. Work with textual information, characters and strings.
3. Understand of a functional hierarchical code organization
4. Debug the program
5. Understand the differences between syntax errors, runtime errors, and logic errors.

Annexure I

B. Sc (Information Technology)		Semester – I	
Course Name: Digital Logic and Applications		Course Code: USIT102	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2	75
	Internal	--	25

Course Objectives:

1. To introduce the basics of logic in digital electronics as an entry level course.
2. To interpret and assess number systems and the conversions of number systems
3. To analyze the boolean expressions and reduce the expression to the minimum.
4. To design simple logic circuits using tools such as Boolean Algebra and Karnaugh Mapping.
5. To understand the state of a memory cell and its types using flip-flops.
6. To create simple digital systems using counters, registers etc.

Unit	Details	Lectures
I	Digital Systems and Binary numbers Introduction to Number systems, Positional Number systems, Conversions (converting between bases), Non positional number systems, Unsigned and Signed binary numbers, Binary Codes, Number representation and storage in computer system. Logic gates and Logic Circuits Basic and Universal Gates	12
II	Boolean algebra and Gate level minimization Introduction, Postulates of Boolean Algebra, Two Valued Boolean Algebra, Principle of Duality, Basic Theorems of Boolean Algebra, Boolean Functions and their Representation, Gate-Level Minimization (Simplification of Boolean Function), Quine-McCluskey Method, Review questions	12
III	Combinational logic Introduction, Analysis and Design Procedure for Combinational Logic Circuits, Types of Combinational Circuit, Review Questions	12
IV	Sequential circuits Introduction, Latch, Flip-Flops, Registers, Counters, Review Questions	12
V	Applications Bit Arithmetic and Logic unit, Carry lookahead generator, Binary Multiplication and Division algorithm, Booth's multiplication algorithm	12

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Digital Logic Design	Sonali Singh	BPB publications	1 st	2015
2.	Fundamentals of Digital Electronics and Logic Design	Subir Kumar Sarkar, Asish Kumar De, Souvil Sarkar	Pan Stanford Publishing	1 st	2014
3.	Digital Electronics Principles, Design and Applications	Anil K Maini	Wiley	1 st	2007
4.	Fundamentals of Logic	Charles H Roth, Jr. , Larry L	Cengage	7 th	2014

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	Design	Kinney	Learning		
5.	Digital Principles and Applications	Donald P Leach Albert Malvino Goutam Saha	TMH	8 th	2015

Course Outcomes:

Learners will be able to,

1. Apply number conversion techniques in real digital systems
2. Solve boolean algebra expressions
3. Derive and design logic circuits by applying minimization in SOP and POS forms
4. Design and develop Combinational and Sequential circuits
5. Understand and develop digital applications

B. Sc (Information Technology)		Semester – I	
Course Name: Digital Logic and Applications Practical		Course Code: USIT1P2	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	--

Course Objectives:

1. To apply and test the gates learnt using various IC's .
2. To evaluate the Boolean expression to reduce and minimize the gates used

1.	Study of basic gates and Universal gates
a.	To verify the truth tables of OR, AND, NOR, NAND, EX-OR, EX-NOR gates
b.	To study IC 7400, 7402, 7404, 7408, 7432, 7486, 74266
c.	To implement and verify NAND and NOR as Universal gates
2.	Study of Boolean expressions
a.	To verify De Morgan's laws
b.	Implement the given expression using a minimum number of gates.
c.	Implement the given expression using a minimum number of ICs.
3.	Design of Combinational Circuits using K-maps
a.	Design and implement combinational circuits for the given problem/problems using minimization techniques of K-maps.
4.	Design and implement code converters
a.	Design the circuit and implement Binary to gray code converter
b.	Design the circuit and implement Gray to Binary code converter
c.	Design the circuit and implement Binary to BCD code converter
d.	Design the circuit and implement Binary to XS-3 code converter
5.	Implement Adder and Subtractor circuits
a.	Design the circuit and implement Half Adder and Full Adder
b.	Design the circuit and implement BCD Adder, XS-3 Adder , Binary Subtractor

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6.	Design and implement Arithmetic circuits
a.	Design and implement 2-by-2 bit multiplier
7.	Implement Encoders and Decoders
a.	Design and implement 8: 3 encoder
b.	Design and implement 3:8 decoder
8.	Multiplexers and Demultiplexers
a.	Design and Implement 4:1 multiplexer
b.	Design and Implement 1:4 demultiplexer
c.	Study IC 74151 8: 1 multiplexer and implement the expression
d.	Study IC 74138 3: 8 decoder and implement the expression
9.	Study of Flipflops and Counters
a.	Study of IC's 7473, 7474, and 7476
b.	Design a 3-bit ripple/ synchronous counter using IC 7473 and required gates
10.	Design of Shift Registers
a.	Design of Shift registers using IC 7474
b.	Implementation of digits using seven segment displays

Course Outcomes:

Learners will be able to,

- 1. Construct basic and universal logic circuits.**
- 2. Verify the functionalities of various IC's.**
- 3. Design circuits using K-maps minimization technique**
- 4. Design and test Encoders, Decoders, Multiplexers and Demultiplexers**
- 5. Design and develop logic for Registers, Counters and its applications.**

Annexure I

B. Sc (Information Technology)		Semester – I	
Course Name: Fundamentals of Database Management Systems		Course Code: USIT103	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2	75
	Internal	--	25

Course Objectives:

The objective of the course is to present an introduction to fundamentals of database management systems, with an emphasis on how to organize, maintain and retrieve - efficiently, and effectively - information from a DBMS.

Unit	Details	Lectures
I	Database system- concept and Architecture, Relational model and Relational database constraints. Relational Algebra.	12
II	Conceptual modelling and database design: Data modelling using the Entity Relationship model (ER).The enhanced entity relationship model. Relational database design by ER and EER model. Practical database design methodology and use of UML diagrams.	12
III	Database Design theory and normalization: Basics of functional dependencies and normalization for relational databases. Relational database design and further dependencies.	12
IV	Introduction to SQL , Complex queries, triggers, views, joining database tables and schema modification. Query Processing and optimization. File structure, hashing and indexing	12
V	Transaction management and concurrency control and recovery: Introduction to transaction processing concepts and theory. Concurrency control technique. Database recovery technique.	12

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Fundamentals of Database systems.	Ramez Elmasri, Shamkant B Navathe	Pearson.	6th Edition	
2.	Database Systems: Design implementation and management.	Carlos Coronel, Steven Morris, Peter Rob	Cengage Learning	9th Edition	2010

Course Outcomes:

Learners will be able to

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1. Define and describe the fundamental elements of relational database management system.
2. To relate the basic concepts of relational data model, entity-relationship model, relational database design, relational algebra and SQL.
3. Design ER-models to represent simple database application scenarios.
4. Transform the ER-model to relational tables, populate relational database and formulate SQL queries on data.
5. Improve the database design by normalization.
6. Understand basic database storage structures and access techniques: file and page organizations, indexing methods and hashing.

B. Sc (Information Technology)		Semester – I	
Course Name: Fundamentals of Database Management Systems Practical		Course Code: USIT1P3	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	--

Course Objectives:

- To introduce ER data model, database design and normalization.
- To Learn SQL basics for data definition and data manipulation.

1.	Draw E-R diagram and convert entities and relationships to relation table for a given scenario
a.	Bank
b.	College
2.	Write relational algebra queries for a given set of relations
3.	Defining data
a.	Using CREATE statement
b.	Using ALTER statement
c.	Using DROP statement
d.	Using TRUNCATE statement
e.	Using RENAME statement
4.	Manipulating data
a.	Using INSERT statement
b.	Using UPDATE statement
c.	Using DELETE statement
d.	Using SELECT statement
5.	Creating and managing the tables
a.	Creating table with constraints: NOTNULL, UNIQUE, PRIMARY KEY ,FOREIGN KEY
6.	Restricting and sorting data
a.	Using DISTINCT,IN, AS, SORT,LIKE,ISNULL, OR
b.	Using Group By, Having clause, Order By clause
7.	Aggregate and Mathematical functions:
a.	AVG,MIN,MAX,SUM,COUNT

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b.	ABS,SQRT,ROUND,TRUNCATE,SIGN,POWER,MOD,FLOOR,CEIL
8.	Views and Joins: For a given set of relation tables perform the following
a.	Creating view
b.	Dropping view
c.	Selecting from a view
8.	Database trigger
a.	Using CREATE OR REPLACE TRIGGER
9.	Index
a.	Create index
b.	Drop index

Course Outcomes:

Learners will be able to:

1. Design database schema for a given application and apply normalization.
2. Acquire skills in using SQL Commands for data Definition and data manipulation.

Annexure I

B. Sc (Information Technology)		Semester – I	
Course Name: Computational Logic and Discrete Structures		Course Code: USIT104	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2	75
	Internal	--	25

Course Objectives:

- Course will provide students with an overview of discrete mathematics.
- Students will learn about topics such as logic and proofs, sets and functions, recursion, graph theory, trees and other important discrete math concepts.

Unit	Details	Lectures
I	Set Theory Introduction, Sets and Elements, Subsets, Venn Diagrams, Set Operations, Algebra of Sets, Duality, Finite Sets, Counting Principle, Classes of Sets, Power Sets, Partitions, Mathematical Induction Relations Introduction, Product Sets, Relations, Pictorial Representatives of Relations, Composition of Relations, Types of Relations, Closure Properties, Equivalence Relations, Partial Ordering Relations	12
II	Functions and Algorithms Introduction, Functions, One-to-One, Onto, and Invertible Functions, Mathematical Functions, Exponential and Logarithmic Functions, Sequences, Indexed Classes of Sets, Recursively Defined Functions, Cardinality, Algorithms and Functions, Complexity of Algorithms Probability Introduction, Sample Space and Events, Finite Probability Spaces, Conditional Probability, Independent Events, Independent Repeated Trials, Binomial Distribution, Random Variables, Chebyshev's Inequality, Law of Large Numbers	12
III	Techniques of Counting Introduction, Basic Counting Principles, Mathematical Functions, Permutations, Combinations, the Pigeonhole Principle, The Inclusion–Exclusion Principle, Tree Diagrams Advanced Counting Techniques, Recursion Introduction, Combinations with Repetitions, Ordered and Unordered Partitions, Inclusion–Exclusion Principle Revisited, Pigeonhole Principle Revisited, Recurrence Relations, Linear Recurrence Relations with Constant Coefficients, Solving Second-Order Homogeneous Linear Recurrence Relations, Relations, Solving General Homogeneous Linear Recurrence Relations	12
IV	Graph Theory Introduction, Data Structures, Graphs and Multigraphs, Subgraphs, Isomorphic and Homeomorphic Graphs, Paths, Connectivity, Traversable and Eulerian Graphs, Bridges of Königsberg, Labeled and Weighted Graphs, Complete, Regular, and Bipartite	12

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	<p>Graphs, Tree Graphs, Planar Graphs, Graph Colorings, Representing Graphs in Computer Memory, Graph Algorithms, Traveling-Salesman Problem, Solved Problems</p> <p>Directed Graphs</p> <p>Introduction, Directed Graphs, Basic Definitions, Rooted Trees, Sequential Representation of Directed Graphs, Warshall's Algorithm, Shortest Paths, Linked Representation of Directed Graphs, Graph Algorithms: Depth-First and Breadth-First Searches, Directed Cycle-Free Graphs, Topological Sort, Pruning Algorithm for Shortest Path</p>	
V	<p>Binary Trees</p> <p>Introduction, Binary Trees,, Complete and Extended Binary Trees, Representing Binary Trees in Memory, Traversing Binary Trees, Binary Search Trees, Priority Queues, Heaps, Path Lengths, Huffman's Algorithm, General (Ordered Rooted) Trees Revisited</p> <p>Ordered Sets and Lattices</p> <p>Introduction, Ordered Sets, Hasse Diagrams of Partially Ordered Sets, Consistent Enumeration, Supremum and Infimum, Isomorphic (Similar) Ordered Sets, Well-Ordered Sets, Lattices 346</p> <p>Bounded Lattices, Distributive Lattices, Complements, Complemented Lattices</p>	12

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Discrete Mathematics, Schaum's Outlines Series	Seymour Lipschutz, Marc Lipson	Tata McGraw Hill	3 rd	2007
2.	Discrete Mathematics with Applications	Sussana S. Epp	Cengage Learning	5 th	2018
3.	Discrete Mathematics and its Applications	Kenneth H. Rosen	Tata McGraw Hill	8 th	2019
4.	Discrete mathematical structures	B Kolman RC Busby, S Ross	PHI		
5.	Discrete structures	Liu	Tata McGraw Hill		

Course Outcomes:

Learners will be able to:

1. Use logical notation
2. Perform logical proofs
3. Apply recursive functions and solve recurrence relations
4. Use graphs and trees
5. Apply basic and advanced principles of counting
6. Define sets and Relations
7. Calculate discrete probabilities.

Annexure I

B. Sc (Information Technology)		Semester – I	
Course Name: Computational Logic and Discrete Structures Practical		Course Code: USIT1P4	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	--

Course Objectives:

Course will make students understand different commands and functions of SCILAB. It will enable student to use these tools to compute solutions of various discrete mathematical structures.

1.	Set Theory
a.	Inclusion Exclusion principle.
b.	Power Sets
c.	Mathematical Induction
2.	Functions and Algorithms
a.	Recursively defined functions
b.	Cardinality
c.	Polynomial evaluation
d.	Greatest Common Divisor
3.	Probability Theory 1
a.	Sample space and events
b.	Finite probability spaces
c.	Equiprobable spaces
d.	Addition Principle
4.	Probability Theory 2
a.	Conditional Probability
b.	Multiplication theorem for conditional probability
c.	Independent events
d.	Repeated trials with two outcomes
5.	Counting 1
a.	Sum rule principle
b.	Product rule principle
c.	Factorial
d.	Binomial coefficients
6.	Counting 2
a.	Permutations
b.	Permutations with repetitions

Annexure I

c.	Combinations
d.	Combinations with repetitions
7.	Counting 3
a.	Ordered partitions
b.	Unordered partitions
8.	Graph Theory
a.	Paths and connectivity
b.	Minimum spanning tree
c.	Isomorphism
9.	Directed Graphs
a.	Adjacency matrix
b.	Path matrix
10	Recurrence relations
a.	Linear homogeneous recurrence relations with constant coefficients
b.	Solving linear homogeneous recurrence relations with constant coefficients
c.	Solving general homogeneous linear recurrence relations

Course Outcomes:

Learners will be able to:

1. To find computational solution to various discrete mathematical structures.

Annexure I

B. Sc (Information Technology)		Semester – I	
Course Name: Technical Communication Skills		Course Code: USIT105	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2	75
	Internal	--	25

Course Objectives:

- To recognize the importance of various types of communication in technical set up.
- To understand the dynamics in different forms of formal communication.
- To learn about active listening and the art of giving presentations and interviews.
- To learn the art of business writing and ethics in business communication across functional areas.
- To evaluate, analyze and interpret technical data.

Unit	Details	Lectures
I	Fundamentals of Technical Communication Introduction, The process of communication, Language as tool of communication, levels of communication, The flow of communication, Communication Networks, The importance of technical communication Barriers to communication Definition of Noise, classification of Barriers Non-verbal Communication Introduction, Definition, significance of nonverbal, forms of non -verbal communication, types of non-verbal communication	12
II	The Seven Cs of Effective Communication: Completeness, Conciseness, Consideration, Concreteness, Clarity, Courtesy, Correctness Conversations Introduction, Importance of Business conversion, Essential of Business conversion, Conversation Management Meeting and conferences Introduction, Purpose of Meeting, planning a meeting, Meeting Process, Leading effective meeting, Evaluating meeting, planning conference, teleconferencing Group Discussion and team presentation Introduction, Benefits of GD, Workplace GD guidelines, Functional and non functional roles in GD, Improving group performance, Assessment of group discussion ,Team presentation Email communication Introduction, Advantages of email, problems in email communication, Email etiquettes, Techniques of writing Effective Email	12
III	Active Listening Introduction, Type of listening, Traits of good listener, Active vs Passive listening, Implication of effective listening Effective presentation Strategies Introduction, Defining purpose, Analyzing audience and Locale, Organizing contents, preparing outline, Visual Aids, Understanding Nuances of delivery, Kinesics Interview Introduction, objectives, types of interview, job interviews	12
IV	Business writing Introduction, Importance of written Business, Five main strategies of writing business messages	12

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	Business correspondence Business letter writing, common component of Business letter, Strategies for writing body of a letter, Types of Business letter, writing memos Business reports and proposal What is report? Steps in writing routine Business report, parts of report, corporate reports and Business proposals Careers and Resume Introduction to career building, resume format, traditional, electronic and video resumes, sending resume, follow up letters and online recruitment process	
V	Communication across Functional areas Financial communication, MIS Ethics in Business Communication Ethical communication, Values, ethics and communication, ethical dilemmas facing manager, strategic approaches to corporate ethics Creating and Using Visual Aids Object, Models, Handouts, Charts and Graphs, Text Visuals , Formatting Computer generated charts, graphs and visuals	12

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Technical communication : principles and practices	Meenakshi Raman & Sangeeta Sharma	Oxford Higher Education		
2.	Business Communication	Meenakshi Raman & Prakash Singh	Oxford- Higher Education	2 nd edition	2006
3.	Effective Business Communication	Herta Murphy, Herbert Hildebrandt, Jane Thomas	Tata McGraw Hill	7 th edition	2008
4.	Professional Communication	Aruna Koneru	McGraw Hill		2008
5.	Business and Professional Communication Plans, Processes and Performance	James R. DiSanza Nancy J..Legge	Pearson Education	4 th Edition	
6.	Storytelling with data-a data visualization guide for business professionals	Cole Nussbaumer knaflic	Wiley		

Course Outcome:

Learners will be able to,

1. Analyze, synthesize and utilize the process and strategies from delivery to solving communication problem.
2. Learn the communication methodologies at workplace and learning about importance of team collaboration.
3. Learn about different technical communication such as presentations and interviews.
4. Understand and apply the art of written communication in writing reports, proposals.
5. Ground rules of ethical communication and MIS.
6. Understand the functions of graphs, maps, charts.

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B. Sc (Information Technology)		Semester – I	
Course Name: Technical Communication Skills Practical		Course Code: USIT1P5	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	--

Course Objectives:

- To express thoughts feelings and ideas of learners by using features of MS Word.
- To articulate formal and informal reports.
- To analyze and interpret data and learn visualization of data.
- To learn effective tools of presentation.

1.	Use of word processing tools for communication.
a.	Use of various tools like spell checker, header, footer etc.
b.	Make formal and informal letters, creating resume.
c.	Designing brochures and flyers using templates in word.
2.	Writing reports, minutes of meeting, action plan.
3.	Use of spreadsheet for data interpretation and data analysis.
4.	Basic use of what if analysis using excel.
5.	Visual Representation of data using excel – pie chart ,line chart, bar chart etc.
6.	Summarization of data using of pivot tables and chart in excel.
7.	Use of presentation tools like PowerPoint for communication and presentation skills.
8.a.	Basic communication covering the following topics:- Meeting people, Asking Questions and Design of questionnaire.
8.b.	Using netiquettes in online mode of communication using Zoom / Google Meet / MS-Teams etc.
9.	Use of Mail etiquette for writing effective mails.
10.a.	Use of Mail merge and its features.
10.b.	Creating profile using LinkedIn.

Course Outcome:

Learners will be able to:

1. Use different forms of digital mediums for effective communication.
2. Create technical documents and format existing documents for effective communication.
3. Learn to use graphical tools for better visualization.
4. Create business presentation effectively.
5. Visualize the data from pictorial representations.

SEMESTER II

Annexure I

B. Sc (Information Technology)		Semester – I	
Course Name: Object Oriented Programming with C++		Course Code: USIT201	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2	75
	Internal	--	25

Course Objectives:

Understand object oriented programming and advanced C++ concepts

- **Be able to explain the difference between object oriented programming and procedural programming.**
- **Be able to program using more advanced C++ features such as composition of objects, operator overloads, dynamic memory allocation, inheritance and polymorphism, file I/O, exception handling, etc.**
- **Be able to build C++ classes using appropriate encapsulation and design principles**
- **Be able to apply object oriented or non-object oriented techniques to solve**
- **bigger computing problems**

Unit	Details	Lectures
I	<p>INTRODUCTION OF OBJECT-ORIENTED DESIGN : Introduction, Objects, Class and Instance, Polymorphism, Inheritance, Object-Oriented Analysis, Finding the Objects, Conceptual Modeling Requirements Model, Analysis Model, The Design Model, The Implementation Model, Test Model, Object-Oriented Analysis and Design, The Evolution of Object Model, Object-Oriented Programming, Object-Oriented Design, Object-Oriented Analysis, Elements of Object Model, The Role of OOAD in the Software Life Cycle, OOAD Methodologies, Grady Booch Approach,</p> <p>STARTING WITH C++: C++ Overview, C++ Character Set, C++ Tokens, Variables, Counting Tokens, Data Types, Qualifiers, Range of Data Types, Your First C++ Program, Structure of a C++ Program, Styles of, Writing C++ Programs, Programming Examples</p> <p>FEATURES OF C++: Introduction, Operators and Expressions, Declaring Constants, Type Conversion, Decision Making: An Introduction, Unconditional Branching Using Goto, Introduction to Looping</p> <p>OPERATORS AND REFERENCES IN C++: Introduction, Scope Resolution Operator, Reference Variables, The Bool Data Type, The Operator New and Delete, Malloc Vs. New, Pointer Member Operators</p>	12
II	<p>FUNCTION IN C++: Introduction, Function Declaration/Prototyping, The Main Function in C++, Recursion, Call by Reference, Call by Reference Vs Call by Address, Return by Reference, Inline Function, Function Overloading, Function with Default Arguments</p> <p>CLASS AND OBJECTS IN C++ : Working with Class, Structure in C++, Accessing Private Data Passing and Returning Object, Array of Object, Friend Function, Static Class Members, Constant Member Function</p> <p>WORKING WITH CONSTRUCTOR AND DESTRUCTOR: Introduction, Constructor with Parameters, Implicit and Explicit Call to Constructor, Copy Constructor, Dynamic Initialization of Objects, Dynamic Constructor, Destructor</p> <p>WORKING WITH OPERATOR OVERLOADING: Introduction, Operator Overloading with Binary Operator Overloading Assignment (=) Operator, Overloading</p>	12

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	Unary Operators, Overloading Using Friend Function, Rules of Operator Overloading, Type Conversion	
III	WORKING WITH INHERITANCE IN C++: Introduction, Types of Inheritance, Public, Private and Protected Inheritance, Multiple Inheritance, Hierarchical Inheritance, Virtual Base Class, Constructor and Destructor in Inheritance, Containership POINTERS TO OBJECTS AND VIRTUAL FUNCTIONS: Pointer to Objects, The This Pointer, What is Binding in C++? , Virtual Functions ,Working of a Virtual Function ,Rules for Virtual Function ,Pure Virtual Function and Abstract Class ,Object Slicing ,Some Facts about Virtual Function ,Virtual Destructor INPUT-OUTPUT AND MANIPULATORS IN C++: Introduction, C++ Stream Classes, Unformatted Input/Output, Formatted Input /Output Operations, Manipulators	12
IV	FILE HANDLING IN C++: Introduction, File Streams, Opening and Closing a File, File Opening Modes Checking End of File, Random Access in File, Command Line Arguments, Working with Binary Mode Error Handling TEMPLATE PROGRAMMING: Introduction , Function Template , Class Template EXCEPTION HANDLING IN C++ : Introduction , Basics of Exception Handling , Exception Handling Mechanism , Programming Examples ,Exception Handling with Class Catching all Exceptions , Specifying Exception for a Function	12
V	INTRODUCTION TO THE STANDARD TEMPLATE LIBRARY : Introduction , Components of STL , Containers , Algorithms , Iterators ,Application of Container Classes Function Objects MANIPULATING STRINGS : Introduction , Creating (string) Objects , Manipulating String Objects , Relational Operations, String Characteristics , Accessing Characters in Strings , Comparing and Swapping NEW FEATURES OF ANSI C++ STANDARD : Introduction ,New Data Types , New Operators , Class Implementation , Namespace Scope , Operator Keywords , New Keywords , New Headers	12

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Object-oriented Programming C++ Simplified	Hari Mohan Pandey	University Science Press	1 st Edition	2017
2.	Object Oriented Programming in C++	E Balagurusamy	Tata McGraw-Hill	5 th Edition	2011
3.	Object-Oriented Programming in C++	Robert Lafore	Sams	4 th Edition	2002
4.	Programming with ANSI C++	Bhushan Trivedi	Oxford University Press	2 nd Edition	2012
5.	Demystified Object-Oriented Programming with C++	Dorothy R. Kirk	Packt Publishing Lt	1 st Edition	2021
6.	C++ Programming: An Object-Oriented Approach	Behrouz A. Forouzan , Richard F. Gilbert	McGraw-Hill Education	1 st edition	2020
7.	C++ How to Program	Paul Deitel, Harvey Deitel	Pearson Education	10 th Edition	2017

Annexure I

Course Outcomes:

Learners will be able to,

1. Understand the concept of OOPs, feature of C++ language.
2. Understand and apply various types of Datatypes, Operators, Conversions while designing the program.
3. Understand and apply the concepts of Classes & Objects, friend function, constructors & destructors in program design.
4. Design & implement various forms of inheritance, String class, calling base class constructors.
5. Apply & Analyze operator overloading, runtime polymorphism, Generic Programming.
6. Analyze and explore various Stream classes, I/O operations and exception handling.

B. Sc (Information Technology)		Semester – II	
Course Name: Object Oriented Programming with C++ Practical		Course Code: USIT2P1	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	--

Course Objectives:

- The student should be able to explain the important characteristics of the C++ programming language.
- The learner must be able to combine components of the C++ programming language to develop structured program.
- The student must demonstrate the skills essential to compile, debug, and test C++ programs correctly.

1.	
a.	Write a C++ program to create a simple calculator.
b.	Write a C++ program to convert seconds into hours, minutes and seconds.
c.	Write a C++ program to find the volume of a square, cone, and rectangle.
2.	
a.	Write a C++ program to find the greatest of three numbers.
b.	Write a C++ program to find the sum of even and odd n natural numbers
c.	Write a C++ program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.
3.	
a.	Write a C++ program using classes and object Student to print name of the student, roll_no. Display the same.
b.	Write a C++ program for Structure bank employee to print name of the employee, account_no. & balance. Display the same also display the balance after withdraw and deposit
c.	Write a C++ Program to design a class having static member function named showcount() which has the property of displaying the number of objects created of the class.

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d.	Write a Program to find Maximum out of Two Numbers using friend function. Note: Here one number is a member of one class and the other number is member of some other class.
e.	Write a C++ Program using copy constructor to copy data of an object to another object.
f.	Write a C++ Program to allocate memory dynamically for an object of a given class using class's constructor.
4.	
a.	Write a C++ program to design a class representing complex numbers and having the functionality of performing addition & multiplication of two complex numbers using operator overloading.
b.	Write a C++ program to overload new/delete operators in a class.
c.	Write a C++ program to access members of a STUDENT class using pointer to object members
	Write a C++ Program to generate Fibonacci Series by using Constructor to initialize the Data Members.
d.	Write a C++ Program to generate Fibonacci Series by using Constructor to initialize the Data Members.
e.	Write a C++ Program that illustrate single inheritance.
f.	Write a C++ Program that illustrate multiple inheritance.
g.	Write a C++ Program that illustrate multi level inheritance.
h.	Write a C++ Program that illustrate Hierarchical inheritance.
i.	Write a C++ Program illustrating how the constructors are implemented and the order in which they are called when the classes are inherited. Use three classes named alpha, beta, gamma such that alpha, beta are base class and gamma is derived class inheriting alpha & beta
5.	
a.	Write a C++ Program to design a student class representing student roll no. and a test class (derived class of student) representing the scores of the student in various subjects and sports class representing the score in sports. The sports and test class should be inherited by a result class having the functionality to add the scores and display the final result for a student.
6.	
a.	Write a C++ program to maintain the records of person with details (Name and Age) and find the eldest among them. The program must use this pointer to return the result.
7.	
a.	Write a C++ program illustrating the use of virtual functions in class.
b.	Write a C++ program to design a class representing the information regarding digital library (books, tape: book & tape should be separate classes having the base class as media). The class should have the functionality for adding new item, issuing, deposit etc. the program should use the runtime polymorphism.
8.	
a.	Write a C++ program to show conversion from string to int and vice-versa.
b.	Write a C++ program implementing basic operation of class ios i.e. setf, unsetf, precision etc.
c.	Write a C++ program to implement I/O operations on characters. I/O operations includes inputting a string, Calculating length of the string, Storing the String in a file, fetching the stored characters from it, etc.
d.	Write a C++ program to copy the contents of one file to another.

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e.	Write a C++ program to perform read/write binary I/O operation on a file (i.e. write the object of a structure/class to file).
9.	
a.	Write a C++ program to implement the exception handling with multiple catch statements.
b.	Write a C++ program to implement the exception handling with rethrowing in Exception.
10.	
a.	Write a C++ Program to create Simple calculator using Class template.
b.	Write a C++ Program to get maximum of two number using Class template.

Course Outcomes:

Leaners will able to,

- Utilize C++ characteristics in software design and development.
- Explain object-oriented techniques and explain how C++ supports them.
- Employ C++ to demonstrate practical skill developing object-oriented solutions.
- Examine a problem statements and design and develop object-oriented software using good coding practices and procedures.
- In object-oriented design, use common software patterns and recognize their relevance in other software development contexts.

Annexure I

B. Sc (Information Technology)		Semester – II	
Course Name: Fundamentals of Micro Processor and Microcontrollers		Course Code: USIT202	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2	75
	Internal	--	25

Course Objectives:

- 1) To understand the basic concept of Micro Computer Systems
- 2) To develop background knowledge in 8085 Microprocessor
- 3) To write Assembly language Programs of 8085
- 4) To understand the peripheral devices and interfacing to 8051 Micro Controller and design aspects of Micro Controller

Unit	Details	Lectures
I	<p>Microprocessor, microcomputers, and Assembly Language: Microprocessor, Microprocessor Instruction Set and Computer Languages, From Large Computers to Single-Chip Microcontrollers, Applications.</p> <p>Microprocessor Architecture and Microcomputer System: Microprocessor Architecture and its operation's, Memory, I/O Devices, Microcomputer System, Logic Devices and Interfacing, Microprocessor-Based System Application.</p> <p>8085 Microprocessor Architecture and Memory Interface: Introduction, 8085 Microprocessor unit, 8085-Based Microcomputer, Memory Interfacing, Interfacing the 8085 Memory Segment.</p>	12
II	<p>Interfacing of I/O Devices Basic Interfacing concepts, Interfacing Output Displays, Interfacing Input Devices, Memory Mapped I/O, Testing and Troubleshooting I/O Interfacing Circuits.</p> <p>Introduction to 8085 Assembly Language Programming: The 8085 Programming Model, Instruction Classification, Instruction, Data and Storage, Writing assembling and Execution of a simple program, Overview of 8085 Instruction Set, Writing and Assembling Program.</p> <p>Introduction to 8085 Instructions: Data Transfer Operations, Arithmetic Operations, Logic Operation, Branch Operation, Writing Assembly Languages Programs, Debugging a Program.</p>	12
III	<p>Programming Techniques With Additional Instructions: Programming Techniques: Looping, Counting and Indexing, Additional Data Transfer and 16-Bit Arithmetic Instructions, Arithmetic Instruction Related to Memory, Logic Operations: Rotate, Logics Operations: Compare, Dynamic Debugging.</p> <p>Counters and Time Delays: Counters and Time Delays, Illustrative Program: Hexadecimal Counter, Illustrative Program: zero-to-nine (Modulo Ten) Counter, Generating Pulse Waveforms, Debugging Counter and Time-Delay Programs.</p> <p>Stacks and Sub-Routines: Stack, Subroutine, Restart, Conditional Call, Return Instructions, Advanced Subroutine concepts.</p> <p>Interrupts: The 8085 Interrupt, 8085 Vectored and Non vectored Interrupts, Restart as S/W Instructions.</p>	12

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IV	<p>Micro Controllers: Embedded Systems and general purpose computer systems, history, classifications, applications and purpose of embedded systems.</p> <p>Embedded Hardware: Memory map, i/o map, interrupt map, processor family, external peripherals, memory – RAM , ROM, types of RAM and ROM, memory testing, CRC ,Flash memory.</p> <p>Peripherals: Control and Status Registers, Device Driver, Timer watch Timer</p> <p>The 8051 Microcontrollers: Microcontrollers and Embedded processors, Overview of 8051 family.8051 Microcontroller hardware, Input/output pins, Ports, and Circuits, External Memory.</p> <p>8051 Programming in C: Data Types and time delay in 8051 C, I/O Programming, Logic operations, Data conversion Programs.</p>	12
V	<p>Designing Embedded System with 8051 Microcontroller: Factors to be considered in selecting a controller, why 8051 Microcontroller, Designing with 8051.</p> <p>Programming embedded systems: structure of embedded program, infinite loop, compiling, linking and debugging.</p> <p>Design and Development: Embedded system, development Environment – IDE, types of file generated on cross compilation, Embedded Product Development cycle and Trends in embedded Industry</p>	12

Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Microprocessors Architecture, Programming and Applications with the 8085.	Ramesh Gaonkar	PENRAM	5 th	2012
2.	8080A/8085 Assembly Language Programming	Lance A. Leventhel	Osborne		1978
3	Embedded Systems	Rajkamal	Tata Mcgraw-Hill		
4	Introduction to embedded systems	Shibu K V	Tata Mcgraw-Hill	1 st	2012

Course Outcomes:

Learners will be able to,

1. Understand the basic concepts of Micro Computer Systems
2. Understand the architecture and hardware aspects of 8085
3. Write assembly language programs in 8085
4. Design elementary aspects of Micro Controller based systems
5. Interfacing peripherals using Micro Controller

Annexure I

B. Sc (Information Technology)		Semester – II	
Course Name: Fundamentals of Micro Processor and Microcontrollers Practical		Course Code: USIT2P2	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	--

Course Objectives: The course aims to learn

- 1. Operations related to single & Multiple memory locations**
- 2. Simple assembly language programs**
- 3. How to perform register operations, packing and unpacking**
- 4. Embedding computer using 8051 microcontrollers**
- 5. Interfacing I/O Ports**
- 6. Implement flashmagic in microcontrollers**

List of Practical	
1.	Perform the following Operations related to memory locations.
a.	Store the data byte 32H into memory location 4000H.
b.	Exchange the contents of memory locations 2000H and 4000H
2.	Simple assembly language programs.
a.	Subtract two 8-bit numbers.
b.	Subtract the 16-bit number in memory locations 4002H and 4003H from the 16-bit number in memory locations 4000H and 4001H. The most significant eight bits of the two numbers are in memory locations 4001H and 4003H. Store the result in memory locations 4004H and 4005H with the most significant byte in memory location 4005H.
c.	Find the 1's complement of the number stored at memory location 4400H and store the complemented number at memory location 4300H.
d.	Find the 2's complement of the number stored at memory location 4200H and store the complemented number at memory location 4300H.
3.	Packing and unpacking operations.
a.	Pack the two unpacked BCD numbers stored in memory locations 4200H and 4201H and store result in memory location 4300H. Assume the least significant digit is stored at 4200H.
b.	Two digit BCD number is stored in memory location 4200H. Unpack the BCD number and store the two digits in memory locations 4300H and 4301H such that memory location 4300H will have lower BCD digit.
4.	Register Operations.
a.	Write a program to shift an eight bit data four bits right. Assume that data is in register C.
b.	Program to shift a 16-bit data 1 bit left. Assume data is in the HL register pair

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c.	Write a set of instructions to alter the contents of flag register in 8085.
d.	Write a program to count number of 1's in the contents of D register and store the count in the B register.
5.	Multiple memory locations.
a.	Calculate the sum of series of numbers. The length of the series is in memory location 4200H and the series begins from memory location 4201H. a. Consider the sum to be 8 bit number. So, ignore carries. Store the sum at memory location 4300H. b. Consider the sum to be 16 bit number. Store the sum at memory locations 4300H and 4301H
b.	Multiply two 8-bit numbers stored in memory locations 2200H and 2201H by repetitive addition and store the result in memory locations 2300H and 2301H.
c.	Divide 16 bit number stored in memory locations 2200H and 2201H by the 8 bit number stored at memory location 2202H. Store the quotient in memory locations 2300H and 2301H and remainder in memory locations 2302H and 2303H.
6.	Calculations with respect to memory locations.
a.	Write a program to sort given 10 numbers from memory location 2200H in the ascending order.
b.	Calculate the sum of series of even numbers from the list of numbers. The length of the list is in memory location 2200H and the series itself begins from memory location 2201H. Assume the sum to be 8 bit number so you can ignore carries and store the sum at memory location 2300H. Sample problem:
7.	Assembly programs on memory locations
a.	A list of 50 numbers is stored in memory, starting at 6000H. Find number of negative, zero and positive numbers from this list and store these results in memory locations 7000H, 7001H, and 7002H respectively
b.	Write an assembly language program to generate fibonacci number.
c.	Program to calculate the factorial of a number between 0 to 8.
8.	Design and develop a reprogrammable embedded computer using 8051 microcontrollers and to show the following aspects. a. Programming b. Execution c. Debugging
9 a	Configure timer control registers of 8051 and develop a program to generate given time delay.
b	Port I / O: Use one of the four ports of 8051 for O/P interfaced to eight LED's. Simulate binary counter (8 bit) on LED's
c	To interface 8 LEDs at Input-output port and create different patterns.
d	To demonstrate timer working in timer mode and blink LED without using any

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	loop delay routine.
10.	Using FlashMagic
a.	To demonstrate the procedure for flash programming for reprogrammable embedded system board using Flash Magic
b.	To demonstrate the procedure and connections for multiple controllers programming of same type of controller with same source code in one go, using flash magic.

Course Outcomes:

Learners will be able to,

1. Apply concepts of 8085 to single & Multiple Memory Locations
2. Apply concepts of micro-processor register operations
3. Can implement assembly language programs
4. Use of Shift registers 8 & 16 bits
5. Apply the knowledge of Flash Magic in embedded Controllers
6. Learns to simulate and configure different timer controls

Annexure I

B. Sc (Information Technology)		Semester – II	
Course Name: Web Applications Development		Course Code: USIT203	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2	75
	Internal	--	25

Course Objectives:

- Understand basic concepts of Internet and World Wide Web.
- Comprehend different HTML elements that can be used to develop static web pages.
- Become familiar with concept of stylesheets and various CSS effects.
- Peruse JavaScript as a tool to add dynamism to static HTML pages.
- Explore how server-side script works on the web.
- Learn how PHP can be connected to a database to store and retrieve data.

Unit	Details	Lectures
I	Internet and the World Wide Web: What is Internet? Applications of Internet, E-mail, Telnet, FTP, E-commerce and E-business. Internet Service Providers, Domain Name Server, Internet Address, World Wide Web (WWW): World Wide Web and its Evolution, Uniform Resource Locator (URL), Browsers, Common Features of Browsers, Search Engine, Web Server, HTTP Protocol. HTML5: Introduction, Formatting Text by using Tags, Using Lists, Creating Hyperlinks and Bookmarks, Defining Metadata about an HTML Document, Redirecting to another URL. CSS: Implementing Styles using CSS – Stylesheets, Formatting Text and Links using CSS, CSS Selectors, Changing Background, Adding Border, Margin and Padding, Setting Dimensions, Using Inline Container to mark up a part of a text.	12
II	HTML Page Layout: Using Layout Elements, Semantic Elements, Creating, Positioning and Formatting Divisions, Floating Divisions next to each other, Responsive Web Design, Inline Frames. HTML Media, Tables and Forms: Embedding Images, Creating Client-side and Server-side Image Map, adding Favicon, Embedding audio and video on web page. Creating Simple Table, Table Dimension, Merging Table Cells, Formatting Tables: Applying Borders, Background and Foreground fills, Changing Cell Padding, Spacing and Alignment Collecting user input with HTML Forms, Additional Input Types in HTML5.	12
III	JavaScript: Introduction, Difference between Client-side and Server-side Scripting, JavaScript Variables and Constants, Data Types, Statements, Comments, Functions, Variable Scope, Hoisting, Strict Mode, JavaScript Objects, Dialog Boxes, void Keyword	12

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	<p>Operators: Arithmetic Operators, Assignment Operators, Comparison Operators, Logical Operators, Bitwise Operators</p> <p>Statements: Conditional Statements – if else, switch, Loops – while, do while, for, for in, for of, Loop Control – break, continue, labels</p> <p>JavaScript Objects: User-defined Objects, with Keyword, Native Objects – Array, String, Date, Math, Number, RegExp</p> <p>DOM: Introduction, DOM Properties and Methods.</p> <p>Browser BOM: Moving back and forward with History, Cookies</p> <p>Events and Event Handlers: HTML Events, DOM Events, DOM Event Listener, onAbort, onBlur, onChange, onClick, onDblClick, onError, onFocus, onKeyDown, onKeyPress, onKeyUp, onLoad, onMouseDown, onMouseMove, onMouseOut, onMouseOver, onMouseUp, onReset, onResize, onSelect, onSubmit, onUnload</p>	
IV	<p>PHP: Introduction, Server-side Scripting, PHP Syntax and Comments, Variables and Constants, Data Types, Control Structures, Looping, Loop Termination, Functions, PHP Form Handling, PHP Form Validation, Superglobals, PHP Arrays, PHP Strings, PHP RegEx, PHP Numbers, PHP Math, Basic PHP Errors</p>	12
V	<p>Advanced PHP: PHP Date and Time, PHP Include, PHP Cookies, PHP Sessions, Validating and Sanitizing Data with PHP Filters</p> <p>PHP and MySQL Why PHP and MySQL? Connect to MySQL, Creating Database and Tables, Inserting Single and Multiple Rows, Retrieving Last ID, MySQL Prepared, Selecting Data, Updating Data, Deleting Data, Limiting Data.</p>	12

Course Outcomes:

- **Analyze working of Internet.**
- **Gain an insight into designing web pages.**
- **Use different ways of styling web pages using CSS.**
- **Implement basic and complex functionalities of JavaScript in a web page.**
- **Employ PHP Scripts to execute dynamic tasks in a web page.**
- **Perform various database tasks using PHP.**

Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
	The Complete Reference HTML & CSS	Thomas A. Powell	McGrawHill	5 th	-
	Step by Step HTML5	Faithe Wempen	Microsoft Press		2011
	Learning PHP, MySQL, JavaScript, CSS & HTML5	Robin Nixon	O'Reilly	3 rd	2018
	Learning Web Design A Beginner's Guide to Html, CSS, JavaScript, And Web Graphics	Jennifer Niederst Robbins	O'Reilly	5 th	2018

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	The Complete Reference JavaScript	Thomas A. Powell & Fritz Schneider	McGrawHill	3 rd	2012
	PHP & MySQL Novice to Ninja	Tom Butler	SPD	7 th	2022

B. Sc (Information Technology)		Semester – II	
Course Name: Web Application Development Practical		Course Code: USIT2P3	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	--

Course Objectives:

- Understand how to effectively implement HTML.
- Write CSS effectively to create well organized, styled web pages.
- Add versatility to a web page with client-side scripting.
- Deploy a local web server and run a simple web application.
- Read and process data in MySQL using PHP.

List of Practical:	
1.	Use of Basic Tags
a.	Design a web page using different text formatting tags.
b.	Design a web page with links to different pages and allow navigation between web pages.
c.	Design a web page that automatically redirects the user to another page.
2.	Use of CSS
a.	Design a web page demonstrating different stylesheet types.
b.	Design a web page demonstrating grouping selectors.
3.	Layout and Media
a.	Design a web page demonstrating different semantics.
b.	Design a web page embedding image, audio and video.
c.	Design a web page with Imagemaps.
4.	Tables and Forms
a.	Design a web page with different tables.
b.	Design a web page with a form that uses all types of controls.

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5.	JavaScript
a.	Using JavaScript, design a web page to accept a number from the user and print its Factorial.
b.	Using JavaScript, a web page that prints Fibonacci series/any given series.
c.	Write a JavaScript program to display all the prime numbers between 1 and 100.
d.	Write a JavaScript program to accept a number from the user and display the sum of its digits.
6.	JavaScript Objects
a.	Using JavaScript, design a web page demonstrating different native objects of JavaScript.
b.	Write a program in JavaScript to accept a sentence from the user and display the number of words in it. (Do not use split () function).
7.	JavaScript Events
a.	Write a JavaScript program to design simple calculator.
b.	Design a form and validate all the controls placed on the form using JavaScript.
8.	Basic PHP
a.	Write a PHP code to find the greater of 2 numbers. Accept the no. from the user.
b.	Write a PHP Program to accept a number from the user and print it factorial.
c.	Write a PHP program to accept a number from the user and print whether it is prime or not.
d.	Write a PHP program to display the following Binary Pyramid: 1 0 1 1 0 1 0 1 0 1 1 0 1 0 1
e.	Write a PHP program to demonstrate different string functions.
f.	Write a PHP program to demonstrate different array functions.
9.	Advanced PHP
a.	Write a PHP program to demonstrate use of sessions and cookies.
b.	Write a PHP program to demonstrate use of filters.
10.	PHP and MySQL
a.	Write a PHP program to create: Create a database College

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	Create a table Department (Dname, Dno, Number_of_faculty)
b.	Write a PHP program to create a database named “College”. Create a table named “Student” with following fields (sno, sname, percentage). Insert 3 records of your choice. Display the names of the students whose percentage is between 35 to 75 in a tabular format.
c.	Write a PHP program to Update rows in a table Delete rows from a table
d.	Design a PHP page for authenticating a user

Course Outcomes:

Learners will be able to,

1. Design static web pages using Hyper Text Markup Language (HTML).
2. Enhance the look of web pages by implementing CSS.
3. Collect information from the user with HTML Forms.
4. Design interactive webpages using client-side script (JavaScript).
5. Implement Document Object Model and events in web pages using JavaScript.
6. Write and deploy basic PHP code to simplify web development.
7. Store and retrieve data from a server using PHP.

Annexure I

B. Sc (Information Technology)		Semester – I	
Course Name: Numerical Methods		Course Code: USIT204	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2	75
	Internal	--	25

Course Objectives:

Course will enhance the problem solving skills of students using extremely powerful numerical methods.

Unit	Details	Lectures
I	Mathematical Modeling and Engineering Problem Solving: A Simple Mathematical Model, Conservation Laws and Engineering Problems Approximations and Round-Off Errors: Significant Figures, Accuracy and Precision, Error Definitions, Round-Off Errors Truncation Errors and the Taylor Series: The Taylor Series, Error Propagation, Total Numerical Errors, Formulation Errors and Data Uncertainty	12
II	Solutions of Algebraic and Transcendental Equations: The Bisection Method, The Newton-Raphson Method, The Regula-falsi method, The Secant Method. Interpolation: Forward Difference, Backward Difference, Newton's Forward Difference Interpolation, Newton's Backward Difference Interpolation, Lagrange's Interpolation	12
III	Solution of simultaneous algebraic equations (linear) using iterative methods: Gauss-Jordan Method, Gauss-Seidel Method. Numerical differentiation and Integration: Numerical differentiation, Numerical integration using Trapezoidal Rule, Simpson's 1/3 rd and 3/8 th rules.	12
IV	Numerical solution of 1st and 2nd order differential equations: Taylor series, Euler's Method, Modified Euler's Method, Runge-Kutta Method for 1 st and 2 nd Order Differential Equations. Least-Squares Regression: Linear Regression, Polynomial Regression, Multiple Linear Regression, General Linear Least Squares, Nonlinear Regression	12
V	Linear Programming: Linear optimization problem, Formulation and Graphical solution, Basic solution and Feasible solution. Numerical Solutions of Partial Differential Equations: Classification of Partial Differential Equations of the second order, Difference equation corresponding to Laplace Equation, Liebmann's Iteration Process, Bender-Schmidt's Difference Equation corresponding to the parabolic equation, Crank Nicolson's difference equations corresponding to the parabolic equation, Difference equation corresponding to the Hyperbolic equation..	12

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
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Annexure I

1.	Introductory Methods of Numerical Methods	S. S. Sastry	PHI	5 th	2012
2.	Numerical Methods for Engineers	Steven C. Chapra, Raymond P. Canale	Tata Mc Graw Hill	6 th	2010
3.	Numerical Analysis	Richard L. Burden, J. Douglas Faires	Cengage Learning	9 th	2011
4.	Numerical Methods	T Veerarajan T Ramachandran	Tata Mc Graw Hill	7 th	2011

Course Outcomes:

Learners will be able to,

1. Understand numerical techniques to find the roots of non-linear equations and solution of system of linear equations.
2. Understand the difference operators and the use of interpolation.
3. Understand numerical differentiation and integration and numerical solutions of ordinary and partial differential equations.

B. Sc (Information Technology)		Semester – I	
Course Name: Numerical Methods Practical		Course Code: USIT2P4	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	--

Course Objectives:

Course will provide different tools to find solutions to various numerical techniques

List of Practical:

To be implemented using SCILAB

1. Iterative Calculation	
a.	Program for iterative calculation
b.	Program to calculate the roots of a quadratic equation using the formula
c.	Program to evaluate e^x using infinite series
2.	Solution of algebraic and transcendental equations:

Annexure I

a.	Program to solve algebraic and transcendental equation by bisection method.
b.	Program to solve algebraic and transcendental equation by false position method.
c.	Program to solve algebraic and transcendental equation by Secant method.
d.	Program to solve algebraic and transcendental equation by Newton Raphson method.
3.	Interpolation
a.	Program for Newton's forward interpolation.
b.	Program for Newton's backward interpolation.
c.	Program for Lagrange's interpolation.
4.	Solving linear system of equations by iterative methods
a.	Program for solving linear system of equations using Gauss Jordan method.
b.	Program for solving linear system of equations using Gauss Seidel method.
5.	Numerical Differentiation
a.	Program to obtain derivatives numerically.
6.	Numerical Integration
a.	Program for numerical integration using Trapezoidal rule.
b.	Program for numerical integration using Simpson's $1/3^{\text{rd}}$ rule.
c.	Program for numerical integration using Simpson's $3/8^{\text{th}}$ rule.
7.	Solution of differential equations
a.	Program to solve differential equation using Euler's method.
b.	Program to solve differential equation using modified Euler's method.
c.	Program to solve differential equation using Runge-kutta 2^{nd} order and 4^{th} order methods.
8.	Regression 1
a.	Program for Linear regression.
b.	Program for Polynomial Regression.
9.	Regression 2

Annexure I

a.	Program for multiple linear regression.
b.	Program for non-linear regression.
10.	Numerical solution of partial differential equations
a.	Program to find solution of Laplace's equation.

Course Outcomes:

Learners will be able to,

- 1. Find fast and accurate solution to simple and complex numerical problems using these programs.**

Annexure I

B. Sc (Information Technology)		Semester – II	
Course Name: Green IT		Course Code: USIT205	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2	75
	Internal	--	25

Course Objectives:

- To understand the concept of Green Technology.
- To learn Green IT regulating Green IT and different standards.
- To understand the concept of minimizing power utilization in technology.
- To know about Green PCs, Green notebooks and servers and Green data centers.
- To know how the way of work is changing and understand implementation of Paperless work.
- To know the concept of Recycling.
- To understand Metrics for Green IT.

Unit	Details	Lectures
I	Overview to Green IT: Problems: Toxins, Power Consumption, Equipment Disposal, Company's Carbon Footprint: Measuring, Details, reasons to bother, Plan for the Future, Cost Savings: Hardware, Power. Regulating Green IT: Laws, Standards and Protocols Introduction, The Regulatory Environment and IT Manufacturers RoHS, REACH, WEEE, Legislating for GHG Emissions and Energy Use of IT Equipment. Nonregulatory Government Initiatives, Industry Associations and Standards Bodies, Green Building Standards, Green Data Centres, Social Movements and Greenpeace.	12
II	Minimizing Power Usage: Power Problems, Monitoring Power Usage, Servers, Low-Cost Options, Reducing Power Use, Data De-Duplication, Virtualization, Management, Bigger Drives, Involving the Utility Company, Low Power Computers, PCs, Linux, Components, Servers, Computer Settings, Storage, Monitors, Power Supplies, Wireless Devices, Software. Cooling: Cooling Costs, Power Cost, Causes of Cost, Calculating Cooling Needs, Reducing Cooling Costs, Economizers, On-Demand Cooling, HP's Solution, Optimizing Airflow, Hot Aisle/Cold Aisle, Raised, Floors, Cable Management, Vapour Seal, Prevent Recirculation of Equipment Exhaust, Supply Air Directly to Heat Sources, Fans, Humidity, Adding Cooling, Fluid Considerations, System Design, Datacentre Design, Centralized Control, Design for Your Needs, Put Everything Together.	12
III	Greening IT: Green PCs, Notebooks and Servers, Green Data Centres, Green Cloud Computing, Green Data Storage, Green Software, Green Networking and Communications. Changing the Way of Work: Old Behaviours, starting at the Top, Process Reengineering with Green in Mind, Analysing the Global Impact of Local Actions, Steps: Water, Recycling, Energy, Pollutants, Teleworkers and Outsourcing, Telecommuting, Outsourcing, how to Outsource. Going Paperless: Paper Problems, The Environment, Costs: Paper and Office, Practicality, Storage, Destruction, Going Paperless, Organizational Realities, Changing Over, Paperless Billing, Handheld Computers vs. the Clipboard, Unified Communications, Intranets, What to Include, Building an Intranet, Microsoft Office SharePoint Server 2007, Electronic Data Interchange (EDI), Nuts and Bolts, Value Added Networks, Advantages, Obstacles.	12

Annexure I

IV	<p>Recycling: Means of Disposal, Recycling, Refurbishing, Make the Decision, Life Cycle, from beginning to end, Life, Cost, Green Design, Recycling Companies, Finding the Best One, Checklist, Certifications, Hard Drive Recycling, Consequences, cleaning a Hard Drive, Pros and cons of each method, CDs and DVDs, good and bad about CD and DVDs disposal, Change the mind-set, David vs. America Online.</p> <p>Hardware Considerations: Certification Programs, EPEAT, RoHS, Energy Star, Computers, Monitors, Printers, Scanners, All-in-Ones, Thin Clients, Servers, Blade Servers, Consolidation, Products, Hardware Considerations, Planned Obsolescence, Packaging, Toxins, Other Factors, Remote Desktop, Using Remote Desktop, Establishing a Connection.</p>	12
V	<p>Greening Your Information Systems: Initial Improvement Calculations, Selecting Metrics, Tracking Progress, Change Business Processes, Customer Interaction, Paper Reduction, Green Supply Chain, Improve Technology Infrastructure, Reduce PCs and Servers, Shared Services, Hardware Costs, Cooling.</p> <p>Staying Green: Organizational Check-ups, Chief Green Officer, Evolution, Sell the CEO, SMART Goals, Equipment Check-ups, Gather Data, Tracking the data, Baseline Data, Benchmarking, Analyse Data, Conduct Audits, Certifications, Benefits, Realities, Helpful Organizations.</p>	12

Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Green IT	Toby Velte, Anthony Velte, Robert Elsenpeter	McGraw Hill		2008
2.	Harnessing Green IT: Principles and Practices	San Murugesan, G. R. Ganadharan,	Wiley & IEEE.		
3.	Green Data Center: Steps for the Journey	Alvin Galea, Michael Schaefer, Mike Ebbers	Shroff Publishers and Distributors		2011
4.	Green IT	Deepak Shikarpur	Vishwkarma Publications,		2014
5.	Green Computing Tools and Techniques for Saving Energy, Money and Resources	Bud E. Smith	CRC Press		2014
	Green Computing and Green IT Best Practice	Jason Harris	Emereo		

Course Outcomes:

Learners will be able to,

- Understand the concept of Green IT and problems related to it.
- Know different standards for Green IT.
- Understand the how power usage can be minimized in Technology.
- Learn about how the way of work is changing.
- Understand the concept of recycling.
- Know how information system can stay Green Information system.

Annexure I

B. Sc (Information Technology)		Semester – II	
Course Name: Practical's in PL/SQL		Course Code: USIT2P5	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	--

Course Objectives:

- To understand the basics of PL/SQL.
- To understand control and conditional statement in PL/SQL.
- To understand working of sequences and cursor in PL/SQL.
- To understand concept of stored procedure and functions.
- To understand triggers and packages in PL/SQL.
- To understand the concept of Exception handling.

