

Syllabus for F. Y. B.Sc.

Course- ZOOLOGY Minor

Course Code: ZO23101MN & ZO23202MN

To be implemented from Academic year 2023-2024

SEMESTER – I & II

PAPER CODE	UNIT	TOPICS	CREDITS	LECTURE S/WEEK
Semester-I ZO23101MN	I	An overview of animal classification	2	2
	II	Wonders of Animal World		1
Semester-II ZO23202MN	I	Introduction to commercial aquaculture practices	2	1
	II	Quality control and Packaging		1
	III	Marketing and finance		1
VSC ZO23103SE		Exploring the Animal world	2	2
VSC ZO23204SE		Principles of Pisciculture	2	2

Syllabus for
S.Y.B.Sc.
Course – ZOOLOGY
To be implemented from Academic year 2016-17
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	Study of Nutrition and Excretion	2	1
	II	Study Respiration and circulation,		1
	III	Control and coordination, Locomotion and Reproduction		1
USZO303	I	Ethology	2	1
	II	Parasitology		1
	III	Economic Zoology		1
USZOP3	Practical based on all three courses		03	9

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 , writing and ethics		1
USZO402	I	Cell Biology,	2	1
	II	Endo membrane System		1
	III	Biomolecules		1
USZO403	I	Comparative Embryology,	2	1
	II	Aspects of Human Reproduction,		1
	III	Pollution and its effect on organisms		1
USZOP4	Practical based on all three courses		03	9

Syllabus for T. Y. B. Sc. Course: ZOOLOGY
Credit Based Semester and Grading System
- with a Choice for Additional Credits
(To be implemented from the Academic Year 2018-2019)

SEMESTER - VI					
THEORY					
COURSE NO.	COURSE CODE	UNIT	TOPICS	CREDITS	LECTURES/ WEEK
15	USZO601	I	Phylum Chordata: Group Protochordata and Group Euchordata I	2.5	1
		II	Group Euchordata II		1
		III	Group Euchordata III		1
		IV	Type study: Shark		1
16	USZO602	I	Enzymology	2.5	1
		II	Homeostasis		1
		III	Endocrinology		1
		IV	Animal Tissue Culture		1
17	USZO603	I	Molecular Biology	2.5	1
		II	Genetic Engineering		1
		III	Human Genetics		1
		IV	Bioinformatics		1
18	USZO604	I	Environment management	2.5	1
		II	Wildlife management		1
		III	Bioprospecting and Zoopharmacognosy		1
		IV	Zoogeography		1
				10	16
PRACTICAL					
USZOP06	Practicals based on all four courses			06	16
Total Number of Credits and Workload				16	32
Research Project					
USZOR02	Additional Credits (Choice Based / Optional)			1	No Workload for Teachers



Dombivli Shikshan Prasarak Mandal's
K. V. Pendharkar College of Arts, Science and Commerce (Autonomous)



Re-accredited with 'A' Grade (3.14 CGPA) by NAAC (3rd Cycle 2017)

1st Meet

No.: KVPC/2022-2023/

Date: 11th November, 2022

MEETING NOTICE

The First Board of Studies meeting of B.Com - Accounting and Finance of Dombivli Shikshan Prasarak Mandal's K. V. Pendharkar College (Autonomous) for the Academic Year 2022-2023 will be convened on **17th November, 2022 at 11.00 a.m.** via online mode. You are requested to please make it convenient to attend the same. The agenda of the meeting is attached herewith.

The link of the meeting will be shared through whatsapp

Dr. Suryakant V. Lasune
Principal



PRINCIPAL
K. V. PENDHARKAR COLLEGE OF
ARTS, SCIENCE & COMMERCE
DOMBIVLI (EAST)

Copy to:

1. All members of the Board of Studies
2. The Honourable Chairman, Dombivli Shikshan Prasarak Mandal

Address: Opposite MIDC Office, Dombivli East, Maharashtra – 421 203 | Contact: 02512473282
+91 8691022339 Email ID: dkvpcollege@gmail.com



Date: 11th November, 2022

AGENDA OF THE MEETING

(17th November 2022, 11.00 a.m.)