List of Practical:	
1.	PL/SQL Basics
a.	Use of variables.
b.	Write executable statement.
c.	Interacting with Oracle Server.
d.	Create anonymous PL/SQL block
2.	Control Structure in PL/SQL .
a.	Using while loop
b.	Do loop
c.	For loop
d.	Use of GOTO statement
3.	Create conditional statement using PL/SQL
a.	Using if statement
b.	Using if else statement
c.	Using elsif ladder
d.	Using case expression.
4.	Creation of Sequence in PL/SQL
5.	Create cursor in PL/SQL
a.	Implicit cursor
b.	Explicit

Annexure I

c.	Parameterized cursor
d.	Cursor for loop
6.	Creation of Procedures in PL/SQL
7.	Functions in PL/SQL
a.	Compute and returns the maximum value
b.	Compute factorial of given number.
8.	Creation of Trigger
a.	Create Row level trigger
b.	Create Statement level trigger
c.	Create instead of trigger
9.	Handling exceptions
a.	Creation of user defined exception
b.	Creation of system defined exception.
10.	Creation of Package in PL/SQL

Course Outcomes:

Learner will be able to:

- Understand the basics of PL/SQL.
- Use of the control and conditional statement in PL/SQL.
- Apply sequences and cursor in PL/SQL.
- Know the concept of stored procedure and functions
- Create the triggers and packages in PL/SQL.
- Implement the concept of Exception handling.

UNIVERSITY OF MUMBAI



Syllabus for S.Y.B.Sc.

Programme: B.Sc.

Course: Information Technology

Choice Based Credit and Semester System

with effect from the academic year

2023 – 2024

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UNIVERSITY OF MUMBAI



Syllabus for Approval

Sr. No.	Heading	Particulars
1	Title of the Programme	Bachelor of Science in Information Technology (Second Year)
2	Eligibility for Admission	Ordinance no. O.5051 Circular no. UG/284 of 2007 dated 16th June 2007
3	Passing Marks	40%
4	Ordinances / Regulations (if any)	As applicable for all B.Sc. Courses
5	No. of Years / Semesters	Three years – Six Semesters
6	Level	P.G. / U.G./ Diploma / Certificate (Strike out which is not applicable)
7	Pattern	Yearly / Semester (Strike out which is not applicable)
8	Status	Revised / New / Amended (Strike out which is not applicable)
9	To be implemented from Academic Year	From Academic Year <u>2023-2024</u>

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Semester – 3			
Course Code	Course Type	Course Title	Credits
USIT301	Skill Enhancement Course	Python Programming	2
USIT302	Core Subject	Data Structures	2
USIT303	Core Subject	Computer Networks	2
USIT304	Core Subject	Operating Systems	2
USIT305	Core Subject	Applied Mathematics	2
USIT3P1	Skill Enhancement Course Practical	Python Programming Practical	2
USIT3P2	Core Subject Practical	Data Structures Practical	2
USIT3P3	Core Subject Practical	Computer Networks Practical	2
USIT3P4	Core Subject Practical	Operating Systems Practical	2
USIT3P5	Core Subject Practical	Mobile Programming Practical	2
Total Credits			20

Semester – 4			
Course Code	Course Type	Course Title	Credits
USIT401	Skill Enhancement Course	Core Java	2
USIT402	Core Subject	Introduction to Embedded Systems	2
USIT403	Core Subject	Computer Oriented Statistical Techniques	2
USIT404	Core Subject	Software Engineering	2
USIT405	Core Subject	Computer Graphics and Animation	2
USIT4P1	Skill Enhancement Course Practical	Core Java Practical	2
USIT4P2	Core Subject Practical	Introduction to Embedded Systems Practical	2
USIT4P3	Core Subject Practical	Computer Oriented Statistical Techniques Practical	2
USIT4P4	Core Subject Practical	Software Engineering Practical	2
USIT4P5	Core Subject Practical	Computer Graphics and Animation Practical	2
Total Credits			20

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SEMESTER III

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Python Programming

B. Sc. (Information Technology)		Semester – III	
Course Name: Python Programming		Course Code: USIT301	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Course Objective:

- Interpret the fundamental Python syntax and semantics and be fluent in the use of Python control flow statements.
- Express proficiency in the handling of strings and functions.
- Determine the methods to create and manipulate Python programs by utilizing the data structures like lists, dictionaries, tuples and sets.
- Identify the commonly used operations involving file systems and regular expressions.
- Articulate the Object-Oriented Programming concepts such as encapsulation, inheritance and polymorphism as used in Python.

Unit	Details	Lectures
I	Introduction: The Python Programming Language, History, features, Installing Python, Running Python program, Debugging : Syntax Errors, Runtime Errors, Semantic Errors, Experimental Debugging, Formal and Natural Languages, The Difference Between Brackets, Braces, and Parentheses, Variables and Expressions Values and Types, Variables, Variable Names and Keywords, Type conversion, Operators and Operands, Expressions, Interactive Mode and Script Mode, Order of Operations. Conditional Statements: if, if-else, nested if –else Looping: for, while, nested loops Control statements: Terminating loops, skipping specific conditions	12
II	Functions: Function Calls, Type Conversion Functions, Math Functions, Composition, Adding New Functions, Definitions and Uses, Flow of Execution, Parameters and Arguments, Variables and Parameters Are Local, Stack Diagrams, Fruitful Functions and Void Functions, Why Functions? Importing with from, Return Values, Incremental Development, Composition, Boolean Functions, More Recursion, Leap of Faith, Checking Types Strings: A String Is a Sequence, Traversal with a for Loop, String Slices, Strings Are Immutable, Searching, Looping and Counting, String Methods, The in Operator, String Comparison, String Operations.	12
III	Lists: Values and Accessing Elements, Lists are mutable, traversing a List, Deleting elements from List, Built-in List Operators,	12

	<p>Concatenation, Repetition, In Operator, Built-in List functions and methods</p> <p>Tuples and Dictionaries: Tuples, Accessing values in Tuples, Tuple Assignment, Tuples as return values, Variable-length argument tuples, Basic tuples operations, Concatenation, Repetition, in Operator, Iteration, Built-in Tuple Functions</p> <p>Creating a Dictionary, Accessing Values in a dictionary, Updating Dictionary, Deleting Elements from Dictionary, Properties of Dictionary keys, Operations in Dictionary, Built-In Dictionary Functions, Built-in Dictionary Methods</p> <p>Files: Text Files, The File Object Attributes, Directories</p> <p>Exceptions: Built-in Exceptions, Handling Exceptions, Exception with Arguments, User-defined Exceptions</p>	
IV	<p>Regular Expressions – Concept of regular expression, various types of regular expressions, using match function.</p> <p>Classes and Objects: Overview of OOP (Object Oriented Programming), Class Definition, Creating Objects, Instances as Arguments, Instances as return values, Built-in Class Attributes, Inheritance, Method Overriding, Data Encapsulation, Data Hiding</p> <p>Multithreaded Programming: Thread Module, creating a thread, synchronizing threads, multithreaded priority queue</p> <p>Modules: Importing module, Creating and exploring modules, Math module, Random module, Time module</p>	12
V	<p>Creating the GUI Form and Adding Widgets:</p> <p>Widgets: Button, Canvas, Checkbutton, Entry, Frame, Label, Listbox, Menubutton, Menu, Message, Radiobutton, Scale, Scrollbar, text, Toplevel, Spinbox, PanedWindow, LabelFrame, tkMessageBox.</p> <p>Handling Standard attributes and Properties of Widgets.</p> <p>Layout Management: Designing GUI applications with proper Layout Management features.</p> <p>Look and Feel Customization: Enhancing Look and Feel of GUI using different appearances of widgets.</p> <p>Storing Data in Our MySQL Database via Our GUI : Connecting to a MySQL database from Python, Configuring the MySQL connection, Designing the Python GUI database, Using the INSERT command, Using the UPDATE command, Using the DELETE command, Storing and retrieving data from MySQL database.</p>	12

Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Think Python	Allen Downey	O'Reilly	1 st	2012
2.	An Introduction to Computer Science using Python 3	Jason Montojo, Jennifer Campbell, Paul Gries	SPD	1 st	2014
3.	Python GUI Programming Cookbook	Burkhard A. Meier	Packt		2015

4.	Introduction to Problem Solving with Python	E. Balagurusamy	TMH	1 st	2016
5.	Murach's Python programming	Joel Murach, Michael Urban	SPD	1 st	2017
6.	Object-oriented Programming in Python	Michael H. Goldwasser, David Letscher	Pearson Prentice Hall	1 st	2008
7.	Exploring Python	Budd	TMH	1 st	2016

Course Outcome:

After completing the course, the learner will be able to:

CO1: Aware of the variables, expressions, looping and conditions used in Python programming.

CO2: Implement functions, strings, lists, tuples and directories

CO3: Create GUI forms and add widgets.

CO4: Use MySQL to store data.

CO5: Apply the programming skillset learnt here into various domains by having advance programming skillset of Python and usage of libraries.

Data Structures

B. Sc. (Information Technology)		Semester – III	
Course Name: Data Structures		Course Code: USIT302	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Course Objective:

- Ability to analyze the performance of algorithms.
- Ability to choose appropriate algorithm design techniques for solving problems.
- Understand how the choice of data structures and the algorithm design methods impact the performance of programs.

Unit	Details	Lectures
I	<p>Introduction: Data and Information, Data Structure, Classification of Data Structures, Primitive Data Types, Abstract Data Types, Data structure vs. File Organization, Operations on Data Structure, Algorithm, Importance of Algorithm Analysis, Complexity of an Algorithm, Asymptotic Analysis and Notations, Big O Notation, Big Omega Notation, Big Theta Notation, Rate of Growth and Big O Notation.</p> <p>Array: Introduction, One Dimensional Array, Memory Representation of One Dimensional Array, Traversing, Insertion, Deletion, Searching, Sorting, Merging of Arrays, Multidimensional Arrays, Memory Representation of Two Dimensional Arrays, General Multi-Dimensional Arrays, Sparse Arrays, Sparse Matrix, Memory Representation of Special kind of Matrices, Advantages and Limitations of Arrays.</p>	12
II	<p>Linked List: Linked List, One-way Linked List, Traversal of Linked List, Searching, Memory Allocation and De-allocation, Insertion in Linked List, Deletion from Linked List, Copying a List into Other List, Merging Two Linked Lists, Splitting a List into Two Lists, Reversing One way linked List, Circular Linked List, Applications of Circular Linked List, Two way Linked List, Traversing a Two way Linked List, Searching in a Two way linked List, Insertion of an element in Two way Linked List, Deleting a node from Two way Linked List, Header Linked List, Applications of the Linked list, Representation of Polynomials, Storage of Sparse Arrays, Implementing other Data Structures.</p>	12
III	<p>Stack: Introduction, Operations on the Stack Memory Representation of Stack, Array Representation of Stack, Applications of Stack,</p>	12

	<p>Evaluation of Arithmetic Expression, Matching Parenthesis, infix and postfix operations, Recursion.</p> <p>Queue: Introduction, Queue, Operations on the Queue, Memory Representation of Queue, Array representation of queue, Linked List Representation of Queue, Circular Queue, Some special kinds of queues, Deque, Priority Queue, Application of Priority Queue, Applications of Queues.</p>	
IV	<p>Sorting and Searching Techniques Bubble, Selection, Insertion, Merge Sort. Searching: Sequential, Binary, Indexed Sequential Searches. Tree: Tree, Binary Tree, Properties of Binary Tree, Memory Representation of Binary Tree, Operations Performed on Binary Tree, Reconstruction of Binary Tree from its Traversals, Huffman Algorithm, Binary Search Tree, Operations on Binary Search Tree, Heap, Memory Representation of Heap, Operation on Heap, Heap Sort. Advanced Tree Structures: Red Black Tree, Operations Performed on Red Black Tree, AVL Tree, Operations performed on AVL Tree, 2-3 Tree, B-Tree.</p>	12
V	<p>Hashing Techniques Hash function, Address calculation techniques, Common hashing functions Collision resolution, Linear probing, Quadratic, Double hashing, Bucket hashing, Deletion and rehashing Graph: Introduction, Graph, Graph Terminology, Memory Representation of Graph, Adjacency Matrix Representation of Graph, Adjacency List or Linked Representation of Graph, Operations Performed on Graph, Graph Traversal, Applications of the Graph, Reachability, Shortest Path Problems, Spanning Trees.</p>	12

Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	A Simplified Approach to Data Structures	Lalit Goyal, Vishal Goyal, Pawan Kumar	SPD	1 st	2014
2.	An Introduction to Data Structure with Applications	Jean – Paul Tremblay and Paul Sorenson	Tata McGraw Hill	2 nd	2007
3.	Data Structure and Algorithm	Maria Rukadikar	SPD	1 st	2017
4.	Schaum’s Outlines Data structure	Seymour Lipschutz	Tata McGraw Hill	2 nd	2005
5.	Data structure – A Pseudocode Approach with C	AM Tanenbaum, Y Langsam and MJ Augustein	Prentice Hall India	2 nd	2006
6.	Data structure and Algorithm Analysis in C	Weiss, Mark Allen	Addison Wesley	1 st	2006

Course Outcome:

After completing the course, the learner will be able to:

CO1: Identify and distinguish data structure classification, data types, their complexities

CO2: Implement array, linked list, stack and queue.

CO3: Implement trees, various hashing techniques and graph for various applications

CO4: Compare various sorting and searching techniques

Computer Networks

B. Sc. (Information Technology)		Semester – III	
Course Name: Computer Networks		Course Code: USIT303	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Course Objective:

- Knowledge of uses and services of Computer Network.
- Ability to identify types and topologies of network.
- Understanding of analog and digital transmission of data.
- Familiarization with the techniques of routing.
- Understand the functioning of networking application

Unit	Details	Lectures
I	Introduction: Computer Network, Evolution of Computer Networks Different types of Computer Network, Difference between LAN, MAN and WAN, Hardware Devices used for Networking: Network Interface Card (NIC), Modem, Hub, Switch L1 and L2 switches, Comparison between switch and hub, Bridge, Router, Gateway. Standards and administration. Network Models: Protocol layering, TCP/IP protocol suite, The OSI model.	12
II	Introduction to Physical layer: Data and signals, periodic analog signals, digital signals, transmission impairment, data rate limits, performance. Introduction to the Data Link Layer: Link layer addressing, Data Link Layer Design Issues, Error detection and correction, block coding Wireless LANs: Introduction, IEEE 802.11 project, Bluetooth, WiMAX, Cellular telephony, Satellite networks.	12
III	Network Layer: IPv4 Addresses, IPv4 Protocol, ARP, ICMP, IPv6 Routing: RIP, OSPF, BGP	12
IV	Transport Layer: UDP, TCP	12
V	Application Layer: WWW, HTTP, DNS, SMTP, POP3, MIME, IMAP, DHCP, TELNET, SSH, FTP	12

Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	TCP/IP Protocol Suite	Behrouz A. Forouzan	Tata McGraw Hill 2010	-----	-----
2.	Data Communication and Networking	Behrouz A. Forouzan	Tata McGraw Hill	-----	-----
3.	Computer Networks	Andrew Tanenbaum	Pearson	Fifth	2013

Online Resources:

- <https://ekumbh.aicte-india.org/allbook.php>
- <https://free.aicte-india.org/>

Course Outcomes:

After completing the course, the learner will be able to:

CO1: Identify various data communication standards, topologies and terminologies

CO2: Describe how signals are used to transfer data and communication aspects between nodes

CO3: Configure IP addresses using TCP/IP protocol suite

CO4: Use different application layer protocols

Operating Systems

B. Sc. (Information Technology)		Semester – III	
Course Name: Operating Systems		Course Code: USIT304	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Course Objective:

- Analyze the concepts of processes in operating system and illustration of the scheduling of processor for a given problem instance.
- Identify the dead lock situation and provide appropriate solution so that protection and security of the operating system is also maintained.
- Analyze memory management techniques, concepts of virtual memory and disk scheduling.
- Understand the implementation of file systems and directories along with the interfacing of IO devices with the operating system.
- Ability to apply CPU scheduling algorithms to manage tasks.
- Initiation into the process of applying memory management methods and allocation policies.
- Knowledge of methods of prevention and recovery from a system deadlock.

Unit	Details		Lectures
I	Operating System Overview: Objectives and Functions, Evolution, Achievements, Modern Operating Systems, Fault tolerance, OS design considerations for multiprocessor and multicore, overview of different operating systems Processes: Process Description and Control.		12
II	Threads, Concurrency: Mutual Exclusion and Synchronization.		12
III	Concurrency: Deadlock and Starvation, Memory: Memory Management, Virtual Memory.		12
IV	Scheduling: Uniprocessor Scheduling, Multiprocessor and Real-Time Scheduling		12
V	IO and File Management: I/O Management and Disk Scheduling, File Management, Operating System Security.		12

Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Operating Systems – Internals and Design Principles	Willaim Stallings	Pearson	9 th	2009
2.	Operating System Concepts	Abraham Silberschatz,	Wiley	8 th	

		Peter B. Galvineg Gagne			
3.	Operating Systems	Godbole and Kahate	McGraw Hill	3 rd	

Online Resources:

- https://onlinecourses.nptel.ac.in/noc20_cs04/preview
- <https://free.aicte-india.org/>
- <https://www.javatpoint.com/best-courses-for-the-operating-system>

Course Outcomes:

After completing the course, the learner will be able to:

CO1: Role of Operating System Computer System.

CO2: Use the different types of Operating System and their services.

CO3: configure process scheduling algorithms and synchronization techniques to achieve better performance of a computer system.

CO4: Apply virtual memory concepts.

CO5: Effectively use and manage secondary memory.

Applied Mathematics

B. Sc. (Information Technology)		Semester – III	
Course Name: Applied Mathematics		Course Code: USIT305	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Course Objective:

The course is aimed to develop the basic Mathematical skills of IT students that are imperative for effective understanding of IT subjects.

- Apply the knowledge of matrices to solve the problems.
- Know and to understand various types of numerical methods.
- Ability to interpret the mathematical results in physical or practical terms for complex numbers.
- Inculcate the habit of Mathematical Thinking through Indeterminate forms and Taylor series expansion
- Solve and analyze the Partial derivatives and its application in related field of engineering

Unit	Details	Lectures
I	<p>Matrices: Inverse of a matrix, Properties of matrices, Elementary Transformation, Rank of Matrix, Echelon or Normal Matrix, Inverse of matrix, Linear equations, Linear dependence and linear independence of vectors, Linear transformation, Characteristics roots and characteristics vectors, Properties of characteristic vectors, Caley-Hamilton Theorem, Similarity of matrices, Reduction of matrix to a diagonal matrix which has elements as characteristics values.</p> <p>Complex Numbers: Complex number, Equality of complex numbers, Graphical representation of complex number(Argand's Diagram), Polar form of complex numbers, Polar form of $x+iy$ for different signs of x,y, Exponential form of complex numbers, Mathematical operation with complex numbers and their representation on Argand's Diagram, Circular functions of complex angles, Definition of hyperbolic function, Relations between circular and hyperbolic functions, Inverse hyperbolic functions, Differentiation and Integration, Graphs of the hyperbolic functions, Logarithms of complex quality, $j(=i)$ as an operator(Electrical circuits)</p>	12
II	<p>Equation of the first order and of the first degree: Separation of variables, Equations homogeneous in x and y, Non-homogeneous linear equations, Exact differential Equation, Integrating Factor, Linear Equation and equation reducible to this form, Method of substitution.</p> <p>Differential equation of the first order of a degree higher than the first: Introduction, Solvable for p (or the method of factors), Solve for</p>	12

	<p>y, Solve for x, Clairaut's form of the equation, Methods of Substitution, Method of Substitution.</p> <p>Linear Differential Equations with Constant Coefficients: Introduction, The Differential Operator, Linear Differential Equation $f(D) y = 0$, Different cases depending on the nature of the root of the equation $f(D) = 0$, Linear differential equation $f(D) y = X$, The complimentary Function, The inverse operator $1/f(D)$ and the symbolic expiration for the particular integral $1/f(D) X$; the general methods, Particular integral : Short methods, Particular integral : Other methods, Differential equations reducible to the linear differential equations with constant coefficients.</p>	
III	<p>The Laplace Transform: Introduction, Definition of the Laplace Transform, Table of Elementary Laplace Transforms, Theorems on Important Properties of Laplace Transformation, First Shifting Theorem, Second Shifting Theorem, The Convolution Theorem, Laplace Transform of an Integral, Laplace Transform of Derivatives, Inverse Laplace Transform: Shifting Theorem, Partial fraction Methods, Use of Convolution Theorem, Solution of Ordinary Linear Differential Equations with Constant Coefficients, Solution of Simultaneous Ordinary Differential Equations, Laplace Transformation of Special Function, Periodic Functions, Heaviside Unit Step Function, Dirac-delta Function(Unit Impulse Function),</p>	12
IV	<p>Multiple Integrals: Double Integral, Change of the order of the integration, Double integral in polar co-ordinates, Triple integrals. Applications of integration: Areas, Volumes of solids.</p>	12
V	<p>Beta and Gamma Functions – Definitions, Properties and Problems. Duplication formula. Differentiation Under the Integral Sign Error Functions</p>	12

Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	A text book of Applied Mathematics Vol I	P. N. Wartikar and J. N. Wartikar	Pune Vidyathi Graha		
2.	Applied Mathematics II	P. N. Wartikar and J. N. Wartikar	Pune Vidyathi Graha		
3.	Higher Engineering Mathematics	Dr. B. S. Grewal	Khanna Publications		

Course Outcomes:

Upon the successful completion of the course, students will be able to:

CO 1: Solve the matrix operations, identify the linear dependence and independence of a vectors.

CO 2: Familiar with the various forms and operations of a complex number.

CO 3: Find the Laplace transform of a function and Inverse Laplace transform of a function using definition also solve ordinary differential equations using Laplace transform.

CO 4: Evaluate the multiple integrals in Cartesian, Polar coordinates, change the order of the integral,

CO 5: Apply integration methods to calculate the areas and volumes of solids.

CO 6: Evaluate the Beta, Gamma, Differentiation Under integral sign and error functions

Python Programming Practical

B. Sc. (Information Technology)		Semester – III	
Course Name: Python Programming Practical		Course Code: USIT3P1	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	--

List of Practical	
1.	Write the program for the following:
a.	Create a program that asks the user to enter their name and their age. Print out a message addressed to them that tells them the year that they will turn 100 years old.
b.	Enter the number from the user and depending on whether the number is even or odd, print out an appropriate message to the user.
c.	Write a program to generate the Fibonacci series.
d.	Write a function that reverses the user defined value.
e.	Write a function to check the input value is Armstrong and also write the function for Palindrome.
f.	Write a recursive function to print the factorial for a given number.
2.	Write the program for the following:
a.	Write a function that takes a character (i.e. a string of length 1) and returns True if it is a vowel, False otherwise.
b.	Define a function that computes the <i>length</i> of a given list or string.
c.	Define a <i>procedure</i> histogram() that takes a list of integers and prints a histogram to the screen. For example, histogram([4, 9, 7]) should print the following: **** ***** *****
3.	Write the program for the following:
a.	A <i>pangram</i> is a sentence that contains all the letters of the English alphabet at least once, for example: <i>The quick brown fox jumps over the lazy dog</i> . Your task here is to write a function to check a sentence to see if it is a pangram or not.
b.	Take a list, say for example this one: a = [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89] and write a program that prints out all the elements of the list that are less than 5.
4.	Write the program for the following:

a.	Write a program that takes two lists and returns True if they have at least one common member.
b.	Write a Python program to print a specified list after removing the 0th, 2nd, 4th and 5th elements.
c.	Write a Python program to clone or copy a list
5.	Write the program for the following:
a.	Write a Python script to sort (ascending and descending) a dictionary by value.
b.	Write a Python script to concatenate following dictionaries to create a new one. Sample Dictionary : dic1={ 1:10, 2:20} dic2={ 3:30, 4:40} dic3={ 5:50,6:60} Expected Result : { 1: 10, 2: 20, 3: 30, 4: 40, 5: 50, 6: 60}
c.	Write a Python program to sum all the items in a dictionary.
6.	Write the program for the following:
a.	Write a Python program to read an entire text file.
b.	Write a Python program to append text to a file and display the text.
c.	Write a Python program to read last n lines of a file.
7.	Write the program for the following:
a.	Design a class that store the information of student and display the same
b.	Implement the concept of inheritance using python
c.	Create a class called Numbers, which has a single class attribute called MULTIPLIER, and a constructor which takes the parameters x and y (these should all be numbers). i. Write a method called add which returns the sum of the attributes x and y. ii. Write a class method called multiply, which takes a single number parameter a and returns the product of a and MULTIPLIER. iii. Write a static method called subtract, which takes two number parameters, b and c, and returns b - c. iv. Write a method called value which returns a tuple containing the values of x and y. Make this method into a property, and write a setter and a deleter for manipulating the values of x and y.
8.	Write the program for the following:
a.	Open a new file in IDLE ("New Window" in the "File" menu) and save it as geometry.py in the directory where you keep the files you create for this course. Then copy the functions you wrote for calculating volumes and areas in the "Control Flow and Functions" exercise into this file and save it. Now open a new file and save it in the same directory. You should now be able to import your own module like this: <pre>import geometry</pre> Try and add print dir(geometry) to the file and run it.

	Now write a function pointyShapeVolume(x, y, squareBase) that calculates the volume of a square pyramid if squareBase is True and of a right circular cone if squareBase is False. x is the length of an edge on a square if squareBase is True and the radius of a circle when squareBase is False. y is the height of the object. First use squareBase to distinguish the cases. Use the circleArea and squareArea from the geometry module to calculate the base areas.
b.	Write a program to implement exception handling.
9.	Write the program for the following:
a.	Try to configure the widget with various options like: bg="red", family="times", size=18
b.	Try to change the widget type and configuration options to experiment with other widget types like Message, Button, Entry, Checkbutton, Radiobutton, Scale etc.
10.	Design the database applications for the following:
a.	Design a simple database application that stores the records and retrieve the same.
b.	Design a database application to search the specified record from the database.
c.	Design a database application to that allows the user to add, delete and modify the records.

Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Think Python	Allen Downey	O'Reilly	1 st	2012
2.	An Introduction to Computer Science using Python 3	Jason Montojo, Jennifer Campbell, Paul Gries	SPD	1 st	2014

Data Structures Practical

B. Sc. (Information Technology)		Semester – III	
Course Name: Data Structures Practical		Course Code: USIT3P2	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	--

List of Practical	
1.	Implement the following:
a.	Write a program to store the elements in 1-D array and perform the operations like searching, sorting and reversing the elements. [Menu Driven]
b.	Read the two arrays from the user and merge them and display the elements in sorted order. [Menu Driven]
c.	Write a program to perform the Matrix addition, Multiplication and Transpose Operation. [Menu Driven]
2.	Implement the following for Linked List:
a.	Write a program to create a single linked list and display the node elements in reverse order.
b.	Write a program to search the elements in the linked list and display the same
c.	Write a program to create double linked list and sort the elements in the linked list.
3.	Implement the following for Stack:
a.	Write a program to implement the concept of Stack with Push, Pop, Display and Exit operations.
b.	Write a program to convert an infix expression to postfix and prefix conversion.
c.	Write a program to implement Tower of Hanoi problem.
4.	Implement the following for Queue:
a.	Write a program to implement the concept of Queue with Insert, Delete, Display and Exit operations.
b.	Write a program to implement the concept of Circular Queue
c.	Write a program to implement the concept of Deque.
5.	Implement the following sorting techniques:
a.	Write a program to implement bubble sort.
b.	Write a program to implement selection sort.
c.	Write a program to implement insertion sort.
6.	Implement the following data structure techniques:
a.	Write a program to implement merge sort.

b.	Write a program to search the element using sequential search.
c.	Write a program to search the element using binary search.
7.	Implement the following data structure techniques:
a.	Write a program to create the tree and display the elements.
b.	Write a program to construct the binary tree.
c.	Write a program for inorder, postorder and preorder traversal of tree
8.	Implement the following data structure techniques:
a.	Write a program to insert the element into maximum heap.
b.	Write a program to insert the element into minimum heap.
9.	Implement the following data structure techniques:
a.	Write a program to implement the collision technique.
b.	Write a program to implement the concept of linear probing.
10.	Implement the following data structure techniques:
a.	Write a program to generate the adjacency matrix.
b.	Write a program for shortest path diagram.

Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Data Structures and Algorithms Using Python	Rance Necaie	Wiley	First	2016
2.	Data Structures Using C and C++	Langsam , Augenstein, Tanenbaum	Pearson	First	2015

Computer Network Practical

B. Sc. (Information Technology)		Semester – III	
Course Name: Computer Network Practical		Course Code: USIT3P3	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	

List of Practical:	
1.	Colour code for crimping LAN (Cat 5/6/7) cable
a.	Study of Different color codes
b.	Study of different connecting devices and their differences
c.	Crimping LAN Cable
2.	Configuring LAN setup
a.	Planning and Setting IP networks
b.	Configuring subnet
c.	Study of basic network command and Network configuration commands. ipconfig, netstat, ARP, ping, trace route etc.
d.	Basic network troubleshooting.
e.	Configuration of TCP/IP Protocols in Windows / Linux.
f.	Implementation of Drive/file sharing and printer sharing.
3.	IPv4 Addressing and Subnetting
a.	Given an IP address and network mask, determine other information about the IP address such as: <ul style="list-style-type: none"> • Network address • Network broadcast address • Total number of host bits • Number of hosts
b.	Given an IP address and network mask, determine other information about the IP address such as: <ul style="list-style-type: none"> • The subnet address of this subnet • The broadcast address of this subnet • The range of host addresses for this subnet • The maximum number of subnets for this subnet mask • The number of hosts for each subnet • The number of subnet bits • The number of this subnet
4.	Designing and configuring a network topology
a.	Configure IP static routing

5.	Configure IP routing using RIP.
6.	Configuring Simple and multi-area OSPF.
7.	Configuring server and client.
a.	Configure DHCP
b.	Configure DNS
c.	Configure HTTP
d.	Configure Telnet
e.	Configure FTP
8.	Configure basic security features for networks
9.	Packet capture and header analysis by wire-shark (TCP, UDP, IP etc.)
10.	Planning and Design a corporate network for a given scenario.

Operating System Practical

B. Sc. (Information Technology)		Semester – III	
Course Name: Operating System Practical		Course Code: USIT3P4	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	

List of Practical:	
1.	Installation and Configuration of virtual machine
d.	Installation of virtual machine software.
e.	Installation of Windows OS
f.	Installation of Linux OS
2.	Windows (DOS) Commands
g.	Date, time, prompt, md, cd, rd, path.
h.	Chkdsk, copy, xcopy, format, fidsk, cls, defrag, del, move.
i.	Diskcomp, diskcopy, diskpart, doskey, echo
j.	Edit, fc, find, rename, set, type, ver
3.	Linux commands:
c.	pwd, cd, absolute and relative paths, ls, mkdir, rmdir
d.	file, touch, rm, cp, mv, rename, head, tail, cat, tac, more, less, strings, chmod
e.	ps, top, kill, pkill, bg, fg
f.	grep, locate, find, locate
g.	date, cal, uptime, w, whoami, finger, uname, man, df, du, free, whereis, which
h.	Compression: tar, gzip
4.	Working with Linux Desktop and utilities
b.	The vi editor
c.	Graphics User Interface
d.	Working with Terminal
e.	Adjusting display resolution
f.	Using the browsers
g.	Configuring simple networking
h.	Creating users and shares
5.	Installing utility software on Linux and Windows
6.	Running C/C++/Python programs in Linux
7.	Introduction to Linux Shell Scripting
f.	Basic operators

g.	Decision Making
h.	Looping
i.	Regular Expression
j.	Special variables and command Line arguments
8.	Case study of Server OS: Windows Server 2022 operating System - Architecture, Components, Services, Configuration
9.	Case study of Android OS: Architecture, Components, Services, Configuration
10.	Case study of Cloud OS: AWS, Azure, Google Cloud

Mobile Programming Practical

B. Sc. (Information Technology)		Semester – III	
Course Name: Mobile Programming Practical		Course Code: USIT3P5	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	--

The practical's will be based on HTML5, CSS, Flutter. (Android will be introduced later after they learn Java)

List of Practical	
	Setting up Flutter, PhoneGAP Project and environment.
1.	Program to demonstrate the features of Dart language.
2.	Designing the mobile app to implement different widgets.
3.	Designing the mobile app to implement different Layouts.
4.	Designing the mobile app to implement Gestures.
5.	Designing the mobile app to implement the theming and styling.
6.	Designing the mobile app to implement the routing.
7.	Designing the mobile app to implement the animation.
8.	Designing the mobile app to implement the state management.
9.	Designing the mobile app working with SQLite Database.
10.	Designing the mobile app working with Firebase.

Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Flutter for Beginners	Alessandro Biessek	Packt Publishing		2019
2.	PhoneGap By Example	Andrey Kovalenko	PACKT Publishing	1 st	2015

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SEMESTER IV

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Java Programming

B. Sc. (Information Technology)		Semester – IV	
Course Name: Java Programming		Course Code: USIT401	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Course Objectives:

Upon completion of this course, students will be able to:

- Understand the concept of OOP as well as the purpose and usage principles of inheritance, polymorphism, encapsulation and method overloading.
- Identify classes, objects, members of a class and the relationships among them needed for a specific problem.
- Create Java application programs using sound OOP practices (e.g., interfaces and APIs) and proper program structuring (e.g., by using access control identifies, automatic documentation through comments, error exception handling).
- Use testing and debugging tools to automatically discover errors of Java programs as well as use versioning tools for collaborative programming/editing.
- Develop programs using the Java Collection API as well as the Java standard class library.
- Apply object-oriented programming concepts in problem solving through JAVA.

Unit	Details	Lectures
I	Introduction: History, Features of Java, Java Development Kit, Java Application Programming Interface, Java Virtual Machine, Java Program Structure. Classes: The Class Object and Its Attributes, Class Methods, Accessing A Method, Method Overloading, Instantiating Objects from A Class, Constructors, this keyword, super keyword, Types of Classes, Scope Rules, Access Modifier, constants, static members of a class, garbage collection.	12
II	Inheritance: Derived Class Objects, Inheritance and Access Control, Default Base Class Constructors, this and super keywords. Abstract Classes and Interfaces, Abstract Classes, Abstract Methods, Interfaces: What Is an Interface? How Is an Interface Different from An Abstract Class? Multiple Inheritance, Defining an Interface, Implementing Interfaces.	12
III	Exceptions: Catching Java Exceptions, Catching Run-Time Exceptions, Handling Multiple Exceptions, The finally Clause, The throws Clause, Built-in Exceptions in java Multithreading: Thread Creations, Thread Life Cycle, Life Cycle Methods, Synchronization, wait() notify() notify all() methods Packages: Introduction to predefined packages, User Defined Packages, Access specifier, Java Built-in packages, Array Class, String Class	12

IV	Introduction to JFC and Swing- Features of the Java Foundation Classes, Swing API Components, JComponent Class, Containers and Panels, Labels, Buttons, RadioButton, Check Boxes, Text-Entry Components, Menus Layouts: Flow Layout, Grid Layout, Border Layout Event Handling: Delegation Event Model, Events, Event classes, Event listener interfaces, Using delegation event model, adapter classes.	12
V	Advanced Swing Controls: JScrollPane, Lists and Combo Boxes, Colors and File Choosers, Tables and Trees, JTabbedPane. JDBC: Introduction, JDBC Architecture, JDBC Drivers, java.sql package, Using Statement, PreparedStatement, CallableStatement, ResultSet	12

Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Core Java 8 for Beginners	Vaishali Shah, Sharnam Shah	SPD	1st	2015
2.	Java: The Complete Reference	Herbert Schildt	McGraw Hill	9th	2014
3.	Murach's beginning Java with Net Beans	Joel Murach , Michael Urban	SPD	1st	2016
4.	Core Java, Volume I: Fundamentals	Hortsman	Pearson	9th	2013
5.	Core Java, Volume II: Advanced Features	Gary Cornell and Hortsman	Pearson	8th	2008
6.	Core Java: An Integrated Approach	R. Nageswara Rao	DreamTech	1st	2008

Course Outcome:

After completing the course, the learner will be able to:

CO1: Learn the architecture of Java

CO2: Identify data types, control flow, classes, inheritance, exceptions and event handling

CO3: Use object-oriented concepts for problem solving real-life applications

CO4: Build GUI programs

CO5 : Create event driven programs using java.

Introduction to Embedded Systems

B. Sc. (Information Technology)		Semester – IV	
Course Name: Introduction to Embedded Systems		Course Code: USIT402	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Course Objectives:

- To introduce the Building Blocks of Embedded System
- To Educate in Various microcontrollers used in Embedded Development
- To Introduce Bus Communication in processors, Input/output interfacing.
- To impart knowledge in sensors and actuators.
- To familiar with the real world application development using embedded system.

Unit	Details	Lectures
I	PIC MICROCONTROLLER: Architecture – memory organization – addressing modes – instruction set – PIC programming in Assembly & C –I/O port, Data Conversion, RAM & ROM Allocation, Timer programming Advanced ARM Controllers: Introduction to ARM and its Features, Architecture – memory organization – addressing modes –The ARM Programmer’s model -Registers – Pipeline - Interrupts – Coprocessors – Interrupt Structure	12
II	Communication Protocol & Implementation: Introduction to Communication Protocol, I2C - Interfacing with micro controller using bit-banking method, I2C devices – RTC, Memory, ADC-DAC, Port Expander, SPI (Serial Peripheral Interface), Bluetooth, Wi-Fi and RFID. Understanding Serial, Communication, Bluetooth Communication, SPI Interface ZigBee, Wi-Fi, I ² C, Infrared, RFID, GSM, GPS, PDH/SDH/Ethernet	12
III	Getting Started with Arduino: Introduction, Arduino Variants, Install the Drivers, Arduino IDE Basic Functions: Overview, Structure, Digital I/O Functions, Analog I/O Functions, Advanced I/O Functions, Timer Functions, Communication Functions, Interrupt Functions, Math Functions, Programming Language Reference	12

IV	Using Sensors with the Arduino: Light Sensitive Sensors, Temperature Sensors, Temperature and Humidity Sensor, Line-Tracking Sensor, Ultrasonic Sensors, Digital Infrared Motion Sensor, Joystick Module, Gas Sensor, Hall Sensor, Color Sensor, Digital Tilt Sensor, Triple Axis Acceleration Sensor, Analog Sound Sensor, Voice Recognition Module, Digital Vibration Sensor, Flame Sensor, Capacitive Touch Sensor Electromechanical Control Using the Arduino: DC Motor, Stepper Motor, Servo Motor	12
V	Wireless Control Using the Arduino: Infrared Transmitter and Receiver, Wireless Radio Frequency, Bluetooth, GSM/GPRS, Wi-Fi Case Studies: <ul style="list-style-type: none"> • Air Quality Monitor Using Arduino • A Fire-Fighting Robot Using Arduino • Intelligent Lock System Using Arduino 	12

Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Programming Embedded Systems in C and C++	Michael Barr	O'Reilly	First	1999
2.	Introduction to embedded systems	Shibu K V	Tata Mcgraw-Hill	First	2012
3.	The 8051 Microcontroller and Embedded Systems	Muhammad Ali Mazidi	Pearson	Second	2011
4.	Embedded Systems	Rajkamal	Tata Mcgraw-Hill		

Course Outcome:

CO1: Differentiate between general purpose and embedded systems

CO2: Discuss the characteristics and quality attributes of embedded systems

CO3: Use different types of sensors for appropriately

CO4: Design and develop embedded systems

Computer Oriented Statistical Techniques

B. Sc. (Information Technology)		Semester – IV	
Course Name: Computer Oriented Statistical Techniques		Course Code: USIT403	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Course Objectives:

1. To learn the different methods of calculating the central tendencies.
2. To introduce the moments, skewness and kurtosis.
3. To learn scientific view to conduct the survey in proper way to collect the data about specific perspective.
4. To Learn variety of probability sampling methods for selecting a sample from a population.
5. To learn the sampling theory and testing of hypothesis and making inferences.
6. To introduce the students with understanding of the curve fitting, regression and correlation techniques.

Unit	Details	Lectures
I	<p>The Mean, Median, Mode, and Other Measures of Central Tendency: Index, or Subscript, Notation, Summation Notation, Averages, or Measures of Central Tendency ,The Arithmetic Mean , The Weighted Arithmetic Mean ,Properties of the Arithmetic Mean ,The Arithmetic Mean Computed from Grouped Data ,The Median ,The Mode, The Empirical Relation Between the Mean, Median, and Mode, The Geometric Mean G, The Harmonic Mean H ,The Relation Between the Arithmetic, Geometric, and Harmonic Means, The Root Mean Square, Quartiles, Deciles, and Percentiles, Software and Measures of Central Tendency.</p> <p>The Standard Deviation and Other Measures of Dispersion: Dispersion, or Variation, The Range, The Mean Deviation, The Semi-Interquartile Range, The 10–90 Percentile Range, The Standard Deviation, The Variance, Short Methods for Computing the Standard Deviation, Properties of the Standard Deviation, Charlie’s Check, Sheppard’s Correction for Variance, Empirical Relations Between Measures of Dispersion, Absolute and Relative Dispersion; Coefficient of Variation, Standardized Variable; Standard Scores, Software and Measures of Dispersion.</p> <p>Introduction to R: Basic syntax, data types, variables, operators, control statements, R-functions, R –Vectors, R – lists, R Arrays.</p>	12

II	<p>Moments, Skewness, and Kurtosis : Moments , Moments for Grouped Data ,Relations Between Moments , Computation of Moments for Grouped Data, Charlie's Check and Sheppard's Corrections, Moments in Dimensionless Form, Skewness, Kurtosis, Population Moments, Skewness, and Kurtosis, Software Computation of Skewness and Kurtosis.</p> <p>Elementary Probability Theory: Definitions of Probability, Conditional Probability; Independent and Dependent Events, Mutually Exclusive Events, Probability Distributions, Mathematical Expectation, Relation Between Population, Sample Mean, and Variance, Combinatorial Analysis, Combinations, Stirling's Approximation to $n!$, Relation of Probability to Point Set Theory, Euler or Venn Diagrams and Probability.</p> <p>Elementary Sampling Theory : Sampling Theory, Random Samples and Random Numbers, Sampling With and Without Replacement, Sampling Distributions, Sampling Distribution of Means, Sampling Distribution of Proportions, Sampling Distributions of Differences and Sums, Standard Errors, Software Demonstration of Elementary Sampling Theory.</p>	12
III	<p>Statistical Estimation Theory: Estimation of Parameters, Unbiased Estimates, Efficient Estimates, Point Estimates and Interval Estimates; Their Reliability, Confidence-Interval Estimates of Population Parameters, Probable Error.</p> <p>Statistical Decision Theory: Statistical Decisions, Statistical Hypotheses, Tests of Hypotheses and Significance, or Decision Rules, Type I and Type II Errors, Level of Significance, Tests Involving Normal Distributions, Two-Tailed and One-Tailed Tests, Special Tests, Operating-Characteristic Curves; the Power of a Test, p-Values for Hypotheses Tests, Control Charts, Tests Involving Sample Differences, Tests Involving Binomial Distributions.</p> <p>Statistics in R: mean, median, mode, Normal Distribution , Binomial Distribution, Frequency Distribution in R.</p>	12
IV	<p>Small Sampling Theory: Small Samples, Student's t Distribution, Confidence Intervals, Tests of Hypotheses and Significance, The Chi-Square Distribution, Confidence Intervals for Sigma , Degrees of Freedom, The F Distribution.</p> <p>The Chi-Square Test: Observed and Theoretical Frequencies, Definition of chi-square, Significance Tests, The Chi-Square Test for Goodness of Fit, Contingency Tables, Yates' Correction for Continuity, Simple Formulas for Computing chi-square, Coefficient of Contingency, Correlation of Attributes, Additive Property of chi-square.</p>	12
V	<p>Curve Fitting and the Method of Least Squares: Relationship Between Variables, Curve Fitting, Equations of Approximating Curves, Freehand Method of Curve Fitting, The Straight Line, The Method of Least Squares, The Least-Squares Line, Nonlinear Relationships, The</p>	12

	<p>Least-Squares Parabola, Regression, Applications to Time Series, Problems Involving More Than Two Variables.</p> <p>Correlation Theory: Correlation and Regression, Linear Correlation, Measures of Correlation, The Least-Squares Regression Lines, Standard Error of Estimate, Explained and Unexplained Variation, Coefficient of Correlation, Remarks Concerning the Correlation Coefficient, Product-Moment Formula for the Linear Correlation Coefficient, Short Computational Formulas, Regression Lines and the Linear Correlation Coefficient, Correlation of Time Series, Correlation of Attributes, Sampling Theory of Correlation, Sampling Theory of Regression.</p>	
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Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	STATISTICS	Murray R. Spiegel, Larry J. Stephens.	McGRAW – HILL INTERNATIONAL	FOURTH	
2.	A Practical Approach using R	R.B. Patil, H.J. Dand and R. Bhavsar	SPD	1 st	2017
3.	FUNDAMENTAL OF MATHEMATICAL STATISTICS	S.C. GUPTA and V.K. KAPOOR	SULTAN CHAND and SONS	ELEVENTH REVISED	2011
4.	MATHEMATICAL STATISTICS	J.N. KAPUR and H.C. SAXENA	S. CHAND	TWENTIETH REVISED	2005

Course Outcome: Upon the successful completion of the course, students will be able to:

CO 1: To calculate and apply measures of central tendencies and measures of dispersion -- grouped and ungrouped data cases.

CO 2: To calculate the moments, skewness and kurtosis by various methods.

CO 3: How to apply discrete and continuous probability distributions to various business problems.

CO 4: Perform Test of Hypothesis as well as calculate confidence interval for a population parameter for single sample and two sample cases. Understand the concept of p-values

CO 5: Apply simple linear regression and correlation model to real life examples.

Software Engineering

B. Sc. (Information Technology)		Semester – IV	
Course Name: Software Engineering		Course Code: USIT404	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Course Objective:

- Develop the software projects or prototypes by understanding the requirements.
- Meet the project deadlines along with the number of resources and type of tasks to be carried out.
- Evaluate and analyze the SDLC and basic architecture SRS documents.
- Help to understand the software design and coding techniques.
- Understand the software testing principles.
- Understand the concept project management.
- Identify various concepts of Advanced UML techniques

Unit	Details	Lectures
I	<p>Introduction: What is software engineering? Software Development Life Cycle, Requirements Analysis, Software Design, Coding, Testing, Maintenance etc.</p> <p>Software Requirements: Functional and Non-functional requirements, User Requirements, System Requirements, Interface Specification, Documentation of the software requirements.</p> <p>Software Processes: Process and Project, Component Software Processes.</p> <p>Software Development Process Models.</p> <ul style="list-style-type: none"> • Waterfall Model. • Prototyping. • Iterative Development. • Rational Unified Process. • The RAD Model • Time boxing Model. <p>Agile software development: Agile methods, Plan-driven and agile development, Extreme programming, Agile project management, Scaling agile methods.</p>	12
II	<p>Socio-technical system: Essential characteristics of socio technical systems, Emergent System Properties, Systems Engineering, Components of system such as organization, people and computers, Dealing Legacy Systems.</p> <p>Critical system: Types of critical system, A simple safety critical system, Dependability of a system, Availability and Reliability, Safety and Security of Software systems.</p>	12

	Requirements Engineering Processes: Feasibility study, Requirements elicitation and analysis, Requirements Validations, Requirements Management. System Models: Models and its types, Context Models, Behavioural Models, Data Models, Object Models, Structured Methods.	
III	Architectural Design: Architectural Design Decisions, System Organisation, Modular Decomposition Styles, Control Styles, Reference Architectures. User Interface Design: Need of UI design, Design issues, The UI design Process, User analysis, User Interface Prototyping, Interface Evaluation. Project Management Software Project Management, Management activities, Project Planning, Project Scheduling, Risk Management. Quality Management: Process and Product Quality, Quality assurance and Standards, Quality Planning, Quality Control, Software Measurement and Metrics.	12
IV	Verification and Validation: Planning Verification and Validation, Software Inspections, Automated Static Analysis, Verification and Formal Methods. Software Testing: System Testing, Component Testing, Test Case Design, Test Automation. Software Measurement: Size-Oriented Metrics, Function-Oriented Metrics, Extended Function Point Metrics Software Cost Estimation: Software Productivity, Estimation Techniques, Algorithmic Cost Modelling, Project Duration and Staffing	12
V	Process Improvement: Process and product quality, Process Classification, Process Measurement, Process Analysis and Modeling, Process Change, The CMMI Process Improvement Framework. Service Oriented Software Engineering: Services as reusable components, Service Engineering, Software Development with Services. Software reuse: The reuse landscape, Application frameworks, Software product lines, COTS product reuse. Distributed software engineering: Distributed systems issues, Client–server computing, Architectural patterns for distributed systems, Software as a service	12

Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Software Engineering, edition,	Ian Somerville	Pearson Education.	Ninth	
2.	Software Engineering	Pankaj Jalote	Narosa Publication		

3.	Software engineering, a practitioner's approach	Roger Pressman	Tata Mcgraw-hill	Seventh	
4.	Software Engineering principles and practice	WS Jawadekar	Tata Mcgraw-hill		
5.	Software Engineering- A Concise Study	S.A Kelkar	PHI India.		
6.	Software Engineering Concept and Applications	Subhajit Datta	Oxford Higher Education		
7.	Software Design	D.Budgen	Pearson education	2nd	
8.	Software Engineering	KL James	PHI	EEE	2009

Course Outcome:

After completing the course, the learner will be able to:

CO1: Understand software engineering

CO2: Apply software engineering principles

CO3: Discuss various approaches to verification and validation of software including testing, measurements and estimation of software products

CO4: Create software using different software development models

Computer Graphics and Animation

B. Sc. (Information Technology)		Semester – IV	
Course Name: Computer Graphics and Animation		Course Code: USIT405	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Course Objectives:

1. To train the students to acquire skills in generating marketable computer graphics and animated pictures, especially in the area of advertisements.
2. To train the students to acquire skills and mastery in the use of different software producing graphics and animation.
3. The course introduces the basic concepts of computer graphics.
4. It provides the necessary theoretical background and demonstrates the application of computer science to graphics.
5. The course further allows students to develop programming skills in computer graphics through programming assignments.

Unit	Details	Lectures
I	Introduction to Computer Graphics: Overview of Computer Graphics, Computer Graphics Application and Software, Description of some graphics devices, Input Devices for Operator Interaction, Active and Passive Graphics Devices, Display Technologies, Storage Tube Graphics Displays, Calligraphic Refresh Graphics Displays, Raster Refresh (Raster-Scan) Graphics Displays, Cathode Ray Tube Basics, Color CRT Raster Scan Basics, Video Basics, The Video Controller, Random-Scan Display Processor, LCD displays. Scan conversion – Digital Differential Analyzer (DDA) algorithm, Bresenham's Line drawing algorithm. Bresenham's method of Circle drawing, Midpoint Circle Algorithm, Midpoint Ellipse Algorithm, Mid-point criteria, Problems of Aliasing, end-point ordering and clipping lines, Scan Converting Circles, Clipping Lines algorithms–Cyrus-Beck, Cohen-Sutherland and Liang-Barsky, Clipping Polygons, problem with multiple components.	12
II	Two-Dimensional Transformations: Transformations and Matrices, Transformation Conventions, 2D Transformations, Homogeneous Coordinates and Matrix Representation of 2D Transformations, Translations and Homogeneous Coordinates, Rotation, Reflection, Scaling, Combined Transformation, Transformation of Points, Transformation of The Unit Square, Solid Body Transformations, Rotation About an Arbitrary Point, Reflection	12

	<p>through an Arbitrary Line, A Geometric Interpretation of Homogeneous Coordinates, The Window-to-Viewport Transformations.</p> <p>Three-Dimensional Transformations: Three-Dimensional Scaling, Three-Dimensional Shearing, Three-Dimensional Rotation, Three-Dimensional Reflection, Three-Dimensional Translation, Multiple Transformation, Rotation about an Arbitrary Axis in Space, Reflection through an Arbitrary Plane, Matrix Representation of 3D Transformations, Composition of 3D Transformations, Affine and Perspective Geometry, Perspective Transformations, Techniques for Generating Perspective Views, Vanishing Points, the Perspective Geometry and camera models, Orthographic Projections, Axonometric Projections, Oblique Projections, View volumes for projections.</p>	
III	<p>Viewing in 3D Stages in 3D viewing, Canonical View Volume (CVV), Specifying an Arbitrary 3D View, Examples of 3D Viewing, The Mathematics of Planar Geometric Projections, Combined transformation matrices for projections and viewing, Coordinate Systems and matrices, camera model and viewing pyramid.</p> <p>Light: Radiometry, Transport, Equation, Photometry Color: Colorimetry, Color Spaces, Chromatic Adaptation, Color Appearance</p>	12
IV	<p>Visible-Surface Determination: Techniques for efficient Visible-Surface Algorithms, Categories of algorithms, Back face removal, The z-Buffer Algorithm, Scan-line method, Painter's algorithms (depth sorting), Area sub-division method, BSP trees, Visible-Surface Ray Tracing, comparison of the methods.</p> <p>Plane Curves and Surfaces: Curve Representation, Nonparametric Curves, Parametric Curves, Parametric Representation of a Circle, Parametric Representation of an Ellipse, Parametric Representation of a Parabola, Parametric Representation of a Hyperbola, Representation of Space Curves, Cubic Splines, , Bezier Curves, B-spline Curves, B-spline Curve Fit, B-spline Curve Subdivision, Parametric Cubic Curves, Quadric Surfaces. Bezier Surfaces.</p>	12
V	<p>Computer Animation: Principles of Animation, Key framing, Deformations, Character Animation, Physics-Based Animation, Procedural Techniques, Groups of Objects.</p> <p>Image Manipulation and Storage: What is an Image? Digital image file formats, Image compression standard – JPEG, Image Processing - Digital image enhancement, contrast stretching, Histogram Equalization, smoothing and median Filtering.</p>	12

Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Computer Graphics - Principles and Practice	J. D. Foley, A. Van Dam, S. K. Feiner and J. F. Hughes	Pearson	2 nd	
2.	Steve Marschner, Peter Shirley	Fundamentals of Computer Graphics	CRC press	4 th	2016
3.	Computer Graphics	Hearn, Baker	Pearson	2 nd	
4.	Principles of Interactive Computer Graphics	William M. Newman and Robert F. Sproull	TMH	2 nd	
5.	Mathematical Elements for CG	D. F. Rogers, J. A. Adams	TMH	2 nd	

After completion of the course students are supposed to be able to:

CO 1. Understand the basics of computer graphics, different graphics systems and applications of computer graphics

CO 2. Compare various algorithms for scan conversion and filling of basic objects

CO 3. Use of geometric transformations on graphics objects and their application in composite form.

CO 4. Extract scene with different clipping methods and its transformation to graphics display device.

CO 5. Explore projections and visible surface detection techniques for display of 3D scene on 2D screen.

CO 6. Render projected objects to naturalize the scene in 2D view and use of illumination models

CO 7. Understand the core concepts and mathematical foundations of computer graphics

CO 8. Know the fundamental computer graphics algorithms and data structures

CO 9. Understand an overview of different modeling approaches and methods

CO 10. Apply basic shading and texture mapping techniques

CO 11. Understand light interaction with 3D scenes

CO 12. Explain the applications, areas, and graphic pipeline, display and hardcopy technologies.

CO 13. Apply and compare the algorithms for drawing 2D images also explain aliasing, anti-aliasing and half toning techniques.

CO 14. Discuss OpenGL application programming Interface and apply it for 2D & 3D computer graphics.

CO 15. Analyze and apply clipping algorithms and transformation on 2D images.

CO 16. Solve the problems on viewing transformations and explain the projection and hidden surface removal algorithms.

CO 17. Apply basic ray tracing algorithm, shading, shadows, curves and surfaces and also solve the problems of curves.