- Item 1.01: To review the minutes and Action Taken report of previous meeting.
- Item 1.02: To review of curriculum implemented in the year 2021-22
- Item 1.03: To review of Certificate Course implemented in the year 2021-22
- Item 1.04: To consider and explore options of providing additional credits
- Item 1.05: To discuss and approve change in Internal and External Evaluation Pattern
- Item 1.06: To discuss and explore options of foreign collaborations
- Item 1.07: To discuss any other item with the permission of the chairperson
- Item 1.08: Vote of Thanks

Dr. Suryakant V. Lasune
Principal



PRINCIPAL
K. V. PENDHARKAR COLLEGE OF
ARTS, SCIENCE & COMMERCE
DOMBIVLI (EAST)



Dombivli Shikshan Prasarak Mandal's
K. V. Pendharkar College of Arts, Science and Commerce (Autonomous)
Re-accredited with 'A' Grade (3.14 CGPA) by NAAC (3rd Cycle 2017)
BOARD OF STUDIES (ACCOUNTING AND FINANCE)



ACTION TAKEN REPORT

Agenda No.	Agenda	Points Discussed	Actions Taken
1.02	To consider and approve proposed syllabus of Second Year	Chairperson discussed the course structure of Semester III and Semester IV.	The approved syllabus have been implemented for the S.Y.B.A.F. from the Academic Year 2022-23
1.03	To consider and approve Internal and External Evaluation system	Resolved that evaluation pattern i.e. 60:40 as approved by BOS to be continued.	Approved evaluation pattern has been applied to all the semester.
1.04	To discuss any other item with the permission of the chairperson	Chairperson discussed a new certificate course on Income Tax Return named as 'E-Filing of Income Tax Returns'.	Course completed in the month of May, total students enrolled for course is 42, duration of that course is 30 hours.


Mr. Premkumar Nair
Chairperson
BoS - Accounting & Finance

D.S.P.M.'s
K. V. Pendharkar College of Arts, Science and Commerce (Autonomous), Dombivli (E)

Minutes of the Board of Studies (Accounting and Finance)
held on 17th November, 2022 (virtually) at 11.00 am

Members Present:

Sr. No.	Composition	Members
1.	Head of the department Concerned (Chairman).	Mr. Premkumar Nair.
2.	The entire faculty of each Specialization	(Vice-Principal) Ms. Ashwini Bagkar Ms. Sweta Patel Ms. Bhakti Pawaskar Ms. Shruti Bhosle Ms. Prachi Jadhav Ms. Anila Alakkal Ms. Jyoti Diwedi Mr. Rakesh Chavan
3.	Experts in the subject from outside the college to be nominated by the Academic Council	Mrs. Sushma Ahire (SNDT University, Mumbai)
4.	One expert to be nominated by the vice chancellor from a panel	CA (Dr.) Kajal Vadhrya (CHM, College)
5.	One Representative from Industry/ Corporate Sector/ Allied area relating to Placement.	CA Suket Seth.
6.	One Post graduate Meritorious Alumnus to be Nominated by the Principal.	Mr. Preshit Deshmukh.

Leave of absence was granted to Dr. Jyoti Thakur

The meeting started at 11 a.m. and was chaired by the Chairperson of Board of Studies (Accounting & Finance) and Head of Department Mr Premkumar Nair.

Ms Bhakti Pawaskar welcomed the Chairperson of the meeting, Experts nominated by Academic council – Mrs. Sushma Ahire, expert nominated by the vice-chancellor – Dr. CA Kajal Vadhrya, Representative from Industry- CA Suket Seth, Post graduate Meritorious Alumnus – Mr. Preshit Deshmukh and all the other members of the Board of studies.