Java Programming Practical

B. Sc. (Information Technology)		Semester – III	
Course Name: Java Programming Practical		Course Code: USIT4P----	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	

List of Practical:	
1.	OOPs concepts in Java – 1
a.	Write a program to create a class and implement a default, overloaded and copy Constructor.
b.	Write a program to create a class and implement the concepts of Method Overloading
c.	Write a program to create a class and implement the concepts of Static methods
2.	OOPs concepts in Java – 2
a.	Write a program to implement the concepts of Inheritance and Method overriding
b.	Write a program to implement the concepts of Abstract classes and methods
c.	Write a program to implement the concept of interfaces
3.	Exceptions
a.	Write a program to raise built-in exceptions and raise them as per the requirements
b.	Write a program to define user defined exceptions and raise them as per the requirements
4.	Multithreading: Write a java application to demonstrate 5 bouncing balls of different colors using threads.
5.	JDBC
a.	Write a JDBC program that displays the data of a given table in a GUI Table.
b.	Write a JDBC program to Show the details of a specified product from a given table selected using Combobox.
c.	Write a GUI application to Navigate forward and reverse result set data.
6.	Swing
a.	Create a swing application that randomly changes color on button click.
b.	Create a Swing application to demonstrate use of TextArea using scrollpane to show content of text file in textarea selected using file chooser.
c.	Create a Swing application to demonstrate use of scrollpane to change its color selected using colour chooser.
7.	Layouts: Write programs for the following layouts:

a.	Flow Layout
b.	Grid Layout
c.	Border Layout
8.	Events: Write programs to demonstrate the following events:
a.	ActionEvent
b.	MouseEvent
c.	KeyEvent
d.	SelectionEvent
e.	FocusEvent
9.	Demonstrate the use of Adapter Class in Event Handling
10.	Demonstrate the use of Anonymous Inner Class in Event Handling

Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Core Java 8 for Beginners	Vaishali Shah, Sharnam Shah	SPD	1st	2015
2.	Java: The Complete Reference	Herbert Schildt	McGraw Hill	9th	2014
3.	Murach's beginning Java with Net Beans	Joel Murach , Michael Urban	SPD	1st	2016
4.	Core Java, Volume I: Fundamentals	Hortsman	Pearson	9th	2013
5.	Core Java, Volume II: Advanced Features	Gary Cornell and Hortsman	Pearson	8th	2008
6.	Core Java: An Integrated Approach	R. Nageswara Rao	DreamTech	1st	2008

Introduction to Embedded Systems Practical

B. Sc. (Information Technology)		Semester – IV	
Course Name: Introduction to Embedded Systems Practical		Course Code: USIT4P2	
Periods per week 1 Period is 50 minutes	Lectures per week	3	
		Hours	Marks
Evaluation System	Practical Examination	2½	50

List of Practical: All practicals to be done online using TinkerCAD	
1.	Introduction to Arduino
	Introduction to Arduino circuits and breadboarding
	Blinking of LEDs
2.	Program using Light Sensitive Sensors
3.	Program using temperature sensors
4.	Programs using humidity sensors
5.	Programs using Line tracking sensors
6.	Programs using Ultrasonic Sensors
7.	Programs using digital infrared motion sensors
8.	Programs using gas sensors
9.	Programs using servo motors
10.	Programs making Joystick with Arduino

Computer Oriented Statistical Techniques Practical

B. Sc. (Information Technology)		Semester – IV	
Course Name: Computer Oriented Statistical Techniques Practical		Course Code: USIT4P3	
Periods per week 1 Period is 50 minutes	Lectures per week	3	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
List of Practical			
1.	Using R/Python execute the basic commands, array, list and frames.		
2.	Create a Matrix using R/Python and Perform the operations addition, inverse, transpose and multiplication operations.		
3.	Using R/Python Execute the statistical functions: mean, median, mode, quartiles, range, inter quartile range histogram		
4.	Using R/Python import the data from Excel / .CSV file and Perform the above functions.		
5.	Using R/Python import the data from Excel / .CSV file and Calculate the standard deviation, variance, co-variance.		
6.	Using R/Python import the data from Excel / .CSV file and draw the skewness.		
7.	Import the data from Excel / .CSV and perform the hypothesis testing.		
8.	Import the data from Excel / .CSV and perform the Chi-squared Test.		
9.	Using R/Python perform the binomial and normal distribution on the data.		
10.	a. Perform the Linear Regression using R/Python.		
	b. Compute the Least squares means using R/Python.		
	c. Compute the Linear Least Square Regression using R/Python		

Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	A Practical Approach to R Tool	R.B. Patil, H.J. Dand and R. Dahake	SPD	First	2011
2.	STATISTICS	Murray R. Spiegel, Larry J. Stephens.	McGRAW –HILL INTERNATIONAL	FOURTH	2006

Software Engineering Practical

B. Sc. (Information Technology)		Semester – IV	
Course Name: Software Engineering Practical		Course Code: USIT4P4	
Periods per week 1 Period is 50 minutes	Lectures per week	3	
		Hours	Marks
Evaluation System	Practical Examination	2½	50

List of Practical (To be executed using Star UML or any similar software)

1.	Study and implementation of class diagrams.
2.	Study and implementation of Use Case Diagrams.
3.	Study and implementation of Entity Relationship Diagrams.
4.	Study and implementation of Sequence Diagrams.
5.	Study and implementation of State Transition Diagrams.
6.	Study and implementation of Data Flow Diagrams.
7.	Study and implementation of Collaboration Diagrams.
8.	Study and implementation of Activity Diagrams.
9.	Study and implementation of Component Diagrams.
10.	Study and implementation of Deployment Diagrams.

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
3.	Object - Oriented Modeling and Design	Michael Blaha, James Rumbaugh	Pearson		2011
4.	Learning UML 2. 0	Kim Hamilton, Russ Miles	O'Reilly Media		2006
5.	The unified modeling language user guide	Grady Booch, James Rumbaugh, Ivar Jacobson	Addison-Wesley		2005
6.	UML A Beginners Guide	Jason T. Roff	McGraw Hill Professional		2003

Computer Graphics and Animation

B. Sc. (Information Technology)		Semester – IV	
Course Name: Computer Graphics and Animation		Course Code: USIT4P5	
Periods per week 1 Period is 50 minutes	Lectures per week	3	
		Hours	Marks
Evaluation System	Practical Examination	2½	50

List of Practical	
1.	Solve the following:
a.	Study and enlist the basic functions used for graphics in C / C++ / Python language. Give an example for each of them.
b.	Draw a co-ordinate axis at the center of the screen.
2.	Solve the following:
a.	Divide your screen into four region, draw circle, rectangle, ellipse and half ellipse in each region with appropriate message.
b.	Draw a simple hut on the screen.
3.	Draw the following basic shapes in the center of the screen :
	i. Circle ii. Rectangle iii. Square iv. Concentric Circles v. Ellipse vi. Line
4.	Solve the following:
a.	Develop the program for DDA Line drawing algorithm.
b.	Develop the program for Bresenham's Line drawing algorithm.
5.	Solve the following:
a.	Develop the program for the mid-point circle drawing algorithm.
b.	Develop the program for the mid-point ellipse drawing algorithm.
6.	Solve the following:
a.	Write a program to implement 2D scaling.
b.	Write a program to perform 2D translation
7.	Solve the following:
a.	Perform 2D Rotation on a given object.
b.	Program to create a house like figure and perform the following operations. i. Scaling about the origin followed by translation. ii. Scaling with reference to an arbitrary point. iii. Reflect about the line $y = mx + c$.

8.	Solve the following:
a.	Write a program to implement Cohen-Sutherland clipping.
b.	Write a program to implement Liang - Barsky Line Clipping Algorithm
9.	Solve the following:
a.	Write a program to fill a circle using Flood Fill Algorithm.
b.	Write a program to fill a circle using Boundary Fill Algorithm.
10.	Solve the following:
a.	Develop a simple text screen saver using graphics functions.
b.	Perform smiling face animation using graphic functions.
c.	Draw the moving car on the screen.

Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Computer Graphics - Principles and Practice	J. D. Foley, A. Van Dam, S. K. Feiner and J. F. Hughes	Pearson Education	Second Edition	
2.	Steve Marschner, Peter Shirley	Fundamentals of Computer Graphics	CRC press	Fourth Edition	2016
3.	Computer Graphics	Hearn, Baker	Pearson Education	Second	
4.	Principles of Interactive Computer Graphics	William M. Newman and Robert F. Sproull	Tata McGraw Hill	Second	

Evaluation Scheme:**1. Internal Evaluation (25 Marks).****i. Test: 1 Class test of 20 marks. (Can be taken online)**

Q	Attempt <u>any four</u> of the following:	20
a.		
b.		
c.		
d.		
e.		
f.		

ii. 5 marks: Active participation in the class, overall conduct, attendance.**2. External Examination: (75 marks)**

	All questions are compulsory	
Q1	(Based on Unit 1) Attempt <u>any three</u> of the following:	15
a.		
b.		
c.		
d.		
e.		
f.		
Q2	(Based on Unit 2) Attempt <u>any three</u> of the following:	15
Q3	(Based on Unit 3) Attempt <u>any three</u> of the following:	15
Q4	(Based on Unit 4) Attempt <u>any three</u> of the following:	15
Q5	(Based on Unit 5) Attempt <u>any three</u> of the following:	15

3. Practical Exam: 50 marks

A Certified copy journal is essential to appear for the practical examination.

1.	Practical Question 1	20
2.	Practical Question 2	20
3.	Journal	5
4.	Viva Voce	5

OR

1.	Practical Question	40
2.	Journal	5
3.	Viva Voce	5

UNIVERSITY OF MUMBAI

No. UG/76 of 2018-19

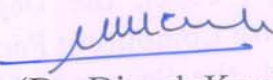
CIRCULAR:-

Attention of the Principals of the affiliated Colleges and Directors of the recognized Institutions in Science & Technology Faculty is invited to this office Circular Nos. UG/66 of 2012-13, dated 12th September, 2012 relating to syllabus of the Bachelor of Science (B.Sc.) programme in the course of Information Technology.

They are hereby informed that the recommendations made by the Ad-hoc Board of Studies in Information Technology at its meeting held on 8th June, 2018 have been accepted by the Academic Council at its meeting held on 14th June, 2018 vide item No. 4.49 and that in accordance therewith, the revised syllabus as per the (CBCS) for the T.Y.B.Sc. in Information Technology (Sem – V & VI), has been brought into force with effect from the academic year 2018-19, accordingly. (The same is available on the University's website www.mu.ac.in).

MUMBAI – 400 032

To 6th June, 2018
July


(Dr. Dinesh Kamble)
I/c REGISTRAR

The Principals of the affiliated Colleges & Directors of the recognized Institutions in Science & Technology Faculty. (Circular No. UG/334 of 2017-18 dated 9th January, 2018.)

A.C./4.49/14/06/2018


No. UG/ 76 -A of 2018

MUMBAI-400 032

6th June, 2018
July

Copy forwarded with Compliments for information to:-

- 1) The I/c Dean, Faculty of Science & Technology,
- 2) The Chairman, Ad-hoc Board of Studies in Information Technology,
- 3) The Director, Board of Examinations and Evaluation,
- 4) The Director, Board of Students Development,
- 5) The Co-Ordinator, University Computerization Centre,


(Dr. Dinesh Kamble)
I/c REGISTRAR

Academic Council 14/06/2018

Item No:4.49

UNIVERSITY OF MUMBAI



Syllabus for T.Y.B.Sc.

Programme: B.Sc.

Subject: Information Technology

(Choice Based Credit System)

(with effect from the academic year 2018 – 2019)

Semester – 5			
Course Code	Course Type	Course Title	Credits
USIT501	Skill Enhancement Course	Software Project Management	2
USIT502	Skill Enhancement Course	Internet of Things	2
USIT503	Skill Enhancement Course	Advanced Web Programming	2
USIT504	Discipline Specific Elective (Any One)	Artificial Intelligence	2
USIT505		Linux System Administration	
USIT506	Discipline Specific Elective (Any One)	Enterprise Java	2
USIT507		Next Generation Technologies	
USIT5P1	Skill Enhancement Course Practical	Project Dissertation	2
USIT5P2	Skill Enhancement Course Practical	Internet of Things Practical	2
USIT5P3	Skill Enhancement Course Practical	Advanced Web Programming Practical	2
USIT5P4	Discipline Specific Elective Practical (Any One)*	Artificial Intelligence Practical	2
USIT5P5		Linux Administration Practical	
USIT5P6	Discipline Specific Elective Practical (Any One)*	Enterprise Java Practical	2
USIT5P7		Next Generation Technologies Practical	
Total Credits			20

(All the practical mentioned in the syllabi are compulsory as per the courses chosen)

Semester – 6			
Course Code	Course Type	Course Title	Credits
USIT601	Skill Enhancement Course	Software Quality Assurance	2
USIT602	Skill Enhancement Course	Security in Computing	2
USIT603	Skill Enhancement Course	Business Intelligence	2
USIT604	Discipline Specific Elective (Any One)	Principles of Geographic Information Systems	2
USIT605		Enterprise Networking	
USIT606	Discipline Specific Elective (Any One)	IT Service Management	2
USIT607		Cyber Laws	
USIT6P1	Skill Enhancement Course Practical	Project Implementation	2
USIT6P2	Skill Enhancement Course Practical	Security in Computing Practical	2
USIT6P3	Skill Enhancement Course Practical	Business Intelligence Practical	2
USIT6P4	Discipline Specific Elective Practical (Any One)*	Principles of Geographic Information Systems Practical	2
USIT6P5		Enterprise Networking Practical	
USIT6P6	Skill Enhancement Course Practical	Advanced Mobile Programming	2
Total Credits			20

***The choice of Practical course is based on the theory Course. For Semester V, USIT504, USIT505, USIT506 and USIT507, the practical courses are USIT5P4, USIT5P5, USIT5P6, USIT5P7. For Semester VI, USIT604, USIT605 the practical courses are USIT6P4, USIT6P5 respectively. Practical Course USIT6P6 is compulsory.**

SEMESTER V

B. Sc. (Information Technology)		Semester – V	
Course Name: Software Project Management		Course Code: USIT501	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Unit	Details	Lectures
I	<p>Introduction to Software Project Management: Introduction, Why is Software Project Management Important? What is a Project? Software Projects versus Other Types of Project, Contract Management and Technical Project Management, Activities Covered by Software Project Management, Plans, Methods and Methodologies, Some Ways of Categorizing Software Projects, Project Charter, Stakeholders, Setting Objectives, The Business Case, Project Success and Failure, What is Management? Management Control, Project Management Life Cycle, Traditional versus Modern Project Management Practices.</p> <p>Project Evaluation and Programme Management: Introduction, Business Case, Project Portfolio Management, Evaluation of Individual Projects, Cost–benefit Evaluation Techniques, Risk Evaluation, Programme Management, Managing the Allocation of Resources within Programmes, Strategic Programme Management, Creating a Programme, Aids to Programme Management, Some Reservations about Programme Management, Benefits Management.</p> <p>An Overview of Project Planning: Introduction to Step Wise Project Planning, Step 0: Select Project, Step 1: Identify Project Scope and Objectives, Step 2: Identify Project Infrastructure, Step 3: Analyse Project Characteristics, Step 4: Identify Project Products and Activities, Step 5: Estimate Effort for Each Activity, Step 6: Identify Activity Risks, Step 7: Allocate Resources, Step 8: Review/Publicize Plan, Steps 9 and 10: Execute Plan/Lower Levels of Planning</p>	12
II	<p>Selection of an Appropriate Project Approach: Introduction, Build or Buy? Choosing Methodologies and Technologies, Software Processes and Process Models, Choice of Process Models, Structure versus Speed of Delivery, The Waterfall Model, The Spiral Model, Software Prototyping, Other Ways of Categorizing Prototypes, Incremental Delivery, Atern/Dynamic Systems Development Method, Rapid Application Development, Agile Methods, Extreme Programming (XP), Scrum, Lean Software Development, Managing Iterative Processes, Selecting the Most Appropriate Process Model.</p> <p>Software Effort Estimation: Introduction, Where are the Estimates Done? Problems with Over- and Under-Estimates, The Basis for Software Estimating, Software Effort Estimation Techniques, Bottom-up Estimating, The Top-down Approach and Parametric Models, Expert Judgement, Estimating by Analogy, Albrecht Function Point</p>	12

	Analysis, Function Points Mark II, COSMIC Full Function Points, COCOMO II: A Parametric Productivity Model, Cost Estimation, Staffing Pattern, Effect of Schedule Compression, Capers Jones Estimating Rules of Thumb.	
III	<p>Activity Planning: Introduction, Objectives of Activity Planning, When to Plan, Project Schedules, Projects and Activities, Sequencing and Scheduling Activities, Network Planning Models, Formulating a Network Model, Adding the Time Dimension, The Forward Pass, Backward Pass, Identifying the Critical Path, Activity Float, Shortening the Project Duration, Identifying Critical Activities, Activity-on-Arrow Networks.</p> <p>Risk Management: Introduction, Risk, Categories of Risk, Risk Management Approaches, A Framework for Dealing with Risk, Risk Identification, Risk Assessment, Risk Planning, Risk Management, Evaluating Risks to the Schedule, Boehm's Top 10 Risks and Counter Measures, Applying the PERT Technique, Monte Carlo Simulation, Critical Chain Concepts.</p> <p>Resource Allocation: Introduction, Nature of Resources, Identifying Resource Requirements, Scheduling Resources, Creating Critical Paths, Counting the Cost, Being Specific, Publishing the Resource Schedule, Cost Schedules, Scheduling Sequence.</p>	12
IV	<p>Monitoring and Control: Introduction, Creating the Framework, Collecting the Data, Review, Visualizing Progress, Cost Monitoring, Earned Value Analysis, Prioritizing Monitoring, Getting the Project Back to Target, Change Control, Software Configuration Management (SCM).</p> <p>Managing Contracts: Introduction, Types of Contract, Stages in Contract Placement, Typical Terms of a Contract, Contract Management, Acceptance.</p> <p>Managing People in Software Environments: Introduction, Understanding Behaviour, Organizational Behaviour: A Background, Selecting the Right Person for the Job, Instruction in the Best Methods, Motivation, The Oldham-Hackman Job Characteristics Model, Stress, Stress Management, Health and Safety, Some Ethical and Professional Concerns.</p>	12
V	<p>Working in Teams: Introduction, becoming a Team, Decision Making, Organization and Team Structures, Coordination Dependencies, Dispersed and Virtual Teams, Communication Genres, Communication Plans, Leadership.</p> <p>Software Quality: Introduction, The Place of Software Quality in Project Planning, Importance of Software Quality, Defining Software Quality, Software Quality Models, ISO 9126, Product and Process Metrics, Product versus Process Quality Management, Quality Management Systems, Process Capability Models, Techniques to Help Enhance Software Quality, Testing, Software Reliability, Quality Plans.</p> <p>Project Closeout: Introduction, Reasons for Project Closure, Project</p>	12

	Closure Process, Performing a Financial Closure, Project Closeout Report.	
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Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Software Project Management	Bob Hughes, Mike Cotterell, Rajib Mall	TMH	6 th	2018
2.	Project Management and Tools & Technologies – An overview	Shailesh Mehta	SPD	1st	2017
3.	Software Project Management	Walker Royce	Pearson		2005

Course Name: Internet of Things		Course Code: USIT502	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Unit	Details	Lectures
I	<p>The Internet of Things: An Overview: The Flavour of the Internet of Things, The “Internet” of “Things”, The Technology of the Internet of Things, Enchanted Objects, Who is Making the Internet of Things?</p> <p>Design Principles for Connected Devices: Calm and Ambient Technology, Magic as Metaphor, Privacy, Keeping Secrets, Whose Data Is It Anyway? Web Thinking for Connected Devices, Small Pieces, Loosely Joined, First-Class Citizens on The Internet, Graceful Degradation, Affordances.</p> <p>Internet Principles: Internet Communications: An Overview, IP, TCP, The IP Protocol Suite (TCP/IP), UDP, IP Addresses, DNS, Static IP Address Assignment, Dynamic IP Address Assignment, IPv6, MAC Addresses, TCP and UDP Ports, An Example: HTTP Ports, Other Common Ports, Application Layer Protocols, HTTP, HTTPS: Encrypted HTTP, Other Application Layer Protocols.</p>	12
II	<p>Thinking About Prototyping: Sketching, Familiarity, Costs versus Ease of Prototyping, Prototypes and Production, Changing Embedded Platform, Physical Prototypes and Mass Personalisation, climbing into the Cloud, Open Source versus Closed Source, Why Closed? Why Open? Mixing Open and Closed Source, Closed Source for Mass Market Projects, Tapping into the Community.</p> <p>Prototyping Embedded Devices: Electronics, Sensors, Actuators, Scaling Up the Electronics, Embedded Computing Basics, Microcontrollers, System-on-Chips, Choosing Your Platform, Arduino, developing on the Arduino, Some Notes on the Hardware, Openness, Raspberry Pi, Cases and Extension Boards, Developing on the Raspberry Pi, Some Notes on the Hardware, Openness.</p>	12
III	<p>Prototyping the Physical Design: Preparation, Sketch, Iterate, and Explore, Nondigital Methods, Laser Cutting, Choosing a Laser Cutter, Software, Hinges and Joints, 3D Printing, Types of 3D Printing, Software, CNC Milling, Repurposing/Recycling.</p> <p>Prototyping Online Components: Getting Started with an API, Mashing Up APIs, Scraping, Legalities, writing a New API, Clockodillo, Security, implementing the API, Using Curl to Test, Going Further, Real-Time Reactions, Polling, Comet, Other Protocols, MQ Telemetry Transport, Extensible Messaging and Presence Protocol, Constrained Application Protocol.</p>	12
IV	Techniques for Writing Embedded Code: Memory Management,	12

	Types of Memory, Making the Most of Your RAM, Performance and Battery Life, Libraries, Debugging. Business Models: A Short History of Business Models, Space and Time, From Craft to Mass Production, The Long Tail of the Internet, Learning from History, The Business Model Canvas, Who Is the Business Model For? Models, Make Thing, Sell Thing, Subscriptions, Customisation, be a Key Resource, Provide Infrastructure: Sensor Networks, take a Percentage, Funding an Internet of Things Startup, Hobby Projects and Open Source, Venture Capital, Government Funding, Crowdfunding, Lean Startups.	
V	Moving to Manufacture: What Are You Producing? Designing Kits, Designing Printed circuit boards, Software Choices, The Design Process, Manufacturing Printed Circuit Boards, Etching Boards, Milling Boards. Assembly, Testing, Mass-Producing the Case and Other Fixtures, Certification, Costs, Scaling Up Software, Deployment, Correctness and Maintainability, Security, Performance, User Community. Ethics: Characterizing the Internet of Things, Privacy, Control, Disrupting Control, Crowdsourcing, Environment, Physical Thing, Electronics, Internet Service, Solutions, The Internet of Things as Part of the Solution, Cautious Optimism, The Open Internet of Things Definition.	12

Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Designing the Internet of Things	Adrian McEwen, Hakim Cassimally	WILEY	First	2014
2.	Internet of Things – Architecture and Design	Raj Kamal	McGraw Hill	First	2017
3.	Getting Started with the Internet of Things	Cuno Pfister	O'Reilly	Sixth	2018
4.	Getting Started with Raspberry Pi	Matt Richardson and Shawn Wallace	SPD	Third	2016

B. Sc. (Information Technology)		Semester – V	
Course Name: Advanced Web Programming		Course Code: USIT503	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Unit	Details	Lectures
I	<p>Introducing .NET: The .NET Framework, C#, VB, and the .NET Languages, The Common Language Runtime, The .NET Class Library.</p> <p>The C# Language: C# Language Basics, Variables and Data Types, Variable Operations, Object-Based Manipulation, Conditional Logic, Loops, Methods.</p> <p>Types, Objects, and Namespaces: The Basics About Classes, Building a Basic Class, Value Types and Reference Types, Understanding Namespaces and Assemblies, Advanced Class Programming.</p>	12
II	<p>Web Form Fundamentals: Writing Code, Using the Code-Behind Class, Adding Event Handlers, Understanding the Anatomy of an ASP.NET Application, Introducing Server Controls, Using the Page Class, Using Application Events, Configuring an ASP.NET Application.</p> <p>Form Controls: Stepping Up to Web Controls, Web Control Classes, List Controls, Table Controls, Web Control Events and AutoPostBack, Validation, Understanding Validation, Using the Validation Controls, Rich Controls, The Calendar, The AdRotator, Pages with Multiple Views, User Controls and Graphics, User Controls, Dynamic Graphics, The Chart Control, Website Navigation: Site Maps, URL Mapping and Routing, The SiteMapPath Control, The TreeView Control, The Menu Control.</p>	12
III	<p>Error Handling, Logging, and Tracing: Avoiding Common Errors, Understanding Exception Handling, Handling Exceptions, Throwing Your Own Exceptions, Using Page Tracing</p> <p>State Management: Understanding the Problem of State, Using View State, Transferring Information Between Pages, Using Cookies, Managing Session State, Configuring Session State, Using Application State, Comparing State Management Options</p> <p>Styles, Themes, and Master Pages: Styles, Themes, Master Page Basics, Advanced Master Pages,</p>	12
IV	<p>ADO.NET Fundamentals: Understanding Databases, Configuring Your Database, Understanding SQL Basics, Understanding the Data Provider Model, Using Direct Data Access, Using Disconnected Data Access.</p> <p>Data Binding: Introducing Data Binding, Using Single-Value Data Binding, Using Repeated-Value Data Binding, Working with Data</p>	12

	Source Controls, The Data Controls: The GridView, Formatting the GridView, selecting a GridView Row, Editing with the GridView, Sorting and Paging the GridView, Using GridView Templates, The DetailsView and FormView	
V	XML: XML Explained, The XML Classes, XML Validation, XML Display and Transforms. Security Fundamentals: Understanding Security Requirements, Authentication and Authorization, Forms Authentication, Windows Authentication. ASP.NET AJAX: Understanding Ajax, Using Partial Refreshes, Using Progress Notification, Implementing Timed Refreshes, Working with the ASP.NET AJAX Control Toolkit.	12

Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Beginning ASP.NET 4.5 in C#	Matthew MacDonald	Apress		2012
2.	C# 2015	Anne Bohem and Joel Murach	Murach	Third	2016
3.	Murach's ASP.NET 4.6 Web Programming in C#2015	Mary Delamater and Anne Bohem	SPD	Sixth	2016
4.	ASP.NET 4.0 programming	J. Kanjilal	Tata McGraw-Hill		2011
5.	Programming ASP.NET	D.Esposito	Microsoft Press (Dreamtech)		2011
6.	Beginning Visual C# 2010	K. Watson, C. Nagel, J.H Padderson, J.D. Reid, M.Skinner	Wrox (Wiley)		2010

B. Sc. (Information Technology)		Semester – V	
Course Name: Artificial Intelligence		Course Code: USIT504 (Elective I)	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Unit	Details	Lectures
I	Introduction: What is Artificial Intelligence? Foundations of AI, history, the state of art AI today. Intelligent Agents: agents and environment, good behavior, nature of environment, the structure of agents.	12
II	Solving Problems by Searching: Problem solving agents, examples problems, searching for solutions, uninformed search, informed search strategies, heuristic functions. Beyond Classical Search: local search algorithms, searching with non-deterministic action, searching with partial observations, online search agents and unknown environments.	12
III	Adversarial Search: Games, optimal decisions in games, alpha-beta pruning, stochastic games, partially observable games, state-of-the-art game programs. Logical Agents: Knowledge base agents, The Wumpus world, logic, propositional logic, propositional theorem proving, effective propositional model checking, agents based on propositional logic.	12
IV	First Order Logic: Syntax and semantics, using First Order Logic, Knowledge engineering in First Order Logic. Inference in First Order Logic: propositional vs. First Order, unification and lifting, forward and backward chaining, resolution.	12
V	Planning: Definition of Classical Planning, Algorithms for planning as state space search, planning graphs, other classical planning approaches, analysis of planning approaches, Time, Schedules and resources, hierarchical planning, Planning and Acting in Nondeterministic Domains, multiagent planning, Knowledge Representation: Categories and Objects, events, mental events and objects, reasoning systems for categories, reasoning with default information, Internet shopping world	12

Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Artificial Intelligence: A Modern Approach	Stuart Russel and Peter Norvig	Pearson	3 rd	2015

2.	A First Course in Artificial Intelligence	Deepak Khemani	TMH	First	2017
3.	Artificial Intelligence: A Rational Approach	Rahul Deva	Shroff publishers	1 st	2018
4.	Artificial Intelligence	Elaine Rich, Kevin Knight and Shivashankar Nair	TMH	3 rd	2009
5.	Artificial Intelligence & Soft Computing for Beginners	Anandita Das Bhattacharjee	SPD	1 st	2013

B. Sc. (Information Technology)		Semester – V	
Course Name: Linux System Administration		Course Code: USIT505 (Elective I)	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Unit	Details	Lectures
I	<p>Introduction to Red Hat Enterprise Linux: Linux, Open Source and Red Hat, Origins of Linux, Distributions, Duties of Linux System Administrator.</p> <p>Command Line: Working with the Bash Shell, Getting the Best of Bash, Useful Bash Key Sequences, Working with Bash History, Performing Basic File System Management Tasks, Working with Directories, Piping and Redirection, Finding Files</p> <p>System Administration Tasks: Performing Job Management Tasks, System and Process Monitoring and Management, Managing Processes with ps, Sending Signals to Processes with the kill Command, using top to Show Current System Activity, Managing Process Niceness, Scheduling Jobs, Mounting Devices, Working with Links, Creating Backups, Managing Printers, Setting Up System Logging, Setting Up Rsyslog, Common Log Files, Setting Up Logrotate</p> <p>Managing Software: Understanding RPM, Understanding Meta Package Handlers, Creating Your Own Repositories, Managing Repositories, Installing Software with Yum, Querying Software, Extracting Files from RPM Packages</p>	12
II	<p>Configuring and Managing Storage: Understanding Partitions and Logical Volumes, Creating Partitions, Creating File Systems, File Systems Overview, Creating File Systems, Changing File System Properties, Checking the File System Integrity, Mounting File Systems Automatically Through fstab, Working with Logical Volumes, Creating Logical Volumes, Resizing Logical Volumes, Working with Snapshots, Replacing Failing Storage Devices, Creating Swap Space, Working with Encrypted Volumes</p> <p>Connecting to the Network: Understanding NetworkManager, Working with Services and Runlevels, Configuring the Network with NetworkManager, Working with system-config-network, NetworkManager Configuration Files, Network Service Scripts, Networking from the Command Line, Troubleshooting Networking, Setting Up IPv6, Configuring SSH, Enabling the SSH Server, Using the SSH Client, Using PuTTY on Windows Machines, Configuring Key-Based SSH Authentication, Using Graphical Applications with SSH, Using SSH Port Forwarding, Configuring VNC Server Access</p>	12

	<p>Working with Users, Groups, and Permissions: Managing Users and Groups, Commands for User Management, Managing Passwords, Modifying and Deleting User Accounts, Configuration Files, Creating Groups, Using Graphical Tools for User, and Group Management, Using External Authentication Sources, the Authentication Process, sssd, nsswitch, Pluggable Authentication Modules, Managing Permissions, the Role of Ownership, Basic Permissions: Read, Write, and Execute, Advanced Permissions, Working with Access Control Lists, Setting Default Permissions with umask, Working with Attributes</p>	
III	<p>Securing Server with iptables: Understanding Firewalls, Setting Up a Firewall with system-config-firewall, Allowing Services, Trusted Interfaces, Masquerading, Configuration Files, Setting Up a Firewall with iptables, Tables, Chains, and Rules, Composition of Rule, Configuration Example, Advanced iptables Configuration, Configuring Logging, The Limit Module, Configuring NAT</p> <p>Setting Up Cryptographic Services: Introducing SSL, Proof of Authenticity: The Certificate Authority, Managing Certificates with openssl, Creating a Signing Request, Working with GNU Privacy Guard, Creating GPG Keys, Key Transfer, Managing GPG Keys, Encrypting Files with GPG, GPG Signing, Signing RPM Files</p> <p>Configuring Server for File Sharing: What is NFS? Advantages and Disadvantages of NFS, Configuring NFS4, Setting Up NFSv4, Mounting an NFS Share, Making NFS Mounts Persistent, Configuring Automount, Configuring Samba, Setting Up a Samba File Server, Samba Advanced Authentication Options, Accessing Samba Shares, Offering FTP Services.</p>	12
IV	<p>Configuring DNS and DHCP: Introduction to DNS, The DNS Hierarchy, DNS Server Types, The DNS Lookup Process, DNS Zone Types, Setting Up a DNS Server, Setting Up a Cache-Only Name Server, Setting Up a Primary Name Server, Setting Up a Secondary Name Server, Understanding DHCP, Setting Up a DHCP Server</p> <p>Setting Up a Mail Server: Using the Message Transfer Agent, the Mail Delivery Agent, the Mail User Agent, Setting Up Postfix as an SMTP Server, Working with Mutt, Basic Configuration, Internet Configuration, Configuring Dovecot for POP and IMAP</p> <p>Configuring Apache on Red Hat Enterprise Linux: Configuring the Apache Web Server, creating a Basic Website, Understanding the Apache Configuration Files, Apache Log Files, Working with Virtual Hosts, Securing the Web Server with TLS Certificates, Configuring Authentication, Setting Up Authentication with .htpasswd, Configuring LDAP Authentication, Setting Up MySQL</p>	12

V	<p>Introducing Bash Shell Scripting: Introduction, Elements of a Good Shell Script, Executing the Script, Working with Variables and Input, Understanding Variables, Variables, Subshells, and Sourcing, Working with Script Arguments, Asking for Input, Using Command Substitution, Substitution Operators, Changing Variable Content with Pattern Matching, Performing Calculations, Using Control Structures, Using if...then...else, Using case, Using while, Using until, Using for, Configuring booting with GRUB.</p> <p>High-Availability Clustering: High-Availability Clustering, The Workings of High Availability, High-Availability Requirements, Red Hat High-Availability Add-on Software, Components, Configuring Cluster-Based Services, Setting Up Bonding, Setting Up Shared Storage, Installing the Red Hat High Availability Add-On, Building the Initial State of the Cluster, Configuring Additional Cluster Properties, Configuring a Quorum Disk, Setting Up Fencing, Creating Resources and Services, Troubleshooting a Nonoperational Cluster, Configuring GFS2 File Systems</p> <p>Setting Up an Installation Server: Configuring a Network Server as an Installation Server, Setting Up a TFTP and DHCP Server for PXE Boot, Installing the TFTP Server, Configuring DHCP for PXE Boot, Creating the TFTP PXE Server Content, creating a Kickstart File, Using a Kickstart File to Perform an Automated, Installation, Modifying the Kickstart File with, system-config-kickstart, Making Manual Modifications to the Kickstart File</p>	12
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Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Red Hat Enterprise Linux6 Administration	Sander van Vugt	John Wiley and Sons		2013
2.	Red hat Linux Networking and System Administration	Terry Collings and Kurt Wall	Wiley	3 rd	
3.	Linux Administration: A Beginner's Guide	Wale Soyinka	TMH	Fifth Edition	

B. Sc. (Information Technology)		Semester – V	
Course Name: Enterprise Java		Course Code: USIT506 (Elective II)	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Unit	Details	Lectures
I	<p>Understanding Java EE: What is an Enterprise Application? What is Java Enterprise Edition? Java EE Technologies, Java EE evolution, Glassfish server</p> <p>Java EE Architecture, Server and Containers: Types of System Architecture, Java EE Server, Java EE Containers.</p> <p>Introduction to Java Servlets: The Need for Dynamic Content, Java Servlet Technology, Why Servlets? What can Servlets do?</p> <p>Servlet API and Lifecycle: Java Servlet API, The Servlet Skeleton, The Servlet Life Cycle, A Simple Welcome Servlet</p> <p>Working with Servlets: Getting Started, Using Annotations Instead of Deployment Descriptor.</p> <p>Working with Databases: What is JDBC? JDBC Architecture, Accessing Database, The Servlet GUI and Database Example.</p>	12
II	<p>Request Dispatcher: RequestDispatcher Interface, Methods of RequestDispatcher, RequestDispatcher Application.</p> <p>COOKIES: Kinds of Cookies, Where Cookies Are Used? Creating Cookies Using Servlet, Dynamically Changing the Colors of A Page</p> <p>SESSION: What Are Sessions? Lifecycle of HttpSession, Session Tracking With Servlet API, A Servlet Session Example</p> <p>Working with Files: Uploading Files, Creating an Upload File Application, Downloading Files, Creating a Download File Application.</p> <p>Working with Non-Blocking I/O: Creating a Non-Blocking Read Application, Creating The Web Application, Creating Java Class, Creating Servlets, Retrieving The File, Creating index.jsp</p>	12
III	<p>Introduction To Java Server Pages: Why use Java Server Pages? Disadvantages Of JSP, JSP vs Servlets, Lifecycle of a JSP Page, How does a JSP function? How does JSP execute? About Java Server Pages</p> <p>Getting Started With Java Server Pages: Comments, JSP Document, JSP Elements, JSP GUI Example.</p> <p>Action Elements: Including other Files, Forwarding JSP Page to Another Page, Passing Parameters for other Actions, Loading a Java Bean.</p> <p>Implicit Objects, Scope and EL Expressions: Implicit Objects, Character Quoting Conventions,</p>	12

	<p>UnifiedExpressionLanguage[UnifiedEl], ExpressionLanguage.</p> <p>Java Server Pages Standard Tag Libraries:</p> <p>What is wrong in using JSP Scriptlet Tags?</p> <p>How JSTL Fixes JSP Scriptlet's Shortcomings? Disadvantages Of JSTL, Tag Libraries.</p>	
IV	<p>Introduction To Enterprise Java Beans: Enterprise Bean Architecture, Benefits of Enterprise Bean, Types of Enterprise Bean, Accessing Enterprise Beans, Enterprise Bean Application, Packaging Enterprise Beans</p> <p>Working with Session Beans: When to use Session Beans? Types of Session Beans, Remote and Local Interfaces, Accessing Interfaces, Lifecycle of Enterprise Beans, Packaging Enterprise Beans, Example of Stateful Session Bean, Example of Stateless Session Bean, Example of Singleton Session Beans.</p> <p>Working with Message Driven Beans: Lifecycle of a Message Driven Bean, Uses of Message Driven Beans, The Message Driven Beans Example.</p> <p>Interceptors: Request and Interceptor, Defining An Interceptor, Around Invoke Method, Applying Interceptor, Adding An Interceptor To An Enterprise Bean, Build and Run the Web Application.</p> <p>Java Naming and Directory Interface: What is Naming Service? What is Directory Service? What is Java Naming and Directory interface? Basic Lookup, JNDI Namespace in Java EE, Resources and JNDI, DataSource Resource Definition in Java EE.</p>	12
V	<p>Persistence, Object/Relational Mapping And JPA: What is Persistence? Persistence in Java, Current Persistence Standards in Java, Why another Persistence Standards? Object/Relational Mapping,</p> <p>Introduction to Java Persistence API: The Java Persistence API, JPA, ORM, Database and the Application, Architecture of JPA, How JPA Works? JPA Specifications.</p> <p>Writing JPA Application: Application Requirement Specifications, Software Requirements, The Application Development Approach, Creating Database and Tables in MySQL, creating a Web Application, Adding the Required Library Files, creating a Java Bean Class, Creating Persistence Unit [Persistence.Xml], Creating JSPS, The JPA Application Structure, Running the JPA Application.</p> <p>Introduction to Hibernate: What is Hibernate? Why Hibernate? Hibernate, Database and The Application, Components of Hibernate, Architecture of Hibernate, How Hibernate Works?</p> <p>Writing Hibernate Application: Application Requirement Specifications, Software Requirements, The Application Development Approach, Creating Database and Tables in MySQL, creating a Web Application, Adding the Required Library Files, creating a Java Bean Class, Creating Hibernate Configuration File, Adding a Mapping Class, Creating JSPS, Running The Hibernate Application.</p>	12

Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Java EE 7 For Beginners	Sharanam Shah, Vaishali Shah	SPD	First	2017
2.	Java EE 8 Cookbook: Build reliable applications with the most robust and mature technology for enterprise development	Elder Moraes	Packt	First	2018
3.	Advanced Java Programming	Uttam Kumar Roy	Oxford Press		2015

B. Sc. (Information Technology)		Semester – V	
Course Name: Next Generation Technologies		Course Code: USIT507 (Elective II)	
Periods per week (1 Period is 50 minutes),		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Unit	Details	Lectures
I	<p>Big Data: Getting Started, Big Data, Facts About Big Data, Big Data Sources, Three Vs of Big Data, Volume, Variety, Velocity, Usage of Big Data, Visibility, Discover and Analyze Information, Segmentation and Customizations, Aiding Decision Making, Innovation, Big Data Challenges, Policies and Procedures, Access to Data, Technology and Techniques, Legacy Systems and Big Data, Structure of Big Data, Data Storage, Data Processing, Big Data Technologies</p> <p>NoSQL: SQL, NoSQL, Definition, A Brief History of NoSQL, ACID vs. BASE, CAP Theorem (Brewer's Theorem), The BASE, NoSQL Advantages and Disadvantages, Advantages of NoSQL, Disadvantages of NoSQL, SQL vs. NoSQL Databases, Categories of NoSQL Databases</p> <p>Introducing MongoDB: History, MongoDB Design Philosophy, Speed, Scalability, and Agility, Non-Relational Approach, JSON-Based Document Store, Performance vs. Features, Running the Database Anywhere, SQL Comparison</p>	12
II	<p>The MongoDB Data Model: The Data Model, JSON and BSON, The Identifier (_id), Capped Collection, Polymorphic Schemas, Object-Oriented Programming, Schema Evolution</p> <p>Using MongoDB Shell: Basic Querying, Create and Insert, Explicitly Creating Collections, Inserting Documents Using Loop, Inserting by Explicitly Specifying _id, Update, Delete, Read, Using Indexes, Stepping Beyond the Basics, Using Conditional Operators, Regular Expressions, MapReduce, aggregate(), Designing an Application's Data Model, Relational Data Modeling and Normalization, MongoDB Document Data Model Approach</p> <p>MongoDB Architecture: Core</p>	12

	Processes,mongod,mongo,mongos,MongoDB Tools,Standalone Deployment,Replication,Master/Slave Replication,Replica Set,Implementing Advanced Clustering with Replica Sets,Sharding,Sharding Components,Data Distribution Process,Data Balancing Process,Operations,Implementing Sharding,Controlling Collection Distribution (Tag-Based Sharding),Points to Remember When Importing Data in a ShardedEnvironment,Monitoring for Sharding,Monitoring the Config Servers,Production Cluster Architecture,Scenario 1,Scenario 2,Scenario 3,Scenario 4	
III	<p>MongoDB Storage Engine: Data Storage Engine, Data File (Relevant for MMAPv1), Namespace (.ns File), Data File (Relevant for WiredTiger), Reads and Writes, How Data Is Written Using Journaling, GridFS – The MongoDB File System, The Rationale of GridFS, GridFSunder the Hood, Using GridFS, Indexing, Types of Indexes, Behaviors and Limitations</p> <p>MongoDB Use Cases: Use Case 1 -Performance Monitoring, Schema Design, Operations, Sharding, Managing the Data, Use Case 2 – Social Networking, Schema Design, Operations, Sharding</p> <p>MongoDB Limitations: MongoDB Space Is Too Large (Applicable for MMAPv1), Memory Issues (Applicable for Storage Engine MMAPv1), 32-bit vs. 64-bit, BSON Documents, Namespaces Limits, Indexes Limit, Capped Collections Limit - Maximum Number of Documents in a Capped Collection, Sharding Limitations, Shard Early to Avoid Any Issues, Shard Key Can't Be Updated, Shard Collection Limit, Select the Correct Shard Key, Security Limitations, No Authentication by Default, Traffic to and from MongoDB Isn't Encrypted, Write and Read Limitations, Case-Sensitive Queries, Type-Sensitive Fields, No JOIN, Transactions, MongoDB Not Applicable Range</p> <p>MongoDB Best Practices: Deployment, Hardware Suggestions from the MongoDB Site, Few Points to be Noted, Coding, Application Response Time Optimization, Data Safety, Administration, Replication Lag, Sharding, Monitoring</p>	12
IV	<p>The End of Disk? SSD and In-Memory Databases: The End of Disk?, Solid State Disk, The Economics of Disk, SSD-Enabled Databases, In-Memory Databases, TimesTen, Redis, SAP HANA, VoltDB, Oracle 12c “in-Memory Database, Berkeley Analytics Data Stack and Spark, Spark Architecture</p> <p>jQuery: Introduction, Traversing the DOM, DOM Manipulation with jQuery, Events, Ajax with jQuery, jQuery Plug-ins, jQuery Image Slider</p>	12
V	JSON: Introduction, JSON Grammar, JSON Values, JSON Tokens, Syntax, JSON vs XML,Data Types,Objects,Arrays,Creating JSON,	12

	JSON Object, Parsing JSON, Persisting JSON, Data Interchange, JSON PHP,JSON HTML,JSONP	
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Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Practical MongoDB	Shakuntala Gupta Edward NavinSabharwal	Apress		
2.	Beginning jQuery	Jack Franklin Russ Ferguson	Apress	Second	
3.	Next Generation Databases	Guy Harrison	Apress		
4.	Beginning JSON	Ben Smith	Apress		

B. Sc. (Information Technology)		Semester – V	
Course Name: Project Dissertation		Course Code: USIT5P1	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	--

The details are given in Appendix – I

B. Sc. (Information Technology)		Semester – V	
Course Name: Internet of Things Practical		Course Code: USIT5P2	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	--

Practical No	Details
0	Starting Raspbian OS, Familiarising with Raspberry Pi Components and interface, Connecting to ethernet, Monitor, USB.
1	Displaying different LED patterns with Raspberry Pi.
2	Displaying Time over 4-Digit 7-Segment Display using Raspberry Pi
3	Raspberry Pi Based Oscilloscope
4	Controlling Raspberry Pi with WhatsApp.
5	Setting up Wireless Access Point using Raspberry Pi
6	Fingerprint Sensor interfacing with Raspberry Pi
7	Raspberry Pi GPS Module Interfacing
8	IoT based Web Controlled Home Automation using Raspberry Pi
9	Visitor Monitoring with Raspberry Pi and Pi Camera
10	Interfacing Raspberry Pi with RFID.
11	Building Google Assistant with Raspberry Pi.
12	Installing Windows 10 IoT Core on Raspberry Pi

Raspberry Pi Kits and components should be made available in the ratio of 1 kit : 3 students minimum.

B. Sc. (Information Technology)		Semester – V	
Course Name: Advanced Web Programming Practical		Course Code: USIT5P3	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	--

List of Practical	
1.	Working with basic C# and ASP .NET
a.	Create an application that obtains four int values from the user and displays the product.
b.	Create an application to demonstrate string operations.
c.	Create an application that receives the (Student Id, Student Name, Course Name, Date of Birth) information from a set of students. The application should also display the information of all the students once the data entered.
d.	Create an application to demonstrate following operations i. Generate Fibonacci series. ii. Test for prime numbers. iii. Test for vowels. iv. Use of foreach loop with arrays v. Reverse a number and find sum of digits of a number.
2.	Working with Object Oriented C# and ASP .NET
a.	Create simple application to perform following operations i. Finding factorial Value ii. Money Conversion iii. Quadratic Equation iv. Temperature Conversion
b.	Create simple application to demonstrate use of following concepts i. Function Overloading ii. Inheritance (all types) iii. Constructor overloading iv. Interfaces
c.	Create simple application to demonstrate use of following concepts i. Using Delegates and events ii. Exception handling
3.	Working with Web Forms and Controls
a.	Create a simple web page with various sever controls to demonstrate setting and use of their properties. (Example : AutoPostBack)
b.	Demonstrate the use of Calendar control to perform following operations. a) Display messages in a calendar control b) Display vacation in a calendar control c) Selected day in a calendar control using style d) Difference between two calendar dates
c.	Demonstrate the use of Treeview control perform following operations.

	a) Treeview control and datalist	b) Treeview operations
4.	Working with Form Controls	
a.	Create a Registration form to demonstrate use of various Validation controls.	
b.	Create Web Form to demonstrate use of Adrotator Control.	
c.	Create Web Form to demonstrate use User Controls.	
5.	Working with Navigation, Beautification and Master page.	
a.	Create Web Form to demonstrate use of Website Navigation controls and Site Map.	
b.	Create a web application to demonstrate use of Master Page with applying Styles and Themes for page beautification.	
c.	Create a web application to demonstrate various states of ASP.NET Pages.	
6.	Working with Database	
a.	Create a web application bind data in a multiline textbox by querying in another textbox.	
b.	Create a web application to display records by using database.	
c.	Demonstrate the use of Datalist link control.	
7.	Working with Database	
a.	Create a web application to display Databinding using dropdownlist control.	
b.	Create a web application for to display the phone no of an author using database.	
c.	Create a web application for inserting and deleting record from a database. (Using Execute-Non Query).	
8.	Working with data controls	
a.	Create a web application to demonstrate various uses and properties of SqlDataSource.	
b.	Create a web application to demonstrate data binding using DetailsView and FormView Control.	
c.	Create a web application to display Using Disconnected Data Access and Databinding using GridView.	
9.	Working with GridView control	
a.	Create a web application to demonstrate use of GridView control template and GridView hyperlink.	
b.	Create a web application to demonstrate use of GridView button column and GridView events.	
c.	Create a web application to demonstrate GridView paging and Creating own table format using GridView.	
10.	Working with AJAX and XML	
a.	Create a web application to demonstrate reading and writing operation with XML.	
b.	Create a web application to demonstrate Form Security and Windows Security with proper Authentication and Authorization properties.	
c.	Create a web application to demonstrate use of various Ajax controls.	
11.	Programs to create and use DLL	

B. Sc. (Information Technology)		Semester – V	
Course Name: Artificial Intelligence Practical		Course Code: USIT5P4 (Elective I)	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	--

Practical No		Details
1	a	Write a program to implement depth first search algorithm.
	b	Write a program to implement breadth first search algorithm.
2	a	Write a program to simulate 4-Queen / N-Queen problem.
	b	Write a program to solve tower of Hanoi problem.
3	a	Write a program to implement alpha beta search.
	b	Write a program for Hill climbing problem.
4	a	Write a program to implement A* algorithm.
	b	Write a program to implement AO* algorithm.
5	a	Write a program to solve water jug problem.
	b	Design the simulation of tic – tac – toe game using min-max algorithm.
6	a	Write a program to solve Missionaries and Cannibals problem.
	b	Design an application to simulate number puzzle problem.
7	a	Write a program to shuffle Deck of cards.
	b	Solve traveling salesman problem using artificial intelligence technique.
8	a	Solve the block of World problem.
	b	Solve constraint satisfaction problem
9	a	Derive the expressions based on Associative law
	b	Derive the expressions based on Distributive law
10	a	Write a program to derive the predicate. (for e.g.: Sachin is batsman , batsman is cricketer) - >Sachin is Cricketer.
	b	Write a program which contains three predicates: male, female, parent. Make rules for following family relations: father, mother, grandfather, grandmother, brother, sister, uncle, aunt, nephew and niece, cousin. Question: i. Draw Family Tree. ii. Define: Clauses, Facts, Predicates and Rules with conjunction and disjunction

The practicals can be implemented in C / C++ / Java/ Python / R /Prolog / LISP or any other language.

B. Sc. (Information Technology)		Semester – V	
Course Name: Linux System Administration		Course Code: USIT5P5 (Elective I)	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	--

Practical No	Details
0	Installation of RHEL 6.X
1	Graphical User Interface and Command Line Interface and Processes
a	Exploring the Graphical Desktop
b	The Command Line Interface
c	Managing Processes
2	Storage Devices and Links, Backup and Repository
b	Working with Storage Devices and Links
a	Making a Backup
b	Creating a Repository
3	Working with RPMsm Storage and Networking
a	Using Query Options
b	Extracting Files From RPMs
c	Configuring and Managing Storage
d	Connecting to the Network
4	Working with Users, Groups, and Permissions
5	Firewall and Cryptographic services
a	Securing Server with iptables
b	Setting Up Cryptographic Services
6	Configuring Server for File Sharing
a	Configuring NFS Server and Client
b	Configuring Samba
c	Configuring FTP
7	DNS, DHCP and Mail Server
a	Configuring DNS

b	Configuring DHCP
c	Setting Up a Mail Server
8	Web Server
a	Configuring Apache on Red Hat Enterprise Linux
b	Writing a Script to Monitor Activity on the Apache Web Server
c	Using the select Command
9	Shell Scripts and High-Availability Clustering
a	Writing Shell Scripts
b	Configuring Booting with GRUB
c	Configuring High Availability Clustering
10	Setting Up an Installation Server
a	Configuring Network Server as an Installation Server
b	Setting Up a TFTP and DHCP Server for PXE Boot

B. Sc. (Information Technology)		Semester – V	
Course Name: Enterprise Java		Course Code: USIT5P6 (Elective II)	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	--

List of Practical	
1.	Implement the following Simple Servlet applications.
a.	Create a simple calculator application using servlet.
b.	Create a servlet for a login page. If the username and password are correct then it says message “Hello <username>” else a message “login failed”
c.	Create a registration servlet in Java using JDBC. Accept the details such as Username, Password, Email, and Country from the user using HTML Form and store the registration details in the database.
2.	Implement the following Servlet applications with Cookies and Sessions.
a.	Using Request Dispatcher Interface create a Servlet which will validate the password entered by the user, if the user has entered "Servlet" as password, then he will be forwarded to Welcome Servlet else the user will stay on the index.html page and an error message will be displayed.
b.	Create a servlet that uses Cookies to store the number of times a user has visited servlet.
c.	Create a servlet demonstrating the use of session creation and destruction. Also check whether the user has visited this page first time or has visited earlier also using sessions.
3.	Implement the Servlet IO and File applications.
a.	Create a Servlet application to upload and download a file.
b.	Develop Simple Servlet Question Answer Application using Database.
c.	Create simple Servlet application to demonstrate Non-Blocking Read Operation.
4.	Implement the following JSP applications.
a.	Develop a simple JSP application to display values obtained from the use of intrinsic objects of various types.
b.	Develop a simple JSP application to pass values from one page to another with validations. (Name-txt, age-txt, hobbies-checkbox, email-txt, gender-radio button).
c.	Create a registration and login JSP application to register and authenticate the user based on username and password using JDBC.

5.	Implement the following JSP JSTL and EL Applications.
a.	Create an html page with fields, eno, name, age, desg, salary. Now on submit this data to a JSP page which will update the employee table of database with matching eno.
b.	Create a JSP page to demonstrate the use of Expression language.
c.	Create a JSP application to demonstrate the use of JSTL.
6.	Implement the following EJB Applications.
a.	Create a Currency Converter application using EJB.
b.	Develop a Simple Room Reservation System Application Using EJB.
c.	Develop simple shopping cart application using EJB [Stateful Session Bean].
7.	Implement the following EJB applications with different types of Beans.
a.	Develop simple EJB application to demonstrate Servlet Hit count using Singleton Session Beans.
b.	Develop simple visitor Statistics application using Message Driven Bean [Stateless Session Bean].
c.	Develop simple Marks Entry Application to demonstrate accessing Database using EJB.
8.	Implement the following JPA applications.
a.	Develop a simple Inventory Application Using JPA.
b.	Develop a Guestbook Application Using JPA.
c.	Create simple JPA application to store and retrieve Book details.
9.	Implement the following JPA applications with ORM and Hibernate.
a.	Develop a JPA Application to demonstrate use of ORM associations.
b.	Develop a Hibernate application to store Feedback of Website Visitor in MySQL Database.
c.	Develop a Hibernate application to store and retrieve employee details in MySQL Database.
10.	Implement the following Hibernate applications.
a.	Develop an application to demonstrate Hibernate One- To -One Mapping Using Annotation.
b.	Develop Hibernate application to enter and retrieve course details with ORM Mapping.
c.	Develop a five page web application site using any two or three Java EE Technologies.