The items on the agenda taken up for discussion were as under:-

Item 1.01 To review the minutes and Action Taken report of previous meeting

Mr. Premkumar Nair gives brief introduction to the BOS members about the new members of the committee and about the departmental profile. Mr. Premkumar Nair started by reviewing the minutes of previous meeting which was supported by Action Taken report. E-filing of income tax return certificate course is already implemented.

Proposed by: CA Kajal Vadhrya

Seconded by: Ms. Sushma Ahire

Item 1.02 To review the curriculum implemented in the year 2021-22

On the 1st BOS meeting revised the syllabus of FYBAF and that revised syllabus implemented in the year 2021-22, after completion of Sem 1, the result is 96% which is conducted on offline platform and Sem 2 is conducted online platform. At a time of conducting of this exams faced some problems like students' less intellectual due to HSC exams conducted online, other than this not faced any kind problem for implementing this curriculum.

Resolution: FYBAF syllabus revision is a successful attempt which should be continued

Proposed by: CA Suket Seth

Seconded by: CA Kajal Vadhrya

Item 1.03 To review of certificate course implemented in the year 2021-22

Mr Premkumar Nair reviewed the GSTR certificated course. This course started in the year of 2022-23. Total enquiry received from students is 73 and in those 42 students enrolled for the same. Out of 42 students 38 students passed, rest of the students those failed to clear this exam is the only reason that lack of attendance. Course is successfully completed.

Resolution: Certificate course on GST accounts assistant is a successful attempt which should be continued

Proposed by: CA Suket Seth

Seconded by: CA Kajal Vadhrya

Item 1.04 To consider and explore options of providing additional credit

Mr. Premkumar Nair proposed 2 additional credit points in each semester from FY to TY in which students can do any inter disciplinary course, research paper presentation, and social activities. Mr. Premkumar Nair asked opinion about the credit points to the other BOS members. CA Kajal Vadhrya suggest about the study based project and CA Suket Seth suggest about the social activities also discussed how the parameters sets for this.

Resolution: Additional Credit of two per semester should be provided

Proposed by: Ms. Sushma Ahire

Seconded by: CA Suket Seth

Item 1.05 To discuss and approve change in Internal and External Evaluation Pattern

Mr Premkumar Nair discussed about the paper pattern, as there is no change in 60:40 pattern. Recommendation from academic council about 40 marks internal examination in that 20 marks is written exam, the bifurcation of 20 marks is 10 marks objectives and 10 marks short questions, so that from next AY it is proposed for the withdrawal of objectives instead of that proposed for the short question and long question and other 20 marks for the assignment. Mr Premkumar Nair asked the members about the suggestions. There is also a proposal for an external evaluation exam pattern, in that case no change in practical papers pattern but for the theory papers it is suggested that, there are total five questions, in that question number one is objectives and rest four short questions of 12 marks each in that students have to attempt any 2 sub question out of 3 sub question. This is the proposal of evaluation pattern.

Evaluation Pattern:

Type of evaluation	Activity	Type of Questions	Marks Weightage	Marks Weightage
Internal evaluation Maximum Marks 40	Class test (theory & practical)	Short length Questions (Any 2 out of 3)	10	25%
		Long length Questions (Any 1 of 2)	10	25%
	Assignment	Project/ Assignments, case studies	10	25%
	Viva - voce	Viva	05	12.5%
	Attendance & Active Participation	Attendance	05	12.5%
		Total	40	

For Practical Paper:

Type of Evaluation	Types of Question	Marks
External [60 Marks]	Q.1 Objective Questions* (*Multiple Choice/ True or False/ Match the Columns/ Fill in the Blanks) (1 Mark Each) All Modules	15
	Q.2 Full length Practical Question OR Q.2 Full length Practical Question	15
	Q.3 Full length Practical Question OR Q.3 Full length Practical Question	15
	Q. 4 Short notes (any 3 out of 5) OR Q. 4 Full length Practical Question	15

Note: Full length questions of 15 marks each can be subdivided in two sub-questions of '08' & '07' marks each.