B. Sc. (Information Technology)		Semester – V	
Course Name: Next Generation Technologies Practical		Course Code: USIT5P7 (Elective II)	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	--

Practical No	Details
1	MongoDB Basics
a	Write a MongoDB query to create and drop database.
b	Write a MongoDB query to create, display and drop collection
c	Write a MongoDB query to insert, query, update and delete a document.
2	Simple Queries with MongoDB
3	Implementing Aggregation
a	Write a MongoDB query to use sum, avg, min and max expression.
b	Write a MongoDB query to use push and addToSet expression.
c	Write a MongoDB query to use first and last expression.
4	Replication, Backup and Restore
a	Write a MongoDB query to create Replica of existing database.
b	Write a MongoDB query to create a backup of existing database.
c	Write a MongoDB query to restore database from the backup.
5	Java and MongoDB
a	Connecting Java with MongoDB and inserting, retrieving, updating and deleting.
6	PHP and MongoDB
a	Connecting PHP with MongoDB and inserting, retrieving, updating and deleting.
7	Python and MongoDB

a	Connecting Python with MongoDB and inserting, retrieving, updating and deleting.
8	Programs on Basic jQuery
a	jQuery Basic, jQuery Events
b	jQuery Selectors, jQuery Hide and Show effects
c	jQuery fading effects, jQuery Sliding effects
9	jQuery Advanced
a	jQuery Animation effects, jQuery Chaining
b	jQuery Callback, jQuery Get and Set Contents
c	jQuery Insert Content, jQuery Remove Elements and Attribute
10	JSON
a	Creating JSON
b	Parsing JSON
c	Persisting JSON
11	Create a JSON file and import it to MongoDB
a	Export MongoDB to JSON.
b	Write a MongoDB query to delete JSON object from MongoDB

SEMESTER VI

B. Sc. (Information Technology)		Semester – VI	
Course Name: Software Quality Assurance		Course Code: USIT601	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Unit	Details	Lectures
I	<p>Introduction to Quality: Historical Perspective of Quality, What is Quality? (Is it a fact or perception?), Definitions of Quality, Core Components of Quality, Quality View, Financial Aspect of Quality, Customers, Suppliers and Processes, Total Quality Management (TQM), Quality Principles of Total Quality Management, Quality Management Through Statistical Process Control, Quality Management Through Cultural Changes, Continual (Continuous) Improvement Cycle, Quality in Different Areas, Benchmarking and Metrics, Problem Solving Techniques, Problem Solving Software Tools.</p> <p>Software Quality: Introduction, Constraints of Software Product Quality Assessment, Customer is a King, Quality and Productivity Relationship, Requirements of a Product, Organisation Culture, Characteristics of Software, Software Development Process, Types of Products, Schemes of Criticality Definitions, Problematic Areas of Software Development Life Cycle, Software Quality Management, Why Software Has Defects? Processes Related to Software Quality, Quality Management System Structure, Pillars of Quality Management System, Important Aspects of Quality Management.</p>	12
II	<p>Fundamentals of testing: Introduction, Necessity of testing, What is testing? Fundamental test process, The psychology of testing, Historical Perspective of Testing, Definitions of Testing, Approaches to Testing, Testing During Development Life Cycle, Requirement Traceability Matrix, Essentials of Software Testing, Workbench, Important Features of Testing Process, Misconceptions About Testing,</p>	12

	Principles of Software Testing, Salient Features of Good Testing, Test Policy, Test Strategy or Test Approach, Test Planning, Testing Process and Number of Defects Found in Testing, Test Team Efficiency, Mutation Testing, Challenges in Testing, Test Team Approach, Process Problems Faced by Testing, Cost Aspect of Testing, Establishing Testing Policy, Methods, Structured Approach to Testing, Categories of Defect, Defect, Error, or Mistake in Software, Developing Test Strategy, Developing Testing Methodologies (Test Plan), Testing Process, Attitude Towards Testing (Common People Issues), Test Methodologies/Approaches, People Challenges in Software Testing, Raising Management Awareness for Testing, Skills Required by Tester, Testing throughout the software life cycle, Software development models, Test levels, Test types, the targets of testing, Maintenance testing	
III	Unit Testing: Boundary Value Testing: Normal Boundary Value Testing, Robust Boundary Value Testing, Worst-Case Boundary Value Testing, Special Value Testing, Examples, Random Testing, Guidelines for Boundary Value Testing, Equivalence Class Testing: Equivalence Classes, Traditional Equivalence Class Testing, Improved Equivalence Class Testing, Edge Testing, Guidelines and Observations. Decision Table-Based Testing: Decision Tables, Decision Table Techniques, Cause-and-Effect Graphing, Guidelines and Observations, Path Testing: Program Graphs, DD-Paths, Test Coverage Metrics, Basis Path Testing, Guidelines and Observations, Data Flow Testing: Define/Use Testing, Slice-Based Testing, Program Slicing Tools.	12
IV	Software Verification and Validation: Introduction, Verification, Verification Workbench, Methods of Verification, Types of reviews on the basis of Stage Phase, Entities involved in verification, Reviews in testing lifecycle, Coverage in Verification, Concerns of Verification, Validation, Validation Workbench, Levels of Validation, Coverage in Validation, Acceptance Testing, Management of Verification and Validation, Software development verification and validation activities. V-test Model: Introduction, V-model for software, testing during Proposal stage, Testing during requirement stage, Testing during test planning phase, Testing during design phase, Testing during coding, VV Model, Critical Roles and Responsibilities.	12
V	Levels of Testing: Introduction, Proposal Testing, Requirement Testing, Design Testing, Code Review, Unit Testing, Module Testing, Integration Testing, Big-Bang Testing, Sandwich Testing, Critical Path First, Sub System Testing, System Testing, Testing Stages. Special Tests: Introduction, GUI testing, Compatibility Testing, Security Testing, Performance Testing, Volume Testing, Stress Testing, Recovery Testing, Installation Testing, Requirement Testing, Regression Testing, Error Handling Testing, Manual Support Testing,	12

	Intersystem Testing, Control Testing, Smoke Testing, Adhoc Testing, Parallel Testing, Execution Testing, Operations Testing, Compliance Testing, Usability Testing, Decision Table Testing, Documentation Testing, Training testing, Rapid Testing, Control flow graph, Generating tests on the basis of Combinatorial Designs, State Graph, Risk Associated with New Technologies, Process maturity level of Technology, Testing Adequacy of Control in New technology usage, Object Oriented Application Testing, Testing of Internal Controls, COTS Testing, Client Server Testing, Web Application Testing, Mobile Application Testing, eBusiness eCommerce Testing, Agile Development Testing, Data Warehousing Testing.	
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Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Software Testing and Continuous Quality Improvement	William E. Lewis	CRC Press	Third	2016
2	Software Testing: Principles, Techniques and Tools	M. G. Limaye	TMH		2017
3.	Foundations of Software Testing	Dorothy Graham, Erik van Veenendaal, Isabel Evans, Rex Black	Cengage Learning	3 rd	
4.	Software Testing: A Craftsman's Approach	Paul C. Jorgenson	CRC Press	4 th	2017

B. Sc. (Information Technology)		Semester – VI	
Course Name: Security in Computing		Course Code: USIT602	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Unit	Details	Lectures
I	<p>Information Security Overview: The Importance of Information Protection, The Evolution of Information Security, Justifying Security Investment, Security Methodology, How to Build a Security Program, The Impossible Job, The Weakest Link, Strategy and Tactics, Business Processes vs. Technical Controls.</p> <p>Risk Analysis: Threat Definition, Types of Attacks, Risk Analysis.</p> <p>Secure Design Principles: The CIA Triad and Other Models, Defense Models, Zones of Trust, Best Practices for Network Defense.</p>	12
II	<p>Authentication and Authorization: Authentication, Authorization</p> <p>Encryption: A Brief History of Encryption, Symmetric-Key Cryptography, Public Key Cryptography, Public Key Infrastructure.</p> <p>Storage Security: Storage Security Evolution, Modern Storage Security, Risk Remediation, Best Practices.</p> <p>Database Security: General Database Security Concepts, Understanding Database Security Layers, Understanding Database-Level Security, Using Application Security, Database Backup and Recovery, Keeping Your Servers Up to Date, Database Auditing and Monitoring.</p>	12
III	<p>Secure Network Design: Introduction to Secure Network Design, Performance, Availability, Security.</p> <p>Network Device Security: Switch and Router Basics, Network Hardening.</p> <p>Firewalls: Overview, The Evolution of Firewalls, Core Firewall</p>	12

	Functions, Additional Firewall Capabilities, Firewall Design. Wireless Network Security: Radio Frequency Security Basics, Data-Link Layer Wireless Security Features, Flaws, and Threats, Wireless Vulnerabilities and Mitigations, Wireless Network Hardening Practices and Recommendations, Wireless Intrusion Detection and Prevention, Wireless Network Positioning and Secure Gateways.	
IV	Intrusion Detection and Prevention Systems: IDS Concepts, IDS Types and Detection Models, IDS Features, IDS Deployment Considerations, Security Information and Event Management (SIEM). Voice over IP (VoIP) and PBX Security: Background, VoIP Components, VoIP Vulnerabilities and Countermeasures, PBX, TEM: Telecom Expense Management. Operating System Security Models: Operating System Models, Classic Security Models, Reference Monitor, Trustworthy Computing, International Standards for Operating System Security.	12
V	Virtual Machines and Cloud Computing: Virtual Machines, Cloud Computing. Secure Application Design: Secure Development Lifecycle, Application Security Practices, Web Application Security, Client Application Security, Remote Administration Security. Physical Security: Classification of Assets, Physical Vulnerability Assessment, Choosing Site Location for Security, Securing Assets: Locks and Entry Controls, Physical Intrusion Detection.	12

Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	TheCompleteReference: Information Security	Mark Rhodes-Ousley	McGraw-Hill	2 nd	2013
2.	Essential Cybersecurity Science	Josiah Dykstra	O'Reilly	Fifth	2017
3.	Principles of Computer Security: CompTIA Security+ and Beyond	Wm.Arthur Conklin, Greg White	McGraw Hill	Second	2010

B. Sc. (Information Technology)		Semester – VI	
Course Name: Business Intelligence		Course Code: USIT603	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Unit	Details	Lectures
I	Business intelligence: Effective and timely decisions, Data, information and knowledge, The role of mathematical models, Business intelligence architectures, Ethics and business intelligence Decision support systems: Definition of system, Representation of the decision-making process, Evolution of information systems, Definition of decision support system, Development of a decision support system	12
II	Mathematical models for decision making: Structure of mathematical models, Development of a model, Classes of models Data mining: Definition of data mining, Representation of input data , Data mining process, Analysis methodologies Data preparation: Data validation, Data transformation, Data reduction	12
III	Classification: Classification problems, Evaluation of classification models, Bayesian methods, Logistic regression, Neural networks, Support vector machines Clustering: Clustering methods, Partition methods, Hierarchical methods, Evaluation of clustering models	12
IV	Business intelligence applications: Marketing models: Relational marketing, Sales force management, Logistic and production models: Supply chain optimization, Optimization models for logistics planning, Revenue management systems.	12

	Data envelopment analysis: Efficiency measures, Efficient frontier, The CCR model, Identification of good operating practices	
V	Knowledge Management: Introduction to Knowledge Management, Organizational Learning and Transformation, Knowledge Management Activities, Approaches to Knowledge Management, Information Technology (IT) In Knowledge Management, Knowledge Management Systems Implementation, Roles of People in Knowledge Management Artificial Intelligence and Expert Systems: Concepts and Definitions of Artificial Intelligence, Artificial Intelligence Versus Natural Intelligence, Basic Concepts of Expert Systems, Applications of Expert Systems, Structure of Expert Systems, Knowledge Engineering, Development of Expert Systems	12

Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Business Intelligence: Data Mining and Optimization for Decision Making	Carlo Vercellis	Wiley	First	2009
2.	Decision support and Business Intelligence Systems	Efraim Turban, Ramesh Sharda, DursunDelen	Pearson	Ninth	2011
3.	Fundamental of Business Intelligence	Grossmann W, Rinderle-Ma	Springer	First	2015

B. Sc. (Information Technology)		Semester – VI	
Course Name: Principles of Geographic Information Systems		Course Code: USIT604 (Elective I)	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Unit	Details	Lectures
I	<p>A Gentle Introduction to GIS</p> <p>The nature of GIS: Some fundamental observations, Defining GIS, GISystems, GIScience and GIApplications, Spatial data and Geoinformation.</p> <p>The real world and representations of it: Models and modelling, Maps, Databases, Spatial databases and spatial analysis</p> <p>Geographic Information and Spatial Database</p> <p>Models and Representations of the real world</p> <p>Geographic Phenomena: Defining geographic phenomena, types of geographic phenomena, Geographic fields, Geographic objects, Boundaries</p> <p>Computer Representations of Geographic Information: Regular tessellations, irregular tessellations, Vector representations, Topology and Spatial relationships, Scale and Resolution, Representation of Geographic fields, Representation of Geographic objects</p> <p>Organizing and Managing Spatial Data</p> <p>The Temporal Dimension</p>	12
II	<p>Data Management and Processing Systems</p> <p>Hardware and Software Trends</p> <p>Geographic Information Systems: GIS Software, GIS Architecture</p>	12

	<p>and functionality, Spatial Data Infrastructure (SDI)</p> <p>Stages of Spatial Data handling: Spatial data handling and preparation, Spatial Data Storage and maintenance, Spatial Query and Analysis, Spatial Data Presentation.</p> <p>Database management Systems: Reasons for using a DBMS, Alternatives for data management, The relational data model, Querying the relational database.</p> <p>GIS and Spatial Databases: Linking GIS and DBMS, Spatial database functionality.</p>	
III	<p>Spatial Referencing and Positioning</p> <p>Spatial Referencing: Reference surfaces for mapping, Coordinate Systems, Map Projections, Coordinate Transformations</p> <p>Satellite-based Positioning: Absolute positioning, Errors in absolute positioning, Relative positioning, Network positioning, code versus phase measurements, Positioning technology</p> <p>Data Entry and Preparation</p> <p>Spatial Data Input: Direct spatial data capture, Indirect spatial data capture, Obtaining spatial data elsewhere</p> <p>Data Quality: Accuracy and Positioning, Positional accuracy, Attribute accuracy, temporal accuracy, Lineage, Completeness, Logical consistency</p> <p>Data Preparation: Data checks and repairs, Combining data from multiple sources</p> <p>Point Data Transformation: Interpolating discrete data, Interpolating continuous data</p>	12
IV	<p>Spatial Data Analysis</p> <p>Classification of analytical GIS Capabilities</p> <p>Retrieval, classification and measurement: Measurement, Spatial selection queries, Classification</p> <p>Overlay functions: Vector overlay operators, Raster overlay operators</p> <p>Neighbourhood functions: Proximity computations, Computation of diffusion, Flow computation, Raster based surface analysis</p> <p>Analysis: Network analysis, interpolation, terrain modeling</p> <p>GIS and Application models: GPS, Open GIS Standards, GIS Applications and Advances</p> <p>Error Propagation in spatial data processing: How Errors propagate, Quantifying error propagation</p>	12
V	<p>Data Visualization</p> <p>GIS and Maps, The Visualization Process</p> <p>Visualization Strategies: Present or explore?</p> <p>The cartographic toolbox: What kind of data do I have? How can I map my data?</p> <p>How to map? How to map qualitative data, How to map quantitative data, How to map the terrain elevation, How to map time series</p>	12

	Map Cosmetics, Map Dissemination	
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Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Principles of Geographic Information Systems- An Introductory Text Book	Editors: Otto Huisman and Rolf A.	The International Institute of Geoinformation Science and Earth Observation	Fourth	2009
2.	Principles of Geographic Information Systems	P.A Burrough and R.A.McDonnell	Oxford University Press	Third	1999
3.	Fundamentals of Spatial Information Systems,	R.Laurini and D. Thompson,	Academic Press		1994
4.	Fundamentals of Geographic Information Systems	Michael N.Demers	Wiley Publications	Fourth	2009
5.	Introduction to Geographic Information Systems	Chang Kang-tsung (Karl),	McGrawHill	Any above 3 rd Edition	2013 7 th Edition
6.	GIS Fundamentals: A First Text on Geographic Information Systems	Paul Bolsatd	XanEdu Publishing Inc	5 th Edition	

B. Sc. (Information Technology)		Semester – VI	
Course Name: Enterprise Networking		Course Code: USIT605 (Elective II)	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Unit	Details	Lectures
I	<p>General Network Design: Network Design Methodology, Architectures for the Enterprise, Borderless Networks Architecture, Collaboration and Video Architecture, Data Center and Virtualization Architecture, Design Lifecycle: Plan, Build, Manage Plan Phase Build Phase Manage Phase Prepare, Plan, Design, Implement, Operate, and Optimize Phases Prepare Phase Plan Phase Design Phase Implement Phase Operate Phase Optimize Phase Summary of PPDIIOO Phases Project Deliverables Design Methodology Identifying Customer Design Requirements Characterizing the Existing Network Steps in Gathering Information Network Audit Tools Network Checklist Designing the Network Topology and Solutions Top-Down Approach Pilot and Prototype Tests Design Document</p> <p>Network Design Models: Hierarchical Network Models Benefits of the Hierarchical Model, Hierarchical Network Design, Core Layer, Distribution Layer, Access Layer, Hierarchical Model Examples, Hub-and-Spoke, Design Collapsed Core, Design Enterprise Architecture Model, Enterprise Campus Module, Enterprise Edge Area, E-Commerce Module, Internet Connectivity Module, VPN/Remote Access, Enterprise WAN, Service Provider Edge Module, Remote Modules, Enterprise Branch Module, Enterprise Data Center Module, Enterprise Teleworker Module, High Availability Network Services, Workstation-to-Router Redundancy and LAN, High Availability Protocols, ARP Explicit Configuration, RDP, RIP, HSRP, VRRP, GLBP, Server Redundancy, Route</p>	12

	Redundancy, Load Balancing, Increasing Availability, Link Media Redundancy	
II	<p>Enterprise LAN Design: LAN Media, Ethernet Design Rules, 100Mbps Fast Ethernet Design Rules, Gigabit Ethernet Design Rules, 1000BASE-LX Long-Wavelength Gigabit Ethernet, 1000BASE-SX Short-Wavelength Gigabit Ethernet, 1000BASE-CX Gigabit Ethernet over Coaxial Cable, 1000BASE-T Gigabit Ethernet over UTP 86, 10 Gigabit Ethernet Design Rules, 10GE Media Types, EtherChannel, Comparison of Campus Media LAN Hardware, Repeaters, Hubs, Bridges, Switches, Routers, Layer 3 Switches, Campus LAN Design and Best Practices Best Practices for Hierarchical Layers, Access Layer Best Practices, Distribution Layer Best Practices, Core Layer Best Practices, STP Design Considerations, STP Toolkit, PortFast, UplinkFast, BackboneFast, Loop Guard, Root Guard, BPDU Guard, BPDU Filter, VLAN and Trunk Considerations, Unidirectional Link Detection (UDLD) Protocol, Large-Building LANs, Enterprise Campus LANs, Edge Distribution, Medium-Size LANs, Small and Remote Site LANs, Server Farm Module, Server Connectivity Options, Enterprise Data Center Infrastructure, Campus LAN QoS Considerations, Multicast Traffic Considerations, CGMP, IGMP Snooping.</p> <p>Data Center Design: Enterprise DC Architecture, Data Center Foundation Components, Data Center Topology Components, Data Center Network Programmability, SDN, Controllers, APIs, ACI, Challenges in the DC, Data Center Facility Aspects, Data Center Space, Data Center Power, Data Center Cooling, Data Center Heat, Data Center Cabling, Enterprise DC Infrastructure, Data Center Storage, Data Center Reference Architecture, Defining the DC Access Layer, Defining the DC Aggregation Layer, Defining the DC Core Layer, Security in the DC, Fabric Extenders, Virtualization Overview, Challenges, Defining Virtualization and Benefits, Virtualization Risks, Types of Virtualization, Virtualization Technologies, VSS, VRF, vPC, Device Contexts, Server Virtualization, Server Scaling, Virtual Switching, Network Virtualization Design Considerations, Access Control, Path Isolation, Services Edge, Data Center Interconnect, DCI Use Cases, DCI Transport Options, DCI L2 Considerations, Load Balancing in the DC, Application Load Balancing, Network Load Balancing.</p>	12
III	<p>Wireless LAN Design: Wireless LAN Technologies, WLAN Standards, ISM and UNII Frequencies, Summary of WLAN Standards, Service Set Identifier, WLAN Layer 2 Access Method, WLAN Security, Unauthorized Access, WLAN Security Design Approach, IEEE 802.1X-2001 Port-Based Authentication, Dynamic WEP Keys and LEAP, Controlling WLAN Access to Servers, WLAN Authentication, Authentication Options, WLAN Controller Components, WLC Interface Types, AP Controller Equipment</p>	12

	<p>Scaling, Roaming and Mobility Groups, Intracontroller Roaming, Layer 2 Intercontroller Roaming, Layer 3 Intercontroller Roaming, Mobility Groups, WLAN Design, Controller Redundancy Design: Deterministic vs. Dynamic, N+1 WLC Redundancy, N+N WLC Redundancy, N+N+1 WLC Redundancy, Radio Management and Radio Groups, RF Groups, RF Site Survey, Using EoIP Tunnels for Guest Services, Wireless Mesh for Outdoor Wireless, Mesh Design Recommendations, Campus Design Considerations, Power over Ethernet (PoE), Wireless and Quality of Service (QoS), Branch Design Considerations, Local MAC, REAP, Hybrid REAP, Branch Office Controller Options.</p> <p>WAN Technologies and the Enterprise Edge: WAN and Enterprise Edge Overview, Definition of WAN, WAN Edge Module, Enterprise Edge Modules, WAN Transport Technologies, ISDN, ISDN BRI Service, ISDN PRI Service, Digital Subscriber Line, Cable, Wireless, Frame Relay, Time-Division Multiplexing, Metro Ethernet, SONET/SDH, Multiprotocol Label Switching (MPLS), Dark Fiber, Dense Wavelength-Division Multiplexing, Ordering WAN Technology and Contracts, WAN and Edge Design Methodologies, Response Time, Throughput, Reliability, Bandwidth Considerations, WAN Link Categories, Optimizing Bandwidth Using QoS, Queuing, Traffic Shaping and Policing, Classification, Congestion Management, Priority Queuing, Custom Queuing, Weighted Fair Queuing, Class-Based Weighted Fair Queuing, Low-Latency Queuing, Traffic Shaping and Policing, Link Efficiency, Window Size, DMZ Connectivity, Segmenting DMZs, DMZ Services, Internet Connectivity, Centralized Internet (Branch) vs. Direct Internet (Branch), High Availability for the Internet Edge, VPN Network Design.</p> <p>WAN Design Traditional WAN Technologies Hub-and-Spoke Topology Full-Mesh Topology Partial-Mesh Topology Point-to-Point Topology Remote Site Connectivity Enterprise VPN vs. Service Provider VPN Enterprise Managed VPN: IPsec IPsec Direct Encapsulation Generic Routing Encapsulation IPsec DMVPN IPsec Virtual Tunnel Interface Design GETVPN Service Provider-Managed Offerings ,Metro Ethernet Service Provider VPNs: L2 vs. L3 ,Virtual Private Wire Services VPWS L2 VPN Considerations ,Virtual Private LAN Services VPLS L2 VPN Considerations ,MPLS, MPLS Layer 3 Design Overview MPLS L3 VPN Considerations ,VPN Benefits WAN Backup Design WAN Backup over the Internet Enterprise WAN Architecture Cisco Enterprise MAN/WAN Enterprise WAN/MAN Architecture Comparison ,Enterprise WAN Components Comparing Hardware and Software Enterprise Branch Architecture Branch Design Branch</p>	
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	Connectivity Redundancy for Branches Single WAN Carrier vs. Dual WAN Carriers Single MPLS Carrier Site ,Dual MPLS Carriers Hybrid WAN: L3 VPN with IPsec VPN ,Internet for Branches Flat Layer 2 vs. Collapsed Core ,Enterprise Branch Profiles Small Branch Design Medium Branch Design Large Branch Design Enterprise Teleworker Design ,ISRs for Teleworkers	
IV	<p>Internet Protocol Version 4 Design,IPv4 Header ToS IPv4 Fragmentation IPv4 Addressing ,IPv4 Address Classes Class A Addresses Class B Addresses ,Class C Addresses Class D Addresses Class E Addresses ,IPv4 Address Types IPv4 Private Addresses NAT ,IPv4 Address Subnets Mask Nomenclature IP Address Subnet Design Example Determining the Network Portion of an IP Address Variable-Length Subnet Masks, Loopback Addresses IP Telephony Networks ,IPv4 Addressing Design Goal of IPv4 Address Design , Plan for Future Use of IPv4 Addresses , Performing Route Summarization , Plan for a Hierarchical IP Address Network , Private and Public IP Address and NAT Guidelines , Steps for Creating an IPv4 Address Plan</p> <p>Case Study: IP Address Subnet Allocation , Address Assignment and Name Resolution , Recommended Practices of IP Address Assignment , BOOTP DHCP DNS , Internet Protocol Version 6 Design, IPv6 Header IPv6 Address Representation IPv4-Compatible IPv6 Addresses IPv6 Prefix Representation IPv6 Address Scope Types and Address Allocations IPv6 Address Allocations IPv6 Unicast Address Global Unicast Addresses Link-Local Addresses , Unique Local IPv6 Address Global Aggregatable IPv6 Address , IPv4-Compatible IPv6 Address IPv6 Anycast Addresses , IPv6 Multicast Addresses IPv6 Mechanisms ICMPv6 , IPv6 Neighbor Discovery Protocol IPv6 Name Resolution , Path MTU Discovery IPv6 Address-Assignment Strategies , Manual Configuration SLAAC of Link-Local Address , SLAAC of Globally Unique IPv6 Address DHCPv6 , DHCPv6 Lite IPv6 Security IPv6 Routing Protocols RIPng OSPFv3 , BGP4 Multiprotocol Extensions (MP-BGP) for IPv6 , IPv6 Addressing Design , Planning for Addressing with IPv6 , Route Summarization with IPv6 IPv6 Private Addressing</p> <p>IPv6 for the Enterprise IPv6 Address Allocation , Partly Linked IPv4 Address into IPv6, Whole IPv4 Address Linked into IPv6</p> <p>IPv6 Addresses Allocated Per Location and/or Type , IPv4-to-IPv6 Transition Mechanisms and Deployment Models , Dual-Stack Mechanism IPv6 over IPv4 Tunnels , Protocol Translation Mechanisms IPv6 Deployment Models , Dual-Stack Model Hybrid Model Service Block Model ,IPv6 Deployment Model Comparison IPv6 Comparison with IPv4 ,OSPF, BGP, Route Manipulation, and IP Multicast,OSPFv2 OSPFv2 Metric OSPFv2 Adjacencies and Hello Timers , OSPFv2 Areas OSPF Area Design Considerations OSPF Router Types OSPF DRs LSA Types Autonomous System External Path Types OSPF Stub Area Types Stub Areas Totally Stubby Areas ,</p>	12

	<p>NSSAs Virtual Links OSPFv2 Router Authentication , OSPFv2 Summary OSPFv3 OSPFv3 Changes from OSPFv2, OSPFv3 Areas and Router Types OSPFv3 LSAs OSPFv3 Summary</p> <p>BGP BGP Neighbors eBGPiBGP Route Reflectors Confederations BGP Administrative Distance, BGP Attributes, Weight, and the BGP Decision Process</p> <p>BGP Path Attributes Next-Hop Attribute Local Preference Attribute Origin Attribute Autonomous System Path Attribute</p> <p>MED Attribute Community Attribute Atomic Aggregate and Aggregator Attributes Weight BGP Decision Process, BGP Summary, Route Manipulation PBR Route Summarization</p> <p>Route Redistribution Default Metric OSPF Redistribution Route Filtering Transit Traffic Routing Protocols on the Hierarchical Network Infrastructure IP Multicast Review, Multicast Addresses Layer 3 to Layer 2 Mapping IGMP, IGMPv1 IGMPv2 IGMPv3 CGMP IGMP Snooping, Sparse Versus Dense Multicast Multicast Source and Shared Trees PIM PIM-SM PIM DR Auto-RP PIMv2 Bootstrap Router, DVMRP IPv6 Multicast Addresses</p>	
V	<p>Managing Security</p> <p>Network Security Overview Security Legislation Security Threats Reconnaissance and Port Scanning Vulnerability Scanners</p> <p>Unauthorized Access Security Risks Targets Loss of Availability Integrity Violations and Confidentiality Breaches , Security Policy and Process Security Policy Defined , Basic Approach of a Security Policy Purpose of Security Policies, Security Policy Components Risk Assessment , Risk Index Continuous Security Integrating Security Mechanisms into Network Design Trust and Identity Management , Trust Domains of Trust Identity Passwords Tokens Certificates , Network Access Control Secure Services Encryption Fundamentals Encryption Keys VPN Protocols , Transmission Confidentiality Data Integrity Threat Defense , Physical Security Infrastructure Protection Security Management Solutions Security Solution Network Security Platforms , Trust and Identity Technologies Firewall Fundamentals , Types of Firewalls Next-Gen Firewalls NAT Placement , Firewall Guidelines Firewall ACLs , Identity and Access Control Deployments Detecting and Mitigating Threats IPS/IDS Fundamentals IPS/IDS Guidelines , Threat Detection and Mitigation Technologies , Threat-Detection and Threat-Mitigation Solutions , FirePOWER IPS Security Management Applications , Security Platform Solutions Security Management Network</p> <p>Integrating Security into Network Devices IOS Security, ISR G2 Security Hardware Options Securing the Enterprise, Implementing Security in the Campus Implementing Security in the Data Center Implementing Security in the Enterprise Edge</p> <p>Network Management Protocols, Simple Network Management Protocol SNMP Components, MIB SNMP Message Versions</p>	12

	SNMPv1 SNMPv2 SNMPv3, Other Network Management Technologies RMON, RMON2 NetFlow Compared to RMON and SNMP, CDP LLDP Syslog	
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Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	CCDA200-310 Official Cert Guide	ANTHONY BRUNO, CCIE No. 2738 STEVE JORDAN, CCIE No. 11293	Cisco Press		
2.	Network Warrior	Gary A Donabue	O Reilly	2 nd	2011

B. Sc. (Information Technology)		Semester – VI	
Course Name: IT Services Management		Course Code: USIT606 (Elective I)	
Periods per week (1 Period is 50 minutes),		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Unit	Details	Lectures
I	<p>IT Service Management: Introduction, What is service management? What are services? Business Process, Principles of Service management: Specialisation and Coordination, The agency principle, Encapsulation, Principles of systems, The service Life Cycle, Functions and processes across the life cycle.</p> <p>Service Strategy Principles: Value creation, Service Assets, Service Provider Service Structures, Service Strategy Principles.</p> <p>Service Strategy: Define the market, Develop the offerings, Develop Strategic Assets, Prepare for execution.</p> <p>Challenges, Critical Success factors and risks: Complexity, Coordination and Control, Preserving value, Effectiveness in measurement, Risks.</p>	12
II	<p>Service Design: Fundamentals, Service Design Principles: Goals, Balanced Design, Identifying Service requirements, identifying and documenting business requirements and drivers, Design activities, Design aspects, Subsequent design activities, Design constraints, Service oriented architecture, Business Service Management, Service Design Models</p> <p>Service Design Processes: Service Catalogue Management, Service Level Management, Capacity Management, Availability Management, IT Service Continuity Management, Information Security</p>	12

	Management, Supplier Management Challenges, Critical Success factors and risks: Challenges, Risks	
III	Service Transition: Fundamentals, Service Transition Principles: Principles Supporting Service Transition, Policies for Service Transition Service Transition Processes: Transition planning and support, Change Management, Service Asses Configuration Management, Service and Deployment Management, Service Validation and Testing, Evaluation, Knowledge Management. Challenges, Critical Success factors and risks: Challenges, Critical Success factors, Risks, Service Transition under difficult Conditions.	12
IV	Service Operation: Fundamentals, Service Operation Principles: Functions, groups, teams, departments and divisions, a chieving balance in service operations, Providing service, Operation staff involvement in service design and service transition, Operational Health, Communication, Documentation Service Operation Processes: Event Management, Incident Management, Request fulfilment, Problem Management, Access Management, Operational activities of processes covered in other lifecycle phases. Challenges, Critical Success factors and risks: Challenges, Critical Success factors, Risks	12
V	Continual Service Improvement(CSI) Principles: CSI Approach, CSI and organizational change, Ownership, CSI register, External and Internal drivers, Service level management, Knowledge management, The Deming cycle, Service Measurement, IT governance, Frameworks, models, standards and quality Systems, CSI inputs and outputs. CSI Process: The seven-step improvement process. CSI Methods nad Techniques: Methods and techniques, Assessments, benchmarking, Service Measurement, Metrics, Return on Investment, Service reporting, CSI and other service management processes, Organising for CSI: Organisational development, Functions, roles, Customer Engagement, Responsibility model - RACI, Competence and training. Technology considerations: Tools to support CSI activities. Implementing CSI: Critical Considerations for implementing CSI,The start, Governance, CSI and organisational change, Communication Strategy and Plan	12

Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	ITIL v3 Foundation Complete Certification Kit				2009
2.	ITIL v3 Service Strategy		OGC/TSO		

3.	ITIL v3 Service Transition		OGC/TSO		
4.	ITIL v3 Service Operation		OGC/TSO		
5.	ITIL Continual Service Improvement		TSO	2011	2011

B. Sc. (Information Technology)		Semester – VI	
Course Name: Cyber Laws		Course Code: USIT607 (Elective I)	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Unit	Details	Lectures
I	<p>Power of Arrest Without Warrant Under the IT Act, 2000: A Critique, Crimes of this Millennium, Section 80 of the IT Act, 2000 – A Weapon or a Farce? Forgetting the Line Between Cognizable and Non-Cognizable Offences, Necessity of Arrest without Warrant from Any Place, Public or Otherwise, Check and Balances Against Arbitrary Arrests, Arrest for “About to Commit” an Offence Under the IT Act: A Tribute to Draco, Arrest, But NO Punishment!</p> <p>Cyber Crime and Criminal Justice: Penalties, Adjudication and Appeals Under the IT Act, 2000: Concept of “Cyber Crime “ and the IT Act , 2000, Hacking, Teenage Web Vandals, Cyber Fraud and Cyber Cheating, Virus on the Internet, Defamation, Harassment and E-mail Abuse, Cyber Pornography, Other IT Act Offences, Monetary Penalties, Adjudication and Appeals Under IT Act , 2000, Network Service Providers, Jurisdiction and Cyber Crime, Nature of Cyber Criminality, Strategies to Tackle Cyber Crime and Trends, Criminal Justice in India and Implications on Cyber Crime.</p>	12
II	<p>Contracts in the Infotech World: Contracts in the Infotech World, Click-Wrap and Shrink-Wrap Contract: Status under the Indian</p>	12

	<p>Contract Act, 1872, Contract Formation Under the Indian Contract Act, 1872, Contract Formation on the Internet, Terms and Conditions of Contracts.</p> <p>Jurisdiction in the Cyber World: Questioning the Jurisdiction and Validity of the Present Law of Jurisdiction, Civil Law of Jurisdiction in India, Cause of Action, Jurisdiction and the Information Technology Act, 2000, Foreign Judgements in India, Place of Cause of Action in Contractual and IPR Disputes, Exclusion Clauses in Contracts, Abuse of Exclusion Clauses, Objection of Lack of Jurisdiction, Misuse of the Law of Jurisdiction, Legal Principles on Jurisdiction in the United State of America, Jurisdiction Disputes w.r.t. the Internet in the United State of America.</p>	
III	<p>Battling Cyber Squatters and Copyright Protection in the Cyber World: Concept of Domain Name and Reply to Cyber Squatters, Meta-Tagging, Legislative and Other Innovative Moves Against Cyber Squatting, The Battle Between Freedom and Control on the Internet, Works in Which Copyright Subsists and meaning of Copyright, Copyright Ownership and Assignment, License of Copyright, Copyright Terms and Respect for Foreign Works, Copyright Infringement, Remedies and Offences, Copyright Protection of Content on the Internet; Copyright Notice, Disclaimer and Acknowledgement, Downloading for Viewing Content on the Internet, Hyper-Linking and Framing, Liability of ISPs for Copyright Violation in the Cyber World: Legal Developments in the US, Napster and its Cousins: A Revolution on the Internet but a Crisis for Copyright Owners, Computer Software Piracy.</p>	12
IV	<p>E-Commerce Taxation: Real Problems in the Virtual World: A Tug of War on the Concept of 'Permanent Establishment', Finding the PE in Cross Border E-Commerce, The United Nations Model Tax Treaty, The Law of Double Taxation Avoidance Agreements and Taxable Jurisdiction Over Non-Residents, Under the Income Tax Act, 1961, Tax Agents of Non-Residents under the Income Tax Act, 1961 and the Relevance to E-Commerce, Source versus Residence and Classification between Business Income and Royalty, The Impact of the Internet on Customer Duties, Taxation Policies in India: At a Glance.</p> <p>Digital Signature, Certifying Authorities and E-Governance: Digital Signatures, Digital Signature Certificate, Certifying Authorities and Liability in the Event of Digital Signature Compromise, E-Governance in India: A Warning to Babudom!</p>	12
V	<p>The Indian Evidence Act of 1872 v. Information Technology Act, 2000: Status of Electronic Records as Evidence, Proof and Management of Electronic Records; Relevancy, Admissibility and Probative Value of E-Evidence, Proving Digital Signatures, Proof of Electronic Agreements, Proving Electronic Messages, Other Amendments in the Indian Evidence Act by the IT Act, Amendments to the Bankers Books Evidence Act, 1891 and Reserve Bank of India</p>	12

	<p>Act, 1934.</p> <p>Protection of Cyber Consumers in India: Are Cyber Consumers Covered Under the Consumer Protection Act? Goods and Services, Consumer Complaint, Defect in Goods and Deficiency in Services, Restrictive and Unfair Trade Practices, Instances of Unfair Trade Practices, Reliefs Under CPA, Beware Consumers, Consumer Foras, Jurisdiction and Implications on cyber Consumers in India, Applicability of CPA to Manufacturers, Distributors, Retailers and Service Providers Based in Foreign Lands Whose Goods are Sold or Services Provided to a Consumer in India.</p> <p>Amendments in Indian IT Act 2000</p>	
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Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Cyber Law Simplified	VivekSood	TMH Education		2001
2.	Cybersecurity Law	Jeff Kosseff	Wiley		2017

B. Sc. (Information Technology)		Semester – VI	
Course Name: Project Implementation		Course Code: USIT6P1	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	150
	Internal	--	-

The details are given in Appendix – I

B. Sc. (Information Technology)		Semester – VI	
Course Name: Security in Computing Practical		Course Code: USIT6P2	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	-

Practical No	Details
1	Configure Routers
a	OSPF MD5 authentication.
b	NTP.
c	to log messages to the syslog server.
d	to support SSH connections.
2	Configure AAA Authentication
a	Configure a local user account on Router and configure authenticate on the console and vty lines using local AAA
b	Verify local AAA authentication from the Router console and the PC-A client
3	Configuring Extended ACLs
a	Configure, Apply and Verify an Extended Numbered ACL
4	Configure IP ACLs to Mitigate Attacks and IPV6 ACLs

a	Verify connectivity among devices before firewall configuration.
b	Use ACLs to ensure remote access to the routers is available only from management station PC-C.
c	Configure ACLs on to mitigate attacks.
d	Configuring IPv6 ACLs
5	Configuring a Zone-Based Policy Firewall
6	Configure IOS Intrusion Prevention System (IPS) Using the CLI
a	Enable IOS IPS.
b	Modify an IPS signature.
7	Layer 2 Security
a	Assign the Central switch as the root bridge.
b	Secure spanning-tree parameters to prevent STP manipulation attacks.
c	Enable port security to prevent CAM table overflow attacks.
8	Layer 2 VLAN Security
9	Configure and Verify a Site-to-Site IPsec VPN Using CLI
10	Configuring ASA Basic Settings and Firewall Using CLI
a	Configure basic ASA settings and interface security levels using CLI
b	Configure routing, address translation, and inspection policy using CLI
c	Configure DHCP, AAA, and SSH
d	Configure a DMZ, Static NAT, and ACLs

B. Sc. (Information Technology)		Semester – VI	
Course Name: Business Intelligence Practical		Course Code: USIT6P3	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	-

Practical No	Details
1	Import the legacy data from different sources such as (Excel , SqlServer, Oracle etc.) and load in the target system. (You can download sample database such as Adventureworks, Northwind, foodmart etc.)
2	Perform the Extraction Transformation and Loading (ETL) process to construct the database in the Sqlserver.
3	a. Create the Data staging area for the selected database. b. Create the cube with suitable dimension and fact tables based on ROLAP, MOLAP and HOLAP model.
4	a.Create the ETL map and setup the schedule for execution. b. Execute the MDX queries to extract the data from the datawarehouse.
5	a. Import the datawarehouse data in Microsoft Excel and create the Pivot table and Pivot Chart.

	b. Import the cube in Microsoft Excel and create the Pivot table and Pivot Chart to perform data analysis.
6	Apply the what – if Analysis for data visualization. Design and generate necessary reports based on the datawarehouse data.
7	Perform the data classification using classification algorithm.
8	Perform the data clustering using clustering algorithm.
9	Perform the Linear regression on the given datawarehouse data.
10	Perform the logistic regression on the given datawarehouse data.

The BI tools such as Tableau / Power BI / BIRT / R / Excel or any other can be used.

B. Sc. (Information Technology)		Semester – VI	
Course Name: Principles of Geographical Information System Practical		Course Code: USIT6P4 (Elective II)	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	-

Practical No	Details
0	Familiarizing Quantum GIS: Installation of QGIS, datasets for both Vector and Raster data, Maps.
1	Creating and Managing Vector Data: Adding vector layers, setting properties, formatting, calculating line lengths and statistics
2	Exploring and Managing Raster data: Adding raster layers, raster styling and analysis, raster mosaicking and clipping
3	Making a Map, Working with Attributes, Importing Spreadsheets or CSV files Using Plugins, Searching and Downloading OpenStreetMap Data

4	Working with attributes, terrain Data
5	Working with Projections and WMS Data
6	Georeferencing Topo Sheets and Scanned Maps Georeferencing Aerial Imagery Digitizing Map Data
7	Managing Data Tables and Spatial data Sets: Table joins, spatial joins, points in polygon analysis, performing spatial queries
8	Advanced GIS Operations 1: Nearest Neighbor Analysis, Sampling Raster Data using Points or Polygons, Interpolating Point Data
9	Advanced GIS Operations 2: Batch Processing using Processing Framework Automating Complex Workflows using Processing Modeler Automating Map Creation with Print Composer Atlas
10	Validating Map data

B. Sc. (Information Technology)		Semester – VI	
Course Name: Advanced Networking Practical		Course Code: USIT6P5 (Elective II)	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	-

Practical No	Details
1	Configuring OSPF – I
a	Single-Area OSPF Link Costs and Interface Priorities
b	Multi-Area OSPF with Stub Areas and Authentication
2	Configuring OSPF – II
a	OSPF Virtual Links and Area Summarization
b	OSPF over Frame Relay
3	Redistribution and Administrative Distances
a	Redistribution Between RIP and OSPF
b	Manipulating Administrative Distances

4	BGP
a	Configuring BGP with Default Routing
b	Using the AS_PATH Attribute
c	BGP Route Reflectors and Route Filters
5	IPv6
a	Configuring OSPF for IPv6
b	Configuring 6to4 Tunnels
6	VLANs and EtherChannel
a	Static VLANs, VLAN Trunking, and VTP Domains and Modes
b	Configuring EtherChannel
7	Spanning Tree Protocol
a	Spanning Tree Protocol (STP) Default Behavior
b	Modifying Default Spanning Tree Behavior
8	VLAN and Spanning Tree
a	Per-VLAN Spanning Tree Behavior
b	Multiple Spanning Tree
9	Internal VLAN Routing
a	Inter-VLAN Routing with an External Router
b	Inter-VLAN Routing with an Internal Route Processor
10	Configure NAT Services

B. Sc. (Information Technology)		Semester – VI	
Course Name: Advanced Mobile Programming Practical		Course Code: USIT6P6	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	--

Practical No	Details
1	Introduction to Android, Introduction to Android Studio IDE, Application Fundamentals: Creating a Project, Android Components, Activities, Services, Content Providers, Broadcast Receivers, Interface overview, Creating Android Virtual device, USB debugging mode, Android Application Overview. Simple “Hello World” program.
2	Programming Resources Android Resources: (Color, Theme, String, Drawable, Dimension, Image),
3	Programming Activities and fragments Activity Life Cycle, Activity methods, Multiple Activities, Life Cycle of fragments and multiple fragments.
4	Programs related to different Layouts

	Coordinate, Linear, Relative, Table, Absolute, Frame, List View, Grid View.
5	Programming UI elements AppBar, Fragments, UI Components
6	Programming menus, dialog, dialog fragments
7	Programs on Intents, Events, Listeners and Adapters The Android Intent Class, Using Events and Event Listeners
8	Programs on Services, notification and broadcast receivers
9	Database Programming with SQLite
10	Programming threads, handles and asynchronized programs
11	Programming Media API and Telephone API
12	Programming Security and permissions
13	Programming Network Communications and Services (JSON)

APPENDIX – 1

Project Dissertation Semester V and Project Implementation Semester VI

Chapter 1 to 4 should be submitted in Semester V in spiral binding. These chapter have also to be included in Semester VI report. Semester VI report has to be hard bound with golden embossing. Students will be evaluated based on the dissertation in semester V and dissertation and viva voce in Semester VI.

I. OBJECTIVES

- Describe the Systems Development Life Cycle (SDLC).
- Evaluate systems requirements.
- Complete a problem definition.
- Evaluate a problem definition.
- Determine how to collect information to determine requirements.

- Perform and evaluate feasibility studies like cost-benefit analysis, technical feasibility, time feasibility and Operational feasibility for the project.
- Work on data collection methods for fact finding.
- Construct and evaluate data flow diagrams.
- Construct and evaluate data dictionaries.
- Evaluate methods of process description to include structured English, decision tables and decision trees.
- Evaluate alternative tools for the analysis process.
- Create and evaluate such alternative graphical tools as systems flow charts and state transition diagrams.
- Decide the S/W requirement specifications and H/W requirement specifications.
- Plan the systems design phase of the SDLC.
- Distinguish between logical and physical design requirements.
- Design and evaluate system outputs.
- Design and evaluate systems inputs.
- Design and evaluate validity checks for input data.
- Design and evaluate user interfaces for input.
- Design and evaluate file structures to include the use of indexes.
- Estimate storage requirements.
- Explain the various file update processes based on the standard file organizations.
- Decide various data structures.
- Construct and evaluate entity-relationship (ER) diagrams for RDBMS related projects.
- Perform normalization for the unnormalized tables for RDBMS related projects
- Decide the various processing systems to include distributed, client/server, online and others.
- Perform project cost estimates using various techniques.
- Schedule projects using both GANTT and PERT charts.
- Perform coding for the project.
- Documentation requirements and prepare and evaluate systems documentation.
- Perform various systems testing techniques/strategies to include the phases of testing.
- Systems implementation and its key problems.

- Generate various reports.
- Be able to prepare and evaluate a final report.
- Brief the maintenance procedures and the role of configuration management in operations.
- To decide the future scope and further enhancement of the system.
- Plan for several appendices to be placed in support with the project report documentation.
- Decide the various processing systems to include distributed, client/server, online and others.
- Perform project cost estimates using various techniques.
- Schedule projects using both GANTT and PERT charts.
- Perform coding for the project.
- Documentation requirements and prepare and evaluate systems documentation.
- Perform various systems testing techniques/strategies to include the phases of testing.
- Systems implementation and its key problems.
- Generate various reports.
- Be able to prepare and evaluate a final report.
- Brief the maintenance procedures and the role of configuration management in operations.
- To decide the future scope and further enhancement of the system.
- Plan for several appendices to be placed in support with the project report documentation.
- Work effectively as an individual or as a team member to produce correct, efficient, well-organized and documented programs in a reasonable time.
- Recognize problems that are amenable to computer solutions, and knowledge of the tool necessary for solving such problems.
- Develop of the ability to assess the implications of work performed.
- Get good exposure and command in one or more application areas and on the software
- Develop quality software using the software engineering principles
- Develop of the ability to communicate effectively.

II. Type of the Project

The majority of the students are expected to work on a real-life project preferably in some industry/ Research and Development Laboratories/Educational Institution/Software Company. Students are encouraged to work in the areas listed below . However, it is ***not mandatory*** for a

student to work on a real-life project. The student can formulate a project problem with the help of her/his Guide and submit the project proposal of the same. **Approval of the project proposal is mandatory.** If approved, the student can commence working on it, and complete it. Use the latest versions of the software packages for the development of the project.

III. SOFTWARE AND BROAD AREAS OF APPLICATION

FRONT END / GUI Tools	.Net Technologies,Java
DBMS/BACK END	Oracle, SQL Plus, MY SQL, SQL Server,
LANGUAGES	C, C++, Java, VC++, C#, R,Python
SCRIPTING LANGUAGES	PHP,JSP, SHELL Scripts (Unix), Tcl/Tk,
.NET Platform	F#,C#. Net, Visual C#. Net, ASP.Net
MIDDLE WARE (COMPONENT) TECHNOLOGIES	COM/DCOM, Active-X, EJB
UNIX INTERNALS	Device Drivers, RPC, Threads, Socket programming
NETWORK/WIRELESS TECHNOLOGIES	-
REALTIME OPERATING SYSTEM/ EMBEDDED SKILLS	LINUX, Raspberry Pi, Arduino, 8051
APPLICATION AREAS	Financial / Insurance / Manufacturing / Multimedia / Computer Graphics / Instructional Design/ Database Management System/ Internet / Intranet / Computer Networking-Communication Software development/ E-Commerce/ ERP/ MRP/ TCP-IP programming / Routing protocols programming/ Socket programming.

IV.Introduction

The project report should be documented with scientific approach to the solution of the problem that the students have sought to address. The project report should be prepared in order to solve the problem in a methodical and professional manner, making due references to appropriate techniques, technologies and professional standards. The student should start the documentation process from the first phase of software development so that one can easily identify the issues to be focused upon in the ultimate project report. The student should also include the details from

the project diary, in which they will record the progress of their project throughout the course. The project report should contain enough details to enable examiners to evaluate the work. The important points should be highlighted in the body of the report, with details often referred to appendices.

1.1 PROJECT REPORT:

Title Page

Original Copy of the Approved Proforma of the Project Proposal

Certificate of Authenticated work

Role and Responsibility Form

Abstract

Acknowledgement

Table of Contents

Table of Figures

CHAPTER 1: INTRODUCTION

1.1 Background

1.2 Objectives

1.3 Purpose, Scope, and Applicability

1.3.1 Purpose

1.3.2 Scope

1.3.3 Applicability

1.4 Achievements

1.5 Organisation of Report

CHAPTER 2: SURVEY OF TECHNOLOGIES

CHAPTER 3: REQUIREMENTS AND ANALYSIS

3.1 Problem Definition

3.2 Requirements Specification

3.3 Planning and Scheduling

3.4 Software and Hardware Requirements

3.5 Preliminary Product Description

3.6 Conceptual Models

CHAPTER 4: SYSTEM DESIGN

4.1 Basic Modules

4.2 Data Design

4.2.1 Schema Design

4.2.2 Data Integrity and Constraints

4.3 Procedural Design

4.3.1 Logic Diagrams

4.3.2 Data Structures

4.3.3 Algorithms Design

4.4 User interface design

4.5 Security Issues

4.6 Test Cases Design

The documentation should use tools like star UML, Visuo for windows, Rational Rose for design as part of Software Project Management Practical Course. The documentation should be spiral bound for semester V and the entire documentation should be hard bound during semester VI.

CHAPTER 5: IMPLEMENTATION AND TESTING

5.1 Implementation Approaches

5.2 Coding Details and Code Efficiency

5.2.1 Code Efficiency

5.3 Testing Approach

5.3.1 Unit Testing

5.3.2 Integrated Testing

5.3.3 Beta Testing

5.4 Modifications and Improvements

5.5 Test Cases

CHAPTER 6: RESULTS AND DISCUSSION

6.1 Test Reports

6.2 User Documentation

CHAPTER 7: CONCLUSIONS

7.1 Conclusion

7.1.1 Significance of the System

7.2 Limitations of the System

7.3 Future Scope of the Project

REFERENCES

GLOSSARY

APPENDIX A

APPENDIX B

V. EXPLANATION OF CONTENTS

Title Page

Sample format of Title page is given in Appendix 1 of this block. Students should follow the given format.

Original Copy of the Approved Proforma of the Project Proposal

Sample Proforma of Project Proposal is given in Appendix 2 of this block. Students should follow the given format.

Certificate of Authenticated work

Sample format of Certificate of Authenticated work is given in Appendix 3 of this block. Students should follow the given format.

Role and Responsibility Form

Sample format for Role and Responsibility Form is given in Appendix 4 of this block. Students should follow the given format.

Abstract

This should be one/two short paragraphs (100-150 words total), summarising the project work. It is important that this is not just a re-statement of the original project outline. A suggested flow is background, project aims and main achievements. From the abstract, a reader should be able to ascertain if the project is of interest to them and, it should present results of which they may wish to know more details.

Acknowledgements

This should express student's gratitude to those who have helped in the preparation of project.

Table of Contents: The table of contents gives the readers a view of the detailed structure of the report. The students would need to provide section and subsection headings with associated pages. The formatting details of these sections and subsections are given below.

Table of Figures: List of all Figures, Tables, Graphs, Charts etc. along with their page numbers in a table of figures.

Chapter 1: Introduction

The introduction has several parts as given below:

Background: A description of the background and context of the project and its relation to work already done in the area. Summarise existing work in the area concerned with the project work.

Objectives: Concise statement of the aims and objectives of the project. Define exactly what is going to be done in the project; the objectives should be about 30 /40 words.

Purpose, Scope and Applicability: The description of Purpose, Scope, and Applicability are given below:

- **Purpose:** Description of the topic of the project that answers questions on why this project is being done. How the project could improve the system its significance and theoretical framework.
- **Scope:** A brief overview of the methodology, assumptions and limitations. The students should answer the question: What are the main issues being covered in the project? What are the main functions of the project?
- **Applicability:** The student should explain the direct and indirect applications of their work. Briefly discuss how this project will serve the computer world and people.

Achievements: Explain what knowledge the student achieved after the completion of the work. What contributions has the project made to the chosen area? Goals achieved - describes the

degree to which the findings support the original objectives laid out by the project. The goals may be partially or fully achieved, or exceeded.

Organisation of Report: Summarising the remaining chapters of the project report, in effect, giving the reader an overview of what is to come in the project report.

Chapter 2: Survey of Technologies

In this chapter Survey of Technologies should demonstrate the students awareness and understanding of Available Technologies related to the topic of the project. The student should give the detail of all the related technologies that are necessary to complete the project. The should describe the technologies available in the chosen area and present a comparative study of all those Available Technologies. Explain why the student selected the one technology for the completion of the objectives of the project.

Chapter 3: Requirements and Analysis

Problem Definition: Define the problem on which the students are working in the project.

Provide details of the overall problem and then divide the problem in to sub-problems. Define each sub-problem clearly.

Requirements Specification: In this phase the student should define the requirements of the system, independent of how these requirements will be accomplished. The Requirements Specification describes the things in the system and the actions that can be done on these things. Identify the operation and problems of the existing system.

Planning and Scheduling: Planning and scheduling is a complicated part of software development. Planning, for our purposes, can be thought of as determining all the small tasks that must be carried out in order to accomplish the goal. Planning also takes into account, rules, known as constraints, which, control when certain tasks can or cannot happen. Scheduling can be thought of as determining whether adequate resources are available to carry out the plan. The student should show the Gantt chart and Program Evaluation Review Technique (PERT).

Software and Hardware Requirements: Define the details of all the software and hardware needed for the development and implementation of the project.

- Hardware Requirement: In this section, the equipment, graphics card, numeric co-processor, mouse, disk capacity, RAM capacity etc. necessary to run the software must be noted.
- Software Requirements: In this section, the operating system, the compiler, testing tools, linker, and the libraries etc. necessary to compile, link and install the software must be listed.

Preliminary Product Description: Identify the requirements and objectives of the new system. Define the functions and operation of the application/system the students are developing as project.

Conceptual Models: The student should understand the problem domain and produce a model of the system, which describes operations that can be performed on the system, and the allowable sequences of those operations. Conceptual Models could consist of complete Data Flow Diagrams, ER diagrams, Object-oriented diagrams, System Flowcharts etc.

Chapter 4: System Design

Describes desired features and operations in detail, including screen layouts, business rules, process diagrams, pseudocode and other documentation.

Basic Modules: The students should follow the divide and conquer theory, so divide the overall problem into more manageable parts and develop each part or module separately. When all modules are ready, the student should integrate all the modules into one system. In this phase, the student should briefly describe all the modules and the functionality of these modules.

Data Design: Data design will consist of how data is organised, managed and manipulated.

- Schema Design: Define the structure and explanation of schemas used in the project.
- Data Integrity and Constraints: Define and explain all the validity checks and constraints provided to maintain data integrity.

Procedural Design: Procedural design is a systematic way for developing algorithms or procedurals.

- Logic Diagrams: Define the systematical flow of procedure that improves its comprehension and helps the programmer during implementation. e.g., Control Flow Chart, Process Diagrams etc.
- Data Structures: Create and define the data structure used in procedures.
- Algorithms Design: With proper explanations of input data, output data, logic of processes, design and explain the working of algorithms.

User Interface Design: Define user, task, environment analysis and how to map those requirements in order to develop a “User Interface”. Describe the external and internal components and the architecture of user interface. Show some rough pictorial views of the user interface and its components.

Security Issues: Discuss Real-time considerations and Security issues related to the project and explain how the student intends avoiding those security problems. What are the security policy plans and architecture?

Test Cases Design: Define test cases, which will provide easy detection of errors and mistakes with in a minimum period of time and with the least effort. Explain the different conditions in which the students wish to ensure the correct working of the project.

Chapter 5: Implementation and Testing

Implementation Approaches: Define the plan of implementation, and the standards the students have used in the implementation.

Coding Details and Code Efficiency: Students not need include full source code, instead, include only the important codes (algorithms, applets code, forms code etc). The program code should contain comments needed for explaining the work a piece of code does. Comments may be needed to explain why it does it, or, why it does a particular way.

The student can explain the function of the code with a shot of the output screen of that program code.

- Code Efficiency: The student should explain how the code is efficient and how the students have handled code optimisation.

Testing Approach: Testing should be according to the scheme presented in the system design chapter and should follow some suitable model – e.g., category partition, state machine-based. Both functional testing and user-acceptance testing are appropriate. Explain the approach of testing.

- Unit Testing: Unit testing deals with testing a unit or module as a whole. This would test the interaction of many functions but, do confine the test within one module.
- Integrated Testing: Brings all the modules together into a special testing environment, then checks for errors, bugs and interoperability. It deals with tests for the entire application. Application limits and features are tested here.

Modifications and Improvements: Once the students finish the testing they are bound to be faced with bugs, errors and they will need to modify your source code to improve the system. Define what modification are implemented in the system and how it improved the system.

Chapter 6: Results and Discussion

Test Reports: Explain the test results and reports based on the test cases, which should show that the project is capable of facing any problematic situation and that it works fine in different conditions. Take the different sample inputs and show the outputs.

User Documentation: Define the working of the software; explain its different functions, components with screen shots. The user document should provide all the details of the product in such a way that any user reading the manual, is able to understand the working and functionality of the document.

Chapter 7: Conclusions

Conclusion: The conclusions can be summarised in a fairly short chapter (2 or 3 pages). This chapter brings together many of the points that would have made in the other chapters.

Limitations of the System: Explain the limitations encountered during the testing of the project that the students were not able to modify. List the criticisms accepted during the demonstrations of the project.

Future Scope of the Project describes two things: firstly, new areas of investigation prompted by developments in this project, and secondly, parts of the current work that was not completed due to time constraints and/or problems encountered.

REFERENCES

It is very important that the students acknowledge the work of others that they have used or adapted in their own work, or that provides the essential background or context to the project. The use of references is the standard way to do this. Please follow the given standard for the references for books, journals, and online material. The citation is mandatory in both the reports.

E.g:

Linhares, A., & Brum, P. (2007). Understanding our understanding of strategic scenarios: What role do chunks play? *Cognitive Science*, 31(6), 989-1007.
<https://doi.org/doi:10.1080/03640210701703725>

Lipson, Charles (2011). Cite right : A quick guide to citation styles; MLA, APA, Chicago, the sciences, professions, and more (2nd ed.). Chicago [u.a.]: University of Chicago Press. p. 187. ISBN 9780226484648.

Elaine Ritchie, J Knite. (2001). *Artificial Intelligence, Chapter 2 ,p.p 23 - 44.* Tata McGrawHill.

GLOSSARY

If you the students any acronyms, abbreviations, symbols, or uncommon terms in the project report then their meaning should be explained where they first occur. If they go on to use any of them extensively then it is helpful to list them in this section and define the meaning.

APPENDICES

These may be provided to include further details of results, mathematical derivations, certain illustrative parts of the program code (e.g., class interfaces), user documentation etc.

In particular, if there are technical details of the work done that might be useful to others who wish to build on this work, but that are not sufficiently important to the project as a whole to

justify being discussed in the main body of the project, then they should be included as appendices.

VI. SUMMARY

Project development usually involves an engineering approach to the design and development of a software system that fulfils a practical need. Projects also often form an important focus for discussion at interviews with future employers as they provide a detailed example of what the students are capable of achieving. In this course the students can choose your project topic from the lists given in Unit 4: Category-wise Problem Definition.

VII. FURTHER READINGS

1. Modern Systems Analysis and Design; Jeffrey A. Hoffer, Joey F. George, Joseph, S. Valacich; Pearson Education; Third Edition; 2002.
2. ISO/IEC 12207: Software Life Cycle Process
(<http://www.software.org/quagmire/descriptions/iso-iec12207.asp>).
3. IEEE 1063: Software User Documentation (<http://ieeexplore.ieee.org>).
4. ISO/IEC: 18019: Guidelines for the Design and Preparation of User Documentation for Application Software.
5. <http://www.sce.carleton.ca/squall>.
6. <http://en.tldp.org/HOWTO/Software-Release-Practice-HOWTO/documentation.html>.
7. <http://www.sei.cmu.edu/cmm/>

PROFORMA FOR THE APPROVAL PROJECT PROPOSAL

(Note: All entries of the proforma of approval should be filled up with appropriate and complete information. Incomplete proforma of approval in any respect will be summarily rejected.)

PNR No.:

Rollno: _____

1. Name of the Student

2. Title of the Project

3. Name of the Guide

4. Teaching experience of the Guide _____

5. Is this your first submission?

Yes ☐

No ☐

Signature of the Student

Signature of the Guide

Date:

Date:

Signature of the Coordinator

Date:

(All the text in the report should be in times new roman)

TITLE OF THE PROJECT
(NOT EXCEEDING 2 LINES, 24 BOLD,
ALL CAPS)

A Project Report (12 Bold)

Submitted in partial fulfillment of the
Requirements for the award of the Degree of (size-12)

**BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)(14 BOLD,
CAPS)**

By(12 Bold)

Name of The Student (size-15, title case)

Seat Number (size-15)

Under the esteemed guidance of (13 bold)

Mr./Mrs. Name of The Guide (15 bold, title case)

Designation (14 Bold, title case)

COLLEGE LOGO

DEPARTMENT OF INFORMATION TECHNOLOGY(12 BOLD, CAPS)

COLLEGE NAME (14 BOLD, CAPS)

(Affiliated to University of Mumbai) (12, Title case, bold, italic)

CITY, PIN CODE(12 bold, CAPS)

MAHARASHTRA (12 bold, CAPS)

YEAR (12 bold)

COLLEGE NAME (14 BOLD, CAPS)
(Affiliated to University of Mumbai) (13, bold, italic)
CITY-MAHARASHTRA-PINCODE(13 bold, CAPS)

DEPARTMENT OF INFORMATION TECHNOLOGY (14 BOLD, CAPS)

College Logo

CERTIFICATE (14 BOLD, CAPS, underlined, centered)

This is to certify that the project entitled, "**Title of The Project** ", is bonafied work of **NAME OF THE STUDENT** bearing Seat.No: **(NUMBER)** submitted in partial fulfillment of the requirements for the award of degree of BACHELOR OF SCIENCE in INFORMATION TECHNOLOGY from University of Mumbai. (12, times new roman, justified)

Internal Guide (12 bold)

Coordinator

(Don't write names of lecturers or HOD)

External Examiner

Date:

College Seal

COMPANY CERTIFICATE (if applicable)

(Project Abstract page format)

Abstract (20bold, caps, centered)

Content (12, justified)

**Note: Entire document should be with 1.5
line spacing and all paragraphs should start with 1 tab space.**

ACKNOWLEDGEMENT

(20, BOLD, ALL CAPS, CENTERED)

The acknowledgement should be in times new roman, 12 font with 1.5 line spacing, justified.

(Declaration page format)

DECLARATION (20 bold, centered, allcaps)

Content (12, justified)

I here by declare that the project entitled, “**Title of the Project**” done at **place where the project is done**, has not been in any case duplicated to submit to any other university for the award of any degree. To the best of my knowledge other than me, no one has submitted to any other university.

The project is done in partial fulfillment of the requirements for the award of degree of **BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)** to be submitted as final semester project as part of our curriculum.

Name and Signature of the Student

TABLE OF CONTENTS (20bold, caps, centered)

Should be generated automatically using word processing software.

Chapter 1: Introduction	01(no bold)
1.1 Background	02(no bold)
1.2 Objectives
1.3 Purpose and Scope
1.2.1Purpose
1.2.2Scope	

.....
.....

Chapter 2: System Analysis	
2.1 Existing System	
2.2 Proposed System	
2.3 Requirement Analysis	
2.4 Hardware Requirements	
2.5 Software Requirements	
2.6 Justification of selection of Technology	

Chapter 3: System Design	
3.1 Module Division	
3.2 Data Dictionary	
3.3 ER Diagrams	
3.4 DFD/UML Diagrams	

Chapter 4: Implementation and Testing

4.1 Code (Place Core segments)	
4.2 Testing Approach	
4.2.1Unit Testing (Test cases and Test Results)	
4.2.2 Integration System (Test cases and Test Results)	

Chapter 5: Results and Discussions (Output Screens)	
Chapter 6: Conclusion and Future Work	
Chapter 7: References	

List of Tables (20 bold, centered, Title Case)

Should be generated automatically using word processing software.

List of Figures (20 bold, centered, Title Case)

Should be generated automatically using word processing software.

(Project Introduction page format)

Chapter 1

Introduction (20 Bold, centered)

Content or text (12, justified)

Note: Introduction has to cover brief description of the project with minimum 4 pages.

Chapter 2

System Analysis (20 bold, Centered)

Subheadings are as shown below with following format (16 bold, CAPS)

2.1 Existing System (16 Bold)

2.1.1 ----- (14 bold, title case)

2.1.1.1 ----- (12 bold, title case)

2.2 Proposed System

2.3 Requirement Analysis

2.4 Hardware Requirements

2.5 Software Requirements

2.6 Justification of Platform – (how h/w & s/w satisfying the project)

Table 2.1: Caption

Chapter 3

System Design (20 bold, centered)

Subheadings are as shown below with following format (16 bold, CAPS)
Specify figures as Fig 11.1 – caption

3.1 Module Division

3.2 Data Dictionary

3.3 E-R Diagrams

3.4 Data Flow Diagrams / UML

Note: write brief description at the bottom of all diagrams

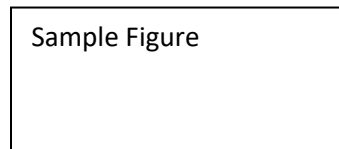


Fig. 3.1: Caption

Chapter 4

Implementation and Testing (20 bold, centered)

4.1 Code (Place Core segments)

Content includes description about coding phase in your project (Font-12)

(* don't include complete code-----just description)

4.2 Testing Approach

Subheadings are as shown below with following format (16 bold, CAPS)

4.2.1 Unit Testing

4.2.2 Integration Testing

Note:

- Explain about above testing methods
- Explain how the above techniques are applied in your project
Provide Test plans, test cases, etc relevant to your project

Chapter 5

Results and Discussions(20 bold, centered)

Note: Place Screen Shots and write the functionality of each screen at the bottom

Chapter 6

Conclusion and Future Work (20 bold, centered)

The conclusions can be summarized in a fairly short chapter around 300 words. Also include limitations of your system and future scope (12, justified)

Chapter 7

References (20 bold, centered)

Content (12, LEFT)

[1] Title of the book, Author

[2] Full URL of online references

[3] -----

*** NOTE ABOUT PROJECT VIVA VOCE:**

Student may be asked to write code for problem during VIVA to demonstrate his coding capabilities and he/she may be asked to write any segment of coding used in the in the project. The project can be done in group of at most four students. However, the length and depth of the project should be justified for the projects done in group. A big project can be modularised and different modules can be assigned as separate project to different students.

Marks Distribution:

Semester V: 50 Marks

Documentation: 50 marks

Semester VI: 150 Marks

Documentation: 50 Marks:

Implementation and Viva Voce: 100 Marks

The plagiarism should be maintained as per the UGC guidelines.

UNIVERSITY OF MUMBAI

No. UG/121 of 2016-17

CIRCULAR:-

A reference is invited to the Syllabi relating to the B.Com. (Banking Insurance) degree course vide this office Circular No. UG/144 of 2011 dated 14th June, 2011 the Principals of affiliated Colleges in Commerce are hereby informed that the approved by the Academic Council at its meeting held on 24th June, 2016 vide item No. 4.74 and that in accordance therewith, the revised syllabus as per Choice Based Credit System for B.Com (Banking and Insurance) (Sem. I to VI) - Course Structure (Sem. I & II), which is available on the University's web site (www.mu.ac.in) and that the same has been brought into force with effect from the academic year 2016-17.

MUMBAI – 400 032

27th October, 2016

(Signature)
26/10/16
(Dr.M.A. Khan)
REGISTRAR

To,

The Principals of affiliated Colleges in Commerce and the Heads of recognized Institutions concerned.

A.C/4.74 /24/06/2016

No. UG/121-A of 2016-17 MUMBAI-400 032 27th October, 2016

Copy forwarded with compliments for information to:-

- 1) The Dean, Faculty of Commerce,
- 2) The Director, Board of College and University Development,
- 3) The Controller of Examinations,
- 4) The Professor-cum- Director, Institute of Distance and Open Learning (IDOL),
- 5) The Co-Ordinator, University Computerization Centre.

(Signature)
26/10/16
(Dr.M.A. Khan)
REGISTRAR

PTO..

University of Mumbai



B.Com. (Banking & Insurance) Programme Three Year Integrated Programme - Six Semesters *Course Structure*

Under Choice Based Credit System

**To be implemented from Academic Year- 2016-2017
Progressively**

Board of Studies-in-Banking & Finance, University of Mumbai

B.Com. (Banking & Insurance) Programme

Under Choice Based Credit, Grading and Semester System

Course Structure

F.Y.B.Com. (Banking & Insurance)

(To be implemented from Academic Year- 2016-2017)

No. of Courses	Semester I	Credits	No. of Courses	Semester II	Credits
1	Elective Courses (EC)		1	Elective Courses (EC)	
1	Environment and Management of Financial Services.	03	1	Principles and Practices of Banking & Insurance	03
2	Principles of Management	03	2	Business Law	03
3	Financial Accounting - I	03	3	Financial Accounting - II	03
2	Ability Enhancement Courses (AEC)		2	Ability Enhancement Courses (AEC)	
2A	Ability Enhancement Compulsory Course (AECC)		2A	Ability Enhancement Compulsory Course (AECC)	
4	Business Communication-I	03	4	Business Communication-II	03
2B	*Skill Enhancement Courses (SEC)		2B	**Skill Enhancement Courses (SEC)	
5	Any one course from the following list of the courses	02	5	Any one course from the following list of the courses	02
3	Core Courses (CC)		3	Core Courses (CC)	
6	Business Economics-I	03	6	Organisational Behaviour	03
7	Quantitative Methods-I	03	7	Quantitative Methods-II	03
Total Credits		20	Total Credits		20

*List of Skill Enhancement Courses (SEC) for Semester I (Any One)		**List of Skill Enhancement Courses (SEC) for Semester II (Any One)	
1	Foundation Course - I	1	Foundation Course - II
2	Foundation Course in NSS - I	2	Foundation Course in NSS - II
3	Foundation Course in NCC - I	3	Foundation Course in NCC - II
4	Foundation Course in Physical Education - I	4	Foundation Course in Physical Education - II
Note: Course selected in Semester I will continue in Semester II			

S.Y.B.Com. (Banking & Insurance)

(To be implemented from Academic Year- 2017-2018)

No. of Courses	Semester III	Credits	No. of Courses	Semester IV	Credits
1	<i>Elective Courses (EC)</i>		1	<i>Elective Courses (EC)</i>	
1, 2 & 3	*Any three courses from the following list of the courses	09	1,2 & 3	*Any three courses from the following list of the courses	09
2	<i>Ability Enhancement Courses (AEC)</i>		2	<i>Ability Enhancement Courses (AEC)</i>	
4	Information Technology in Banking & Insurance-I	02	4	Information Technology in Banking & Insurance-II	02
3	<i>Core Courses (CC)</i>		3	<i>Core Courses (CC)</i>	
5	Laws Governing Banking & Insurance	03	5	Corporate Laws & laws Governing Capital Market	03
6	Financial Market (Equity, Debt, Forex and Derivatives)	03	6	Universal Banking	03
7	Taxation of Financial Services	03	7	Business Economics-II	03
Total Credits		20	Total Credits		20

<i>*List of Discipline Related Elective(DRE) Courses for Semester III (Any Three)</i>		<i>*List of Discipline Related Elective(DRE) Courses for Semester IV (Any Three)</i>	
1	Financial Management -I	1	Financial Management –II
2	Management Accounting (Tools & Techniques, Focus on Banking & Insurance)	2	Financial Market (Equity, Debt, Forex and Derivatives)
3	Organizational Behaviour	3	Wealth Management
4	Risk Management	4	Cost Accounting of Banking & Insurance
5	Mutual Fund Management	5	Entrepreneurship Management

T.Y.B.Com. (Banking & Insurance)

(To be implemented from Academic Year- 2018-2019)

No. of Courses	Semester V	Credits	No. of Courses	Semester VI	Credits
1	Elective Courses (EC)		1	Elective Courses (EC)	
1,2,3 & 4	*Any four courses from the following list of the courses	12	1,2,3 & 4	*Any four courses from the following list of the courses	12
2	Core Courses (CC)		2	Core Courses (CC)	
5	International Banking & Finance	04	5	Central Banking	04
3	*Project Work		3	*Project Work	
6	Project Work-I (Banking)	04	6	Project Work-II (Insurance)	04
Total Credits		20	Total Credits		20

Note: Project work is considered as a special course involving application of knowledge in solving/analyzing/exploring a real life situation/ difficult problem. Project work would be of 04 credits each. A project work may be undertaken in any area of Elective Courses/ study area

*List of Elective Courses for Semester V (Any Four)		*List of Elective Courses for Semester VI (Any Four)	
1	Marketing in Banking & Insurance	1	Security Analysis and Portfolio Management
2	Financial Reporting & Analysis(Corporate Banking & Insurance)	2	Strategic Management
3	Auditing	3	Human Resource Management in Banking & Insurance
4	Business Ethics & Corporate Governance	4	Turnaround Management
5	Financial Services Management	5	International Resource Management in Banking & Insurance
6	Actuarial Analysis in Banking & Insurance	6	Procedures & Documentations in Banking & Insurance

University of Mumbai



**Revised Syllabus
and
Question Paper Pattern
of Courses
of
B.Com. (Banking & Insurance)
Programme
at
First Year
*Semester I and II***

**Under Choice Based Credit, Grading and
Semester System**

(To be implemented from Academic Year- 2016-2017)

Board of Studies-in-Banking & Finance, University of Mumbai

B.Com. (Banking & Insurance) Programme at
Under Choice Based Credit, Grading and Semester System
Course Structure

F.Y.B.Com. (Banking & Insurance)

(To be implemented from Academic Year- 2016-2017)

No. of Courses	Semester I	Credits	No. of Courses	Semester II	Credits
1	Elective Courses (EC)		1	Elective Courses (EC)	
1	Environment and Management of Financial Services.	03	1	Principles and Practices of Banking & Insurance	03
2	Principles of Management	03	2	Business Law	03
3	Financial Accounting -I	03	3	Financial Accounting -II	03
2	Ability Enhancement Courses (AEC)		2	Ability Enhancement Courses (AEC)	
2A	Ability Enhancement Compulsory Course (AECC)		2A	Ability Enhancement Compulsory Course (AECC)	
4	Business Communication-I	03	4	Business Communication-II	03
2B	*Skill Enhancement Courses (SEC)		2B	**Skill Enhancement Courses (SEC)	
5	Any one course from the following list of the courses	02	5	Any one course from the following list of the courses	02
3	Core Courses (CC)		3	Core Courses (CC)	
6	Business Economics-I	03	6	Organizational Behaviour	03
7	Quantitative Methods-I	03	7	Quantitative Methods-II	03
Total Credits		20	Total Credits		20

*List of Skill Enhancement Courses (SEC) for Semester I (Any One)		**List of Skill Enhancement Courses (SEC) for Semester II (Any One)	
1	Foundation Course - I	1	Foundation Course - II
2	Foundation Course in NSS - I	2	Foundation Course in NSS - II
3	Foundation Course in NCC - I	3	Foundation Course in NCC - II
4	Foundation Course in Physical Education - I	4	Foundation Course in Physical Education - II
Note: Course selected in Semester I will continue in Semester II			

B.Com. (Banking & Insurance) Programme

Under Choice Based Credit, Grading and Semester System

Course Structure

(To be implemented from Academic Year- 2016-2017)

Semester I

No. of Courses	Semester I	Credits
1	<i>Elective Courses (EC)</i>	
1	Environment and Management of Financial Services.	03
2	Principles of Management	03
3	Financial Accounting-I	03
2	<i>Ability Enhancement Courses (AEC)</i>	
2A	<i>Ability Enhancement Compulsory Course (AECC)</i>	
4	Business Communication-I	03
2B	<i>*Skill Enhancement Courses (SEC)</i>	
5	Any one course from the following list of the courses	02
3	<i>Core Courses (CC)</i>	
6	Business Economics-I	03
7	Quantitative Methods-I	03
Total Credits		20

<i>*List of Skill Enhancement Courses (SEC) for Semester I (Any One)</i>	
1	Foundation Course - I
2	Foundation Course in NSS - I
3	Foundation Course in NCC - I
4	Foundation Course in Physical Education - I

***Revised Syllabus of courses of B.Com. (Banking & Insurance)
Programme at Semester I
with effect from the Academic Year 2016-2017***

Elective Courses (EC)

**1. Environment and Management of
Financial Services**

Sr. No.	Modules	No. of Lectures
1	Introduction to Financial System	15
2	Phases of Development of Banking and Insurance	15
3	Management, Regulation and Development	15
4	Regulatory and Developmental Framework of Banking & Insurance	15
Total		60

Sr. No.	Modules / Units
1	Introduction to Financial System
	<ul style="list-style-type: none"> • Financial System <ul style="list-style-type: none"> ▪ Institutional set- up ▪ Marketing Structure ▪ Instruments ▪ Overview of different kinds of financial services. (e.g Leasing, Hire purchase, factoring, forfaiting, Bill financing/Bill discounting, housing finance, letter of credit, insurance, venture capital, merchant banking, stock broking and credit rating.) • Meaning, Definition and scope of Banking and Insurance.
2	Phases of Development of Banking and Insurance
	<ul style="list-style-type: none"> • Significance and Role of Banking and Insurance in mobilizing savings, investment, accumulation and economic growth. • Functions and working of banking and insurance companies
3	Management, Regulation and Development
	<ul style="list-style-type: none"> • Risk management within the organizations of Banks and Insurance companies • Asset - Liability Management in Banking and Insurance • Organisational structure and management
4	Regulatory and Developmental Framework of Banking & Insurance
	<ul style="list-style-type: none"> • Banking companies and RBI Acts and legal framework governing the insurance. • Developmental Activities of RBI and IRDA • Mechanism of supervision and regulation. • Prudential Norms.

***Revised Syllabus of courses of B.Com. (Banking & Insurance)
Programme at Semester I
with effect from the Academic Year 2016-2017***

Elective Courses (EC)

2. Principles of Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Management	15
2	Management Process	15
3	Organization Structure of Banking and Insurance companies	15
4	Business Leaders	15
Total		60

Sr. No.	Modules / Units
1	Introduction to Management
	<ul style="list-style-type: none"> • Definition of Management • Management as a Profession • Traditional Vs Contemporary Management (Henry Fayol, F.W. Taylor, Peter Drucker) (C.K.Pralhad, Mr. Vijay Govindarajan)
2	Management Process
	<ul style="list-style-type: none"> • Management Process, Practices, Functions of Management related to Banking and Insurance companies
3	Organization Structure of Banking and Insurance companies
4	Business Leaders
	<ul style="list-style-type: none"> • Leaders in the Indian Industry (J.R.D Tata, Ratan Tata, Aditya Birla, Kumar Mangalam Birla, Mr Dhirubhai Ambani and Sons, Kiran Mazumdar Shaw, Verghese Kurien) • Leaders in the Banking and Insurance Industry <ul style="list-style-type: none"> ▪ Indian Leaders (Banking & Insurance: H.Shanbagh. Uday Kotak, K.V. Kamath Naina Kidwai, Deepak Parekh, Chanda Kochhar, Hinduja, Godrej,Aziz Premzi, Narayan Murthy, Anand Mahindra , Governor of RBI) ▪ International Leader President of World bank, President of Asian Development Bank, President of Fed Reserve, President of International Monetary Fund

***Revised Syllabus of courses of B.Com. (Banking & Insurance)
Programme at Semester I
with effect from the Academic Year 2016-2017***

Elective Courses (EC)

3. Financial Accounting

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to accounting	12
2	Classification of Income & Expenses & Accounting Standards	12
3	Issues of Shares, Stock Valuation & Hire purchase	20
4	Final Accounts	16
Total		60

Sr. No.	Modules / Units
1	Introduction to accounting
	Meaning, scope, objectives, need, importance and limitations of accounting. Basic accounting terminology. Branches of accounting. Accounting concepts, Conventions and Principles. Double Entry System, Classifications of accounts, Rules of debit and credit. Writing of journal Entries and Ledger, Sub division of journal and Trial Balance
2	Classification of Income & Expenses & Accounting Standards
	Classifications of Income, Expenditure and Receipts on the basis of capital and revenue. Source documents required for practical accounting. Introduction to Bank Reconciliation Statement and Errors and their Rectification. Accounting Standard 1, 2, 6, 8, 9, 10. Understanding Fair value concept, Overview of Ind-AS vis-a-vis International Financial Reporting Standards (IFRSs).
3	Issues of Shares, Stock Valuation & Hire purchase
	Introduction to issue of shares. Stock valuation (FIFO and Weighted Average Method only) Hire Purchase Transactions (calculation of interest, accounting as per asset purchase method only, exclude repossession), Introduction to Depreciation: Fixed Installment method, Written Down Value Method, Change of method. Valuation of goodwill (problems based on average profit method and super profit method only)
4	Final Accounts
	Trading Account, Profit and Loss Account, Balance Sheet, Adjustment Entries. Introduction to Accounts of Non Profit Organizations

Revised Syllabus of Courses of B.Com. (Banking & Insurance)
Programme at Semester I
with Effect from the Academic Year 2016-2017

Ability Enhancement Courses (AEC)

4. Business Communication - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Theory of Communication	15
2	Obstacles to Communication in Business World	15
3	Business Correspondence	15
4	Language and Writing Skills	15
Total		60

Sr. No.	Modules / Units
1	Theory of Communication
	<p>Concept of Communication: Meaning, Definition, Process, Need, Feedback Emergence of Communication as a key concept in the Corporate and Global world Impact of technological advancements on Communication</p> <p>Channels and Objectives of Communication: Channels- Formal and Informal- Vertical, Horizontal, Diagonal, Grapevine</p> <p>Objectives of Communication: Information, Advice, Order and Instruction, Persuasion, Motivation, Education, Warning, and Boosting the Morale of Employees (A brief introduction to these objectives to be given)</p> <p>Methods and Modes of Communication: Methods: Verbal and Nonverbal, Characteristics of Verbal Communication Characteristics of Non-verbal Communication, Business Etiquette Modes: Telephone and SMS Communication 3 (General introduction to Telegram to be given) Facsimile Communication [Fax] Computers and E- communication Video and Satellite Conferencing</p>
2	Obstacles to Communication in Business World
	<p>Problems in Communication /Barriers to Communication: Physical/ Semantic/Language / Socio-Cultural / Psychological / Barriers, Ways to Overcome these Barriers</p> <p>Listening: Importance of Listening Skills, Cultivating good Listening Skills – 4</p> <p>Introduction to Business Ethics: Concept and Interpretation, Importance of Business Ethics, Personal Integrity at the workplace, Business Ethics and media, Computer Ethics, Corporate Social Responsibility Teachers can adopt a case study approach and address issues such as the following so as to orient and sensitize the student community to actual business practices: Surrogate Advertising, Patents and Intellectual Property Rights, Dumping of Medical/E-waste, Human Rights Violations and Discrimination on the basis of gender, race, caste, religion, appearance and sexual orientation at the workplace Piracy, Insurance, Child Labour</p>
3	Business Correspondence
	<p>Theory of Business Letter Writing: Parts, Structure, Layouts—Full Block, Modified Block, Semi - Block Principles of Effective Letter Writing, Principles of effective Email Writing,</p> <p>Personnel Correspondence: Statement of Purpose, Job Application Letter and Resume, Letter of Acceptance of Job Offer, Letter of Resignation [Letter of Appointment, Promotion and Termination, Letter of Recommendation (to be taught but not to be tested in the examination)]</p>

Sr. No.	Modules / Units
4	Language and Writing Skills
	<p>Commercial Terms used in Business Communication</p> <p>Paragraph Writing: Developing an idea, using appropriate linking devices, etc Cohesion and Coherence, self-editing, etc [Interpretation of technical data, Composition on a given situation, a short informal report etc.]</p> <p>Activities</p> <ul style="list-style-type: none"> ▪ Listening Comprehension ▪ Remedial Teaching ▪ Speaking Skills: Presenting a News Item, Dialogue and Speeches ▪ Paragraph Writing: Preparation of the first draft, Revision and Self – Editing, Rules of spelling. ▪ Reading Comprehension: Analysis of texts from the fields of Commerce and Management

Revised Syllabus of Courses of B.Com. (Banking & Insurance)
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Skill Enhancement Courses (SEC)

5. Foundation Course - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Overview of Indian Society	05
2	Concept of Disparity- 1	10
3	Concept of Disparity-2	10
4	The Indian Constitution	10
5	Significant Aspects of Political Processes	10
Total		45

Sr. No.	Modules / Units
1	Overview of Indian Society
	Understand the multi-cultural diversity of Indian society through its demographic composition: population distribution according to religion, caste, and gender; Appreciate the concept of linguistic diversity in relation to the Indian situation; Understand regional variations according to rural, urban and tribal characteristics; Understanding the concept of diversity as difference
2	Concept of Disparity- 1
	Understand the concept of disparity as arising out of stratification and inequality; Explore the disparities arising out of gender with special reference to violence against women, female foeticide (declining sex ratio), and portrayal of women in media; Appreciate the inequalities faced by people with disabilities and understand the issues of people with physical and mental disabilities
3	Concept of Disparity-2
	Examine inequalities manifested due to the caste system and inter-group conflicts arising thereof; Understand inter-group conflicts arising out of communalism; Examine the causes and effects of conflicts arising out of regionalism and linguistic differences
4	The Indian Constitution
	Philosophy of the Constitution as set out in the Preamble; The structure of the Constitution-the Preamble, Main Body and Schedules; Fundamental Duties of the Indian Citizen; tolerance, peace and communal harmony as crucial values in strengthening the social fabric of Indian society; Basic features of the Constitution
5	Significant Aspects of Political Processes
	The party system in Indian politics; Local self-government in urban and rural areas; the 73rd and 74th Amendments and their implications for inclusive politics; Role and significance of women in politics

Revised Syllabus of Courses of B.Com. (Banking & Insurance)
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Skill Enhancement Courses (SEC)

5. Foundation Course in NSS - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to NSS	10
2	Concept of Society and Social Issues in India	15
3	Indian Constitution and Social Justice	10
4	Human Personality and National Integration	10
Total		45

Sr. No.	Modules / Units
1	Introduction to NSS Introduction to National Service Scheme(NSS) Orientation and structure of National Service Scheme(NSS) National Service Scheme(NSS)- its objectives The historical perspective of National Service Scheme(NSS) National Service Scheme(NSS)- Symbol and its meaning National Service Scheme(NSS)- its hierarchy from national to college level National Service Scheme(NSS) Regular activities Distribution of working hours- Association between issues and programs- community project- urban rural activities, Association- modes of activity evaluation
2	Concept of Society and Social Issues in India History and philosophy of social sciences in India Concept of society- Development of Indian society - Features of Indian Society- Division of labour and cast system in India Basic social issues in India Degeneration of value system, Family system, Gender issues, Regional imbalance
3	Indian Constitution and Social Justice Indian Constitution Features of Indian Constitution - Provisions related to social integrity and development Social Justice Social Justice- the concept and its features Inclusive growth- the concept and its features
4	Human Personality and National Integration Dimensions of human personality Social Dimension of Human personality- Understanding of the society Physical Dimension of Human personality- Physical Exercise, Yoga, etc. National integration & Communal Harmony National Integration- its meaning, importance and practice Communal Harmony- its meaning, importance and practice

***Revised Syllabus of Courses of B.Com. (Banking & Insurance)
Programme at Semester I
with Effect from the Academic Year 2016-2017***

Skill Enhancement Courses (SEC)

5. Foundation Course in NCC - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to NCC, National Integration & Awareness	10
2	Drill: Foot Drill	10
3	Adventure Training, Environment Awareness and Conservation	10
4	Personality Development and Leadership	10
5	Specialized Subject: Army/ Navy/ Air	05
Total		45

Sr. No.	Modules / Units
1	Introduction to NCC, National Integration & Awareness
	<p>Desired outcome: The students will display sense of patriotism, secular values and shall be transformed into motivated youth who will contribute towards nation building through national unity and social cohesion.</p> <ul style="list-style-type: none"> • Genesis, Aims, Objectives of NCC & NCC Song • Organisation & Training • Incentives & Benefits • Religions, Culture, Traditions and Customs of India • National Integration: Importance and Necessity • Freedom Struggle
2	Drill: Foot Drill
	<p>Desired outcome: The students will demonstrate the sense of discipline, improve bearing, smartness, turnout, develop the quality of immediate and implicit obedience of orders, with good reflexes.</p> <ul style="list-style-type: none"> • General and Words of Command • Attention, Stand at Ease and Stand Easy, Turning and Inclining at the Halt • Sizing, Forming Up in Three Ranks and Numbering, Open and Close Order March and Dressing • Saluting at the Halt, Getting On Parade, Dismissing and Falling Out • Marching, Length of Pace and Time of Marching in Quick Time and Halt, Slow March and Halt • Turning on the March and Wheeling. • Saluting on the March. • Formation of squad and Squad Drill.
3	Adventure Training, Environment Awareness and Conservation
	<p>Adventure Training</p> <p>Desired outcome: The students will overcome fear & inculcate within them the sense of adventure , sportsmanship , esprit-d-corp and develop confidence , courage , determination, diligence and quest for excellence.</p> <ul style="list-style-type: none"> • Any Two such as – Obstacle course, Slithering, Trekking, Cycling, Rock Climbing, Para Sailing, Sailing, Scuba Diving etc <p>Environment Awareness and Conservation</p> <p>Desired outcome: The student will be aware of the conservation of natural resources and protection of environment.</p> <ul style="list-style-type: none"> • Natural Resources – Conservation and Management • Water Conservation and Rainwater Harvesting

Sr. No.	Modules / Units
4	Personality Development and Leadership Desired outcome: The student will develop an all-round personality with adequate leadership traits to deal / contribute effectively in life. <ul style="list-style-type: none"> • Introduction to Personality Development • Factors Influencing /Shaping Personality: Physical, Social, Physiological, Philosophical and Psychological • Self Awareness Know yourself/ Insight • Change Your Mind Set • Communication Skills: Group Discussion / Lecturettes (Public Speaking) • Leadership Traits • Types of Leadership
5	Specialized Subject: Army Or Navy Or Air <u>Army</u> Desired outcome: The training shall instill patriotism, commitment and passion to serve the nation motivating the youth to join the defence forces. It will also acquaint, expose & provide basic knowledge about armed, naval and air-force subjects A. Armed Force <ul style="list-style-type: none"> • Basic organisation of Armed Forces • Organisation of Army • Badges and Ranks B. Introduction to Infantry and weapons and equipments <ul style="list-style-type: none"> • Characteristics of 7.62mm SLR Rifle, Ammunition, Fire power, Stripping, Assembling and Cleaning C. Military history <ul style="list-style-type: none"> • Biographies of renowned Generals (Carriapa / Sam Manekshaw) • Indian Army War Heroes- PVCs D. Communication <ul style="list-style-type: none"> • Types of Communications • Characteristics of Wireless Technologies (Mobile, Wi-Fi etc.) <p style="text-align: center;">OR</p> <u>Navy</u> A. Naval orientation and service subjects <ul style="list-style-type: none"> • History of the Indian Navy-Pre and Post Independence, Gallantry award winners • Organization of Navy- NHQ, Commands, Fleets, Ships and shore establishments • Types of Warships and their role • Organization of Army and Air Force- Operational and Training commands • Ranks of Officers and Sailors, Equivalent Ranks in the Three Services B. Ship and Boat Modelling <ul style="list-style-type: none"> • Principles of Ship Modelling • Maintenance and Care of tools

Sr. No.	Modules / Units
	<p>C. Search and Rescue</p> <ul style="list-style-type: none"> • SAR Organization in the Indian ocean <p>D. Swimming</p> <p>Floating for three minutes and Free style swimming for 50 meters</p> <p style="text-align: center;">OR</p> <p><u>AIR</u></p> <p>A. General Service Knowledge</p> <ul style="list-style-type: none"> • Development of Aviation • History of IAF <p>B. Principles of Flight</p> <ul style="list-style-type: none"> • Introduction • Laws of Motion • Glossary of Terms. <p>C. Airmanship</p> <ul style="list-style-type: none"> • Introduction • Airfield Layout • Rules of the Air • Circuit Procedure • ATC/RT Procedures • Aviation Medicine <p>D. Aero- Engines</p> <ul style="list-style-type: none"> • Introduction to Aero-engines

Revised Syllabus of Courses of B.Com. (Banking & Insurance)
Programme at Semester I

with Effect from the Academic Year 2016-2017

Skill Enhancement Courses (SEC)

5. Foundation Course in Physical Education - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Basic Relevant concepts in Physical Education	10
2	Components of Physical Fitness	15
3	Testing Physical Fitness	10
4	Effect of Exercise on various Body System	10
Total		45

Sr. No.	Modules / Units
1	Introduction to Basic Relevant concepts in Physical Education
	<ul style="list-style-type: none"> • Dimensions and determinants of Health, Fitness & Wellness • Concept of Physical Education and its importance • Concept of Physical Fitness and its types • Concept of Physical Activity, exercise and its types & benefits
2	Components of Physical Fitness
	<ul style="list-style-type: none"> • Concept of components of Physical Fitness • Concept and components of HRPF • Concept and components of SRPF • Importance of Physical Education in developing physical fitness components.
3	Testing Physical Fitness
	<ul style="list-style-type: none"> • Tests for measuring Cardiovascular Endurance • Tests for measuring Muscular Strength& Endurance • Tests for measuring Flexibility • Tests for measuring Body Composition
4	Effect of Exercise on various Body System
	<ul style="list-style-type: none"> • Effect of exercises on Musculoskeletal system • Effect of exercises on Circulatory System • Effect of exercises on Respiratory System • Effect of exercises on Glandular System

***Revised Syllabus of Courses of B.Com. (Banking & Insurance)
Programme at Semester I
with Effect from the Academic Year 2016-2017***

Core Courses (CC)

6. Business Economics I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction	10
2	Demand Analysis	10
3	Supply and Production Decisions and Cost of Production	15
4	Market structure: Perfect competition and Monopoly and Pricing and Output Decisions under Imperfect Competition	15
5	Pricing Practices	10
Total		60

Sr. No.	Modules / Units
1	Introduction
	<p>Scope and Importance of Business Economics - basic tools- Opportunity Cost principle- Incremental and Marginal Concepts. Basic economic relations - functional relations: equations- Total, Average and Marginal relations- use of Marginal analysis in decision making,</p> <p>The basics of market demand, market supply and equilibrium price- shifts in the demand and supply curves and equilibrium</p>
2	Demand Analysis
	<p>Demand Function - nature of demand curve under different markets Meaning, significance, types and measurement of elasticity of demand (Price, income cross and promotional)- relationship between elasticity of demand and revenue concepts</p> <p>Demand estimation and forecasting: Meaning and significance - methods of demand estimation : survey and statistical methods <i>(numerical illustrations on trend analysis and simple linear regression)</i></p>
3	Supply and Production Decisions and Cost of Production
	<p>Production function: short run analysis with Law of Variable Proportions- Production function with two variable inputs- isoquants, ridge lines and least cost combination of inputs- Long run production function and Laws of Returns to Scale - expansion path - Economies and diseconomies of Scale.</p> <p>Cost concepts: Accounting cost and economic cost, implicit and explicit cost, fixed and variable cost - total, average and marginal cost - Cost Output Relationship in the Short Run and Long Run <i>(hypothetical numerical problems to be discussed)</i>, LAC and Learning curve - Break even analysis <i>(with business applications)</i></p>
4	Market structure: Perfect competition and Monopoly and Pricing and Output Decisions under Imperfect Competition
	<p>Short run and long run equilibrium of a competitive firm and of industry - monopoly - short run and long- run equilibrium of a firm under Monopoly</p> <p>Monopolistic competition: Equilibrium of a firm under monopolistic competition, debate over role of advertising. <i>(topics to be taught using case studies from real life examples)</i></p> <p>Oligopolistic markets: key attributes of oligopoly - Collusive and non-collusive oligopoly market - Price rigidity - Cartels and price leadership models <i>(with practical examples)</i></p>
5	Pricing Practices
	<p>Cost oriented pricing methods: cost – plus (full cost) pricing, marginal cost pricing, Mark up pricing, discriminating pricing, multiple – product pricing - transfer pricing <i>(case studies on how pricing methods are used in business world)</i></p>

Revised Syllabus of Courses of B.Com. (Banking & Insurance)
Programme at Semester I
with Effect from the Academic Year 2016-2017

Core Courses (CC)

7. Quantitative Methods -I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction, Organising, Data, Frequency Distribution, Data Representation	10
2	Measures of Central Tendencies	10
3	Measures of Dispersion	08
4	Co-variance, Correlation and Regression	10
5	Probability, Probability Distribution and decision Theory	10
6	Index Nos.	06
7	Insurance	06
Total		60

Sr. No.	Modules / Units
1	Introduction, Organising, Data, Frequency Distribution, Data Representation
	Organizing Data, Frequency Distribution, Measure of Central tendency, Org Data, preparation of frequency distribution graphical and diagrammatic representation histogram, frequency polygon and gives. Definition of averages and objective of averages types of average. Arithmetic mean, Geometric, harmonic mean and its usages, mode and medium (using graph also) for both) for grouped as well as ungrouped data
2	Measures of Central Tendencies
	Definition of Averages and objective of Averages Types of Averages. Arithmetic mean, Geometric Mean, Harmonic Mean and its advantages, Disadvantages and usages, mode, median, quartiles, deciles and percentiles for both grouped as well as ungrouped data.
3	Measures of Dispersion
	Concept and idea of dispersion. Various measures Range, quartile deviation, Mean Deviation, Standard Deviation and corresponding relative measure of dispersion. Geographical representation and utility of various is measure of Dispersions
4	Co-variance, Correlation and Regression
	Meaning, definition and Application of covariance, concept of correlation. Rank correlation, regression concept, relationship with correlation, Assumptions in simple Regression, Estimation using Simple Regression: Fitting of straight line, method of least square, construction of characteristic line/estimation line
5	Probability, Probability Distribution and decision Theory
	Concept of probability yen diagrams, Rules of Probality conditional & unconditional probality, Baye theorem. Discrete and continuous variable. Expected value of the variable, Decision theory normal distribution
6	Index Nos.
	Concept and usage of index nos. Construction of index nos. Types of index nos. Aggregate and Relative method of constructing index nos. Chain base index nos. Test of consistency: Time reversal factor reversal and circular test . Quantity and Value index nos for agricultural, industrial production, Retail Prices, Consumer price index nos. for security prices, etc.
7	Insurance
	Meaning, Objective, Purpose and need for Insurance. Fundamentals of Insurance Calculation of age, Premiums, Bonuses, Paid up value of a policy, Maturity Value of the Policy. Claim Calculation and Surrender Value.

B.Com. (Banking & Insurance) Programme

Under Choice Based Credit, Grading and Semester System

Course Structure

(To be implemented from Academic Year- 2016-2017)

Semester II

No. of Courses	Semester II	Credits
1	<i>Elective Courses (EC)</i>	
1	Principles and Practices of Banking & Insurance	03
2	Business Law	03
3	Financial Accounting -II	03
2	<i>Ability Enhancement Courses (AEC)</i>	
2A	<i>Ability Enhancement Compulsory Course (AECC)</i>	
4	Effective Communication-II	03
2B	<i>**Skill Enhancement Courses (SEC)</i>	
5	Any one course from the following list of the courses	02
3	<i>Core Courses (CC)</i>	
6	Organisational Behaviour	03
7	Quantitative Methods-II	03
Total Credits		20

<i>**List of Skill Enhancement Courses (SEC) for Semester II (Any One)</i>	
1	Foundation Course - II
2	Foundation Course in NSS - II
3	Foundation Course in NCC - II
4	Foundation Course in Physical Education - II

Revised Syllabus of courses of B.Com. (Banking & Insurance)
Programme at Semester II
with effect from the Academic Year 2016-2017

Elective Courses (EC)

1. Principles and Practices of Banking & Insurance

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Banking	15
2	Banking Scenario in India	15
3	Introduction to Insurance	15
4	Insurance Business Environment in India	15
Total		60

Sr. No.	Modules / Units
1	Introduction to Banking
	Basic Concepts: Origin, Need, Types, Scope and Functions of Banking - Need for Regulation and Supervision
2	Banking Scenario in India
	Banking Operations -Types of accounts - Banking Services - Current Scenario, Financial Inclusion and Banking Regulations & Role of RBI.
3	Introduction to Insurance
	Understanding Risk - Kinds of business risks - Need and Scope of insurance - Evolution of. insurance - Principles of insurance - Types of insurance and policies - Risk and Return relationship
4	Insurance Business Environment in India
	Growth of Insurance Business - Actuarial Role - Claim and Settlement Procedures - Insurance Regulations Role of IRDA.

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Elective Courses (EC)

2. Business Law

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Law	08
2	Indian Constitution	10
3	Contract Act	12
4	Special Contract	12
5	Negotiable Instrument Act	10
6	Information Technology Act	08
Total		60

Sr. No.	Modules / Units
1	Introduction to Law
	Meaning, Definitions, Features, Types, Sources and Classification
2	Indian Constitution
	Natural Justice, Special Leave Appeal, Features, Writs, Fundamental Rights
3	Contract Act
	Meaning, Essentials, Agreement, Offer, Acceptance, Consent, Free Consent, Consideration, Capacity of contract, Kinds and Classification of Contract, Performance, Discharge and Termination of Contract, Void - Quasi- Contingent - Wager - Minor Contracts, Breach and Remedies For the Contract.
4	Special Contract
	<ul style="list-style-type: none"> • Indemnity & Guarantee - Meaning, Features, distinguish, position, Surety, discharge of surety • Bailment : Meaning, Types, Features, Position, Lien, Finder of Goods Pledge • Agency: Meaning, Features, types, Position, Ratification, Modes of Creation and Termination, Liabilities. • Sale of Goods Act: Introduction, Meaning, Features, Terms, Goods Classification, Sale and Agreement to sell, Unpaid Seller and position Conditions and Warranty
5	Negotiable Instrument Act
	Features, Promissory Notes, Bills of Exchange, Cheque, Features, Distinguish, Acceptance, Crossing, Dishonor, Position Of Banker, Holder and Holder In Due Course, Privileges, Payment In and Out of Due Course, Types of Instruments, Penalties For Dishonour, Endorsement
6	Information Technology Act
	Objectives, Scheme, Digital Signature, Authorization, E- Governance, Certifying Authorities, Digital Certificates, Cyber

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Elective Courses (EC)

3. Financial Accounting - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Valuation of Goodwill and Shares	15
2	Buyback of equity shares	15
3	Redemption of preference shares	15
4	Redemption of debentures (excluding buy back of own debentures)	15
Total		60

Sr. No.	Modules / Units
1	Valuation of Goodwill and Shares
	Valuation of Goodwill Maintainable Profit method, Super Profit Method Capitalization method, Annuity Method Valuation of Shares Intrinsic Value Method, Yield method and Fair Value Method
2	Buyback of equity shares
	Company Law/ Legal Provisions (including related restrictions, power, transfer to capital redemption reserve account and prohibitions) Compliance of conditions including sources, maximum limits and debt equity ratio
3	Redemption of preference shares
	Company Law / Legal Provisions for redemption of preference shares in Companies Act Sources of redemption including divisible profits and proceeds of fresh issue of shares Premium on redemption from security premium and profits of company Capital Redemption Reserve Account - creation and use
4	Redemption of debentures
	Redemption of debentures by payment from sources including out of capital and / or out of profits. Debenture redemption reserve and debenture redemption sinking fund excluding insurance policy. Redemption of debentures by conversion into new class of shares or debentures with options- including at par, premium and discount

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Ability Enhancement Courses (AEC)

4. Business Communication - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Presentation Skills	15
2	Group Communication	15
3	Business Correspondence	15
4	Language and Writing Skills	15
Total		60

Sr. No.	Modules / Units
1	Presentation Skills
	<p>Presentations: (to be tested in tutorials only) 4 Principles of Effective Presentation</p> <p>Effective use of OHP</p> <p>Effective use of Transparencies</p> <p>How to make a Power-Point Presentation</p>
2	Group Communication
	<p>Interviews: Group Discussion Preparing for an Interview, Types of Interviews – Selection, Appraisal, Grievance, Exit</p> <p>Meetings: Need and Importance of Meetings, Conduct of Meeting and Group Dynamics Role of the Chairperson, Role of the Participants, Drafting of Notice, Agenda and Resolutions</p> <p>Conference: Meaning and Importance of Conference Organizing a Conference Modern Methods: Video and Tele – Conferencing</p> <p>Public Relations: Meaning, Functions of PR Department, External and Internal Measures of PR</p>
3	Business Correspondence
	<p>Trade Letters: Order, Credit and Status Enquiry, Collection (just a brief introduction to be given)</p> <p>Only following to be taught in detail:-</p> <p>Letters of Inquiry, Letters of Complaints, Claims, Adjustments Sales Letters, promotional leaflets and fliers Consumer Grievance Letters, Letters under Right to Information (RTI) Act</p> <p>[Teachers must provide the students with theoretical constructs wherever necessary in order to create awareness. However students should not be tested on the theory.]</p>
4	Language and Writing Skills
	<p>Reports: Parts, Types, Feasibility Reports, Investigative Reports</p> <p>Summarisation: Identification of main and supporting/sub points Presenting these in a cohesive manner</p>

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Skill Enhancement Courses (SEC)

5. Foundation Course – II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Globalisation and Indian Society	07
2	Human Rights	10
3	Ecology	10
4	Understanding Stress and Conflict	10
5	Managing Stress and Conflict in Contemporary Society	08
Total		45

Sr. No	Modules /Units
1	Globalisation and Indian Society
	Understanding the concepts of liberalization, privatization and globalization; Growth of information technology and communication and its impact manifested in everyday life; Impact of globalization on industry: changes in employment and increasing migration; Changes in agrarian sector due to globalization; rise in corporate farming and increase in farmers' suicides.
2	Human Rights
	Concept of Human Rights; origin and evolution of the concept; The Universal Declaration of Human Rights; Human Rights constituents with special reference to Fundamental Rights stated in the Constitution
3	Ecology
	Importance of Environment Studies in the current developmental context; Understanding concepts of Environment, Ecology and their interconnectedness; Environment as natural capital and connection to quality of human life; Environmental Degradation- causes and impact on human life; Sustainable development- concept and components; poverty and environment
4	Understanding Stress and Conflict
	Causes of stress and conflict in individuals and society; Agents of socialization and the role played by them in developing the individual; Significance of values, ethics and prejudices in developing the individual; Stereotyping and prejudice as significant factors in causing conflicts in society. Aggression and violence as the public expression of conflict
5	Managing Stress and Conflict in Contemporary Society
	Types of conflicts and use of coping mechanisms for managing individual stress; Maslow's theory of self-actualisation; Different methods of responding to conflicts in society; Conflict-resolution and efforts towards building peace and harmony in society

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Skill Enhancement Courses (SEC)

2.5. Foundation Course in NSS - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Socio-economic Survey and Special Camp	10
2	Orientation of the College Unit and Communication Skills	15
3	Rapport with Community and Programme Planning	10
4	Government Organisations /Non-Government Organisations	10
Total		45

Sr. No.	Modules / Units
1	Socio-economic Survey and Special Camp
	<p>Socio economic survey Socio-economic survey- its meaning and need, Process of Socio-economic survey- design of questionnaire; data collection, data analysis and report writing</p> <p>Special camping activity Concept of camp- Identification of community problems- Importance of group living- Team building- Adoption of village- Planning for camp- pre camping, during the course of camp and post camping activities</p>
2	Orientation of the College Unit and Communication Skills
	<p>Training and orientation of the program unit in the college Leadership training – formation of need based programmes- Concept of campus to community(C to C) activities</p> <p>Communication skills and Documentation Communication skills- the concept, Verbal, Non-Verbal communication The documentation- Activity Report Writing – basics of NSS accounting – Annual Report – Press note and preparation</p>
3	Rapport with Community and Programme Planning
	<p>Working with individual group and community Ice breaking- interaction games – conflict resolution</p> <p>Program planning Programme planning- the concept and its features, requirements for successful implementation of program- program flow charting- feedback</p>
4	Government Organisations /Non-Government Organisations
	<p>Structure of Government Organisations and Non-Government Organisations Government organisations (GO)- its meaning -Legal set up, functioning, Sources of funding Non-Government organisations (NGO)- its meaning -Legal set up, functioning, Sources of funding National Service Scheme(NSS)- Government organisations (GO) and Non-Government organisations (NGO)</p> <p>Government schemes for community development Schemes os Government welfare departments for community development- provisions & examples</p>

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Skill Enhancement Courses (SEC)

5. Foundation Course in NCC - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Disaster Management, Social Awareness and Community Development	10
2	Health and Hygiene	10
3	Drill with Arms	10
4	Weapon Training	10
5	Specialized Subject: Army Or Navy Or Air	05
Total		45

Sr. No.	Modules / Units
1	Disaster Management, Social Awareness and Community Development Disaster Management: Desired outcome: The student shall gain basic information about civil defence organisation / NDMA & shall provide assistance to civil administration in various types of emergencies during natural / manmade disasters <ul style="list-style-type: none"> • Civil Defence Organisation and Its Duties/ NDMA • Types of Emergencies/ Natural Disaster • Assistance during Natural / Other Calamities: Flood / Cyclone/ Earth Quake/ Accident etc. • 'Avan' model of NCC Social Awareness and Community Development: Desired outcome: The student shall have an understanding about social service and its need, about NGOs and shall participate in community action programmes for betterment of the community. <ul style="list-style-type: none"> • Basics of Social Service, Weaker Sections of Our Society and Their Needs • Social/ Rural Development Project: MNREGA, SGSY, NSAP etc. • Contribution of Youth towards Social Welfare • Civic Responsibilities • Causes & Prevention of HIV/AIDS; Role of Youth
2	Health and Hygiene Desired outcome: The student shall be fully aware about personal health and hygiene lead a healthy life style and foster habits of restraint and self awareness. <ul style="list-style-type: none"> • Structure and Functioning of the Human Body • Hygiene and Sanitation (Personal and Food Hygiene) • Infectious & Contagious Diseases & Their Prevention
3	Drill with Arms Desired outcome: The students will demonstrate the sense of discipline, improve bearing, smartness, turnout, develop the quality of immediate and implicit obedience of orders, with good reflexes. <ul style="list-style-type: none"> • Attention, Stand at Ease and Stand Easy • Getting on Parade with Rifle and Dressing at the Order • Dismissing and Falling Out • Ground / Take Up Arms • Present From the Order and Vice-versa • General Salute, Salami Shastra
4	Weapon Training Desired outcome: The student shall have basic knowledge of weapons and their use and handling. <ul style="list-style-type: none"> • Characteristics of a Rifle / Rifle Ammunition and its Fire Power • Stripping, Assembling, Care and Cleaning and Sight Setting of .22 rifle • Stripping, Assembling, Care and Cleaning of 7.62mm SLR • Loading, Cocking and Unloading • The lying position, Holding and Aiming- I • Trigger control and firing a shot • Range procedure and safety precautions • Short range firing, Aiming- II -Alteration of sight

Sr. No.	Modules / Units
5	Specialized Subject: Army Or Navy Or Air
	<p>Army Desired outcome: The training shall instill patriotism, commitment and passion to serve the nation motivating the youth to join the defence forces. It will also acquaint, expose & provide basic knowledge about armed, naval and air-force subjects</p> <p>A. Map reading</p> <ul style="list-style-type: none"> • Introduction to types of Maps and Conventional signs • Scales and Grid system • Topographical forms and technical terms • Relief, contours and Gradients • Cardinal points and Types of North • Types of bearings and use of Service Protractor • Prismatic compass and its use and GPS <p>B. Field Craft and Battle Craft</p> <ul style="list-style-type: none"> • Introduction • Judging distance • Description of ground • Recognition, Description and Indication of landmarks and targets <p style="text-align: center;">OR</p> <p>Navy A. Naval Communication</p> <ul style="list-style-type: none"> • Introduction to Naval Modern Communication, Purpose and Principles <ul style="list-style-type: none"> ▪ Introduction of Naval communication ▪ Duties of various communication sub-departments • Semaphore <ul style="list-style-type: none"> ▪ Introduction of position of letters and prosigns ▪ Reading of messages ▪ Transmission of messages <p>B. Seamanship</p> <ul style="list-style-type: none"> • Anchor work <ul style="list-style-type: none"> ▪ Parts of Anchor and Cable, their identification • Rigging <ul style="list-style-type: none"> ▪ Types of ropes and breaking strength- stowing, maintenance and securing of ropes ▪ Practical Bends and Hitches: Reef Knot, Half hitch, Clove Hitch, Rolling Hitch, Timber Hitch, Bow Line, Round Turn and Two half hitch and Bow line on the Bight and its basic elements and uses. ▪ Introduction to Shackles, Hooks, Blocks and Derricks, Coiling Down and Splicing of rope <p>C. Boat work</p> <ul style="list-style-type: none"> • Parts of Boat and Parts of an Oar • Instruction on boat Pulling- Pulling orders • Steering of boat under oars, Practical instruction on Boat Pulling, Precautions while pulling

Sr. No.	Modules / Units
	<p style="text-align: center;">OR</p> <p>Air</p> <p>A. Air frames</p> <ul style="list-style-type: none"> • Aircraft Controls • Landing Gear <p>B. Instruments</p> <ul style="list-style-type: none"> • Basic Flight Instruments <p>C. Aircraft Particulars</p> <ul style="list-style-type: none"> • Aircraft Particulars (Type specific) <p>D. Aero modelling</p> <ul style="list-style-type: none"> • History of Aero modelling • Materials used in Aero modelling • Type of Aero models • Flying/ Building of Aero models

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Skill Enhancement Courses (SEC)

5. Foundation Course in Physical Education - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Development of Fitness	10
2	Health, Fitness and Diseases	15
3	Yoga Education	10
4	Daily Schedule of Achieving Quality of Life and Wellness	10
Total		45

Sr. No.	Modules / Units
1	Development of Fitness
	<ul style="list-style-type: none"> • Benefits of physical fitness and exercise and principles of physical fitness • Calculation of fitness index level 1-4 • Waist-hip ratio Target Heart Rate, BMI and types and principles of exercise (FITT) • Methods of training – continues, Interval, circuit, Fartlek and Plyometric
2	Health, Fitness and Diseases
	<ul style="list-style-type: none"> • Definition of obesity and its management • Communicable diseases, their preventive and therapeutic aspects • Factors responsible for communicable diseases • Preventive and therapeutic aspect of Communicable and non- communicable diseases
3	Yoga Education
	<ul style="list-style-type: none"> • Meaning and history of yoga • Ashtang yoga and types of yoga • Types of Suryanamaskar and Technique of Pranayam • Benefits of Yoga
4	Daily Schedule of Achieving Quality of Life and Wellness
	<ul style="list-style-type: none"> • Daily schedule based upon one's attitude, gender, age & occupation. • Basic – module: - Time split for rest, sleep, diet, activity & recreation. • Principles to achieve quality of life:- positive attitude, daily regular exercise, control over food habits & healthy hygienic practices.