For Theory Paper:

Type of Evaluation	Types of Question	Marks
External [60 Marks]	Q.1 Objective Questions* (*Multiple Choice/ True or False/ Match the Columns/ Fill in the Blanks) (1 Mark Each) All Modules	12
	Q.2 Full length Question OR Q.2 Full length Question	12
	Q.3 Full length Questions OR Q.3 Full length Question	12
	Q. 4 Full length Question OR	12

	Q. 4 Full length Question	
	Q. 5 Full length Question OR Q. 5 Full length Question	12

Note: Full length questions of 15 marks each can be subdivided in two sub-questions of 06 marks each.

Resolution: New evaluation pattern can be applied from the next academic year.

Proposed by: CA Kajal Vadhrya

Seconded by: CA Suket Seth

Item 1.06 To discuss and explore options of foreign collaborations

There is a foreign university member in the financial accounting and cost accounting syllabus committee. Mr Premkumar Nair also emphasis to have a foreign university member for all subjects so that the curriculum framing can be done more appropriately. Mr Premkumar Nair also asked the BOS members about the suggestions. CA Kajol Vadhrya suggested for the MoU with foreign university or the alumni who is doing further study in the foreign university that alumni can take guest lecture. Ms Sushma Ahire suggested about the webinars.

Resolution: MoU must be made with foreign universities and/ or alumni

Proposed by: CA Kajal Vadhrya

Seconded by: CA Suket Seth

Item 1.07 To discuss any other item with the permission of the chairperson

Mr Premkumar Nair gives quick brief on the current years revision of syllabus subjects, and also took the approval from BOS about an Audit as a new subject. Syllabus committee members are already working on it, once the syllabus proposal file prepared and syllabus committee gave the approval about it, then it will proposed against the BOS.

Resolution: Revision of TYBAF syllabus can be initiated.

Proposed by: CA Kajal Vadhrya

Seconded by: CA Suket Seth

Item 1.08 Vote of thanks

Besides the above points no other point was discussed. The meeting concluded at 11.30 am. Ms Sweta Patel proposed the formal vote of thanks at the end of the meeting.



(Mr. Premkumar Nair)

Chairperson

Board of Studies (Accounting and Finance)



No.: KVPC/2022-2023/

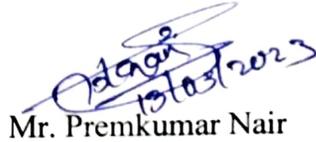
Date: 13th March, 2023

2nd Meeting

MEETING NOTICE

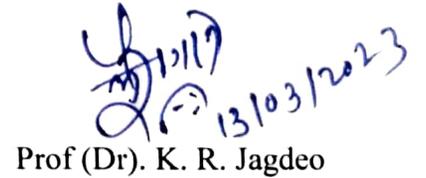
The Second Board of Studies meeting of B.Com - Accounting and Finance of Dombivli Shikshan Prasarak Mandal's K. V. Pendharkar College (Autonomous) for the Academic Year 2022-2023 will be convened on **18th March, 2023 at 12.00 p.m.** via online mode. You are requested to please make it convenient to attend the same. The agenda of the meeting is attached herewith.

The link of the meeting will be shared through whatsapp


13/03/2023

Mr. Premkumar Nair
Chairperson

Board of Studies - Accounting & Finance


13/03/2023

Prof (Dr). K. R. Jagdeo
I/C Principal

Copy to:

1. All members of the Board of Studies
2. The Honourable Chairman, Dombivli Shikshan Prasarak Mandal



Date: 13th March, 2023

AGENDA OF THE MEETING

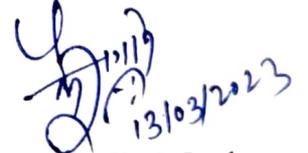
(18th March 2023, 12.00 p.m.)

- Item 1.01: To review the minutes and Action Taken report of previous meeting.
- Item 1.02: To consider and approve proposed syllabus of Third Year of B.A.F.
- Item 1.03: To consider and approve Internal and External Evaluation system
- Item 1.04: To discuss any other item with the permission of the chairperson
- Item 1.05: Vote of Thanks


13/03/2023

Mr. Premkumar Nair
Chairperson

Board of Studies - Accounting & Finance


13/03/2023

Prof (Dr). K. R. Jagdeo
I/C Principal

The Chairperson started by reviewing the minutes of previous meeting which was supported by Action Taken report. As per 2nd agenda discussed the FYBAF sem I and II syllabus implementation, also discussed the GSTR Certificate course. Post review, all Board of Studies members granted their approval on the minutes and Action Taken report.

Resolution:

Resolved that the ,minutes of the last meeting of Board of Studies held on 17th November, 2022 be passed by the members.

Proposed by: CA Suket Seth

Seconded by: Ms. Sushma Ahire

Item 1.02 To consider and approve proposed syllabus of Third Year of BAF

Chairperson Mr. Premkumar Nair elaborated the course structure of TYBAF of Semester V and VI followed by presenting the composition of all Syllabus Framing Committees including Foreign University member. Proposed Course Structure of TYBAF is as follows.

Semester V

Financial Accounting – V
 Financial Accounting – VI
 Cost Accounting III
 Financial Management II
 Taxation - III (Indirect Taxes - I)
 International Finance

Semester – VI

Financial Accounting – VII
 Taxation - IV (Indirect Taxes - II)
 Cost Accounting IV
 Audit II (Techniques and Procedures)
 Security Analysis and Portfolio Management
 Project Work

After presenting the course structure, proposed syllabus was presented by convenors as designed by the Syllabus Framing Committees. Each course consisted of learner space innovative pedagogy as suggested by the committee members.

Resolution:

Resolved that the proposed syllabus for Third Year BAF is approved by the BOS.

Proposed by: CA Suket Seth

Seconded by: Ms. Sushma Ahire

Item 1.03 To Consider and approve Internal and External Evaluation System

BOS Chairperson presented the proposed evaluation pattern. Evaluation pattern will be 40 marks for internal evaluation consisting of Class test, Assignment, Live Project, Seminar and workshop participation and class participation and External evaluation will be 60 marks consisting Objectives, long and short answers.

Evaluation Pattern:

Type of evaluation	Activity	Type of Questions	Marks Weightage	Marks Weightage
Internal evaluation Maximum Marks 40	Class test (theory & practical)	Short length Questions (Any 2 out of 3)	10	25%
		Long length	10	25%

	Questions (Any 1 of 2)		
Assignment	Project/ Assignments, case studies	10	25%
Viva - voce	Viva	05	12.5%
Attendance & Active Participation	Attendance	05	12.5%
	Total	40	

For Practical Paper:

Type of Evaluation	Types of Question	Marks	Weightage
External [60 Marks]	Q.1 Objective Questions* (*Multiple Choice/ True or False/ Match the Columns/ Fill in the Blanks) (1 Mark Each) All Modules	15	25%
	Q.2 Full length Practical Question OR Q.2 Full length Practical Question	15	25%
	Q.3 Full length Practical Question OR Q.3 Full length Practical Question	15	25%
	Q. 4 Short notes (any 3 out of 5) OR Q. 4 Full length Practical Question	15	25%

Note: Full length questions of 15 marks each can be subdivided in two sub-questions of '08' & '07' marks each.