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Core Courses (CC)

6. Organizational Behavior

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction of organizational Behavior	15
2	Group Dynamics	15
3	Organizational Culture and Change Management	15
4	Organizational Development.	15
Total		60

Sr. No.	Modules / Units
1	Introduction of organizational Behavior
	Meaning, Nature and scope of OB, Models of OB, Theories of Motivation : <ul style="list-style-type: none"> Maslow, Herzberg, Mc.Gregor Theory X and Theory Y, William Ouchi's Theory Z, Victor Vroom . ERG theory Application of the Theories Motivational techniques in Banking and Insurance Industry
2	Group Dynamics
	<ul style="list-style-type: none"> Individual Behavior (IQ, EQ, SQ) Group Formation, Team Building, Team Development. Goal Setting Soft Skills, Interpersonal Skills, Multicultural Skills, Cross Cultural Skills. Johari Window
3	Organizational Culture and Change Management
	<ul style="list-style-type: none"> Work Culture, Ways for Making Work Culture Effective and Lively, Work Conflicts. Organizational Change, effects of Resistance to Change, ways to overcome resistance to change. Time and Stress Management.
4	Organizational Development
	<ul style="list-style-type: none"> Meaning and Nature of OD. Techniques of OD. Importance of OD.

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Core Courses (CC)

7. Quantitative Methods-II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Testing of Hypothesis	10
2	Linear Programming Techniques	10
3	Matrices & Determinants (Application in Business and Economics)	10
4	Ratio, Proportion & Percentage	10
5	Statistical Applications In Investment Management	15
6	Economic indicators	05
Total		60

Sr. No.	Modules / Units
1	Testing of Hypothesis
	Testing of hypotheses: Null Hypothesis, Alternative Hypothesis, Decision Criterion, Critical Region, Type I and Type II Error, level of significance, Test based on large Sample for Means and Proportion/s
2	Linear Programming Techniques
	Meaning, Advantages, limitations, business applications, basic terminology, formulation of linear Programming Problems, Graphical Method of solving Linear Programming Problems, Simplex method (upto 3 variables) with Maximisation and Minimisation. Duality in Linear Programming (concept only)
3	Matrices & Determinants (Application in Business and Economics)
	Matrices, Types of Matrices, Transpose, Addition, Multiplication, Subtraction of a Matrix, Determinants, Type of Determinants, inverse of a matrix by Pivotal Reduction Method, Adjoint Method and Row / Column Transformation. Application of Matrices and Determinants to Business and Economics. (Please concentrate on application of Matrices and Determinants to Business & Economics)
4	Ratio, Proportion & Percentage
	Ratio Definition, Continued Ratio, Inverse Ratio, Proportion, Continued Proportion, Direct Proportion, Inverse proportion, Variation, Inverse Variation, Joint Variation, Percentage: Meaning & Computation of Percentage.
5	Statistical Applications In Investment Management
	Expected return from shares (using probability) Measuring total risk from investigator shares (using standard deviations) Partitioning risk into systematic and unsystematic component (using co-variance) Measuring risks of portfolio (using co-relation) to draw conclusions regarding share prices (using testing of hypothesis).
6	Economic indicators
	GDP, Real growth in GDP price level Inflation rate, Money supply, Index for agricultural production Index for industrial production, Electrical

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- *Politics in India: structure, Process and Policy* Subrata Mitra, Routledge Pub
- *Politics in India*, Rajani Kothari, Orient Blackswan
- *Problems of Communalism in india*, Ravindra Kumar Mittal Pub
- *Combating communalism in India: Key to National Integration*, Kawal Kishor Bhardwaj, Mittal Pub

Foundation Course in NSS

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Programme at Semester II
with effect from the Academic Year 2016-2017

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Revised Syllabus of Courses of B.Com. (Banking & Insurance)
Programme at Semester I and II
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Scheme of Evaluation

The performance of the learners will be evaluated in two Components. One component will be the Internal Assessment component carrying 25% marks and the second component will be the Semester-wise End Examination component carrying 75% marks. The allocation of marks for the Internal Assessment and Semester End Examinations will be as shown below:-

A) Internal Assessment: 25 %

Question Paper Pattern

(Internal Assessment- Courses without Practical Courses)

Sr. No.	Particular	Marks
1	One class test (20 Marks)	
	Match the Column/ Fill in the Blanks/ Multiple Choice Questions (½ Mark each)	05 Marks
	Answer in One or Two Lines (Concept based Questions) (01 Mark each)	05 Marks
	Answer in Brief (Attempt Any Two of the Three) (05 Marks each)	10 Marks
2	Active participation in routine class instructional deliveries and overall conduct as a responsible learner, mannerism and articulation and exhibit of leadership qualities in organizing related academic activities	05 Marks

Question Paper Pattern

(Internal Assessment- Courses with Practical Courses)

Sr. No.	Particular	Marks
1	Semester End Practical Examination (20 Marks)	
	Journal	05 Marks
	Viva	05 Marks
	Laboratory Work	10 Marks
2	Active participation in routine class instructional deliveries and overall conduct as a responsible learner, mannerism and articulation and exhibit of leadership qualities in organizing related academic activities articulation and exhibit of leadership qualities in organizing related academic activities	05 Marks

B) Semester End Examination: 75 %

- i) Duration: The examination shall be of 2 ½ Hours duration
- ii) Theory question paper pattern
 - There shall be five questions each of 15 marks.
 - All questions shall be compulsory with internal choice within the questions.
 - Question may be subdivided into sub-questions a, b, c... and the allocation of marks depends on the weightage of the topic.

(Detail question paper pattern has been given separately)

Passing Standard

The learners to pass a course shall have to obtain a minimum of 40% marks in aggregate for each course where the course consists of Internal Assessment and Semester End Examination. The learners shall obtain minimum of 40% marks (i.e. 10 out of 25) in the Internal Assessment and 40% marks in Semester End Examination (i.e. 30 Out of 75) separately, to pass the course and minimum of Grade E to pass a particular semester A learner will be said to have passed the course if the learner passes the Internal Assessment and Semester End Examination together.

Question Paper Pattern (Practical Courses)

Maximum Marks: 75

Questions to be set: 05

Duration: 2 ½ Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions A) Sub Questions to be asked 10 and to be answered any 08 B) Sub Questions to be asked 10 and to be answered any 07 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	15 Marks
Q-2	Full Length Practical Question OR	15 Marks
Q-2	Full Length Practical Question	15 Marks
Q-3	Full Length Practical Question OR	15 Marks
Q-3	Full Length Practical Question	15 Marks
Q-4	Full Length Practical Question OR	15 Marks
Q-4	Full Length Practical Question	15 Marks
Q-5	A) Theory questions B) Theory questions OR	08 Marks 07 Marks
Q-5	Short Notes To be asked 05 To be answered 03	15 Marks

Note:

Practical question of 15 marks may be divided into two sub questions of 7/8 and 10/5 Marks. If the topic demands, instead of practical questions, appropriate theory question may be asked.

Question Paper Pattern (Theoretical Courses)

Maximum Marks: 75

Questions to be set: 05

Duration: 2 ½ Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions A) Sub Questions to be asked 10 and to be answered any 08 B) Sub Questions to be asked 10 and to be answered any 07 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	15 Marks
Q-2	Full Length Question OR	15 Marks
Q-2	Full Length Question	15 Marks
Q-3	Full Length Question OR	15 Marks
Q-3	Full Length Question	15 Marks
Q-4	Full Length Question OR	15 Marks
Q-4	Full Length Question	15 Marks
Q-5	A) Theory questions B) Theory questions OR	08 Marks 07 Marks
Q-5	Short Notes To be asked 05 To be answered 03	15 Marks

Note:

Theory question of 15 marks may be divided into two sub questions of 7/8 and 10/5 Marks.

B.Com. (Banking and Insurance) Programme

Under Choice Based Credit, Grading and Semester System

Course Structure

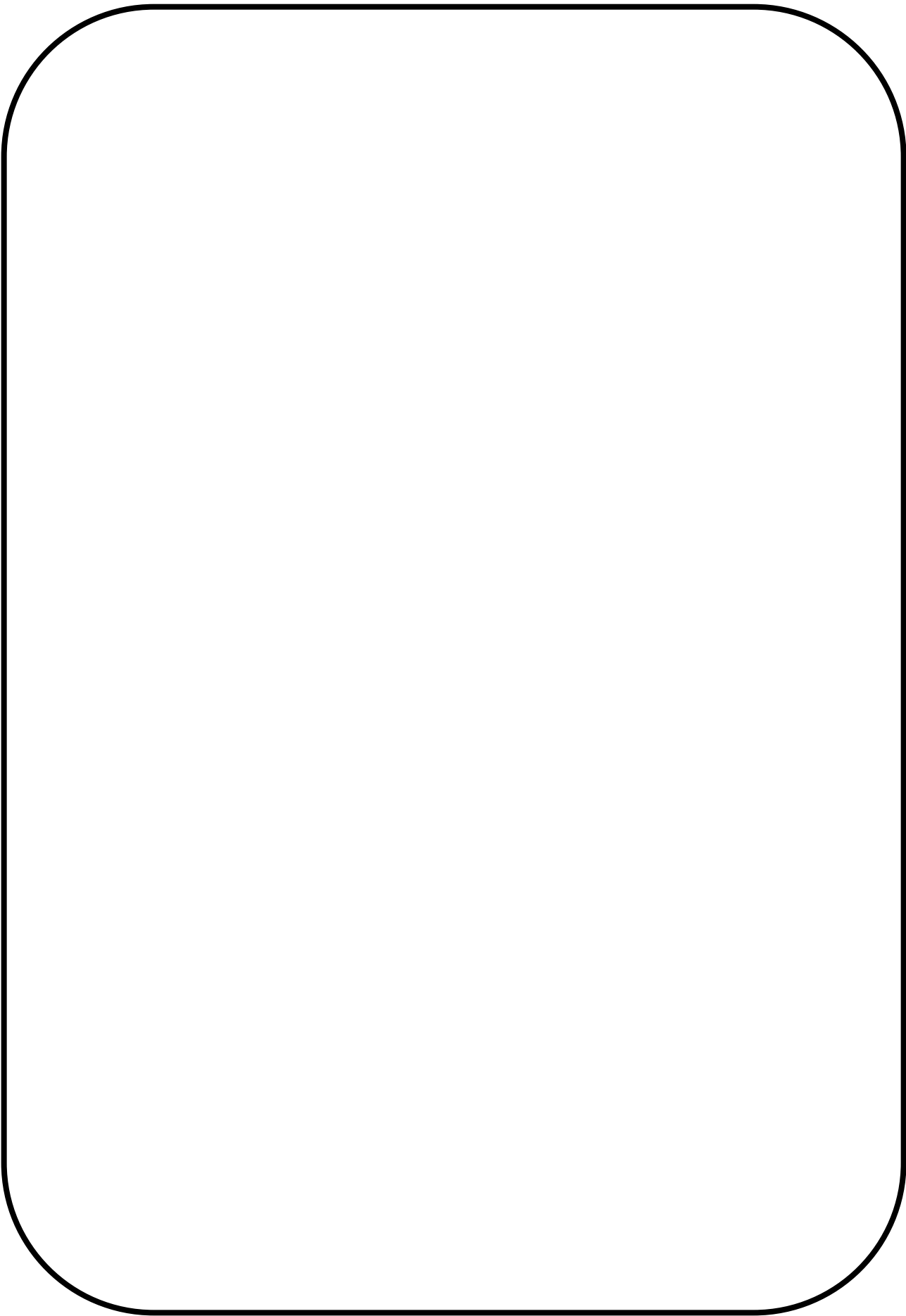
S.Y.B.Com. (Banking & Insurance)

(To be implemented from Academic Year- 2017-2018)

No. of Courses	Semester III	Credits	No. of Courses	Semester IV	Credits
1	Elective Courses (EC)		1	Elective Courses (EC)	
1,2 & 3	*Any three courses from the following list of the courses	09	1,2 & 3	**Any three courses from the following list of the courses	09
2	Ability Enhancement Courses (AEC)		2	Ability Enhancement Courses (AEC)	
2A	Ability Enhancement Compulsory Course (AECC)		2A	Ability Enhancement Compulsory Course (AECC)	
4	Information Technology in Banking & Insurance- I	03	4	Information Technology in Banking & Insurance- II	03
2B	*Skill Enhancement Courses (SEC)		2B	**Skill Enhancement Courses (SEC)	
5	Any one course from the following list of the courses	02	5	Any one course from the following list of the courses	02
3	Core Courses (CC)		3	Core Courses (CC)	
6	Financial Markets	03	6	Corporate & Securities Law	03
7	Direct Taxation	03	7	Business Economics-II	03
Total Credits		20	Total Credits		20

*List of Skill Enhancement Courses (SEC) for Semester III (Any One)			**List of Skill Enhancement Courses (SEC) for Semester IV (Any One)		
1	Foundation Course – III (An Overview of Banking Sector)		1	Foundation Course - IV (An Overview of Insurance Sector)	
2	Foundation Course- Contemporary Issues- III		2	Foundation Course- Contemporary Issues- IV	
3	Foundation Course in NSS - III		3	Foundation Course in NSS – IV	
4	Foundation Course in NCC - III		4	Foundation Course in NCC – IV	
5	Foundation Course in Physical Education - III		5	Foundation Course in Physical Education -IV	

*List of Elective Courses (EC) for Semester III (Any Three)			**List of Elective Courses (EC) for Semester IV (Any Three)		
1	Financial Management - I		1	Financial Management –II	
2	Management Accounting		2	Cost Accounting	
3	Organizational Behaviour		3	Entrepreneurship Management	
4	Risk Management		4	Wealth Management	
5	Mutual Fund Management		5	Customer Relationship Management	
Note: Course selected in Semester III will continue in Semester IV					



***Revised Syllabus of Courses of B.Com. (Banking & Insurance)
Programme at Semester III
with Effect from the Academic Year 2017-2018***

1. Elective Courses (EC)

***Financial Management - I
Modules at a Glance***

Sr. No.	Modules	No. of Lectures
1	Introduction to Finance and Financial Management	15
2	Financial Goal Setting & Time value of Money	15
3	Investment Decisions: Capital Budgeting	15
4	Financial Decisions	15
Total		60

Sr. No.	Modules / Units
1	Introduction to Finance and Financial Management <p>A) Introduction to Finance</p> <ul style="list-style-type: none"> • Meaning and definition of finance • Importance of finance • Types of Finance: Public and Private • Sources of finance <ol style="list-style-type: none"> 1. Long Term Sources : Term Loans, Debentures, Bonds, Zero Coupon bonds, Convertible Bonds, Equity shares, Preference shares, CD, CP, Public Deposits 2. Short Term Sources: Bank Finance, Trade Credit ,Other Short Term Sources 3. Venture Capital and Hybrid Financing <p>B) Financial Management</p> <ul style="list-style-type: none"> • Meaning and Importance of Financial Management • Scope of Financial Management • Functions and Objectives of Financial Management • Primary Objective of Corporate Management • Agency Problem • Organization of Finance Function • Emerging role of Finance Managers in India. <p>C) Objectives of the Firm</p> <ul style="list-style-type: none"> • Profit Maximization and Shareholders Wealth Maximization, • Profit V/s Value Maximization
2	Financial Goal Setting & Time value of Money <p>A) Financial Goal Setting</p> <ul style="list-style-type: none"> • Introduction • Financial Forecasting – Meaning, Techniques, Benefits • Approaches to Financial Planning • Economic Value Added (EVA)– Measurement & Components • Free Cash Flow (FCF) - <p>B) Time Value of Money</p> <ul style="list-style-type: none"> • Concept • Present Value • Annuity • Techniques of Discounting • Techniques of Compounding,
3	Investment Decisions: Capital Budgeting <p>A) Capital Budgeting</p> <ul style="list-style-type: none"> • Nature of Capital Budgeting • Purpose of Capital Budgeting • Capital Budgeting Process • Types of Capital Investment • Basic Principle of Measuring Project Cash Flows • Increment Principle, Long Term Funds Principle, Exclusion of Financial Cost Principle, Post Tax Principle

	<ul style="list-style-type: none"> • Probability technique for measurement of cash flow • Capital Budgeting Techniques: Net Present Value Profitability Index and Discounted Pay Back Method. • A Comparison; Project Selection Under Capital Rationing <p>(Note: Problems on computation of cash flow, ranking of projects on various techniques, selection and analysis with / without capital rationing)</p>
4	Financial Decisions
	<p>A) Cost of Capital :</p> <ul style="list-style-type: none"> • Introduction and Definition of Cost of Capital • Measurement of Cost of Capital • Measurement of WACC using book value and market value method. • Measuring Marginal Cost of Capital <p>B) Capital Structure Decisions:</p> <ul style="list-style-type: none"> • Meaning and Choice of Capital Structure • Importance of Optimal Capital Structure • EBIT -EPS Analysis • Capital Structure Theories • Dividend Policies (Walter & Gordon)

Note: Relevant Law/Statute/Rules in force and relevant Accounting Standards in force on 1st April immediately preceding commencement of Academic Year is applicable for ensuing examination after relevant year.

***Revised Syllabus of Courses of B.Com. (Banking & Insurance)
Programme at Semester III
with Effect from the Academic Year 2017-2018***

1. Elective Courses (EC)

Management Accounting

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Management Accounting	10
2	Financial Statement Analysis	20
3	Working Capital Management	15
4	Management of Profits/Dividend Policy	15
Total		60

Sr. No.	Modules / Units
1	Introduction to Management Accounting
	Meaning and Definition , Scope, Functions , Objectives, Importance, Role of Management Accounting, Management Accounting Framework, Tools of Management Accounting
2	Financial Statement Analysis
	<p>A) Introduction to Corporate Financial Statements : Understanding the Balance sheet and Revenue statements with the headings and sub headings, Uses of financial statements, Users of Financial Statements.</p> <p>B) Financial Statement Analysis Introduction and Meaning of Financial Statement Analysis, Steps, Objective, Types of Analysis.</p> <ul style="list-style-type: none"> • Ratio analysis: Meaning, classification, Du Point Chart, advantages & limitations. • Balance Sheet Ratios: Current Ratio, Liquid Ratio, Stock Working Capital Ratio, Proprietary Ratio, Debt Equity Ratio, Capital Gearing Ratio. <p>Revenue Statement Ratios: Gross Profit Ratio, Expenses Ratio , Operating Ratio, Net Profit Ratio , Net Operating Profit Ratio , Stock Turnover Ratio, Combined Ratio, Return on Capital employed (Including Long Term Borrowings), Return on proprietor's Fund (Shareholders Fund and Preference Capital , Return on Equity Capital, Dividend Payout Ratio, Debt Service Ratio, Debtors Turnover, Creditors Turnover.</p>
3	Working Capital Management:
	Concept, Nature of Working Capital, Planning of Working Capital, Estimation /Projection of Working Capital Requirements in case of Trading and Manufacturing Organization Operating Cycle.
4	Management of Profits/Dividend Policy
	Meaning, Types, Factors influencing dividend policy, Forms of dividend. Determinants of Dividends Policy: Factors; Dividend Policy in India; Bonus Shares (Stock dividend) and Stock (Share) Splits; Legal, Procedural; and Tax Aspects associated with Dividend Decision

***Revised Syllabus of Courses of B.Com. (Banking & Insurance)
Programme at Semester III
with Effect from the Academic Year 2017-2018***

1. Elective Courses (EC)

Organizational Behaviour

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	The Individual Behaviour	15
2	The Group Dynamics	15
3	The Organizational Dynamics	15
4	Organization Behaviour In Financial Services	15
Total		60

Sr. No.	Modules / Units
1	The Individual Behaviour
	<p>A) Personality: Meaning, Determinants of Personality, Major personality traits influencing OB, The Big Five Model, Trait Theory of personality, Psychoanalytic theory of Personality, Freud Stages of Personality Development, Locus of Control, Self-Monitoring.</p> <p>B) Learning: Meaning and Definition of Learning-The Learning Process, Principles of Learning, Theories of Learning-Classical conditioning, Operant Conditioning, Social Learning Theory, Learning through Reinforcement, Learning by Observing, Learning through Experience.</p> <p>C) Perception-Meaning, Factors Influencing Perception, Attribution Theory, Improving Perceptions- Johari Window, Empathy.</p> <p>D) Workplace Emotions, Values and Ethics: Meaning of Emotions, Cognitive Dissonance, Emotional Dissonance, Managing Emotions at Work (Emotional Labor) - The Six Universal Emotions. Meaning and Types of Values, Sources of Value systems, Values across Cultures, Values and Ethical Behaviour.</p> <p>E) Individual Decision Making: How are Decisions made in organization, Decision Making process, Decisional Styles.</p>
2	The Group Dynamics
	<p>A) Group Communication: Importance, Corporate Communication – Need, Importance and Techniques of Corporate Communication.</p> <p>B) Power and Politics: Meaning of Power, Bases of Power, Power Tactics, Organizational Politics, Reasons for Organizational Politics, Managing Organizational Politics.</p> <p>C) Negotiations: Meaning, Process, Strategies, Third Party Negotiations, Crisis Negotiations, Focus Areas of Negotiations.</p> <p>D) Transactional Analysis Model: Types of Transactions, Ego states, Life Positions, Elaboration of Transactional styles.</p> <p>E) Virtual teams and Group Cohesiveness: Structure, Types, Stages in Management of Virtual teams, Features of Cohesive Groups, Effects/Consequences/Impact of Group Cohesion.</p> <p>F) Group Decision-Making: Advantages, Disadvantages, Assumptions, Managing Group Decision-Making, Strength and Weakness of Group Decision-Making.</p>
3	The Organizational Dynamics
	<p>A) Organization structure: Meaning, Meaning and key features of the concept of Centralization, Decentralization, Span of control and Departmentation, Simple structure, Bureaucratic & Matrix structure.</p> <p>B) New design options: Team structure, Virtual organizations, Boundary less organizations</p> <p>C) Organization structure differentiation: Strategy, Organization size, Technology & Environment, Organizational Designs and employee behaviour.</p>

	D) Organizational Climate: Impact of Communication, Impact of Rewards & Punishment, Quality work life with reference to Banking & Insurance, Job Frustration-Sources, Causes, Effects, Ways to Overcome Frustration, Impact of Frustration on Banking and Insurance companies.
4	Organization Behaviour In Banking and Insurance Sector
	A) Practices of OB in Banks and Insurance B) Issue of organization behaviour in Banks C) Strategies to manage issues of organization behaviour in banks D) Case Studies – Transfer, Promotion, Separation.

***Revised Syllabus of Courses of B.Com. (Banking & Insurance)
Programme at Semester III
with Effect from the Academic Year 2017-2018***

1. Elective Courses (EC)

Risk Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Foundations of Risk Management	15
2	Capital Market Risk Management	15
3	Credit Market Risk Management	15
4	Risk Measurement	15
Total		60

Sr. No.	Modules / Units
1.	Foundations of Risk Management
	<ul style="list-style-type: none"> • Basic risk types • The role of risk management • Enterprise Risk Management (ERM) • History of financial disasters and risk management failures • 2007 financial crisis
2.	Capital Market Risk Management
	<ul style="list-style-type: none"> • Equity, currencies & commodities markets in India • Introduction to Derivatives • Forward, Future and option contracts • Hedging through Derivatives contract • Fixed-income securities • Fixed-income risk management through derivatives • Rating agencies
3.	Credit Market Risk Management
	<ul style="list-style-type: none"> • Introduction, • Information required for evaluation of credit risk, • Procedure for Credit Risk Management, • Credit Lifecycle, • Loan Review Mechanism, • RBI guidelines on Credit Rating Framework in Banks, • Introduction of Basel Norms and calculation of capital adequacy ratio
4.	Risk Measurement
	<ul style="list-style-type: none"> • Estimation of volatilities and correlations (application to volatility term structures) Monte Carlo simulations (application to interest rate forecasting) • Linear Value-at-Risk (application to market, credit and operational risk) • Option valuation • Risk-adjusted return on capital (RAROC) & beta calculation • Risk management of derivatives (application to convertible risk) • Interest rates and measures of interest rate sensitivity

***Revised Syllabus of Courses of B.Com. (Banking & Insurance)
Programme at Semester III
with Effect from the Academic Year 2017-2018***

Mutual Fund Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Mutual Fund	15
2	Classification of Mutual Fund	20
3	Fund Selection Criteria	15
4	Financial Planning in Mutual fund	10
Total		60

Sr. No.	Modules / Units
1	Introduction to Mutual Fund
	<p>A) History & Origin, Definition, Meaning, Characteristics, Advantages, Disadvantages, Limitations of Mutual Funds, Ethics in Mutual Fund. Entities involved – Sponsor, Trust, Trustee, Asset Management Company, Registrar and Transfer Agent (RTA) and Fund Houses in India.</p> <p>B) Legal Framework - Role of regulatory agencies for Mutual funds – SEBI, RBI, AMFI, Ministry of Finance, SRO, Company Law Board, Department of Company's affairs, Registrar of Companies MF guidelines on advertisement , Accounting , Taxation and Valuation norms, Guidelines to purchase Mutual Funds, Investor protection and MF regulations, Grievance mechanism in MF in India.</p>
2	Classification of Mutual Fund
	<p>A) Types of Mutual Fund- (introduction and Characteristics)</p> <ul style="list-style-type: none"> • Functional/Operational – Open ended, close ended, Interval • Portfolio – Income, Growth, Balanced, MMMF • Geographical/ Location – Domestic, Offshore • Miscellaneous - Tax Saving Funds, Exchange Traded Funds, Balance Funds, Fixed Term Plan, Debt Funds, Systematic Investment Planning & Systematic Transfer Plan <p>B) Portfolio Maturity, Calculations of NAV, Entry Load, Exit Load.</p>
3	Fund Selection Criteria
	<p>A) Fund Rating and Ranking – Its need and importance. Basis of Ratings, Interpretation of Funding Rating by CRISIL, CARE and ICRA, Selection Criteria – (Size, Stability, Credit Portfolio, Performance)Performance Measurement – Rolling Returns and Benchmarking</p> <p>B) Yield To Maturity and Bond Valuation</p>
4	Financial Planning in Mutual fund
	<p>A) Basics of Financial Planning – Financial Planning Steps, Life Cycle, Wealth Cycle, Risk Profiling, Asset Allocation, Contingency Funds.</p> <p>B) Investors Guide Towards Financial Planning – Eligibility for investment in MF, KYC (Individuals, Micro SIPs, Institutional Investors ,Fund Category Guidance (Long Bond Funds, Short Bond Funds, Ultra Short Bond Funds) , Need for Financial Advisor, Difference between Advisor and Distributor, Colour Coding MF products, Bank FD's V/s Mutual Funds, Dividend V/s Growth Option</p> <p>C) Developing Model Portfolio for Investors – Model Portfolios meaning, Step by Step Approach of Building Model Portfolio.</p>

***Revised Syllabus of Courses of B.Com. (Banking & Insurance)
Programme at Semester III
with Effect from the Academic Year 2017-2018***

2A. Ability Enhancement Courses (AEC)

Information Technology in Banking & Insurance - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Electronic Commerce	10
2	E-banking	15
3	MS-Office: Packages for Institutional Automation:	20
4	Cyber Law & Cyber Security	15
Total		60

Sr. No.	Modules / Units
1	Introduction to Electronic Commerce
	<p>A) E-Commerce Framework, E-Commerce and media convergence, anatomy of E-Commerce Applications, E-Commerce Consumer and Organization Applications</p> <p>B) The network Infrastructure for Electronic Commerce - Market forces influencing the I-way, Components of I-way, Network Access Equipment</p> <p>C) E-Commerce and World Wide Web- Architectural framework of E-Commerce, WWW and its architecture, hypertext publishing, Technology behind the web, Security and the Web</p>
2	E-banking
	<p>A) Meaning, definition, features, advantages and limitations- core banking, the evolution of e-banking in India, Legal framework for e-banking.</p> <p>B) Electronic Payment System Types of Electronic Payment Systems, Digital Token-based EPS, Smart Card EPS, Credit Card EPS, Risk in EPS, Designing a EPS</p>
3	MS-Office: Packages for Institutional Automation:
	<p>A) Ms-Word: Usage of smart art tools, bookmark, cross-reference, hyperlink, mail merge utility and converting word as PDF files.</p> <p>B) Ms-Excel: Manipulating data, Working with charts, Working with PIVOT table and what-if analysis; Advanced excel functions-Vlookup(), hlookup(), PV(), FV(), average(), goal seek(), AVERAGE(), MIN(), MAX(), COUNT(), COUNTA(), ROUND(), INT(), nested functions, name, cells/ranges/constants, relative, absolute & mixed cell references, >, <, = operators, Logical functions using if, and, or =, not, date and time functions & annotating formulae.</p> <p>C) Application in Banking and Insurance Sector – Calculation of Interest, Calculation of Instalment, Calculation of Cash Flow, Calculation of Premium, Calculation of risk coverage in Insurance and Reporting.</p>
4	Cyber Law & Cyber Security:
	<p>A) Need of Cyber Law, History of Cyber Law in India</p> <p>B) Cyber Crimes: Various threats and attacks, Phishing, Key Loggers, Identity Theft, Call & SMS forging, e-mail related crimes, Denial of Service Attacks, Hacking, Online shopping frauds, Credit card frauds, Cyber Stalking</p> <p>C) Cyber Security: Computer Security, E-Security, Password Security and Reporting internet fraud</p>

***Revised Syllabus of Courses of B.Com. (Banking & Insurance)
Programme at Semester III
with Effect from the Academic Year 2017-2018***

2B. Skill Enhancement Courses (SEC)

Foundation Course – III (An Overview of Banking Sector)

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	An Overview of Banking Industry	10
2	Commercial Banking and Customer – Banker Relationship	10
3	Universal Banking & Technology in Banking sector	10
4	Microfinance & Financial Inclusion	15
Total		45

Sr. No.	Modules / Units
1	An Overview of Banking Industry
	<ul style="list-style-type: none"> • Definition of Banks, Types of Banks, Principles of Banking • Banking System in India, Overview of RBI, Public, Private, Co-operative, Payment Bank, Regional Rural Banks • Emerging trends of banking - Universal banking, electronic banking, globalization of banking. • Brief history of banking sector reforms from 1991-2000 and Current developments in banking sector • Regulatory Architecture – Overview of Banking Regulation Act 1949, Banking Regulation Act(Amendment 2015), Payment and Settlement Act 2007, Negotiable Instrument Act 1881, BIS, Basel I, II and III. • Bank Crises in India • Critical Evaluation of Banking Industry in India
2	Commercial Banking and Customer – Banker Relationship
	<ul style="list-style-type: none"> • Definition and meaning of Commercial Bank, Evolution of Commercial Banking in India, Functions of Commercial Bank , Services offered by Commercial Bank. • Retail Banking – Meaning, Features, Significance of Retail Banking and Overview of its products • Corporate Banking -Meaning, Features, Significance of Corporate Banking and Overview of its products • Rural Banking - Meaning, Features, Significance of Rural Banking and Overview of its products • Banking Ombudsman – Meaning and Functions
3	Universal Banking & Technology in Banking sector
	<p>A) Universal Banking</p> <ul style="list-style-type: none"> • Concept of Universal Banking, Evolution of Universal banking ,Services to Government, Payment & Settlement, Merchant Banking, Mutual Fund, Depository Services, Wealth Management, Portfolio Management Bancassurance, NRI Remittance. <p>B) Technology in Banking</p> <ul style="list-style-type: none"> • Features, norms and Limitations of E- banking, Mobile Banking, Internet Banking, RTGS, POS Terminal, NEFT, IMPS, Brown Label ATM's, White Label ATM's, NUUP, AEPS, APBS, CBS, CTS, Digital Signature , M-Wallets , Online opening of bank accounts – savings & current, and application for credit cards, loan. • Applicability of KYC norms in Banking Sector.
4	Microfinance & Financial Inclusion
	<p>A) Microfinance</p> <ul style="list-style-type: none"> • Introduction, Need and Code of Conduct for Microfinance Institutions in India, • Advantages, Purpose, Limitations and Models of SHG – Bank Linkage Program. • Role of NABARD and SIDBI,

- Portfolio Securitization,
- SHG-2, NRLM and SRLM ,
- Priority Sector and its Classification

B) Financial Inclusion

- Need & Extent
- RBI Committee Report of Medium Term Path on Financial Inclusion 2015, World Findex Report 2015, NISM Report 2015, (Only Brief Extracts relating to bank account holdings and credit taken and contrast between developing and developed nations.)
- Features & Procedures of Pradhan Mantri Jan Dhan Yojana, and PM Mudra Yojana.
- Features, procedures and significance of Stand up India Scheme for Green Field

***Revised Syllabus of Courses of B.Com. (Banking & Insurance)
Programme at Semester III
with Effect from the Academic Year 2017-2018***

2B. Skill Enhancement Courses (SEC)

Foundation Course- Contemporary Issues- III

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Human Rights Provisions, Violations and Redressal	12
2	Dealing With Environmental Concerns	11
3	Science and Technology I	11
4	Soft Skills for Effective Interpersonal Communication	11
Total		45

Sr. No.	Modules / Units
1	Human Rights Violations and Redressal
	<p>A. Scheduled Castes- Constitutional and legal rights, Forms of violations, Redressal mechanisms. (2 Lectures)</p> <p>B. Scheduled tribes- Constitutional and legal rights, Forms of violations, Redressal mechanisms. (2 Lectures)</p> <p>C. Women- Constitutional and legal rights, Forms of violations, Redressal mechanisms. (2 Lectures)</p> <p>D. Children- Constitutional and legal rights, Forms of violations, Redressal mechanisms. (2 Lectures)</p> <p>E. People with Disabilities, Minorities, and the Elderly population- Constitutional and legal rights, Forms of violations, Redressal mechanisms. (4 Lectures)</p>
2	Dealing With Environmental Concerns
	<p>A. Concept of Disaster and general effects of Disasters on human life- physical, psychological, economic and social effects. (3 Lectures)</p> <p>B. Some locally relevant case studies of environmental disasters. (2 Lectures)</p> <p>C. Dealing with Disasters - Factors to be considered in Prevention, Mitigation (Relief and Rehabilitation) and disaster Preparedness. (3 Lectures)</p> <p>D. Human Rights issues in addressing disasters- issues related to compensation, equitable and fair distribution of relief and humanitarian approach to resettlement and rehabilitation. (3 Lectures)</p>
3	Science and Technology – I
	<p>A. Development of Science- the ancient cultures, the Classical era, the Middle Ages, the Renaissance, the Age of Reason and Enlightenment. (3 Lectures)</p> <p>B. Nature of science- its principles and characteristics; Science as empirical, practical, theoretical, validated knowledge. (2 Lectures)</p> <p>C. Science and Superstition- the role of science in exploding myths, blind beliefs and prejudices; Science and scientific temper- scientific temper as a fundamental duty of the Indian citizen. (3 Lectures)</p> <p>D. Science in everyday life- technology, its meaning and role in development; Interrelation and distinction between science and technology. (3 Lectures)</p>
4	Soft Skills for Effective Interpersonal Communication
	<p>Part A (4 Lectures)</p> <p>I) Effective Listening - Importance and Features.</p> <p>II) Verbal and Non-Verbal Communication; Public-Speaking and Presentation Skills.</p> <p>III) Barriers to Effective Communication; Importance of Self-Awareness and Body Language.</p> <p>Part B (4 Lectures)</p> <p>I) Formal and Informal Communication - Purpose and Types.</p> <p>II) Writing Formal Applications, Statement of Purpose (SOP) and Resume.</p> <p>III) Preparing for Group Discussions, Interviews and Presentations.</p> <p>Part C (3 Lectures)</p> <p>I) Leadership Skills and Self-Improvement - Characteristics of Effective Leadership.</p> <p>II) Styles of Leadership and Team-Building.</p>

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7. Motilal, Shashi, and Nanda, Bijoy Lakshmi, *Human Rights: Gender and Environment*, Allied Publishers, New Delhi, 2007.
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11. Sathe, Satyaranjan P., *Judicial Activism in India*, Oxford University Press, New Delhi, 2003.
12. Singh, Ashok Kumar, *Science and Technology for Civil Service Examination*, Tata McGraw Hill, New Delhi, 2012.
13. Thorpe, Edgar, *General Studies Paper I Volume V*, Pearson, New Delhi, 2017.

Projects / Assignments (for Internal Assessment)

- i. Projects/Assignments should be drawn for the component on Internal Assessment from the topics in **Module 1 to Module 4**.
- ii. Students should be given a list of possible topics - at least 3 from each Module at the beginning of the semester.
- iii. The Project/Assignment can take the form of Street-Plays / Power-Point Presentations / Poster Exhibitions and similar other modes of presentation appropriate to the topic.
- iv. Students can work in groups of not more than 8 per topic.
- v. Students must submit a hard / soft copy of the Project / Assignment before appearing for the semester end examination.

QUESTION PAPER PATTERN (Semester III)

The Question Paper Pattern for Semester End Examination shall be as follows:

TOTAL MARKS: 75

DURATION: 150 MINUTES

QUESTION NUMBER	DESCRIPTION	MARKS ASSIGNED
1	i. Question 1 A will be asked on the meaning / definition of concepts / terms from all Modules. ii. Question 1 B will be asked on the topic of the Project / Assignment done by the student during the Semester iii. In all 8 Questions will be asked out of which 5 have to be attempted.	a) Total marks: 15 b) For 1 A, there will be 3 marks for each sub-question. c) For 1 B there will be 15 marks without any break-up.
2	Descriptive Question with internal option (A or B) on Module 1	15
3	Descriptive Question with internal option (A or B) on Module 2	15
4	Descriptive Question with internal option (A or B) on Module 3	15
5	Descriptive Question with internal option (A or B) on Module 4	15

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2B. Skill Enhancement Courses (SEC)

Foundation Course in NSS - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Value System & Gender sensitivity	12
2	Disaster preparedness & Disaster management	10
3	Health, hygiene & Diseases	13
4	Environment & Energy conservation	10
Total		45

Sr. No.	Modules / Units
1	Value System & Gender sensitivity
	UNIT - I – Value System Meaning of value, Types of values- human values and social responsibilities- Indian value system- the concepts and its features UNIT - II - Gender sensitivity and woman empowerment Concept of gender- causes behind gender related problems- measures Meaning of woman empowerment- schemes for woman empowerment in India
2	Disaster preparedness & Disaster management
	UNIT - I - Basics of Disaster preparedness Disaster- its meaning and types Disaster preparedness- its meaning and methods UNIT - II - Disaster management Disaster management- concept- disaster cycle - role of technology in disaster response- role of as first responder – the study of ‘Avhan’ Model
3	Health, Hygiene & Diseases
	UNIT - I - Health and hygiene Concept of complete health and maintenance of hygiene UNIT - II - Diseases and disorders- preventive campaigning Diseases and disorders- preventive campaigning in Malaria, Tuberculosis, Dengue, Cancer, HIV/AIDS, Diabetes
4	Environment & Energy conservation
	UNIT - I Environment and Environment enrichment program Environment- meaning, features , issues, conservation of natural resources and sustainability in environment UNIT - II Energy and Energy conservation program Energy- the concept, features- conventional and non- conventional energy Energy conservation- the meaning and importance

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2B. Skill Enhancement Courses (SEC)

Foundation Course in NCC - III

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	National Integration & Awareness	10
2	Drill: Foot Drill	10
3	Adventure Training and Environment Awareness and Conservation	05
4	Personality Development and Leadership	10
5	Specialized subject (ARMY)	10
Total		45

Sr. No.	Modules / Units
1	National Integration & Awareness
	<p>Desired outcome: The students will display sense of patriotism, secular values and shall be transformed into motivated youth who will contribute towards nation building through national unity and social cohesion.</p> <p>The students shall enrich themselves about the history of our beloved country and will look forward for the solutions based on strengths to the challenges to the country for its development.</p> <ul style="list-style-type: none"> • Freedom Struggle and nationalist movement in India. • National interests, Objectives, Threats and Opportunities. • Problems/ Challenges of National Integration. • Unity in Diversity
2	Drill: Foot Drill
	<p>Desired outcome: The students will demonstrate the sense of discipline, improve bearing, smartness, turnout, develop the quality of immediate and implicit obedience of orders, with good reflexes.</p> <ul style="list-style-type: none"> • Side pace, pace forward and to the rear • Turning on the march and whiling • Saluting on the march • Marking time, forward march and halt in quick time • Changing step • Formation of squad and squad drill
3	Adventure Training, Environment Awareness and Conservation
3A	Adventure Training
	<p>Desired outcome: The students will overcome fear & inculcate within them the sense of adventure, sportsmanship, esprit-d-corp and develop confidence, courage, determination, diligence and quest for excellence.</p> <ul style="list-style-type: none"> • Any Two such as – Obstacle course, Slithering, Trekking, Cycling, Rock Climbing, Para Sailing, Sailing, Scuba Diving etc.
3B	Environment Awareness and Conservation
	<p>Desired outcome: The student will be made aware of the modern techniques of waste management and pollution control.</p> <ul style="list-style-type: none"> • Waste management • Pollution control, water, Air, Noise and Soil
4	Personality Development and Leadership
	<p>Desired outcome: The student will inculcate officer like qualities with desired ability to take right decisions.</p> <ul style="list-style-type: none"> • Time management • Effect of Leadership with historical examples • Interview Skills • Conflict Motives- Resolution

Sr. No.	Modules / Units
5	Specialized Subject: Army Or Navy Or Air
	<p><u>Army</u> Desired outcome: It will acquaint, expose & provide knowledge about Army/ Navy/ Air force and to acquire information about expanse of Armed Forces ,service subjects and important battles</p> <p>A. Armed Force</p> <ul style="list-style-type: none"> • Task and Role of Fighting Arms • Modes of Entry to Army • Honors and Awards <p>B. Introduction to Infantry and weapons and equipments</p> <ul style="list-style-type: none"> • Characteristics of 5.56mm INSAS Rifle, Ammunition, Fire power, Stripping, Assembling and Cleaning • Organization of Infantry Battalion. <p>C. Military history</p> <ul style="list-style-type: none"> • Study of battles of Indo-Pak War 1965,1971 and Kargil • War Movies <p>D. Communication</p> <ul style="list-style-type: none"> • Characteristics of Walkie-Talkies • Basic RT Procedure • Latest trends and Development (Multi Media, Video Conferencing, IT) <p style="text-align: center;">OR</p> <p><u>Navy</u></p> <p>A. Naval orientation and service subjects</p> <ul style="list-style-type: none"> • Organization of Ship- Introduction on Onboard Organization • Naval Customs and Traditions • Mode of Entry into Indian Navy • Branches of the Navy and their functions • Naval Campaign (Battle of Atlantic, Pearl Harbour, Falkland War/Fleet Review/ PFR/ IFR)s <p>B. Ship and Boat Modelling</p> <ul style="list-style-type: none"> • Types of Models • Introduction of Ship Model- Competition Types of Model Prepare in NSC and RDC • Care and handling of power-tools used- maintenance and purpose of tools

Sr. No.	Modules / Units
	<p>C. Search and Rescue</p> <ul style="list-style-type: none"> • Role of Indian Coast Guard related to SAR <p>D. Swimming</p> <ul style="list-style-type: none"> • Floating and Breathing Techniques- Precautions while Swimming <p style="text-align: center;">OR</p> <p><u>AIR</u></p> <p>A. General Service Knowledge</p> <ul style="list-style-type: none"> • Organization Of Air Force • Branches of the IAF. <p>B. Principles of Flight</p> <ul style="list-style-type: none"> • Venturi Effect • Aerofoil • Forces on an Aircraft • Lift and Drag <p>C. Airmanship</p> <ul style="list-style-type: none"> • ATC/RT Procedures • Aviation Medicine <p>D. Aero- Engines</p> <ul style="list-style-type: none"> • Types of Engines • Piston Engines • Jet Engines • Turboprop Engines

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2B. Skill Enhancement Courses (SEC)

Foundation Course in Physical Education - III

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Overview of Nutrition	10
2	Evaluation of Health, Fitness and Wellness	10
3	Prevention and Care of Exercise Injuries	10
4	Sports Training	15
Total		45

Sr. No.	Modules / Units
1	Overview of Nutrition
	<ul style="list-style-type: none"> • Introduction to nutrition & its principles • Role of Nutrition in promotion of health • Dietary Guidelines for Good Health • Regulation of water in body and factors influencing body temperature.
2	Evaluation of Health, Fitness and Wellness
	<ul style="list-style-type: none"> • Meaning & Concept of holistic health • Evaluating Personal health-basic parameters • Evaluating Fitness Activities – Walking & Jogging • Myths & mis-conceptions of Personal fitness
3	Prevention and Care of Exercise Injuries
	<ul style="list-style-type: none"> • Types of Exercise Injuries • First Aid- Importance & application in Exercise Injuries • Management of Soft tissues injuries • Management of bone injuries
4	Sports Training
	<ul style="list-style-type: none"> • Definition, aims & objectives of Sports training • Importance of Sports training • Principles of Sports training • Drug abuse & its effects

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3. Core Courses (CC)

Financial Markets

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Indian Financial System	15
2	Financial Markets in India	15
3	Commodity Market	15
4	Derivatives Market	15
Total		60

Sr. No.	Modules / Units
1	Indian Financial System
	<p>A) Introduction, Meaning, Functions of financial system, Indian financial system from financial neutrality to financial activism and from financial volatility to financial stability, Role of Government in financial development, Overview of Phases of Indian financial system since independence (State Domination – 1947-1990, Financial sector reforms 1991 till Financial Sector Legislative Reforms Commission 2013), Monitoring framework for financial conglomerates.</p> <p>B) Structure of Indian Financial System – Banking & Non-Banking Financial Institutions, Organized and Unorganized Financial Markets, Financial Assets/Instruments, Fund based & Fee Based Financial Services.</p>
2	Financial Markets in India
	<p>A) Indian Money Market – Meaning, Features, Functions, Importance, Defects, Participants, Components of Organized and Unorganized markets and Reforms</p> <p>B) Indian Capital Market - Meaning, Features, Functions, Importance, Participants, Instruments, Reforms in Primary and Secondary Market.</p> <p>C) Indian Stock Market - Meaning and functions of Stock Exchange- NSE and BSE.</p> <p>D) Equity Market – Primary Market, IPO, Book Building, Role of Merchant Bankers, ASBA , Green Shoe Option, Issue of Bonus shares, Right Shares, Sweat Equity shares, ESOP.</p> <p>E) Indian Debt Market –Market Instruments, Listing, Primary and Secondary Segments</p>
3	Commodity Market
	<ul style="list-style-type: none"> • Introduction to commodities market - Meaning History & origin, Types of commodities traded, • Structure of commodities market in India, • Participants in commodities market, Trading in commodities in India(cash & derivative segment), • Commodity exchanges in India & abroad • Reasons for investing in commodities.
4	Derivatives Market
	<ul style="list-style-type: none"> • Introduction to Derivatives market- Meaning, History & origin, • Elements of a derivative contract, • Factors driving growth of derivatives market, • Types of derivatives, Types of underlying assets, Participants in derivatives market, Advantages & disadvantages of trading in derivatives market, • Current volumes of derivative trade in India, • Difference between Forwards & Futures

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3. Core Courses (CC)

Direct Taxation

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Definitions and Residential Status	15
2	Heads of Income - I	15
3	Heads of Income - II	15
4	Computation of Total Income & Taxable Income	15
Total		60

Sr. No.	Modules / Units
1	Definitions and Residential Status
	<p>A) Basic Terms (S. 2,3,4) Assesse, Assessment, Assessment Year, Annual Value, Business, Capital Assets, Income, Previous Year, Person, Transfer.</p> <p>B) Determination of Residential Status of Individual, Scope of Total Income (S.5)</p>
2	Heads of Income - I
	<p>A) Salary (S.15-17)</p> <p>B) Income from House Property (S. 22-27)</p> <p>C) Profit & Gain from Business and Profession (S. 28, 30,31,32, 35, 35D, 36, 37, 40, 40A and 43B)</p>
3	Heads of Income - II
	<p>A) Capital Gain (S. 45, 48, 49, 50 and 54)</p> <p>B) Income from other sources (S.56- 59)</p> <p>C) Exclusions from Total Income (S.10) (Exclusions related to specified heads to be covered with relevant heads of income)</p>
4	Computation of Total Income & Taxable Income
	<p>A) Deductions from Total Income S. 80C, 80CCC, 80D, 80DD, 80E, 80U, 80TTA</p> <p>B) Computation of Taxable Income of Individuals.</p>

Notes

1. The Syllabus is restricted to study of particular sections, specifically mentioned rules and notifications only.
2. All modules / units include Computational problems / Case Study.
3. The Law In force on 1st April immediately preceding the commencement of Academic year will be applicable for ensuing Examinations.

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1. Elective Courses (EC)

Financial Management -II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Working Capital Management	15
2	Management of Components of Working Capital	15
3	Financial Planning	15
4	Financial Policy and Corporate Strategy	15
Total		60

Sr. No.	Modules / Units
1	Working Capital Management
	<ul style="list-style-type: none"> • Management of Working Capital in India • Estimating working capital needs • Operating or working capital cycle • Working Capital Financing: Trade Credit; Bank Credit; Commercial Papers; Certificate of Deposits (CDs); Financing.
2	Management of Components of Working Capital
	<ul style="list-style-type: none"> • Management of Cash and Marketable Securities: Motives for Holding Cash; Objectives of Cash Management; Factors Determining Cash Needs; Basic Strategies of Cash Management; Cash Management Techniques / Processes; Marketable Securities; and Cash Management Practices in India. • Receivables Management: Objectives; Credit Policies; Credit Terms; and Collection Policies. • Inventory Management: Objectives; and Techniques.
3	Financial Planning
	<ul style="list-style-type: none"> • Introduction • Meaning and Essentials of Budget • Types of Budget • Advantages of Budgeting • Zero Based Budgeting • Master Budget. • Sales Budget, Production Budget, Material Budget, Cash Budget and Flexible Budget.
4	Financial Policy and Corporate Strategy
	<ul style="list-style-type: none"> • Meaning of Strategic Financial Management • Strategic financial decision making framework • Functions of Strategic financial management <p>Business Risk and Financial Risk</p> <ul style="list-style-type: none"> • Introduction • Debt v/s Equity Financing • Types of Leverage • Investment Objective/Criteria for Individuals/Non-Business Purpose.