For Theory Paper:

Type of Evaluation	Types of Question	Marks	Weightage
External [60 Marks]	Q.1 Objective Questions* (*Multiple Choice/ True or False/ Match the Columns/ Fill in the Blanks) (1 Mark Each) All Modules	12	20%
	Q.2 Full length Question OR Q.2 Full length Question	12	20%
	Q.3 Full length Questions OR Q.3 Full length Question	12	20%
	Q. 4 Full length Question OR Q. 4 Full length Question	12	20%
	Q. 5 Full length Question OR Q. 5 Full length Question	12	20%

Note: Full length questions of 12 marks each can be subdivided in two sub-questions of 06 marks each.

Proposed Passing Pattern

Theory

Candidate can be declared pass if

- He/she gets minimum 40% marks in total (40 out of 100)
- He/she must get minimum 30% marks
- In internal examination (12 out of 40)
- In external examination (18 out of 60)

Project

Candidate can be declared pass if

- Minimum 40% of maximum marks

New passing pattern is proposed to be applied from the next academic year 2022 – 23.

Resolution:

It is resolved that, the new evaluation pattern discussed in the meeting, passed by the Board of Studies members.

Proposed by: CA Suketh Seth

Seconded by: Ms. Sushma Ahire

Item 1.04 To discuss any other item with the permission of the chairperson

From the AY 2023-24 proposing a new Post Graduate Programme namely Master of Commerce in Accounting and Finance that will be a two years programme with four semesters. Proposed course structure for Semester I & II is as follows

Course structure

Semester I

Cost Accounting (Cost Management and Decision Making)
Corporate Governance and Corporate Social Responsibility
Operational Research
Company Law

Semester II

Corporate Restructuring
Taxation I (Direct Tax)
Alternative Investment
Audit

Resolution:

Master of Commerce in Accounting and Finance course structure proposed in front of BOS.

Proposed by: CA (Dr.) Kajal Vadhrya

Seconded by: CA Suket Seth

The meeting was adjourned to 25th March, 2023.

Adjourned Meeting

Chairperson Mr. Premkumar Nair elaborated the course structure of Master in Accounting and Finance of Semester I and II followed by presenting the structure of all Syllabus Framing Committee members including Foreign University member.

Ms Ashwini Bagkar the convenor of Accounting (Cost Management and Decision Making) presented the syllabus and evaluation pattern as 60:40.

Mr. Premkumar Nair, the chairperson presented the syllabus of all other subjects and evaluation pattern as 60:40.

The members unanimously approved and passed the syllabus and evaluation pattern as 60:40 for Masters in Accounting and Finance.

Item 1.05 Vote of thanks

Besides the above points no other point was discussed. The meeting concluded at 01.00 pm.

Ms Sweta Patel proposed the formal vote of thanks at the end of the meeting.



(Mr. Premkumar Nair)

Chairperson

Board of Studies (Accounting and Finance)

Dombivli Shikshan Prasarak Mandal's
K.V. Pendharkar College (Autonomous), Dombivli
Board of Studies (Accounting and Finance)

Action Taken Report

Date : 17th November,2022

Agenda No.	Agenda	Points Discussed	Actions Taken
1.02	To review the curriculum implemented in the year 2021-22	On the 1 st BOS meeting revised the syllabus of FYBAF	Syllabus implemented in the year 2021-22, after completion of Sem 1, the result is 96% and Sem 2 is online. Accounting and finance department syllabus revision is a successful attempt.
1.03	To review of certificate course implemented in the year 2021-22	GSTR certificated course is discussed.	Total enquiry received from students is 73 and in those 42 students enrolled for the same. Out of 42 students 38 students passed.
1.04	To consider and explore options of providing additional credit	Proposed 2 additional credit points in each semester from FY to TY in which students can do any inter disciplinary course, research paper presentation, and social activities.	Not applied
1.05	To discuss and approve change in Internal and External Evaluation Pattern	Changes in internal and external evaluation pattern	Not applied
1.06	To discuss and explore options of foreign collaborations	MoU with foreign university or the alumni who is doing further study in the foreign university that alumni can take guest lecture.	In working
1.07	To discuss any other item with the permission of the chairperson	TYBAF syllabus revision	In working



Dombivli Shikshan Prasarak Mandal's
K. V. Pendharkar College of Arts, Science and Commerce (Autonomous)
Re-accredited with 'A' Grade (3.14 CGPA) by NAAC (3rd Cycle 2017)



No.: KVPC/2022-23/

Date: 02nd May, 2023

3rd Meeting

MEETING NOTICE

The Third Board of Studies meeting of B.Com - Accounting and Finance of Dombivli Shikshan Prasarak Mandal's K. V. Pendharkar College (Autonomous) for the Academic Year 2022-2023 will be convened on **08th May, 2023 (Monday) at 12.00 noon**. You are requested to please make it convenient to attend the same. The agenda of the meeting is attached herewith.

Mr. Premkumar Nair

Chairperson

Board of Studies - Accounting & Finance

Copy to:

1. All members of the Board of Studies
2. The Honourable Chairman, Dombivli Shikshan Prasarak Mandal



Date: 02nd May, 2023

AGENDA OF THE MEETING

(08th May, 2023, 12.00 noon)

- Item 1.01: To review the minutes and Action Taken report of previous meeting.
- Item 1.02: To discuss on implementation of NEP 2020 in First year B.Com (Accounting & Finance) and First year M.Com (Accounting & Finance)
- Item 1.03: To discuss any other item with the permission of the chairperson
- Item 1.04: Vote of Thanks

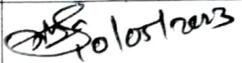
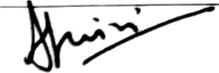
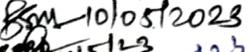
Mr. Premkumar Nair
Chairperson

Board of Studies - Accounting & Finance

Dombivli Shikshan Prasarak Mandal's
K. V. Pendharkar College of Arts, Science and Commerce (Autonomous), Dombivli (E)

Minutes of the 3rd Board of Studies (Accounting and Finance) meeting
held on 08th May, 2023 at 12 noon

Members Present:

Sr. No.	Composition	Members	Signature
1.	Head of the department Concerned (Chairperson).	Mr. Premkumar Nair.	
2.	The entire faculty of each Specialization	(Vice-Principal) Ms. Ashwini Bagkar Ms. Sweta Patel Ms. Bhakti Pawaskar Ms. Shruti Bhosle Ms. Prachi Jadhav Ms. Anila Alakkal Ms. Jyoti Dwivedi Mr. Rakesh Chavan	       
3.	Experts in the subject from outside the college to be nominated by the Academic Council	Mrs. Sushma Ahire (SNDT University, Mumbai)	
4.	One expert to be nominated by the vice chancellor from a panel	CA (Dr.) Kajal Vadhrya (CHM, College)	
5.	One Representative from Industry/ Corporate Sector/ Allied area relating to Placement.	CA Suket Seth.	
6.	One Post graduate Meritorious Alumnus to be Nominated by the Principal.	Mr. Preshit Deshmukh.	

Leave of absence was granted to Dr. Jyoti Thakur

The meeting started at 12 noon and was chaired by the Chairperson of Board of Studies (Accounting & Finance) Mr Premkumar Nair.

Mr. Premkumar Nair welcomed the expert nominated by Academic council – Mrs. Sushma Ahire, expert nominated by the vice-chancellor – Dr. CA Kajal Vadhrya, representative from Industry- CA Suket Seth, Post graduate Meritorious Alumnus – Mr. Preshit Deshmukh and all the other members of the Board of studies.

The items on the agenda taken up for discussion were as under:-

Item 1.01 To review the minutes and Action Taken report of previous meeting. The Chairperson started by reviewing the minutes of the previous meeting which was supported by the Action Taken report.

Resolution :

Post review, all the members of the Board of Studies gave their approval on the Minutes of the Meeting and Action Taken report.