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1. Elective Courses (EC)

Cost Accounting

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Cost Accounting	10
2	Classification of Costs and Cost Sheet	15
3	Standard Costing	20
4	Introduction to Marginal Costing	15
Total		60

Sr. No.	Modules / Units
1	Introduction to Cost Accounting
	<ul style="list-style-type: none"> Objectives and scope of Cost Accounting Cost centres and Cost units Cost classification for stock valuation, Profit measurement, Decision making and control Coding systems Elements of Cost
2	Classification of Cost and Cost Sheet
	<ul style="list-style-type: none"> Classification of costs, Cost of Sales, Cost Centre, Cost Unit, Profit Centre and Investment Centre Cost Sheet and Reconciliation of cost and financial accounts. <p>Note- Practical problems based on preparation of cost sheet reconciliation of cost and financial accounts</p>
3	Standard Costing
	<ul style="list-style-type: none"> Various types of standards, setting of standards, Basic concepts of, Labour and Overhead (Fixed and Variable) variance analysis.
4	Introduction to Marginal Costing
	<ul style="list-style-type: none"> Marginal costing meaning, application, advantages, limitations, Contribution, Breakeven analysis and profit volume graph. <p>Note:- Practical problems based on Marginal Costing excluding decision making</p>

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1. Elective Courses (EC)

Entrepreneurship Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	The Entrepreneur	15
2	Business Planning	15
3	Key Areas of New Ventures	15
4	Evolving Concepts in Entrepreneurship	15
Total		60

Sr. No.	Modules / Units
1	The Entrepreneur
	<p>A) Entrepreneur: Meaning, Nature, origin and development of entrepreneurship in India, Need and Importance, Core elements, Principles, Essentials, Types, Functions, Concept of entrepreneurship management, Motives behind being an entrepreneur, Entrepreneurial Process</p> <p>B) Theories of Entrepreneurship: Innovation Theory of Schumpeter, Need for Achievement Theory of McClelland, Risk Bearing Theory of knight, Hagen's Theory of Entrepreneurship, Economic Theory of Entrepreneurship.</p> <p>C) Entrepreneurial Values and Attitudes, Dominant characteristics of successful entrepreneurs, Internal and external factors for entrepreneurial motivation</p> <p>D) Entrepreneurial Skills, Identifying business opportunities, Role of creativity in Entrepreneurship, the creative process, the Innovation process, types of innovation, sources of innovation, principles of innovation, Sources of Business Ideas.</p>
2	Business Planning
	<p>A) Forms of Entrepreneurial structures:</p> <ul style="list-style-type: none"> • Sole Proprietorship-meaning, merits and limitations. • Partnership-Meaning, Forms, merits and limitations. • Corporations-Meaning, merits and limitations. • Limited Liability partnerships and corporations. • Franchising-Meaning, types, merits and limitations. <p>B) Critical Factors for starting a new enterprise: Personal, Environmental, Sociological factors. Problems of a New Venture- Financial, administrative, marketing, production and other problems.</p> <p>C) Business Plan: Meaning, Benefits, Developing a business plan, Environment scanning, Elements/Areas to be covered in a Business Plan, Project Report preparation, Contents of a Project Report.</p>
3	Key Areas of New Ventures
	<p>A) Marketing: New Product Development, Marketing Strategy for the new venture, Branding strategies, Distribution strategies, Pricing Strategies, Promotion strategies for new venture, Concept of Marketing Mix and Market segmentation, Marketing Plan</p> <p>B) Operations: Size and location of Enterprise, Layout, Inventory Control, Quality Control.</p>

	<p>C) Finance: Sources of long term and short term finance, Debt fund-Meaning, Merits and limitations, Equity Fund- Meaning, merits and limitations, Concept of Break Even analysis, Venture Capital-Meaning, Merits and Limitations, Criteria for Evaluating New Venture Proposals by Venture Capitalist</p> <p>D) Human Resource: Personnel Function, Important Labor Laws: Industrial Disputes Act, Factories Act, Provident Fund Act, Employee State Insurance Act, Payment of Wages Act, Minimum Wages Act, Payment of Gratuity Act, other related Acts and Role of HRD in new ventures.</p>
4	Evolving Concepts in Entrepreneurship
	<p>A) Social Entrepreneurship: Meaning, Social responsibility of an entrepreneur</p> <p>B) Barriers to entrepreneurship: Environmental, economic, non-economic, personal and entrepreneurial barriers.</p> <p>C) Intrapreneurship: Meaning, Characteristics, Intrapreneurs Activities, types of Corporate Entrepreneurs, Corporate V/s Intrapreneurial culture, Climate, Fostering Intrapreneurial culture, Promoting intrapreneurship- Pinchot's Spontaneous teams and Formal Venture teams, establishing intrapreneurial ventures.</p> <p>D) Ethics and Entrepreneurship: Defining Ethics, Approaches to Managerial ethics, ethics and business decisions, Ethical practices and code of conduct, Ethical considerations in corporate entrepreneurship.</p> <p>E) Institutional Support to Entrepreneurs: Importance, Incentives and facilities, Entrepreneurship Development Institute of India (EDI), NSIC, Small Industries Development Organization (SIDO), National Institute for Entrepreneurship and Small Business Development (NIESBUD), Others, Key features of National Policy on Skill Development and Entrepreneurship 2015.</p>

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1. Elective Courses (EC)

Wealth Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Wealth Management	15
2	Wealth Management Strategy	15
3	Financial Planning & Financial Mathematics	15
4	Retirement & Estate Planning	15
Total		60

Sr. No.	Modules/ Units
1	Introduction to Wealth Management
	<p>A) Overview</p> <ul style="list-style-type: none"> Define Wealth, Meaning & Scope of Wealth Management Wealth cycle Wealth Management Process Introduction to Financial literacy. <p>B) Savings and Investments</p> <ul style="list-style-type: none"> Introduction, Nature and Scope of Saving Investments Objectives of Saving and Investment (Tax Saving, Income and Growth of Capital), Investment Alternatives Investment Attributes Approaches to investment decision making Qualities for successful investment Alternatives to Investment decision – Direct & Indirect
2	Wealth Management Strategy
	<p>A) Wealth Management Strategy</p> <ul style="list-style-type: none"> Meaning & scope of wealth management strategy The unwealthy habits Philosophy of wealth creation & management Need for planning <p>B) Investment planning:</p> <ul style="list-style-type: none"> Types of investment risk Risk profiling of investors & asset allocation (life cycle model) Asset allocation strategies(strategic, tactical, life- cycle based) Goal-based financial planning Active & passive investment strategies
3	Financial Planning & Financial Mathematics:
	<p>A) Financial Planning</p> <ul style="list-style-type: none"> Introduction Role of Financial planner Process of financial planning Cash flow analysis Financial Planning in India Financial Blood Test Report <p>B) Financial Mathematics:</p> <ul style="list-style-type: none"> Calculation of returns (CAGR, Post-tax returns, etc.) Calculation of Total assets Net worth calculations
4	Retirement & Estate Planning
	<p>A) Retirement Planning</p> <ul style="list-style-type: none"> Meaning & Objectives of Retirement planning Gifts & Trust, Charity planning Avoidable mistakes in retirement planning Power of attorney for asset management,

	<p>B) Estate planning</p> <ul style="list-style-type: none"> • Meaning & scope • Need for Estate planning • Tools for Estate planning • Considerations for personal property and collectibles <p>C) Insurance Planning :</p> <ul style="list-style-type: none"> • Meaning • Basic principles of insurance • Functions and Characteristics of Insurance • Rights and responsibilities of Insurer and Insured • Types of life insurance policies • Types of general insurance policies • Health insurance – mediclaim – Calculation of Human Life Value / Belth Method CPT
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1. Elective Courses (EC)

Customer Relationship Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Customer Relationship Management (CRM)	15
2	Technological support in Customer Relationship Management (CRM)	15
3	Implementing Customer Relationship Management (CRM)	15
4	Customer Relationship Management (CRM) in Banking and Insurance Sector	15
Total		60

Sr. No.	Modules / Units
1	Introduction to Customer Relationship Management (CRM)
	Meaning, Definition of CRM, Development in CRM, Benefits of CRM, Effective CRM through Customer Knowledge Management, CRM Cycle, Winning market through effective CRM, CRM programmes, Relationship marketing & effectiveness of Relationship marketing, Factors responsible for growth of Customer Relationship Management (CRM)
2	Technological support in Customer Relationship Management (CRM)
	Introduction, Technological application in CRM, Types of Technological application in CRM, Database and Information systems, Database marketing strategies, CRM software solutions for B2C and B2B, Accounting systems for Customer Acquisition and Retention Costs, Customer loyalty and Profitability through Technology. e-CRM – Introduction, Importance, Challenges, Strategies, e-marketing and e-CRM.
3	Implementing Customer Relationship Management (CRM)
	Allocation rule of Customer Relationship Management (CRM), Customer Satisfaction survey, Contact management, Building Customer Relationship Management (CRM), Effectiveness of Customer Relationship Management (CRM), Organizing of Customer Relationship Management (CRM), Employee & customer management process.
4	Customer Relationship Management (CRM) in Banking and Insurance Sector
	Building customer loyalty, B2B Commerce, B2B relationship with intermediaries, Relationship marketing for creating value in business & market, Customer Relationship Management in Indian Banking and Insurance sector- Introduction, CRM objectives, need of CRM, Process of CRM, Customer Relationship Management through Call Centres in Banking sector, E- CRM in Banking and Insurance

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2A. Ability Enhancement Courses (AEC)

Information Technology in Banking & Insurance II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	E-banking Business Models	15
2	Induction of TechnoManagement	20
3	IT Applications and Banking	05
4	MS-Office: Packages for Institutional Automation	20
Total		60

Sr. No.	Modules / Units
1	E-banking Business Models
	Various models- home banking, office banking, online banking, internet banking, mobile banking, SMS banking,- models of electronic payments, other business models
2	Induction of TechnoManagement
	<p>Development Life Cycle, Project Management, Building Data Centres, Role of DBMS in Banking, Data Warehousing and Data Mining, RDBMS Tools</p> <ul style="list-style-type: none"> • Technological Changes in Indian Banking Industry, Trends in Banking and Information Technology, Technology in Banking, Lead Role of Reserve Bank of India, New Horizons for Banking based IT, Automated Clearing House Operations, Electronic Wholesale Banking Credit Transfer, Credit Information Bureau (I) Ltd., Credit Information Company Regulation Bill- 2004, Automation in Indian Banks, Cheque clearing using MICR technology, Innovations, Products and Services, Core-Banking Solutions(CBS), Human Resource Development(HRD)-The Road Ahead, • Technology in Banking Industry, Teleconferencing, Internet Banking, Digital Signature in Banking, MICR-Facility for 'paper-based' clearing, Cheque Truncation • Dealing with Fraudulent transactions under CTS, Efficient customer service, smart quill computer pen, Institute for Development & Research in Banking & Technology (IDRBT). • E-Checks-Protocols and Standards, Problems on mechanization, e-Banking-RBI Regulations & Supervision, Technology Diffusion.
3	IT Applications and Banking
	Objectives, Electronic Commerce and Banking, Banking Software, Electronic Clearing and Settlement Systems, Plastic Money
4	MS-Office: Packages for Institutional Automation
	<ul style="list-style-type: none"> • MS-PowerPoint presentation: Internal links between slides, hyperlinks, embedding multimedia content onto the slides (video/audio/stylish text), slide animation, timer, creating new presentation by existing theme, import online themes, creating a template of presentation, save and run the slide show(.ppsx) • Applications of Internet: Introduction to e-mail, writing professional e-mails, creating digitally signed documents, use of outlook express: configuring outlook express, creating and managing profile in outlook, sending and receiving e-mails via outlook express, Emailing the merged documents, boomerang facility of email, Google drive: usage of Google drive in storing the Google documents, excel sheets, presentations and PDF files.

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2B. Skill Enhancement Courses (SEC)

**Foundation Course – IV
(An Overview of Insurance Sector)
*Modules at a Glance***

Sr. No.	Modules	No. of Lectures
1	An Introduction to Life Insurance	15
2	An Introduction to Health Insurance	10
3	An Introduction to Home and Motor Insurance	10
4	Role of Insurance in Logistic	10
Total		45

Sr. No.	Modules / Units
1	An Introduction to Life Insurance
	<p>A) Life Insurance Business – Components, Human Life Value Approach, Mutuality, Principle of Risk Pooling, Life Insurance Contract, Determinants of Risk Premium</p> <p>B) Products of LIC – Introduction of life insurance plans - Traditional Life Insurance Plans – Term Plans, Whole Life Insurance, Endowment Assurance, Dividend Method of Profit Participation Purpose of plans , Riders in plan - Introduction, Forms and procedures</p> <p>C) Non Traditional Life Insurance Products (Those of SBI and ICICI – Introduction, Forms and procedures)</p>
2	An Introduction to Health Insurance
	<p>A) Health Insurance – Meaning, IRDA Regulations, determinants of Health Insurance, Health Insurance Market in India and determinants of Risk Premium.</p> <p>B) SBI and ICICI Health Insurance Plans - Introduction and Forms and Procedures of Hospitalization, Indemnity Products, top up covers, cashless insurance, Senior citizen plans, critical illness plans and Micro Insurance.</p>
3	An Introduction to Home and Motor Insurance
	<p>A) Home Insurance - SBI and ICICI Plans – Introduction, Forms and Procedures, Inclusions and Exclusions in policies, Determinants of Risk Premium and Impact of Catastrophes on Home Insurance.</p> <p>B) Vehicle Insurance- SBI and ICICI Plans-Introduction, Forms and Procedures, Determinants of Risk Premium, Inclusions and Exclusions.</p>
4	Role of Insurance in Logistic
	<p>A) Role of Insurance in Logistic - Meaning &Importance, Hazards, Protection, Social Security – Type of Risks and Accidents.</p> <p>B) Fire Insurance – SBI and ICICI Plans – Introduction, Forms and Procedures, Standard Fire and Special Perils Policy, Tariff system and special policies.</p>

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2B. Skill Enhancement Courses (SEC)

Foundation Course- Contemporary Issues- IV

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Significant, Contemporary Rights of Citizens	12
2	Approaches to understanding Ecology	11
3	Science and Technology –II	11
4	Introduction to Competitive Exams	11
Total		45

Sr. No.	Modules / Units
1	Significant, Contemporary Rights of Citizens
	<p>A. Rights of Consumers-Violations of consumer rights and important provisions of the Consumer Protection Act, 2016; Other important laws to protect consumers; Consumer courts and consumer movements. (3 Lectures)</p> <p>B. Right to Information- Genesis and relation with transparency and accountability; important provisions of the Right to Information Act, 2005; some success stories. (3 Lectures)</p> <p>C. Protection of Citizens'/Public Interest-Public Interest Litigation, need and procedure to file a PIL; some landmark cases. (3 Lectures)</p> <p>D. Citizens' Charters, Public Service Guarantee Acts. (3 Lectures)</p>
2	Approaches to understanding Ecology
	<p>A. Understanding approaches to ecology- Anthropocentrism, Biocentrism and Eco centrism, Ecofeminism and Deep Ecology. (3 Lectures)</p> <p>B. Environmental Principles-1: the sustainability principle; the polluter pays principle; the precautionary principle. (4 Lectures)</p> <p>C. Environmental Principles-2: the equity principle; human rights principles; the participation principle. (4 Lectures)</p>
3	Science and Technology –II
	<p>Part A:Some Significant Modern Technologies, Features and Applications (7 Lectures)</p> <p>i. Laser Technology- Light Amplification by Stimulated Emission of Radiation; use of laser in remote sensing, GIS/GPS mapping, medical use.</p> <p>ii. Satellite Technology- various uses in satellite navigation systems, GPS, and imprecise climate and weather analyses.</p> <p>iii. Information and Communication Technology- convergence of various technologies like satellite, computer and digital in the information revolution of today's society.</p> <p>iv. Biotechnology and Genetic engineering- applied biology and uses in medicine, pharmaceuticals and agriculture; genetically modified plant, animal and human life.</p> <p>v. Nanotechnology- definition: the study, control and application of phenomena and materials at length scales below 100 nm; uses in medicine, military intelligence and consumer products.</p> <p>Part B:Issues of Control, Access and Misuse of Technology. (4 Lectures)</p>

Sr. No.	Modules / Units
4	Introduction to Competitive Exams
	<p>Part A. Basic information on Competitive Examinations- the pattern, eligibility criteria and local centres:</p> <ul style="list-style-type: none"> i. Examinations conducted for entry into professional courses - Graduate Record Examinations (GRE), Graduate Management Admission Test (GMAT), Common Admission Test (CAT) and Scholastic Aptitude Test (SAT). ii. Examinations conducted for entry into jobs by Union Public Service Commission, Staff Selection Commission (SSC), State Public Service Commissions, Banking and Insurance sectors, and the National and State Eligibility Tests (NET / SET) for entry into teaching profession. <p>Part B. Soft skills required for competitive examinations- (7 Lectures)</p> <ul style="list-style-type: none"> i. Information on areas tested: Quantitative Ability, Data Interpretation, Verbal Ability and Logical Reasoning, Creativity and Lateral Thinking ii. Motivation: Concept, Theories and Types of Motivation iii. Goal-Setting: Types of Goals, SMART Goals, Stephen Covey's concept of human endowment iv. Time Management: Effective Strategies for Time Management v. Writing Skills: Paragraph Writing, Report Writing, Filing an application under the RTI Act, Consumer Grievance Letter.

References

1. Asthana, D. K., and Asthana, Meera, *Environmental Problems and Solutions*, S. Chand, New Delhi, 2012.
2. Bajpai, Asha, *Child Rights in India*, Oxford University Press, New Delhi, 2010.
3. Bhatnagar Mamta and Bhatnagar Nitin, *Effective Communication and Soft Skills*, Pearson India, New Delhi, 2011.
4. G Subba Rao, *Writing Skills for Civil Services Examination*, Access Publishing, New Delhi, 2014
5. Kaushal, Rachana, *Women and Human Rights in India*, Kaveri Books, New Delhi, 2000.
6. Mohapatra, Gaur Krishna Das, *Environmental Ecology*, Vikas, Noida, 2008.
7. Motilal, Shashi, and Nanda, Bijoy Lakshmi, *Human Rights: Gender and Environment*, Allied Publishers, New Delhi, 2007.
8. Murthy, D. B. N., *Disaster Management: Text and Case Studies*, Deep and Deep Publications, New Delhi, 2013.
9. Parsuraman, S., and Unnikrishnan, ed., *India Disasters Report II*, Oxford, New Delhi, 2013
10. Reza, B. K., *Disaster Management*, Global Publications, New Delhi, 2010.
11. Sathe, Satyaranjan P., *Judicial Activism in India*, Oxford University Press, New Delhi, 2003.
12. Singh, Ashok Kumar, *Science and Technology for Civil Service Examination*, Tata McGraw Hill, New Delhi, 2012.
13. Thorpe, Edgar, *General Studies Paper I Volume V*, Pearson, New Delhi, 2017.

Projects / Assignments (for Internal Assessment)

- i. Projects/Assignments should be drawn for the component on Internal Assessment from the topics in **Module 1 to Module 4**.
- ii. Students should be given a list of possible topics - at least 3 from each Module at the beginning of the semester.
- iii. The Project/Assignment can take the form of Street-Plays / Power-Point Presentations / Poster Exhibitions and similar other modes of presentation appropriate to the topic.
- iv. Students can work in groups of not more than 8 per topic.
- v. Students must submit a hard / soft copy of the Project / Assignment before appearing for the semester end examination.

QUESTION PAPER PATTERN (Semester III)

The Question Paper Pattern for Semester End Examination shall be as follows:

TOTAL MARKS: 75

DURATION: 150 MINUTES

QUESTION NUMBER	DESCRIPTION	MARKS ASSIGNED
1	i. Question 1 A will be asked on the meaning / definition of concepts / terms from all Modules. ii. Question 1 B will be asked on the topic of the Project / Assignment done by the student during the Semester iii. In all 8 Questions will be asked out of which 5 have to be attempted.	a) Total marks: 15 b) For 1 A, there will be 3 marks for each sub-question. c) For 1 B there will be 15 marks without any break-up.
2	Descriptive Question with internal option (A or B) on Module 1	15
3	Descriptive Question with internal option (A or B) on Module 2	15
4	Descriptive Question with internal option (A or B) on Module 3	15
5	Descriptive Question with internal option (A or B) on Module 4	15

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2B. Skill Enhancement Courses (SEC)

Foundation Course in NSS - IV

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Entrepreneurship Development	10
2	Rural Resource Mobilization	10
3	Ideal village & stake of GOS and NGO	13
4	Institutional Social Responsibility and modes of Awareness	12
Total		45

Sr. No.	Modules / Units
1	Entrepreneurship Development
	UNIT - I Entrepreneurship development Entrepreneurship development- its meaning and schemes Government and self-employment schemes for Entrepreneurship development UNIT - II - Cottage Industry Cottage Industry- its meaning, its role in development process Marketing of cottage products and outlets
2	Rural Resource Mobilization
	UNIT - I - Rural resource mobilization- A case study of eco-village, eco-tourism, agro-tourism UNIT - II - Micro financing with special reference to self-help groups
3	Ideal village & stake of GOS and NGO
	UNIT - I - Ideal village Ideal village- the concept Gandhian Concept of Ideal village Case studies on Ideal village UNIT - II - Government Organisations(GOs) and Non-Government Organisations (NGOs) The concept and functioning
4	Institutional Social Responsibility and modes of Awareness
	UNIT - I - Institutional Social Responsibilities Concept and functioning- case study of adapted village UNIT - II - Modes of awareness through fine Arts Skills Basics of performing Arts as tool for social awareness, street play, creative dance, patriotic song, folk songs and folk dance. Rangoli, posters, flip charts, placards, etc.

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2B. Skill Enhancement Courses (SEC)

Foundation Course in NCC - IV

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Disaster Management, Social Awareness and Community Development	10
2	Health and Hygiene	10
3	Drill with Arms	05
4	Weapon Training	10
5	Specialized Subject: Army Or Navy Or Air	10
Total		45

Sr. No.	Modules / Units
1	Disaster Management, Social Awareness and Community Development
	<p>Disaster Management: Desired outcome: The student shall gain basic information about civil defence organisation / NDMA & shall provide assistance to civil administration in various types of emergencies during natural / manmade disasters</p> <ul style="list-style-type: none"> • Fire Services & Fire fighting • Assistance during Natural / Other Calamities: Flood / Cyclone/ Earth Quake/ Accident etc. <p>Social Awareness and Community Development: Desired outcome: The student shall have an understanding about social evils and shall inculcate sense of whistle blowing against such evils and ways to eradicate such evils.</p> <ul style="list-style-type: none"> • NGOs: Role & Contribution • Drug Abuse & Trafficking • Corruption • Social Evil viz. Dowry/ Female Foeticide/Child Abuse & trafficking etc. • Traffic Control Org. & Anti drunken Driving
2	Health and Hygiene
	<p>Desired outcome: The student shall be fully aware about personal health and hygiene lead a healthy life style and foster habits of restraint and self awareness.</p> <ul style="list-style-type: none"> • Hygiene and Sanitation (Personal and Food Hygiene) • Basics of Home Nursing & First-Aid in common medical emergencies • Wound & Fractures
3	Drill with Arms
	<p>Desired outcome: The students will demonstrate the sense of discipline, improve bearing, smartness, and turnout, and develop the quality of immediate and implicit obedience of orders, with good reflexes.</p> <ul style="list-style-type: none"> • Getting on Parade with Rifle and Dressing at the Order • Dismissing and Falling Out • General Salute, Salami Shastra • Squad Drill • Short/Long tail from the order and vice-versa • Examine Arms
4	Weapon Training
	<p>Desired outcome: The student shall have basic knowledge of weapons and their use and handling.</p> <ul style="list-style-type: none"> • The lying position, Holding and Aiming- I • Trigger control and firing a shot • Range procedure and safety precautions • Theory of Group and Snap Shooting • Short range firing, Aiming- II -Alteration of sight

Sr. No.	Modules / Units
5	Specialized Subject: Army Or Navy Or Air
	<p>Army Desired outcome: The training shall instill patriotism, commitment and passion to serve the nation motivating the youth to join the defence forces. It will also acquaint, expose & provide basic knowledge about armed, naval and air-force subjects</p> <p>A. Map reading</p> <ul style="list-style-type: none"> • Setting a Map, finding North and own position • Map to ground, Ground to Map • Point to Point March <p>B. Field Craft and Battle Craft</p> <ul style="list-style-type: none"> • Observation, Camouflage and Concealment • Field Signals • Types of Knots and Lashing <p>C. Introduction to advanced weapons and role of technology (To be covered by the guest lecturers)</p> <p style="text-align: center;">OR</p> <p>Navy</p> <p>A. Naval Communication</p> <ul style="list-style-type: none"> • Semaphore <ul style="list-style-type: none"> ▪ Phonetic Alphabets ▪ Radio Telephony Procedure ▪ Wearing of National Flag, Ensign and Admiral's Flag. <p>B. Seamanship</p> <ul style="list-style-type: none"> • Anchor work <ul style="list-style-type: none"> ▪ Types of Anchor, Purpose and Holding ground • Boat work <ul style="list-style-type: none"> ▪ Demonstrate Rigging a whaler and enterprise boat- Parts of Sail and Sailing Terms ▪ Instructions in Enterprise Class Board including theory of Sailing, Elementary Sailing Tools ▪ Types of Power Boats Used in the Navy and their uses, Knowledge of Anchoring, Securing and Towing a Boat <p>C. Introduction to advanced weapons and role of technology (To be covered by the guest lecturers)</p>

Sr. No.	Modules / Units
	<p style="text-align: center;"><i>OR</i></p> <p>Air</p> <p>A. Air frames</p> <ul style="list-style-type: none"> • Fuselage • Main and Tail Plain <p>B. Instruments</p> <ul style="list-style-type: none"> • Introduction to RADAR <p>C. Aero modelling</p> <ul style="list-style-type: none"> • Flying/ Building of Aero models <p>D. Introduction to advanced weapons and role of technology (To be covered by the guest lecturers)</p>

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2B. Skill Enhancement Courses (SEC)

Foundation Course in Physical Education - III

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Stress Management	10
2	Awards, Scholarship & Government Schemes	10
3	Yoga Education	10
4	Exercise Scheduling/Prescription	15
Total		45

Sr. No.	Modules / Units
1	Stress Management
	<ul style="list-style-type: none"> • Meaning & concept of Stress • Causes of Stress • Managing Stress • Coping Strategies
2	Awards, Scholarship & Government Schemes
	<ul style="list-style-type: none"> • State & National level Sports Awards • State Sports Policy & Scholarship Schemes • National Sports Policy & Scholarship Schemes • Prominent Sports Personalities
3	Yoga Education
	<ul style="list-style-type: none"> • Differences between Yogic Exercises & non- Yogic exercises • Contribution of Yoga to Sports • Principles of Asanas& Bandha • Misconceptions about Yoga
4	Exercise Scheduling/Prescription
	<ul style="list-style-type: none"> • Daily Routine Prescription. • Understanding Activity level & Calorie requirement. • Adherence & Motivation for exercise. • Impact of Lifestyle on Health

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3. Core Courses (CC)

Corporate and Securities Law

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Company Law – An Overview	15
2	Regulatory Framework Governing Stock Exchanges as per Securities Contracts Regulation Act 1956	15
3	Security Exchange Board of India	15
4	The Depositories Act, 1996	15
Total		60

Sr. No.	Modules / Units
1	Company Law – An Overview
	<p>A) Development of Company Law in India</p> <p>B) Doctrines Governing Corporates – Lifting the Corporate Veil, Doctrine of Ultra Vires, Constructive Notice, Indoor Management, Alter Ego. The Principle of Non Interference (Rule in Foss V/s Harbottle) – Meaning , Advantages , Disadvantages & Exceptions, Majority and Minority Rights under Companies Act</p> <p>C) Application of Company Law to Banking and Insurance Sector Application of Companies Act to Banking and Insurance sector governed by Special Acts. S.1(4) of Companies Act 2013 Exceptions provided (S.67(3), S.73(1), S.129(1), 179(3), S.180(1)(c), S.186, S.189</p>
2	Regulatory Framework governing Stock Exchanges as per Securities Contracts Regulation Act 1956
	<ul style="list-style-type: none"> • Definition of Securities, Spot Delivery Contract, Ready Delivery Contract, Stock Exchange. • Corporatisation and demutualisation of Stock Exchange –Meaning, Procedure & Withdrawal • Power of Recognised Stock Exchange to make rules restricting voting rights etc • Power of Central Government to Direct Rules or Make rules • Power of SEBI to make or amend bye laws of recognised stock exchange • Books and Accounts to be maintained by recognized stock exchange • Grounds on which stock exchange can delist the securities of a company. • Section 3 to Section 20
3	Security Exchange Board Of India
	<p>A) SEBI: Objectives-terms-establishment-powers-functions-accounts and audit- penalties –registration.</p> <p>B) Issues of Disclosure Investors Protection Guidelines: Pre & Post obligations-conditions for issue-Debt Security-IPO-E-IPO-Employee option-right-bonus-preferential allotment intermediary-operational-promoter lock in period requirements-offer document.</p>
4	The Depositories Act, 1996
	<ul style="list-style-type: none"> • Depository – Meaning , Benefits , Models, Functions Participants • The Depository Act 1996 – Objectives, Eligibility condition for depository services, Fungibility, Bye laws of depository , Governance of Depository and Internal audit of depository Participants • BSDA and single registration for depository participants.

Note: Relevant Law/Statute/Rules in force in force on 1st April immediately preceding commencement of Academic Year is applicable for ensuing examination after relevant year.

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3. Core Courses (CC)

Business Economics II

Macroeconomics

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Macroeconomic Data and Theory	15
2	Money, Inflation and Monetary Policy	15
3	Constituents of Fiscal Policy	15
4	Open Economy : Theory and Issues of International Trade	15
Total		60

Sr. No.	Modules / Units
1	Introduction to Macroeconomic Data and Theory
	<ul style="list-style-type: none"> • Macroeconomics: Meaning, Scope and Importance. • Circular flow of aggregate income and expenditure: closed and open economy models • The Measurement of national product: Meaning and Importance - conventional and Green GNP and NNP concepts - Relationship between National Income and Economic Welfare. • Short run economic fluctuations : Features and Phases of Trade Cycles • The Keynesian Principle of Effective Demand: Aggregate Demand and Aggregate Supply - Consumption Function - Investment function - effects of Investment Multiplier on Changes in Income and Output
2	Money, Inflation and Monetary Policy
	<ul style="list-style-type: none"> • Money Supply: Determinants of Money Supply - Factors influencing Velocity of Circulation of Money • Demand for Money : Classical and Keynesian approaches and Keynes' liquidity preference theory of interest • Money and prices : Quantity theory of money - Fisher's equation of exchange - Cambridge cash balance approach • Inflation: Demand Pull Inflation and Cost Push Inflation - Effects of Inflation- Nature of inflation in a developing economy. • Monetary policy : Meaning, objectives and instruments, inflation targeting
3	Constituents of Fiscal Policy
	<ul style="list-style-type: none"> • Role of a Government to provide Public goods-Principles of Sound and Functional Finance • Fiscal Policy: Meaning, Objectives - Contra cyclical Fiscal Policy and Discretionary Fiscal Policy • Instruments of Fiscal policy : Canons of taxation - Factors influencing incidence of taxation - Effects of taxation Significance of Public Expenditure - Social security contributions- Low Income Support and Social Insurance Programmes - Public Debt - Types, Public Debt and Fiscal Solvency, Burden of debt finance • Union budget -Structure- Deficit concepts-Fiscal Responsibility and Budget Management Act.
4	Open Economy : Theory and Issues of International Trade
	<ul style="list-style-type: none"> • The basis of international trade : Ricardo's Theory of comparative cost advantage - Heckscher – Ohlin theory of factor endowments - terms of trade - meaning and types - Factors determining terms of trade - Gains from trade - Free trade versus protection • Foreign Investment : Foreign Portfolio investment- Benefits of Portfolio capital flows-Foreign Direct Investment - Merits of Foreign Direct Investment - Role of Multinational corporations • Balance of Payments: Structure - Types of Disequilibrium - Measures to correct disequilibrium in BOP. <p>Foreign Exchange and foreign exchange market : Spot and Forward rate of Exchange - Hedging, Speculation and Arbitrage -Fixed and Flexible exchange rates- Managed flexibility</p>

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Reference Books

Reference Books
Financial Management - I
<ul style="list-style-type: none"> • <i>Financial Management: I M Pandey, Vikas Publishing House.</i> • <i>Financial Management: M.Y. Khan, P.K. Jain, Tata McGraw Hill.</i> • <i>Financial Management : Ravi M Kishore, Taxman</i> • <i>Financial Management : James C Van Horne, Prentice Hall</i> • <i>Financial Management: Prassana Chandra, Prentice Hall.</i> • <i>Financial Management: Chandra Haribariran Iyer: IBHL Publication.</i>
Management Accounting
<ul style="list-style-type: none"> • <i>Cost and Management Accounting – Ravi N Kishor</i> • <i>Essential of Management Accounting – P.N. Reddy, Himalaya publication.</i> • <i>Advanced Management Accounting – Robert S Kailer.</i> • <i>Financial of Management Accounting – S.R. Varshey, Wisdom.</i> • <i>Introduction of Management Accounting Learning – Charbs T Horngam, PHI.</i> • <i>Management Accounting – I.M Pandey, Vikas Publications.</i> • <i>Cost and Management Accounting – D.K. Mattal, Galgotia Publications.</i> • <i>Cost Accounting Theory and Practice-M.N. Arora, Sultan Chand and sons</i> • <i>Management Accounting – Khan & Jain Tata Mc Graw</i>
Organizational Behaviour
<ul style="list-style-type: none"> • <i>Organizational Behaviour- concept, controversies, applications, by Stephen Robbins, Prentice Hall.</i> • <i>Management and Organizational Behavior , Ninth Edition, by Laurie J. Mullins, Pearson publisher</i> • <i>Organizational Behavior, Text, Cases, Games, By K. Ashwathappa, Himalaya Publishing house</i> • <i>Organizational Behavior by Margie Parikh and Rajen Gupta, Tata Mcgraw Hill Publication</i> • <i>Essentials of Organisational Behaviour (Seventh edition)- Stephen P. Robbins (Prentice Hall India Pvt.Ltd.)</i> • <i>Emerging Knowledge and Practices of the Real world (Fifth Edition)- Steven L McShane, Mary Ann Von Glinow, Radha R. Sharma. (Tata McGraw Hill Education Private Limited)</i> • <i>Organizational Behavior by Dr. S.S. Khanka, Sultanchand publication</i> • <i>Organizational Behavior by Jeff Harris and Sandra J. Hartman, Jaico Publications</i> • <i>Organizational Behavior by Hellriegel, Slocum, Woodman, Pearson Education</i>

Reference Books

Risk Management

- *Quantitative Risk Management : A Practical Guide to Financial Risk- Thomas S. Coleman*
- *Investment Theory and Risk Management: Steve Peterson*
- *Risk Management : M/s Macmillan India Limited*
- *Theory & Practice of Treasury Risk Management: M/s Taxman Publications Ltd.*
- *Corporate Value of ERM : Sim Segal*
- *Risk Management : Insurance and Derivatives Dr G Kotreshwar-Himalaya Publishing House .*

Mutual Fund Management

- *Future scenario of Financial services : R. Gordan & Natarajan (Himalaya)*
- *Marketing of Financial services : V. K. Avadhani (Himalaya)*
- *MF, Data, Interpretation & analysis : K.G. Shahadevan & Thripairaju (Prentice hall of India)*
- *Mutual funds in India (Modern scenario): Dr. Manoj Dave & Mr. Lalitkumar Chauhan, (Paradise Publishers)*
- *Mutual Funds & Financial Management : Ramesh Garg (Yking books)*
- *Mutual Fund products & services : Indian institute for Banking & Finance (Taxmann)*

Information Technology in Banking& Insurance - I

- *E-Banking in India: Challenges and Opportunities-By RimpiJatana, R. K. Uppal*
- *Frontiers of E-Commerce- by Ravi Kalakota, Andrew B. Whinston- Pearson Education*
- *Frontiers of E-Commerce- by Ravi Kalakota, Andrew B. Whinston–Pearson Education*
- *Microsoft Office Professional2013-Step by step*
- *By Beth Melton,Mark Dodge, Echo Swinford, Andrew Couch*
- *An Overview of Cyber Crime & security-Volume 1-1st Edition by Akash Kamal Mishra*
- *Computers and Banking- by Sony and Agarwal*
- *E-Commerce by David Whitely*

Foundation Course –III (An Overview of Banking Sector)

- *Banking Law and Practice – M.L Tannan*
- *Microfinance Perspective and Operations – IIBF, 2016.*
- *Rural Banking Operations – IIBF, 2017 Edition*
- *Financial Inclusion and Growth Governance- Deepali Pant Joshi Gyan Publishing House*
- *Bank Financial Management Paperback – 2010 -IIBF*
- *Money Banking And Finance Paperback – 2009 -N K Sinha*
- *Principles and Practices of Banking Paperback – 2015 - IIBF*
- *Principles and Practices of Banking 11 edition Paperback – 2015 - N S Toor, Arun Toor*
- *Principles Of Banking (With Case Studies) Hardcover – 2009 - Rakesh Kumar*
- *Modern Banking In India , Gupta*

Reference Books

Foundation Course in NSS III

- *National Service Scheme Manual (Revised) 2006, Government of India, Ministry of Youth Affairs and Sports, New Delhi.*
- *University of Mumbai National Service Scheme Manual 2009.*
- *Avhan Chancellor's Brigade - NSS Wing, Training camp on Disaster Preparedness Guidelines, March 2012*
- *Rashtriya Seva Yojana Sankalpana - Prof. Dr. Sankay Chakane, Dr. Pramod Pabrekar, Diamond Publication, Pune*
- *National Service Scheme Manual for NSS District Coordinators, National Service Scheme Cell, Dept. of Higher and Technical Education, Mantralaya,*
- *Annual report of National Service Scheme (NSS) published by Dept. of Higher and Technical Education, Mantralaya,*
- *NSS Cell, Dept. of Higher and Technical Education, Mantralaya, UTKARSHA- Socio and cultural guidelines*
- *Case material as a Training Aid for Field Workers, Gurmeet Hans.*
- *Social service opportunities in hospitals, Kapil K. Krishnan, TISS*
- *New Trends in NSS, Research papers published by University of Pune*
- *ANOOGUNJ Research Journal, published by NSS Unit C. K. Thakur college*
- *Training Manual for Field Work published by RGNIYD, Chreeperumbudur*
- *Prof. Ghatole R.N. Rural Social Science and Community Development.*
- *Purushottam Sheth, Dr. Shailaja Mane, National Service Scheme*
- *Joint programme of National Service Scheme, University of Mumbai & DISHA - DEEPSHIKHA Projects, Nair Hospital, 2011-12*
- *National Service Scheme in India: A Case study of Karnataka, M. B. Dishad, Trust Publications, 2001*
- <http://www.thebetterindia.com/140/national-service-scheme-nss/>
- <http://en.wikipedia.org/wiki/national-service-scheme> 19=<http://nss.nic.in/adminstruct>
- <http://nss.nic.in/propexpan>
- <http://nss.nic.in>
- <http://socialworknss.org/about.html>

Foundation Course in NCC III

- *Cadet's Hand book – Common subject..all wings, BY DG NCC, New Delhi.*
- *Cadet's Hand book – Specialised Subjects, Army, Navy, Air-force, BY DG NCC, New Delhi.*
- *NCC OTA Precise, BY DG NCC, New Delhi.*
- *“AVAN” Model of Disaster Mang., Vinayak Dalvie, Proceedings of Int. Conf. on Urban Plan. and Env Strat & Challenges, Elphinstone College, Jan 2007.*
- *Humanistic Tradition of India, N.L.Gupta, Mohit Publication, New Delhi*
- *Social psychology, Baron & Byrne, Pearson Publication, 12th Edition self awareness know yourself/ insight (110) Group & Individuals (374) Group discussion*
- *Chanakya's 7 Secrets of Leadership, Radhakrishnan Pillai and D.Shivnandhan, Jaico*
- *Social Psychology: Understanding Human Interaction, Baron, Robert A., (302/BAR/BYR), 7th Edition*
- *Seven Habits of Highly Effective People., Covey, Stephen*
- *The Habit of Winning., Iyer, Prakash, Penguin, India; 2011*
- *The Goal, Goldratt, Eliyahu, The Northriver press; 1994*
- *Freedom Struggle, Chandra Bipin, National Book Trust 1972*

- *Freedom of Religion and The Indian Judiciary*, Bachal V.M. , Shubhada Saraswat, (362P)
- *India 1996- A Reference Annual Govt. of India*
- *Saha Soneri Pane*, Vinayak D. Savarkar
- *Environmental Biology and Toxicology*, P.D. Sharma., Rastogi Publication
- *Environmental Science*, S.C. Santra, New Central Book Agency
- *National Cadet Corps (India)*, Lambert M. Surhone, Mariam T. Tennoe, Susan F. Henssonow, Betascript Publishing, 2011
- *National Cadet Corps, Youth in Action (Google eBook)*, National Cadet Corps (India), Lancer Publishers, 2003
- *Youth in Step: History of the National Cadet Corps*, V. Longer, Lancer international, 1983 Original from the University of Michigan
- *National Cadet Corps of India*, Man Mohan Sharma, Vision Books, 1980 Original from the University of Michigan
- *The National Cadet Corps Act, 1948, as Modify Up to the 1st July 1963*, India, Government of India Press, 1963 (Military Law)
- *Cadet Corps in India: Its Evolution and Impact*, Satis Chandra Maikap, Darbari Udyog, 1979 Original from the University of California
- *National Cadet Corps: 100 Years of Distinction*, National Cadet Corps (Singapore), NCC
- *The NCC*, Singapore, National Cadet Corps Council, National Cadet Corps Council
- *Grooming Tomorrow's Leaders: National Cadet Corps, 1917-2006*, R.S. Chhettri, Lancer Publishers, 2006
- *National Civil Defence Cadet Corps*, Lambert M. Surhone, Mariam T. Tennoe, Susan F. Henssonow, Betascript Publishing, 2011
- *Discovery of India*, Jawaharlal Nehru
- *Health and Hygiene*, Manoj. J.S., Agra University Publication
- *Yoga for Healing*, Venkateswaran P.S., Bombay:- Jaico Publishing House 1989)
- *Yoga Illustrated*, New Delhi, Ministry of Information and Broadcasting, 1995
- *Yoga Practice*, 1972, Shivnande Swami, Mumbai:- D.B. Taraporewala 1972
- *Yoga of Patanjali-1979*, Yardi M.R., Bhandarkar Oriental Research Institute- 1974
- *Sustainable Development (An Alternative Paradigm)*, Satpathy , N., Karnavati Publications , Ahmedabad
- *Global Partners for Sustainable Development*, Pachauri R.K & Srivastava L., Tata Energy Research Institute, New Delhi ; 1994, 1998
- *Ecology and the Politics of survival : Conflict over Natural Resources in India*, Shiva , Vandana, Sage Publications , California , 1991

Foundation Course in Physical Education - III

- *Lippian Cott Williams and Wilkins* 2006.
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- E. Gordon and K. Natarajan – *Financial Markets and Services*
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- *Direct Taxes Law & Practice* by V.K. Singhania - Taxman
- *Systematic Approach to Direct Tax* by Ahuja & Gupta - Bharat Law House
- *Income Tax Ready Reckoner* by Dr .V.K. Singhania – Taxman
- *Direct Tax Laws* by T.N. Manoharan - Snow White

Revised Syllabus of Courses of B.Com. (Banking & Finance)
Programme at Semester IV
with effect from the Academic Year 2016-2017

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Financial Management -II
<ul style="list-style-type: none"> • <i>Financial Management: I M Pandey, Vikas Publishing House.</i> • <i>Financial Management: M.Y. Khan, P.K. Jain, Tata McGraw Hill.</i> • <i>Financial Management : Ravi M Kishore, Taxman</i> • <i>Financial Management : James C Van Horne, Prentice Hall</i> • <i>Financial Management: Prassana Chandra, Prentice Hall.</i> • <i>Financial Management: Chandra Haribariran Iyer: IBHL Publication.</i>
Cost Accounting
<ul style="list-style-type: none"> • <i>Lectures on Costing by Swaminathan: S. Chand and Company (P) Ltd., New Delhi</i> • <i>Cost Accounting by C.S. Rayudu, Tata Mc. Grow Hill and Co. Ltd., Mumbai</i> • <i>Cost Accounting by Jawahar Lal and Seema Srivastava, Tata Mc. Grow Hill and Co. Ltd., Mumbai</i> • <i>Cost Accounting by Ravi M. Kishore, Taxmann Ltd., New Delhi</i> • <i>Principles and Practices of Cost Accounting by N.K. Prasad, Book Syndicate Pvt. Ltd., Calcutta</i> • <i>Cost Accounting Theory and Practice by B.K. Bhar, Tata Mc. Grow Hill and Co. Ltd., Mumbai</i> • <i>Cost Accounting Principles and Practice by M.N. Arora, Vikas Publishing House Pvt. Ltd., New Delhi</i> • <i>Advanced Cost and Management Accounting: Problems and Solutions by V.K. Saxena and C.D. Vashist, S. Chand and Company (P) Ltd., New Delhi</i> • <i>Cost Accounting by S.P. Jain and K.L. Narang, Kalyani Publishers, Ludhiana</i> • <i>Modern Cost and Management Accounting by M. Hanif, Tata McGraw Hill Education Pvt. Ltd., New Delhi</i>
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- *General Bank Management from Indian Institute of Banking and Finance* by MACMILAN
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- *Microsoft Office Professional 2013-Step by step*
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Foundation Course –III (An Overview of Insurance Sector)

- *Insurance Principles and Practice – M N Mishra & S B Mishra – S. Chand 22nd Edition*
- *Insurance Claims Solutions – DR L.P Gupta Revised Edition*
- *Introduction to Risk Management & Insurance – Mark S Dorfman & David A. Cather – Tenth Edition*
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- *National Service Scheme Manual (Revised) 2006, Government of India, Ministry of Youth Affairs and Sports, New Delhi.*
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Corporate & Securities law

- Mamta Bhargava – Compliances and Procedures under SEBI Law
- V.L Iyer – SEBI Practice Manual - Taxmann
- D.K Jain – Company Law Ready Reckoner
- Bare Act – Corporate Laws Taxmann Microsoft Office Professional 2013-Step by step
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- Ackley.G (1976), *Macro Economic Theory and Policy*, Macmillan Publishing Co. New York
- Ahuja. H.L., *Modern Economics* — S.Chand Company Ltd. New Delhi.
- Bhatia H.L.: *Public Finance*. Vikas Publishing House Pvt. Ltd
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- Shapiro, E (1996), *Macro-Economic Analysis*, Golgotha Publication, New Delhi.
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Revised Syllabus of Courses of B.Com.(Banking & Insurance)
Programme at Semester III and IV
with effect from the Academic Year 2017-2018

Scheme of Evaluation

The performance of the learners will be evaluated in two Components. One component will be the Internal Assessment component carrying 25% marks and the second component will be the Semester-wise End Examination component carrying 75% marks. The allocation of marks for the Internal Assessment and Semester End Examinations will be as shown below:-

A) Internal Assessment: 25 %

Question Paper Pattern

(Internal Assessment- Courses without Practical Courses)

Sr. No.	Particular	Marks
1	One class test (20 Marks)	
	Match the Column/ Fill in the Blanks/ Multiple Choice Questions (½ Mark each)	05 Marks
	Answer in One or Two Lines (Concept based Questions) (01 Mark each)	05 Marks
	Answer in Brief (Attempt Any Two of the Three) (05 Marks each)	10 Marks
2	Active participation in routine class instructional deliveries and overall conduct as a responsible learner, mannerism and articulation and exhibit of leadership qualities in organizing related academic activities	05 Marks

Question Paper Pattern

(Internal Assessment- Courses with Practical Courses)

Sr. No.	Particular	Marks
1	Semester End Practical Examination (20 Marks)	
	Journal	05 Marks
	Viva	05 Marks
	Laboratory Work	10 Marks
2	Active participation in routine class instructional deliveries and overall conduct as a responsible learner, mannerism and articulation and exhibit of leadership qualities in organizing related academic activities articulation and exhibit of leadership qualities in organizing related academic activities	05 Marks

B) Semester End Examination: 75 %

- i) Duration: The examination shall be of 2 ½ Hours duration
- ii) Theory question paper pattern
 - There shall be five questions each of 15 marks.
 - All questions shall be compulsory with internal choice within the questions.
 - Question may be subdivided into sub-questions a, b, c... and the allocation of marks depends on the weightage of the topic.

(Detail question paper pattern has been given separately)

Passing Standard

The learners to pass a course shall have to obtain a minimum of 40% marks in aggregate for each course where the course consists of Internal Assessment and Semester End Examination. The learners shall obtain minimum of 40% marks (i.e. 10 out of 25) in the Internal Assessment and 40% marks in Semester End Examination (i.e. 30 Out of 75) separately, to pass the course and minimum of Grade E to pass a particular semester A learner will be said to have passed the course if the learner passes the Internal Assessment and Semester End Examination together.

Question Paper Pattern (Practical Courses)

Maximum Marks: 75

Questions to be set: 05

Duration: 2 ½ Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions A) Sub Questions to be asked 10 and to be answered any 08 B) Sub Questions to be asked 10 and to be answered any 07 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	15 Marks
Q-2	Full Length Practical Question OR	15 Marks
Q-2	Full Length Practical Question	15 Marks
Q-3	Full Length Practical Question OR	15 Marks
Q-3	Full Length Practical Question	15 Marks
Q-4	Full Length Practical Question OR	15 Marks
Q-4	Full Length Practical Question	15 Marks
Q-5	A) Theory questions B) Theory questions OR	08 Marks 07 Marks
Q-5	Short Notes To be asked 05 To be answered 03	15 Marks

Note:

Practical question of 15 marks may be divided into two sub questions of 7/8 and 10/5 Marks. If the topic demands, instead of practical questions, appropriate theory question may be asked.

Question Paper Pattern (Theoretical Courses)

Maximum Marks: 75

Questions to be set: 05

Duration: 2 ½ Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions A) Sub Questions to be asked 10 and to be answered any 08 B) Sub Questions to be asked 10 and to be answered any 07 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	15 Marks
Q-2	Full Length Question OR	15 Marks
Q-2	Full Length Question	15 Marks
Q-3	Full Length Question OR	15 Marks
Q-3	Full Length Question	15 Marks
Q-4	Full Length Question OR	15 Marks
Q-4	Full Length Question	15 Marks
Q-5	A) Theory questions B) Theory questions OR	08 Marks 07 Marks
Q-5	Short Notes To be asked 05 To be answered 03	15 Marks

Note:

Theory question of 15 marks may be divided into two sub questions of 7/8 and 10/5 Marks.

UNIVERSITY OF MUMBAI

No. UG/7 of 2018-19

CIRCULAR:-

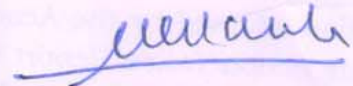
Attention of the Principals of the affiliated Colleges and Directors of the recognized Institutions in Commerce & Management Faculty is invited to this office Circular No.UG/121 of 2016-17, dated 27th October, 2016 relating to syllabus of Bachelor of Commerce (B.Com.) degree course.

They are informed that the recommendations made by the I/c Dean, Faculty of Commerce & Management in Banking and Finance at its meeting held on 28th February, 2018 have been accepted by the Academic Council at its meeting held on 5th May, 2018 vide item No. 4.45 and that in accordance therewith, the revised syllabus as per the (CBCS) for the T.Y.B.Com. (Banking and Finance) (Sem. V & VI)), has been brought into force with effect from the academic year 2018-19, accordingly. (The same is available on the University's website www.mu.ac.in).

MUMBAI – 400 032

12th June, 2018

To



(Dr. Dinesh Kamble)

I/c REGISTRAR

The Principals of the affiliated Colleges and Directors of the recognized Institutions in Commerce & Management Faculty. (Circular No. UG/334 of 2017-18 dated 9th January, 2018.)

A.C./4.45/05/05/2018

No. UG/ 7 -A of 2018

MUMBAI-400 032

12th June, 2018

Copy forwarded with Compliments for information to:-

- 1) The I/c Dean, Faculty of Commerce & Management,
- 2) The Director, Board of Examinations and Evaluation,
- 3) The Director, Board of Students Development,
- 4) The Professor-cum-Director, Institute of Distance and Open Learning (IDOL),
- 5) The Co-Ordinator, University Computerization Centre,



(Dr. Dinesh Kamble)

I/c REGISTRAR

University of Mumbai



**Revised Syllabus
and
Question Paper Pattern
of Courses of
B.Com. (Banking and Insurance)
Programme at
Third Year
*Semester V and VI***

**Under Choice Based Credit, Grading and
Semester System**

***(To be implemented from Academic Year 2018-2019)
Board of Studies-in-Banking & Finance***

B.Com. (Banking and Insurance) Programme

Under Choice Based Credit, Grading and Semester System

T.Y.B.Com. (Banking and Insurance)

(To be implemented from Academic Year 2018-2019)

No. of Courses	Semester V	Credits	No. of Courses	Semester VI	Credits
1	Elective Courses (EC)		1	Elective Courses (EC)	
1,2,3 & 4	*Any four courses from the following list of the courses	12	1,2,3 & 4	**Any four courses from the following list of the courses	12
2	Core Courses (CC)		2	Core Courses (CC)	
5	International Banking and Finance	04	5	Central Banking	04
3	Ability Enhancement Course(AEC)		3	Ability Enhancement Course (AEC)	
6	Research Methodology	04	6	Project Work In Banking & Insurance	04
Total Credits		20	Total Credits		20

✓ **Note:** Project work is considered as a special course involving application of knowledge in solving/analyzing/exploring a real life situation/ difficult problem. Project work would be of 04 credits each. A project work may be undertaken in any area of Elective Courses/ Study Area

*List of Elective Courses for Semester V (Any Four)		**List of Elective Courses for Semester VI (Any Four)	
01	Financial Reporting & Analysis(Corporate Banking & Insurance)	01	Security Analysis and Portfolio Management
02	Auditing - I	02	Auditing - II
03	Strategic Management	03	Human Resource Management
04	Financial Services Management	04	Turnaround Management
05	Business Ethics and Corporate Governance	05	International Business
06	Actuarial Analysis in Banking & Insurance	06	Marketing in Banking & Insurance
Note: Course selected in Semester V will continue in Semester VI			

B.Com. (Banking and Insurance) Programme
Under Choice Based Credit, Grading and Semester System
Course Structure

(To be implemented from Academic Year 2018-2019)

Semester V

No. of Courses	Semester V	Credits
1	<i>Elective Courses (EC)</i>	
1,2,3 & 4	*Any four courses from the following list of the courses	12
2	<i>Core Courses (CC)</i>	
5	International Banking and Finance	04
6	Research Methodology	04
Total Credits		20

<i>*List of Elective Courses for Semester V (Any Four)</i>	
01	Financial Reporting and Analysis(Corporate Banking & Insurance)
02	Auditing- I
03	Strategic Management
04	Financial Services Management
05	Business Ethics and Corporate Governance
06	Actuarial Analysis in Banking & Insurance

***Revised Syllabus of Courses of B.Com. (Banking and Insurance)
Programme at Semester V
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1. Elective Courses (EC)

**1. Financial Reporting and Analysis
(Corporate Banking & Insurance)**

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Final Accounts of Banking Company	16
02	Final Accounts of Insurance Company	12
03	Preparation of Final Accounts of Companies	12
04	Cash Flow Analysis & Ethical Behavior and Implications for Accountants	12
05	Introduction to IFRS	08
Total		60

Sr. No.	Modules / Units
1	Final Accounts of Banking Company
	<p>Legal Provisions in Banking Regulation Act, 1949 relating to Accounts. Statutory Reserves including Cash Reserve and Statutory Liquidity Ratio. Bills Purchase and Discounted, Rebate on Bill Discounted. Final Accounts in Prescribed Form. Non – performing Assets and Income from Non – performing Assets. Classification of Advances: Standard, Sub – standard, Doubtful and Provisioning Requirement.</p>
2	Final Accounts of Insurance Company
	<p>(a) Preparation and Presentation of Corporate Final Accounts for Insurance Companies. (b) Final Accounts in accordance with Insurance Legislation (c) Study of Accounting Policies from Annual Reports of Listed Insurance Companies</p>
3	Preparation of Final Accounts of Companies
	<p>Relevant Provisions of Companies Act related to Preparation of Final Account (excluding cash flow statement) Preparation of Financial Statements as per Companies Act. (excluding cash flow statement) AS 1 in Relation to Final Accounts of Companies (Disclosure of Accounting Policies) Adjustment for –</p> <ol style="list-style-type: none"> 1. Closing Stock 2. Depreciation 3. Outstanding expenses and income 4. Prepaid expenses and Pre received income 5. Proposed Dividend and Unclaimed Dividend 6. Provision for Tax and Advance Tax 7. Bill of exchange (Endorsement, Honour, Dishonour) 8. Capital Expenditure included in Revenue expenditure and vice versa eg- purchase of furniture included in purchases 9. Unrecorded Sales and Purchases 10. Good sold on sale or return basis 11. Managerial remuneration on Net Profit before tax 12. Transfer to Reserves 13. Bad debt and Provision for bad debts 14. Calls in Arrears 15. Loss by fire (Partly and fully insured goods) 16. Goods distributed as free samples. <p>Any other adjustments as per the prevailing accounting standard.</p>

Sr. No.	Modules / Units
4	Cash Flow Analysis & Ethical Behaviour and Implications for Accountants
	<p>Cash Flow Analysis as per AS 3 (Indirect Method Only)</p> <p>Ethical Behaviour and Implications for Accountants Introduction, Meaning of Ethical Behaviour Financial Reports – Link between Law, Corporate Governance, Corporate Social Responsibility and Ethics. Importance and Relevance of Ethical Behavior in Accounting Profession. Implications of Ethical Values for the Principles Versus Rule Based Approaches to Accounting Standards The Principal Based Approach and Ethics The Accounting Standard Setting Process and Ethics The IFAC Code of Ethics for Professional Accountants Contents of Research Report in Ethical Practices Implications of Unethical Behavior on Financial Reports Company Codes of Ethics The increasing role of Whistle – Blowing Need to learn ethics.</p>
5	Introduction to IFRS
	<p>IFRS 1- First Time Adoption of International Financial Reporting Standards Objective, Scope, Definitions, First IFRS Financial Statements, Recognition and Measurement, Comparative Information, Explanation of Transition to IFRS, Reconciliations, Interim Financial Reports, Designation of Financial Assets or Financial Liabilities, Use of Fair Value as Deemed Cost, Use of Deemed Cost, Exceptions to Retrospective Application of other IFRS, Exemptions for Business Combination, Exemptions from other IFRS and Presentation and Disclosure.</p> <p>IFRS 2- Share Based Payment – Objective, Scope, Definitions, Recognition, Equity Settled Share Based Payment Transactions, Transactions in Which Services are Received, Treatment of Vesting Conditions, Expected Vesting Period, Determining the Fair Value of Equity Instruments granted, Modifications of terms and conditions, Cancellation, Cash Settled Share Based Payment Transactions, Share Based Payment Transactions in Which The Terms of The Arrangement Provide The Counterparty With A Choice of Settlement, Share Based Payment Transactions in which the Terms of the Arrangement Provide the Entity with a Choice of Settlement, Share Based Payment Transactions Among Group Entities (2009 Amendments) Disclosure.</p>

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1. Elective Courses (EC)

2. Auditing-I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Introduction to Auditing	15
02	Audit Planning, Procedures and Documentation	15
03	Auditing Techniques and Internal Audit Introduction	15
04	Auditing Techniques: Vouching	08
05	Auditing Techniques: Verification	07
Total		60

Sr. No.	Modules / Units
1	Introduction to Auditing
	<p>Basics—Financial Statements, Users of Information, Definition of Auditing, Objectives of Auditing – Primary and Secondary, Expression of Opinion, Detection of Frauds and Errors, Inherent limitations of Audit. Difference between Accounting and Auditing, Investigation and Auditing.</p> <p>Errors & Frauds—Definitions, Reasons and Circumstances, Types of Error – Commission, Omission, Compensating error. Types of frauds, Risk of Fraud and Error in Audit, Auditors Duties and Responsibilities in Case of Fraud</p> <p>Principles of Audit –Integrity, Objectivity, Independence, Skills, Competence, Work Performed by Others, Documentation, Planning, Audi Evidence, Accounting System and Internal Control, Audit Conclusions and Reporting</p> <p>Types of Audit – Meaning, Advantages and Disadvantages of Balance sheet Audit, Interim Audit, Continuous Audit, Concurrent Audit and Annual Audit.</p>
2	Audit Planning, Procedures and Documentation
	<p>Audit Planning –Meaning, Objectives, Factors to be Considered, Sources of Obtaining Information, Discussion with Client, Overall Audit Approach.</p> <p>Audit Program – Meaning, Factors, Advantages and Disadvantages, Overcoming Disadvantages, Methods of Work , Instruction before Commencing Work, Overall Audit Approach</p> <p>Audit Working Papers - Meaning, Importance, Factors Determining Form and Contents, Main Functions / Importance, Features, Contents of Permanent Audit File, Temporary Audit File, Ownership, Custody, Access of Other Parties to Audit Working Papers, Auditors Lien on Working Papers, Auditors Lien on Client's Books</p> <p>Audit Notebook – Meaning, Structure, Contents, General Information, Current Information, Importance.</p>
3	Auditing Techniques and Internal Audit Introduction
	<p>Test Check-Test Checking Vs Routing Checking, Test Check meaning, Features, Factors to be Considered, When Test Checks Can be Used, Advantages, Disadvantages and Precautions.</p> <p>Audit Sampling -Audit Sampling, Meaning, Purpose, Factors in Determining Sample Size -Sampling Risk, Tolerable Error and Expected Error, Methods of Selecting Sample Items, Evaluation of Sample Results, Auditors Liability in Conducting Audit Based on Sample.</p> <p>Internal Control -Meaning and Purpose, Review of Internal Control, Advantages, Auditors Duties, Review of Internal Control, Inherent Limitations of Internal Control, Internal Control Samples for Sales and Debtors, Purchases and Creditors, Wages and Salaries. Internal Checks Vs Internal Control, Internal Checks Vs Test Checks.</p> <p>Internal Audit -Meaning, Basic Principles of Establishing Internal Audit, Objectives, Evaluation of Internal Audit by Statutory Auditor, Usefulness of Internal Audit, Internal Audit Vs External Audit, Internal Checks Vs Internal Audit.</p>

Sr. No.	Modules / Units
4	Auditing Techniques: Vouching
	<p>Audit of Income - Cash Sales, Sales on Approval, Consignment Sales, Sales Returns Recovery of Bad Debts written off, Rental Receipts, Interest and Dividends Received, Royalties Received.</p> <p>Audit of Expenditure - Purchases, Purchase Returns, Salaries and Wages, Rent, Insurance Premium, Telephone Expenses, Postage and Courier, Petty Cash Expenses, Travelling Commission, Advertisement, Interest Expenses.</p>
5	Auditing Techniques: Verification
	<p>Audit of Assets Book Debts / Debtors, Stocks -Auditors General Duties; Patterns, Dies and Loose Tools, Spare Parts, Empties and Containers, Quoted Investments and Unquoted Investment, Trade Marks / Copyrights, Patents, Know-how, Plant and Machinery, Land and Buildings, Furniture and Fixtures.</p> <p>Audit of Liabilities - Outstanding Expenses, Bills Payable, Secured loans, Unsecured Loans, Contingent Liabilities.</p>

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1. Elective Courses (EC)

3. Strategic Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Strategic Management an Overview	15
02	Strategic Management Environment	10
03	Levels of Strategies and Analysis	10
04	Activating Strategy and Implementation	15
05	Strategic Evaluation and Control	10
Total		60

Sr. No.	Modules / Units
1	Strategic Management an Overview
	Definitions, Strategic Decision Making, Levels of Strategic Management, Process of Strategic Management, Principles of Good Strategy, Elements of Strategic Management, Models of Strategic Management.
2	Strategic Management Environment:
	Importance of Politics in Strategic Management, Social, Political, and Technological forces, Role of Competition, National and Global Business Environment. Components of Environment, Environmental Scanning, Analysis of Strategies and Choice of Strategy. Ethics, Social Responsibility, Impact of Legal Factors in Strategic Management, SWOT Analysis.
3	Levels of Strategies and Analysis
	Corporate Level Strategies- Concentration, Integration and Diversification, Internationalization, Digitization. Process of Strategic Choice, Factors of Strategic Choice, Strategic Analysis.
4	Activating Strategy and Implementation
	Process and Nature of Strategy implementation, Barriers, Model of Strategy Implementation- Structural, Behavioral and Functional.
5	Strategic Evaluation and Control
	Standards, Benchmarking, Gap Analysis. Features and Importance of Evaluation, Barriers in Evaluation, Types. Strategic Control- Setting Standards, Comparison, Control Process, Systems, Approaches, Techniques of Evaluation and Control. Role of Information System.

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1. Elective Courses (EC)

4. Financial Services Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Introduction to Financial Services	12
02	Mutual Funds, Factoring and Forfeiting	12
03	Securitisation of Debts and Derivatives	12
04	Housing Finance and Consumer Finance	12
05	Depositories and Pledge	12
Total		60

Sr. No.	Modules / Units
1	Introduction to Financial Services Financial Services Meaning, Classification, Scope, Fund Based Activities, Non Fund Based Activities, Modern Activities, Sources of Revenue, Need for Financial Innovation, New Financial Products & Services, Innovative Financial Instruments, Challenges Facing the Financial Sector. Merchant Banking Definition, Origin, Merchant Banking in India, Merchant Banks and Commercial Banks, Services of Merchant Banks, Qualities of Merchant Bankers in Market Making Process, Progress of Merchant Banking in India, Problems, Scope of Merchant Banking in India.
2	Mutual Funds, Factoring and Forfeiting Mutual Funds Introduction to Mutual Funds, Structure of Mutual Fund in India, Classification of Mutual Funds, AMFI Objectives, Advantages of Mutual Funds, Disadvantages of Mutual Funds, NAV Calculation and Pricing of Mutual Funds, Mutual Funds Abroad, Mutual Funds in India, Reasons for Slow growth, Future of Mutual Funds Industry. Factoring and Forfeiting Factoring, Meaning, Modus Operandi, Terms and Conditions, Functions, Types of Factoring, Factoring vs. Discounting, Cost of factoring, Benefits, Factoring in India, International Factoring, Definition, Types of Export Factoring, Factoring in Other Countries, EDI Factoring, Forfeiting- Definition, Factoring vs. Forfeiting, Working of Forfeiting, Cost of Forfeiting, Benefits of Forfeiting, Drawbacks of Forfeiting.
3	Securitisation of Debts and Derivatives Securitization of Debt Meaning & Definition of Securitization, Securitization vs. Factoring, Modus Operandi, Role of Merchant Banker, Role of Other Parties, Securitization Structure Securitisable assets, Benefits of Securitization, Conditions for Successful Securitization, Securitization Abroad, Securitization in India, Reasons for non popularity of Securitization, Future Prospects of Securitization. Derivatives Meaning, Types of Financial Derivatives, Options, Futures, Forwards, Swaps, Futures & Options Trading System, Clearing Entities & Their Role.

Sr. No.	Modules / Units
4	Housing Finance and Consumer Finance
	<p>Housing Finance Introduction, Housing Finance Industry, Housing Finance Policy Aspect, Sources of Funds, Market of Housing Finance in India, Major Issues of Housing Finance in India, Growth Factors, Housing Finance Institutions in India, National Housing Bank(NHB), Guidelines for ALM System in Housing Finance Companies, Fair Trade Practice, Code for HFC's, Housing Finance Agencies.</p> <p>Consumer Finance Introduction, Sources, Types of Products, Consumer Finance Practice in India, Mechanics of Consumer Finance, Terms, Pricing, Marketing & Insurance of Consumer Finance, Consumer Credit Scoring.</p>
5	Depositories & Pledge
	Overview of Depository, Key features of Depositories Systems in India, Depository- Bank Analogy, Legal Framework, Eligibility Criteria for A Depository, Agreement between Depository & Issuers, Rights & Obligation of Depositories, Records Maintained by Depository, Services of Depository & Functions of Depository, Organization & Functions of NSDL, Pledge & Hypothecation, Procedure for Pledge/Hypothecation, Procedure of Confirmation of Creation of Pledge/Hypothecations by Pledgee, Closure of A Pledge/Hypothecation by Pledgor, Invocation of Pledge by Pledgee.

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1. Elective Courses (EC)

5. Business Ethics and Corporate Governance

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Introduction to Business Ethics	10
02	Application of Ethical Theories in Business	10
03	Introduction to Corporate Governance	15
04	Genesis and Implementation of Corporate Governance in India	15
05	Global Scenario	10
Total		60

Sr. No.	Modules / Units
1	Introduction to Business Ethics
	Definition, Meaning, Nature of Ethics, Meaning of Moral & Ethics. Types of Ethics, Importance of Ethics, Business Ethics -Meaning and Nature. Importance of Ethics in Business, Areas of Business Ethics, Meaning of Functional Ethics, Types of Ethics According to Functions of Business- Marketing Ethics, Foreign Trade Ethics and Ethics Relating to Copyright. Ethics relating to Free and Perfect Competitive Market.
2	Application of Ethical Theories in Business
	Ethical Decision Making: Decision Making (Normal Dilemmas And Problems): (I) Utilitarianism (J. Bentham And J.S. Mill), (Ii) Deontology (I. Kant) Virtue Ethics (Aristotle). Gandhain Approach In Management And Trusteeship, Importance And Relevance of Trusteeship Principle in Modern Business. Ethical Issues in Functional Areas of Business. Ethics in Advertising (Truth In Advertising). Ethical Issues in Finance,
3	Introduction to Corporate Governance
	Definition & Conceptual Framework of Corporate Governance, Business Ethics - an important dimension to Corporate Governance, Fair and Unfair Business Practices. Theoretical Basis of Corporate Governance, Mechanism- Corporate Governance Systems, Indian Model of Governance, Good Corporate Governance, Obligations Towards Society and Stake holders. Theories underlying Corporate Governance (Stake holder's theory and Stewardship theory, Agency theory, Separation of Ownership and Control, Corporate Governance Mechanism: Process, Indian Model, OECD, and Emphasis on Corporate Governance, (Transparency Accountability and Empowerment).
4	Genesis and Implementation of corporate Governance in India:
	Introduction principles – Arthashastra and Good Governance in ancient India, Protection of Interest of Customer and Investors, Historical perspective of Corporate Governance and Issues in Corporate Governance. Values: Meaning, Types Teaching from Scriptures Like Gita, Quran, Bible Value Systems in Business. Implementation of Corporate Governance Role of Board of Directors and Board Structure, Role of the Non- executive Director, Role of Auditors, SEBI Growth of Corporate Governance. Role of Government, Corporate Governance in India. Accounting Standards and Accounting disclosures. Finance Reporting and Corporate Governance, Non Accounting Regulations in Corporate Governance, Corporate Governance &CSR, Family Owned Business - Background, Family Businesses in India, Need for Professionalization and Transparency in Family Business.
5	Global Scenario
	Business Ethics in Global Economy. Ethics in the Context of Global Economy, Relationship Between Business Ethics & Business Development, Role of Business Ethics in Building a Civilized Society. Corporate Governance and Issues Related to Scams Corruption: Meaning, Causes, Effects. Frauds and Scams in Banks, Insurance Companies, Financial Institutions, Measures to Overcome Fraud and Corruption, Zero Tolerance of Corruption.

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1. Elective Courses (EC)

**6. Actuarial Analysis in Banking and Insurance
*Modules at a Glance***

Sr. No.	Modules	No. of Lectures
01	Probability & Mathematical Statistics	12
02	Models	12
03	Mortality Model	12
04	Contingencies	12
05	Statistical Methods	12
Total		60

Sr. No.	Modules / Units
1	Probability & Mathematical Statistics
	Concepts of Probability, Bayes' Theorem, Concepts of Random Variable, Probability Distribution, Distribution Function, Expected Value, Variance and Higher Moments, Basic Discrete And Continuous Distributions, Central Limit Theorem, Statistical Inference And Sampling Distribution, Confidence Intervals For Unknown Parameters. Test Hypotheses, Concepts of Analysis of Variance
2	Models
	The Principles of Actuarial Modelling., General Principles of Stochastic Processes, Markov Chain, Markov Process, Concept of Survival Models., Estimation Procedures for Lifetime Distributions, Maximum Likelihood Estimators For The Transition Intensities in Models of Transfers Between States With Piecewise Constant Transition Intensities.
3	Mortality Model
	Binomial Model of Mortality, Derive A Maximum Likelihood Estimator for The Probability of Death, How to Estimate Transition Intensities Depending on Age, Exactly or Using The Census Approximation, How To Test Crude Estimates For Consistency With A Standard Table or a Set of Graduated Estimates, The Process of Graduation.
4	Contingencies
	Simple Assurance and Annuity Contracts, Means and Variances of the Present Values of the Payments Under These Contracts, Assuming Constant Deterministic Interest. Expressions in the Form of Sums for the Mean and Variance of the Present Value of Benefit Payments Under Each contract Above, in terms of the curtate random future lifetime, assuming that death benefits are payable at the end of the year of death and that annuities are paid annually in advance or in arrear, and, where appropriate, Obtain expressions in the form of integrals for the mean and variance of the present value of benefit payments under each contract above, in terms of the random future lifetime, assuming that death benefits are payable at the moment of death and that annuities are paid continuously, and, where appropriate.
5	Statistical Method
	<p>Concepts of Decision Theory, Decision Function and a Risk Function. Apply Decision Criteria to Determine Which Decision Functions are Best with Respect to a Specified Criterion. In particular Consider the Minimax Criterion and the Bayes Criterion. Calculate Probabilities and Moments of Loss Distributions both with and without Limits and Risk-Sharing Arrangements.</p> <p>The properties of the Statistical Distributions which are Suitable for Modelling Individual and Aggregate Losses. Apply the Principles of Statistical Inference to Select Suitable Loss Distributions for Sets of Claims. Concepts of Excesses (deductibles), and Retention Limits. The Operation of Simple Forms of Proportional and Excess of Loss Reinsurance.</p>

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2. Core Course (CC)

1. International Banking and Finance

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Fundamentals of International Finance	12
02	International Capital Markets	12
03	Foreign Exchange Markets	12
04	Risk Management	12
05	International Banking Operations	12
Total		60

Sr. No.	Modules / Units
1	Fundamentals of International Finance
	<p>Meaning and Scope of International Finance, Balance of Payment, Components, Deficit in Balance of Payment, Concept of Currency Convertibility.</p> <p>International Monetary System, Gold Standard, Features, Bretton Wood System, Background and Features, Reasons for its Failure, Smithsonian Agreement, SDRs, European Monetary System.</p> <p>Current Exchange Rate Systems - Fixed and Flexible Exchange Rate, Merits Demerits, Types of Fixed Exchange Rate, Hard Pegs and Soft Pegs, Types of Flexible Exchange Rate, Managed and Free Float.</p>
2	International Capital Markets
	<p>Types of Capital Flows, FDI, FPI, FII</p> <p>Euro Currency Markets, Origin and Reasons of growth, a Brief Understanding of Eurocurrency Deposit, Loans Bonds and Notes Market ,Concept of Offshore Banking.</p> <p>International Equity Markets, Concept of Depository Receipts, GDR, Characteristics, Mechanism of Issue, Participants Involved, ADR, Types and Characteristics, Concept of IDR.</p> <p>International Bond Market, Concepts of Domestic Bond, Concept and Types of Foreign Bonds, Concept and Types of Euro Currency Bonds, Concepts of Foreign Currency Convertible and Foreign Currency Exchangeable Bonds, Participatory Notes.</p>
3	Foreign Exchange Markets
	<p>Introduction, Market and Market Participants, Foreign Exchange Management in India, Retail and Whole Sale Component of Indian Foreign Exchange Market, Role of FEDAI, FEMA and Regulatory Framework, Dealing Room Operations.</p> <p>Foreign Exchange Arithmetic, Exchange Rate Quotations, Direct, Indirect and Cross rate, Percentage Spread, Arbitrage, Geographical, Triangular and Interest Rate (formula method only), Calculation of Forward Rates using Schedule of Swap Points, AFM, Determinants of Exchange Rate – Purchasing Power and Interest Rate Parity.</p>
4	Risk Management
	<p>Risk Management and Derivatives, Transaction, Translation and Economic Risk Faced by Corporates, Transaction, Position, Settlement, Pre-settlement, Gap/Mismatch Risk faced by Banks, Internal and External Hedging, Foreign Currency Derivative Instruments for Risk Management, Forward, Futures, Swaps and Options, Country Risk Management.</p>

Sr. No.	Modules / Units
5	International Banking Operations
	<p>Introduction, Definition, Features of International Banking, Reasons for Growth of International Banking, Recent Trends in International Banking, Emergence of Crypto currency - Overview, Brief Overview of Bitcoin and other Crypto Currencies, Note on Mining and Crypto Currency Exchanges, Advantages, Disadvantages of Crypto Currency.</p> <p>Functions of International Banking, Correspondent Banking, International Payment Systems, NRI accounts, Export Finance, Import Finance, International Merchant Banking, Financing Project Exports, Derivative Offering, Remittances, Compliance related- Interbank Functions, Internal Functions, Letter of Credit and Bank Guarantees.</p> <p>International Lending Operation, Loan Syndication, Parties Involved, Phases /Stages in Loan Syndication, Types of Syndication, Role of LIBOR, Risk in International Lending, Role of International Credit Rating Agencies.</p>

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3. Ability Enhancement Course (AEC)

1. Research Methodology

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Research	10
2	Data Collection and Processing	15
3	Data Analysis and Interpretation	15
4	Advanced Statistical Techniques	15
5	Research Report	05
Total		60

Sr. No.	Modules / Units
1	Introduction to Research
	<ul style="list-style-type: none"> Meaning, Objectives and Importance of Research Types of Research Research Process. Characteristics of Good Research Hypothesis-Meaning, Nature, Significance, Types and Sources. Research Design– Meaning, Definition, Need and Importance, Steps, Scope and Essentials of a Good Research Design. Sampling– a) Meaning of Sample and Sampling, b)Methods of Sampling <ul style="list-style-type: none"> i) Non-Probability Sampling–Convenient, Judgment, Quota, Snow ball ii) Probability– Simple Random, Stratified, Cluster, Multi Stage.
2	Data Collection and Processing
	<ul style="list-style-type: none"> Types of Data and Sources-Primary and Secondary Data Sources Methods of Collection of Primary data <ul style="list-style-type: none"> a. Observation- i) structured and unstructured, ii) disguised and undisguised, iii)mechanical observations (use of gadgets) b. Experimental i)Field ii) Laboratory c. Interview – i) Personal Interview ii) focused group, iii) in- depth interviews Method d. Survey– Telephonic survey, Mail, E-mail, Internet survey, Social media, and Media listening. e. Survey instrument– i) Questionnaire designing. <ul style="list-style-type: none"> a. Types of questions–i) structured/close ended and ii) unstructured/ open ended, iii) Dichotomous, iv) Multiple Choice Questions. b. Scaling techniques- i)Likert scale, ii) Semantic Differential scale.
3	Data Analysis and Interpretation
	<ul style="list-style-type: none"> Processing of Data– Meaning & Essentials of i) Editing ii) Coding iii) Tabulation Analysis of Data-Meaning, Purpose, Types. Interpretation of Data-Essentials, Importance, Significance and Descriptive Analysis Testing of hypothesis– One Sample T- Test, ANOVA, F- test, Chi Square and Paired Sample Test
4	Advanced Statistical Techniques
	Introduction, Characteristics and Application of <ul style="list-style-type: none"> Correlation and Regression Analysis Factor Analysis Cluster Analysis Discriminant Analysis Multidimensional Scaling
5	Research Report
	<ul style="list-style-type: none"> Report writing – i) Meaning, Importance, Structure, Types, Process and Essentials of a Good Report.

**Revised Syllabus of Courses of B.Com.(Banking and Insurance)
Programme at Semester V
with effect from the Academic Year 2018-2019**

Reference Books

Reference Books
Elective Courses (EC)
Financial Reporting & Analysis (Corporate Banking & Insurance)
<ul style="list-style-type: none"> Ashish K. Bhattacharyya – “Financial Accounting for Business Managers”, Prentice Hall of India Pvt. Ltd. Shashi K. Gupta – “Contemporary Issues in Accounting”, Kalyani Publishers. R. Narayanaswamy – “Financial Accounting”, Prentice Hall of India, New Delhi Ashok Sehgal – “Fundamentals of Financial Accounting”, Taxmann’s Publishers IFRS – Dr Ram Mohan Bhawe and Dr Anjali Bhawe
Auditing - I
<ul style="list-style-type: none"> CA Surbhi Bansal – Audit and Assurance Taxmann – Auditing Dr. S Meenakumari – Fundamentals of Auditing Baldev Sachdeva & Jagwant Singh Pardeep Kumar – Auditing theory & Practice
Strategic Management
<ul style="list-style-type: none"> Strategic Management, 12th Ed. Concepts and Cases, Arthur A. Jr. and A. J. Strickland Management Policy and Strategic Management (Concepts, Skills and Practices) , R.M. Shrivastava Business Policy and Strategic Management – P. Subba Rao Strategic Planning Formulation of Corporate Strategy , Ramaswamy
Financial Services Management
<ul style="list-style-type: none"> Financial Services, Dr. S Gurusamy, The McGraw Hill companies, 2 edition (26 June 2009). Financial Markets and Financial services, Vasant Desai, Himalaya Publishing House, First Edition edition (2010). Financial Services, M.Y. Khan, Tata Mc-Graw Hill Publishing Company Ltd, Ninth edition (2017). Financial Markets and Services – E. Gordon and K. Natarajan, Himalaya Publishing House, Tenth Edition edition (2016)
Business Ethics and Corporate Governance
<ul style="list-style-type: none"> A. C. Fernando, Corporate Governance Principles, Policies and Practices; Pearson Marc Goeren, International Corporate Governance; Black wells. Cristian A. Mallin, Corporate Governance. Business Ethics, Crane & Matten The Management and ethics omnibus, Chakraborty, Its only Business, Mitra, Values and Ethics for Organizations, Chakraborty, OUP/OIP Perspectives in Business Ethics, Hartman, Chatterjee

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Reference Books

Reference Books
Actuarial Analysis in Banking & Insurance
<ul style="list-style-type: none"> • “Actuarial Statistics: An Introduction Using R” by Shailaja R Deshmukh. • “Predictive Modeling Applications in Actuarial Science” by Richard ADerrig and Glenn Meyers • “Generalized Linear Models for Insurance Data (International Series on Actuarial Science)” by Piet de Jong and Gillian Z Heller • “Contributions to Sampling Statistics (Contributions to Statistics)” by Maria Giovanna Ranalli and FulviaMecatti • “Forecasting Product Liability Claims: Epidemiology and Modeling in the Manville Asbestos Case” by J B Weinstein and Eric Stallard • “Financial Modeling, Actuarial Valuation and Solvency in Insurance” by Mario V Wuthrich and Michael Merz • “Modern Actuarial Risk Theory: Using R” by Rob Kaas and Marc Goovaerts • “Health Insurance: Basic Actuarial Models” by ErmannoPitacco • “Financial and Actuarial Statistics: An Introduction” by Dale S Borowiak and Arnold F Shapiro
Core Course (CC)
International Banking and Finance
<ul style="list-style-type: none"> • Apte P.G. International Finance – A Business Perspective, New Delhi, TATA McGraw Hill , McGraw Hill Education; 2 edition, July 2017. • Bhalla .V.K. international Financial Management- S.Chand Publishing, • International Banking Operations- IIBF- MacMillan Publishers, 2007 • International Banking Legal and Regulatory Aspects- IIBF- MacMillan Publishers, 2007
Ability Enhancement Course (AEC)
Research Methodology
<ul style="list-style-type: none"> • Exploratory and Confirmatory Factor Analysis- Understanding Concepts and Applications(2004) – Bruce Thompson First Edition • Interpreting Economic and Social Data – A Foundation of Descriptive Statistics (2009) - Othmar W. Winkler - Springer • Regression Modelling Strategies (2015) – Frank E Harrell, Jr Springer Series in Statistics. • Research Methodology (2014) – Deepak Chawla and Neena Sondhi, Vikas Publishing House.

B.Com. (Banking and Insurance) Programme
Under Choice Based Credit, Grading and Semester System
Course Structure

(To be implemented from Academic Year 2018-2019)

Semester VI

No. of Courses	Semester VI	Credits
1	<i>Elective Courses (EC)</i>	
1,2,3 & 4	**Any four courses from the following list of the courses	12
2	<i>Core Courses (CC)</i>	
5	Central Banking	04
3	<i>Ability Enhancement Course</i>	
6	Project Work in Banking & Insurance	04
Total Credits		20

<i>*List of Elective Courses for Semester V (Any Four)</i>	
01	Security Analysis and Portfolio Management
02	Auditing - II
03	Human Resource Management
04	Turnaround Management
05	International Business
06	Marketing in Banking & Insurance

***Revised Syllabus of Courses of B.Com. (Banking and Insurance)
Programme at Semester VI
with effect from the Academic Year 2018- 2019***

1. Elective Courses (EC)

1. Security Analysis and Portfolio Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Portfolio Management – An Introduction & Process	12
02	Portfolio Management – Valuation	12
03	Fundamental Analysis	12
04	Technical Analysis	12
05	Efficient Market Theory & CAPM	12
Total		60

Sr. No.	Modules / Units
1	Portfolio Management – An Introduction & Process
	<p>Investment, Meaning, Characteristics, Objectives, Investment V/s Speculation, Investment V/s Gambling and Types of Investors.</p> <p>Portfolio Management – Meaning, Evolution, Phases, Role of Portfolio Managers, Advantages of Portfolio Management.</p> <p>Investment Environment in India and Factors Conducive for Investment in India.</p> <p>Portfolio Analysis – Meaning and its Components, Calculation of Expected Return and Risk, Calculation of Covariance, Risk – Return Trade off.</p> <p>Portfolio Selection – Meaning, Feasible Set of Portfolios, Efficient Set of Portfolios, Selection of Optimal Portfolio, Markowitz Model, Limitations of Markowitz Model, Measuring Security Return and Portfolio Return and Risk under Single Index Model and Multi Index Model.</p>
2	Portfolio Management – Valuation
	<p>Portfolio Revision – Meaning, Need, Constraints and Strategies.</p> <p>Portfolio Evaluation – Meaning, Need, Measuring Returns (Sharpe, Treynor and Jensen Ratios) and Decomposition of Performance.</p> <p>Bond Valuation – Meaning, Measuring Bond Returns, Yield to Maturity, Yield to Call and Bond Pricing. Bond Pricing Theorems, Bond Risks and Bond Duration.</p>
3	Fundamental Analysis
	<p>Economy Analysis – Meaning, Framework, Economic Analysis, Forecasting, Barometric or Indicator Approach, Econometric Model Building and Opportunistic Model Building.</p> <p>Industry Analysis – Concept of Analysis, Industry Life Cycle, Industry Characteristics</p> <p>Company Analysis – Financial Statements, Analysis of Financial Statements, (Practical questions on Debt Equity Ratios, Total Debt Ratio, Proprietary ratios, interest coverage ratio, Profitability ratios related to sales, investment and equity shares Efficiency or Activity Ratios) and Assessment of Risk(Leverages)</p>
4	Technical Analysis
	<p>Dow Theory</p> <p>Meaning and Principles of Technical Analysis, Price Chart, Line Chart, Bar Chart, Japanese Candlestick Chart, Trends and Trend Reversals, Chart Patterns, Support and Resistance, Reversal Patterns, Continuation Patterns and Elliot Wave Theory</p> <p>Mathematical Indicators – Calculation of Moving Averages (Simple and Exponential Moving Average), Oscillators and Relative Strength Index</p> <p>Market Indicators</p> <p>Fundamental Analysis V/s Technical Analysis</p>

Sr. No.	Modules / Units
5	Efficient Market Theory & CAPM
	Random Walk Theory The Efficient Market Hypothesis Forms of Market Efficiency Competitive Market Hypothesis CAPM – Fundamental Notions of Portfolio Theory, Assumption of CAPM, Efficient Frontier with Riskless Lending and Borrowing, Capital Market Line, Security Market Line and Pricing of Securities with CAPM. Arbitrage Pricing Theory (APT) – The Return Generating Model, Factors Affecting Stock Return, Expected Return on Stock, APT V/s CAPM.

***Revised Syllabus of Courses of B.Com. (Banking and Insurance)
Programme at Semester VI
with effect from the Academic Year 2018-2019***

1. Elective Courses (EC)

2. Auditing - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Audit of Limited Companies	15
02	Audit of Banking Companies	15
03	Audit of Insurance Companies	15
04	New Areas of Auditing	08
05	Professional Ethics and Misconduct	07
Total		60

Sr. No.	Modules / Units
1	Audit of Limited Companies
	Qualifications, Disqualifications, Appointment, Removal, Remuneration of Auditors, Audit Ceiling, Status, Power, Duties and Liabilities of Auditors, Branch Audit, Joint Audit, Special Audit. Maintenance of Books of Account –Related Party Disclosures, Segment Reporting, Divisible Profit, Dividend and Depreciation (Companies Act, Standards on Accounting, Legal Decisions and Auditor's Responsibility), Representations by Management, Contents of Annual Report. Definition, Distinction between Report and Certificate, Types of Reports/Opinion.
2	Audit of Banking Companies
	Introduction of Banking Companies, Form and Content of Financial Statements, Qualifications of Auditor, Appointment of Auditor, Remuneration of Auditor, Power of Auditor, Auditor's Report, Format of Audit Report, Long Form Audit Report, Conducting an Audit, Initial Consideration by Statutory Audit, Internal Control System, Verifications of Assets and Balances.
3	Audit of Insurance Companies
	Audit of Companies carrying General Insurance Business, Audit of Companies carrying Life Insurance Business, Applicability of Accounting Standards (AS 3, 4,9,13,17), Books and Registers to be maintained, Submission of Reports and Returns, Audit of Accounts, Preparation of Audit and Internal Controls.
4	New Areas of Auditing
	Introduction to Cost Audit, Human Resource Audit, Management Audit, Operational Audit, Forecast Audit, Social Audit, Tax Audit, Forensic Audit and Environmental (Green) Audit. Audit in an EDP Environment, Introduction, General Approach to EDP Based Audit and Special Techniques for Auditing in an EDP Environment.
5	Professional Ethics and Misconduct
	Introduction, Meaning of Professional Ethics Meaning of Professional Misconduct, Schedules to the Chartered Accountants Act, 1949 Relating to Professional Misconduct, Enquiry into Charges of Misconduct of Chartered Accountants.

***Revised Syllabus of Courses of B.Com. (Banking and Insurance)
Programme at Semester VI
with effect from the Academic Year 2018-2019***

1. Elective Courses (EC)

3. Human Resource Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Framework of Human Resource Management	15
02	HR Procurement	10
03	HR Planning and Recruitment	10
04	Training and Development	15
05	Compensation	10
Total		60

Sr. No.	Modules / Units
1	Framework of Human Resource Management
	Introduction to HRM, Nature of HRM, Scope of HRM, Functions and Objectives of HRM, HRM Policies and Practices, Role and Functions of HR Manager (in Banking and Insurance Sector) HRM and Strategies , Strategic function of HRM, Understanding and Implementing Global Competitiveness and HR, strategic HR, Linkages of Organizational and HR Strategies.
2	HR Procurement
	Job Analysis and Design- Job Analysis, Introduction, Importance, Purpose , Benefits, Job Evaluation, Competency Based Job Analysis Job Design - Introduction, Characteristics, Factor Affecting Job Design, Job Satisfaction.
3	HR Planning and Recruitment
	Definition, Objectives, Need and Importance of HR Planning, Preparing Manpower Inventory. Promotions and Transfers. Recruitment - Strategic Approach to Recruitment, Recruitment Source; Internal and External, Selection Procedure.
4	Training and Development
	Employee Training and Development - Nature and Process of Training, Training methods, On the job, Off the job. Management Development Program, Performance Appraisal -Definition, Methods. Advantages and Limitations of Appraisal.
5	Compensation
	Meaning, Need and Importance, Current Trends in Compensation, Team Based Incentives, Pension Schemes with Reference to Banking and Insurance, Fringe Benefits, Perquisites, Allowances and other Non – Monetary Benefits Voluntary Retirement Scheme - Concept, Types, Needs, Effects with reference to Banking and Insurance Participative Management Meaning, Levels, Types, Employee Welfare, Comparative Study of Working Conditions in Banks, Financial Institutions, Insurance Companies.

***Revised Syllabus of Courses of B.Com. (Banking and Insurance)
Programme at Semester VI
with effect from the Academic Year 2018-2019***

1. Elective Courses (EC)

4. Turnaround Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Introduction to Business	10
02	Industrial Sickness	15
03	Turnaround Management Strategies	15
04	Business Scenario	12
05	Leadership and Turnaround Management	08
Total		60

Sr. No.	Modules / Units
1	Introduction to Business
	Meaning, Definition, Features, Importance, Symptoms, Types of Business Organization. Different approaches for Growth and Survival. <ul style="list-style-type: none"> • Internal Strategies • External Strategies • Survival Strategies
2	Industrial Sickness
	Meaning and Internal /External Reasons of Industrial Sickness <ul style="list-style-type: none"> • Symptoms of Industrial Sickness • Measures to Overcome Sickness by Government and Stakeholders • Role of BIFR in Sick Industries
3	Turnaround Management Strategies
	Turnaround – Meaning, Definition, Indicators of Successful Turnaround <ul style="list-style-type: none"> • TQM and Restructuring. • Selling of a sick unit • BPR <ul style="list-style-type: none"> - Meaning, Definition, Elements, Need, Implications - Approaches (Reengineering Team, BPR Leader, Process Owner, Kaizen, Flow Chart, 5S principles, Process Mapping)
4	Business Scenario
	Features, Advantages, Disadvantages, Types and Present Status of: <ul style="list-style-type: none"> • Outsourcing • Networking • Franchising • Free lancing • Self-Financing • Start up
5	Leadership and Turnaround Management
	Outfitting the Management Team, Personal Characteristic, Focusing on Present Operations, Focus on Needs in Turnarounds, Styles of Decision Making in the Turnaround Process, Organizational Change. Quality in the Managerial Process, Dilemma of Management, Turnaround Management as a Skill.

***Revised Syllabus of Courses of B.Com. (Banking and Insurance)
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1. Elective Courses (EC)

5. International Business

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Introduction to International Business	10
02	International Economic Institutions and Regional Groupings	12
03	International Marketing, Human Resource Management	10
04	Preliminaries for Export Import and Documentation	14
05	Export Import Procedures and Foreign Trade Policy	14
Total		60

Sr. No.	Modules / Units
1	Introduction to International Business
	<p>Introduction to International Business- Importance, Nature and Scope of International Business, Drivers of International Business, Evolution of International Business, Strategies of Going International, Globalisation, Multi National Corporations- Nature, Goals of MNCs, India's Presence- Advantages and Disadvantages of MNCs</p> <p>International Business Environment: Economic, Political, Cultural and Legal Environments in International Business</p>
2	International Economic Institutions and Regional Groupings
	<p>Institutional Support to International Business, Role of World Bank, IMF, ILO, UNCTAD, UNIDO and ADB in International Business, World Trade Organisation (WTO), Origin, Objectives, Functions ,GATT and WTO, Principles of WTO, Transparency, MFN Treatment, National Treatment, Free Trade, Dismantling Trade Barriers, Rule Based Trading System, Treatment for LDCs ,Competition Principle, Environment Protection, Key Subjects in WTO, Agriculture, TRIPS, TRIMS, GATS, Implications for India</p> <p>Integration between Countries: Levels of Integration, Growth of Trading Blocs, Impact of Integration, Major Regional Trading Groups, The European Union, NAFTA, APEC, ASEAN, MERCOSUR, BRICS, SAARC, OPEC</p>
3	International Marketing, Human Resource Management
	<p>International Marketing, Domestic and International Marketing, Compared Benefits of International Marketing, Major Activities, International Market Assessment, International Product Strategies, Pricing Issues and Decisions, Dumping, Promotion Issues and Policies.</p> <p>International Human Resource Management, Nature, Growing Interest in IHRM, DHRM and IHRM compared, Managing International HR activities, Expatriation and Repatriation of employees</p>
4	Preliminaries for Export Import and Documentation
	<p>Meaning and Definition of Export, Methods of Exporting, Registration Formalities for Exports, Export Licensing, Selection of Export Product, Identification of Market for Exports – Export Pricing Quotations, FOB & CIF, Meaning and Definition of Imports, Liberalisation of Imports, Negative list of Imports ,Categories of Importers, Special Schemes for Importers.</p> <p>Aligned Documentation System – Commercial Invoice , Shipping Bill , Certificate of Origin, Consular Invoice, Mate's Receipt, Bill of Lading, GR Form, ISO 9000, Procedure for obtaining ISO 9000, BIS 14000 Certification ,Import Documentation, Transport Documents - Bill of Entry, Certificate of Inspection, Certificate of Measurements, Freight Declaration.</p>

Sr. No.	Modules / Units
5	Export Import Procedures and Foreign Trade Policy
	<p>Steps in Export Procedure , Export Contract, Forward Cover, Export Finance, Institutional Framework for Export Finance, Excise Clearance, Pre-shipment Inspection, Methods of Pre-shipment Inspection, Role of Clearing and Forwarding Agents, Shipping and Customs Formalities, Customs EDI System, Negotiation of Documents, Realisation of Exports Proceeds.</p> <p>Pre-Import Procedure- Steps in Import Procedure, Legal Dimensions of Import Procedure, Customs Formalities for Imports, Warehousing of Imported Goods, Exchange Control Provisions for Imports & Retirement of Export Documents.</p> <p>Foreign Trade Policy Highlights (latest), Duty Drawback, Deemed Exports, ASIDE, MAI & MDA, Star Export Houses, Town of Export Excellence, EPCG Scheme.</p>

***Revised Syllabus of Courses of B.Com. (Banking and Insurance)
Programme at Semester VI
with effect from the Academic Year 2018-2019***

1. Elective Courses (EC)

6. Marketing in Banking and Insurance

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Introduction to Marketing	12
02	Introduction to Service Marketing	12
03	Consumer Behaviour	12
04	Rural Marketing	12
05	E- Marketing	12
Total		60

Sr. No.	Modules / Units
1	Introduction to Marketing
	Meaning, Definition, Importance, Marketing Mix, Market Segmentation, Marketing Strategy, Channels of Marketing, Marketing of Banking and Insurance Products, Marketing Research, Introduction, Process and Types.
2	Introduction to Service Marketing
	Meaning, Concept, Evolution and Characteristics of Service Marketing. Need and Importance of Service Marketing, 7 P's of Services Marketing Mix, Service Marketing Mix Strategies for Banking and Insurance and Marketing Logistics.
3	Consumer Behaviour
	Introduction to Consumer Behaviour, Consumer Expectations, Consumer Buying Behavior, Role of Consumer in Service Delivery, Consumer Responses, Consumer Delight – Concept and Importance. Consumer Behaviour and Marketing Communications: Introduction, Marketing Communication Flow, Communication Process, Interpersonal Communication, Persuasive Communication, Source, Message, Message Appeals, Communication Feedback.
4	Rural Marketing
	Rural Marketing -Concept and Scope ,Nature of Rural Markets , Attractiveness of Rural Markets ,Rural Vs Urban Marketing ,Characteristics of Rural Consumers ,Buying Decision Process ,Rural Marketing Information System ,Potential And Size of Rural Markets. Pricing Strategy, Pricing Policies, Innovative Pricing Methods for Rural Markets, Promotion Strategy, Appropriate Media, Designing Right Promotion Mix, Promotional Campaigns. Distribution- Logistics Management, Problems Encountered, Selection of Appropriate Channels, New Approaches to Reach Out Rural Markets – Electronic Choupal Applications.
5	E- Marketing
	E-marketing: Scope, Benefits and Problems, E-marketing Techniques, Internet Marketing, Digital Marketing and E-marketing E-Marketing Mix Strategy , Introduction, Objectives, the 4Ps in E-Marketing, Additional 3Ps in E-Marketing of Services, the 2P+2C+3S Formula in E-Marketing

***Revised Syllabus of Courses of B.Com. (Banking and Insurance)
Programme at Semester VI
with effect from the Academic Year 2018-2019***

2. Core Course (CC)

1. Central Banking

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	An Overview of Central Banking	12
02	RBI as the Central Bank of India	12
03	Supervisory Role of RBI	12
04	Central Banking in Other Countries	12
05	Central Banking in the Cyber World	12
Total		60

Sr. No.	Modules / Units
1	An Overview of Central Banking
	Overview: Concept of Central Banking, Institutional Growth of Central Banking, The Changing Face of Central Banking. Role of Central Banks: Determination of Goals, Inflation Targeting, Exchange Rate Targeting, Money Supply Targeting, Money Growth Targeting, Viable Alternatives to Central Bank, Central Banking in India. Contemporary Issues, Autonomy and Independence, Credibility, Accountability and Transparency of a Central Bank.
2	RBI as the Central Bank of India
	Policy Framework for RBI: Organizational Framework, Operational Framework – Role as a Central Banker, Promotional Role of RBI, Regulatory Role of RBI. RBI and Monetary Policy Macroeconomic Policies: Meaning & Objectives. Monetary Policy- Meaning & Objectives Monetary Policy in India - Goals, Targets and Instruments A Brief Overview of Fiscal Policy, Striking Balance between Inflation and Growth through Monetary and Fiscal Policies
3	Supervisory Role of RBI
	Regulation and Supervision: Need for Regulation and Supervision, Banking Regulation Act, 1949, Banking Regulation and Supervision, Functions of the Department of Supervisory, Regulations Review Authority, Unified Regulator v/s Multiple Regulators. RBI – On-site Inspection and Off-site Monitoring and Surveillance: The Core Principles for Effective Supervision – On-site Examination – Off-site Surveillance – On-site Inspection and Off-site Monitoring in India – Off-site Monitoring in Different Countries – Computerized Off-site Monitoring and Surveillance (OSMOS). RBI and Financial System, Introduction, Functions, Characteristics of Financial System, Role of RBI in Regulating Financial System and Financial Sector Reforms.
4	Central Bank in other Countries
	Federal Reserve System – Bank of England – The European Central Banking, Bank of Japan, Peoples Bank of China Interconnectivity of Central Banks with Other International Financial Institutions, ADB, IMF, World Bank, and BIS, (Objectives, Role and Functions)
5	Central Banking in Cyber World:
	E -Banking, E- money, IT induced Changes and Monetary Policy, E- payments, Risks in the New IT Era, Impact of IT, Globalization and Central Banks.

**Revised Syllabus of Courses of B.Com.(Banking and Insurance)
Programme at Semester VI
with effect from the Academic Year 2018-2019**

Reference Books

Reference Books
Elective Courses (EC)
Security Analysis and Portfolio Management
<ul style="list-style-type: none"> • Blake, David 1992, <i>Financial Market Analysis</i>, McGraw Hill London • Francis J.C <i>Investments, Analysis and Management</i> McGraw Hill New York. • Pistoletto Clifford <i>Using Technical Analysis</i> Vision Books • Reilly Frank K and Keith Brown <i>Investment Analysis and Portfolio Management</i>.
Auditing - II
<ul style="list-style-type: none"> • <i>Auditing Principles & Practices</i> – SK Basu • Sharma, T.R., <i>Auditing Principles & Problems</i>, SahityaBhavan, Agra • Spicer & Pegler, <i>Practical Auditing</i> • Woolf, Emile, <i>Auditing Today</i> • Basu, Sanjib Kumar, <i>Fundamentals of Auditing</i>, Pearson • <i>Auditing Assurance Standards and Guidelines issued by IC</i>
Human Resource Management
<ul style="list-style-type: none"> • <i>Human Resources Management</i>, Gary Dessler • <i>Personnel Management</i> – C.B Mamoria • <i>Managing Human Resources</i>, R.S. Dwiwedi • <i>Human Resources Management</i>, V.P. Michael • <i>Human Resources Management</i> – Dr.P.C.Pardeshi • <i>Human Resources Management</i> – Mirza&Zaiyadin • <i>Human Resources Management</i> – L.M.Prasad • <i>Human Resources Management</i>, Ashwathappa
Turnaround Management
<ul style="list-style-type: none"> • <i>Practical Shutdown & Turnaround Management for k, Engineers & Managers (English, Paperback, IDC Technologies Pvt Ltd.)</i> • <i>Managing Corporate Turnaround Text & cases</i> Ram AvtarYadav, Concept Publishing Co. • <i>Business Process Reengineering</i>, O.P.Agrawal • <i>The Turnaround Experience</i> – FeddrickZimerman
International Business
<ul style="list-style-type: none"> • <i>Economic Survey, Govt. of India. Various issues</i> • <i>Export-import Policy and Other Documents, Govt. of India</i> • Czinkota, Michael R, 8th Edition, Publisher Wiley, 2010. • Hill, Charles W. L., <i>International Business</i>, McGraw Hill, 2011, New York. • Aswathappa K, <i>International Business</i>, Tata McGraw Hill Education, 2010.

**Revised Syllabus of Courses of B.Com.(Banking and Insurance)
Programme at Semester VI
with effect from the Academic Year 2018-2019**

Reference Books

Reference Books
Marketing in Banking & Insurance
<ul style="list-style-type: none"> • <i>Marketing Management</i> -Philip Kotler, PrenticeHall of India New Delhi. • <i>Service Marketing</i>- S.M.Jha,Himalaya Publishing House, Mumbai. • <i>Essence of Service Marketing</i>- Adrian Payne, Prentice Hall of India New Delhi. • <i>Service Marketing</i>- Hellen Woodruffle,Macmillan Publishers,India, Delhi. • <i>E- Marketing</i> - <u>Judy Strauss</u>, <u>Raymond Frost</u>, Pearson Prentice Hall, 2009, 5th Edition • <i>Marketing Management – An Asian Perspective</i> <u>Philip Kotler</u>, <u>Gary Armstrong</u>, <u>Prafulla Y. Agnihotri</u>, <u>Ehsan UIHaque</u> – Pearson Education 2010. • <i>Rural Marketing – Text and Cases</i> , C.S Krishnamacharayu and Lathiha Ramkrishnan, Pearson Education. • <i>Service Marketing</i> – Christopher Loveloca, Pearson Education
Core Course (CC)
Central Banking
<ul style="list-style-type: none"> • <i>Central Banking</i>- IIBF- MacMillan Publishers, 2011 • <i>Central Banking</i> – ICFAI Press,2008 • <i>Theory and Practice of Central Banking in India</i>- V.A.Avdhani, Second Edition, Published by Somaiya Publications Pvt. Ltd. • <i>Central Banking</i>- M H deKock,Publisher Staples Press. • <i>Central Banking in Planned Economy- The Indian Experiment</i>- C.R.Basu, Edition2,Publisher Tata McGraw-Hill Publishing . Co, 1977.

University of Mumbai



B.Com. (Banking and Insurance) Programme Guidelines for Project Work at Third Year Semester VI

**Under Choice Based Credit, Grading and
Semester System**

(To be implemented from Academic Year 2018-2019)

Board of Studies-in-Banking and Finance

Introduction

Inclusion of project work in the course curriculum of the B.Com. (Banking and Insurance) programme is one of the ambitious aspects in the programme structure. The main objective of inclusion of project work is to inculcate the element of research analyse and scientific temperament challenging the potential of learner as regards to his/ her eager to enquire and ability to interpret particular aspect of the study. It is expected that the guiding teacher should undertake the counselling sessions and make the awareness among the learners about the methodology of formulation, preparation and evaluation pattern of the project work.

- There are two modes of preparation of project work
 1. Project work based on research methodology in the study area
 2. Project work based on internship in the study area

Guidelines for preparation of Project Work

1. General guidelines for preparation of project work based on Research Methodology

- The project topic may be undertaken in any area of Elective Courses.
- Each of the learner has to undertake a Project individually under the supervision of a teacher-guide.
- The learner shall decide the topic and title which should be specific, clear and with definite scope in consultation with the teacher-guide concerned.
- University/college shall allot a guiding teacher for guidance to the students based on her / his specialization.
- The project report shall be prepared as per the broad guidelines given below:
 - Font type: Times New Roman
 - Font size: 12-For content, 14-for Title
 - Line Space : 1.5-for content and 1-for in table work
 - Paper Size: A4
 - Margin : in Left-1.5, Up-Down-Right-1
 - The Project Report shall be bounded.
 - The project report should be 80 to 100 pages

Format

1st page (Main Page)

Title of the problem of the Project

A Project Submitted to
University of Mumbai for partial completion of the degree of
Bachelor in Commerce (Banking and Insurance)
Under the Faculty of Commerce

By

Name of the Learner

Under the Guidance of

Name of the Guiding Teacher

Name and address of the College

Month and Year

2nd Page

This page to be repeated on 2nd page (i.e. inside after main page)

On separate page

Index

Chapter No. 1	Title of the Chapter	Page No.
(sub point 1.1, 1.1.1, And so on)		

Chapter No. 2	Title of the Chapter
---------------	----------------------

Chapter No. 3	Title of the Chapter
---------------	----------------------

Chapter No. 4	Title of the Chapter
---------------	----------------------

Chapter No. 5	Title of the Chapter
---------------	----------------------

List of tables, if any, with page numbers.

List of Graphs, if any, with page numbers.

List of Appendix, if any, with page numbers.

Abbreviations used:

Structure to be followed to maintain the uniformity in formulation and presentation of Project Work

(Model Structure of the Project Work)

- **Chapter No. 1: Introduction**

In this chapter Selection and relevance of the problem, historical background of the problem, brief profile of the study area, definition/s of related aspects, characteristics, different concepts pertaining to the problem etc can be incorporated by the learner.

- **Chapter No. 2: Research Methodology**

This chapter will include Objectives, Hypothesis, Scope of the study, limitations of the study, significance of the study, Selection of the problem, Sample size, Data collection, Tabulation of data, Techniques and tools to be used, etc can be incorporated by the learner.

- **Chapter No. 3: Literature Review**

This chapter will provide information about studies done on the respective issue. This would specify how the study undertaken is relevant and contribute for value addition in information/ knowledge/ application of study area which ultimately helps the learner to undertake further study on same issue.

- **Chapter No. 4: Data Analysis, Interpretation and Presentation**

This chapter is the core part of the study. The analysis pertaining to collected data will be done by the learner. The application of selected tools or techniques will be used to arrive at findings. In this, table of information's, presentation of graphs etc. can be provided with interpretation by the learner.

- **Chapter No. 5: Conclusions and Suggestions**

In this chapter of project work, findings of work will be covered and suggestion will be enlisted to validate the objectives and hypotheses.

Note: If required more chapters of data analysis can be added.

- **Bibliography**
- **Appendix**

On separate page

Name and address of the college

Certificate

This is to certify that Ms/Mr _____ has worked and duly completed her/his Project Work for the degree of Bachelor in Commerce (Banking and Insurance) under the Faculty of Commerce in the subject of _____ and her/his project is entitled, “ _____ *Title of the Project* _____ ” under my supervision.

I further certify that the entire work has been done by the learner under my guidance and that no part of it has been submitted previously for any Degree or Diploma of any University.

It is her/ his own work and facts reported by her/his personal findings and investigations.



Name and Signature of
Guiding Teacher

Date of submission:

On separate page

Declaration by learner

I the undersigned Miss / Mr. _____ *Name of the learner* _____ here by,
declare that the work embodied in this project work titled “ _____
_____ *Title of the Project* _____ ”,
forms my own contribution to the research work carried out under the guidance of
_____ *Name of the guiding teacher* _____ is a result of my own research work and has
not been previously submitted to any other University for any other Degree/ Diploma
to this or any other University.

Wherever reference has been made to previous works of others, it has been clearly
indicated as such and included in the bibliography.

I, here by further declare that all information of this document has been obtained and
presented in accordance with academic rules and ethical conduct.

Name and Signature of the learner

Certified by

Name and signature of the Guiding Teacher

Acknowledgment

(Model structure of the acknowledgement)

To list who all have helped me is difficult because they are so numerous and the depth is so enormous.

I would like to acknowledge the following as being idealistic channels and fresh dimensions in the completion of this project.

I take this opportunity to thank the **University of Mumbai** for giving me chance to do this project.

I would like to thank my **Principal**, _____ for providing the necessary facilities required for completion of this project.

I take this opportunity to thank our **Coordinator** _____, for her moral support and guidance.

I would also like to express my sincere gratitude towards my project guide _____ whose guidance and care made the project successful.

I would like to thank my **College Library**, for having provided various reference books and magazines related to my project.

Lastly, I would like to thank each and every person who directly or indirectly helped me in the completion of the project especially **myParents and Peers** who supported me throughout my project.

2. Guidelines for Internship based project work

- Minimum 20 days/ 100 hours of Internship with an Organisation/ NGO/ Charitable Organisation/ Private firm.
- The theme of the internship should be based on any study area of the elective courses
- Experience Certificate is Mandatory
- A project report has to be brief in content and must include the following aspects:
 - **Executive Summary:**
A bird's eye view of your entire presentation has to be precisely offered under this category.
 - **Introduction on the Company:**
A Concise representation of company/ organization defining its scope, products/ services and its SWOT analysis.
 - **Statement and Objectives:**
The mission and vision of the organization need to be stated enshrining its broad strategies.
 - **Your Role in the Organisation during the internship:**
The key aspects handled, the department under which you were deployed and brief summary report duly acknowledged by the reporting head.
 - **Challenges:**
The challenges confronted while churning out theoretical knowledge into practical world.
 - **Conclusion:**
A brief overview of your experience and suggestions to bridge the gap between theory and practice.
- The project report based on internship shall be prepared as per the broad guidelines given below:
 - Font type: Times New Roman
 - Font size: 12-For content, 14-for Title
 - Line Space : 1.5-for content and 1-for in table work
 - Paper Size: A4
 - Margin : in Left-1.5, Up-Down-Right-1
 - The Project Report shall be bounded.
 - The project report should be of minimum 50 pages

Evaluation pattern of the project work

The Project Report shall be evaluated in two stages viz.	
• Evaluation of Project Report (Bound Copy)	60 Marks
▪ Introduction and other areas covered	20 Marks
▪ Research Methodology, Presentation, Analysis and interpretation of data	30 Marks
▪ Conclusion & Recommendations	10 Marks
• Conduct of Viva-voce	40 Marks
▪ In the course of Viva-voce, the questions may be asked such as importance / relevance of the study, objective of the study, methodology of the study/ mode of Enquiry (question responses)	10 Marks
▪ Ability to explain the analysis, findings, concluding observations, recommendation, limitations of the Study	20 Marks
▪ Overall Impression (including Communication Skill)	10 Marks

Note:

- *The guiding teacher along with the external evaluator appointed by the University/ College for the evaluation of project shall conduct the viva-voce examination as per the evaluation pattern*

Passing Standard

- Minimum of Grade E in the project component
- In case of failing in the project work, the same project can be revised for ATKT examination.
- Absence of student for viva voce: If any student fails to appear for the viva voce on the date and time fixed by the department such student shall appear for the viva voce on the date and time fixed by the Department, such student shall appear for the viva voce only along with students of the next batch.

**Revised Syllabus of Courses of B.Com. (Banking and Insurance) Programme at
Semester V and VI
with effect from the Academic Year 2018-2019**

Scheme of Evaluation

The performance of the learners will be evaluated in two Components. One component will be the Internal Assessment component carrying 25% marks and the second component will be the Semester-wise End Examination component carrying 75% marks. The allocation of marks for the Internal Assessment and Semester End Examinations will be as shown below:-

A) Internal Assessment: 25 %

**Question Paper Pattern
(Internal Assessment- Courses without Practical Courses)**

Sr. No.	Particular	Marks
1	One class test (20 Marks)	
	Match the Column/ Fill in the Blanks/ Multiple Choice Questions (½ Mark each)	05 Marks
	Answer in One or Two Lines (Concept based Questions) (01 Mark each)	05 Marks
	Answer in Brief (Attempt Any Two of the Three) (05 Marks each)	10 Marks
2	Active participation in routine class instructional deliveries and overall conduct as a responsible learner, mannerism and articulation and exhibit of leadership qualities in organizing related academic activities	05 Marks

B) Semester End Examination: 75 %

- i) Duration: The examination shall be of 2 ½ Hours duration
 - ii) Theory question paper pattern
 - There shall be five questions each of 15 marks.
 - All questions shall be compulsory with internal choice within the questions.
 - Question may be subdivided into sub-questions a, b, c... and the allocation of marks depends on the weightage of the topic.
- (Detail question paper pattern has been given separately)**

❖ Passing Standard

The learners to pass a course shall have to obtain a minimum of 40% marks in aggregate for each course where the course consists of Internal Assessment and Semester End Examination. The learners shall obtain minimum of 40% marks (i.e. 10 out of 25) in the Internal Assessment and 40% marks in Semester End Examination (i.e. 30 Out of 75) separately, to pass the course and minimum of Grade E to pass a particular semester A learner will be said to have passed the course if the learner passes the Internal Assessment and Semester End Examination together.

Question Paper Pattern (Practical Courses)

Maximum Marks: 75

Questions to be set: 05

Duration: 2 1/2 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions A. Sub Questions to be asked 10 and to be answered any 08 B. Sub Questions to be asked 10 and to be answered any 07 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	15 Marks
Q-2	Full Length Practical Question OR	15 Marks
Q-2	Full Length Practical Question	15 Marks
Q-3	Full Length Practical Question OR	15 Marks
Q-3	Full Length Practical Question	15 Marks
Q-4	Full Length Practical Question OR	15 Marks
Q-4	Full Length Practical Question	15 Marks
Q-5	A) Theory questions B) Theory questions OR	08 Marks 07 Marks
Q-5	Short Notes To be asked 05 To be answered 03	15 Marks

Note:

Practical question of 15 marks may be divided into two sub questions of 7/8 and 10/5 Marks. If the topic demands, instead of practical questions, appropriate theory question may be asked.

Question Paper Pattern (Theoretical Courses)

Maximum Marks: 75

Questions to be set: 05

Duration: 2 1/2 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions A) Sub Questions to be asked 10 and to be answered any 08 B) Sub Questions to be asked 10 and to be answered any 07 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	15 Marks
Q-2	Full Length Question OR	15 Marks
Q-2	Full Length Question	15 Marks
Q-3	Full Length Question OR	15 Marks
Q-3	Full Length Question	15 Marks
Q-4	Full Length Question OR	15 Marks
Q-4	Full Length Question	15 Marks
Q-5	A) Theory questions B) Theory questions OR	08 Marks 07 Marks
Q-5	Short Notes To be asked 05 To be answered 03	15 Marks

Note:

Theory question of 15 marks may be divided into two sub questions of 7/8 and 10/5Marks.