Proposed by: Ms. Bhakti Pawaskar

Seconded by: Ms. Anila Alakkal

Item 1.02 To discuss on implementation of NEP 2020 in First year B.Com (Accounting & Finance) and First year M.Com (Accounting & Finance).

Mr. Premkumar Nair opened up the discussion by explaining the requirements of NEP 2020 and its various baskets in accordance to which the credit structure has to be formed.

Chairperson's explanation was in reference to the report of Kulkarni Committee and NEP 2020 Directives issued by Higher and Technical Education Department – Maharashtra dated 20th April 2023

Resolution: After detailed deliberation all chairs gave their approval on implementation of NEP 2020 on First year B.Com (Accounting & Finance) and First year M.Com (Accounting & Finance)

Proposed by: Ms. Ashwini Bagkar

Seconded by: Ms. Sweta Patel

After deliberation and approval of chairs the 3rd BoS (Accounting & Finance) meeting was adjourned sine die

Item 1.04: Vote of Thanks

The meeting concluded at 01:00 p.m. The Chairperson proposed a formal vote of thanks and adjourned the meeting.



(Mr. Premkumar Nair)

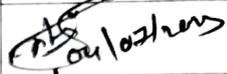
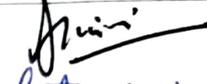
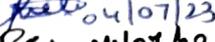
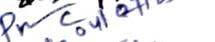
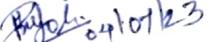
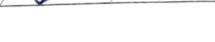
Chairperson

Board of Studies (Accounting and Finance)

Dombivli Shikshan Prasarak Mandal's
K. V. Pendharkar College of Arts, Science and Commerce (Autonomous), Dombivli (E)

Minutes of the 3rd Board of Studies (Accounting and Finance) adjourned meeting held on
 01st July, 2023 at 12 noon

Members Present:

Sr. No.	Composition	Members	Signature
1.	Head of the department Concerned (Chairperson).	Mr. Premkumar Nair.	
2.	The entire faculty of each Specialization	(Vice-Principal) Ms. Ashwini Bagkar Ms. Sweta Patel Ms. Bhakti Pawaskar Ms. Shruti Bhosle Ms. Prachi Jadhav Ms. Anila Alakkal Ms. Pranali Rajoli	      
3.	Experts in the subject from outside the college to be nominated by the Academic Council	Mrs. Sushma Ahire (SNDT University, Mumbai)	
4.	One expert to be nominated by the vice chancellor from a panel	CA (Dr.) Kajal Vadhrya (CHM, College)	
5.	One Representative from Industry/ Corporate Sector/ Allied area relating to Placement.	CA Suket Seth.	
6.	One Post graduate Meritorious Alumnus to be Nominated by the Principal.	Mr. Preshit Deshmukh.	

Leave of absence was granted to Dr. Jyoti Thakur

The meeting continued from 12 noon and was chaired by the Chairperson of Board of Studies (Accounting & Finance) Mr Premkumar Nair, who welcomed all the members in the meeting

The items on the agenda taken up for discussion were as under:-

Item 1.02 To discuss and approve Credit structure, course structure and proposed syllabus of First year B.Com (Accounting & Finance) as per NEP 2020

Mr Premkumar Nair opened the discussion by referring the credit structure of B.Com (Accounting and Finance) as per Mumbai University. As per Mumbai University B.com (Accounting and Finance) is 3 years programme but after implementation of NEP 2020 it will be a 4 years Honours programme. Following is the proposed credit structure of B.Com (Accounting and Finance)

Semester	Credit
Semester I	22
Semester II	22
Semester III	22

Semester IV	22
Semester V	22
Semester VI	22
Semester VII	22
Semester VIII	22

Chairperson elaborated on the course structure of First Year B.Com (Accounting and Finance) of Semester I and II along with the credits .

As per NEP 2020, 1 credit indicates 15 hours of teaching.

After presenting the course structure, proposed syllabus of each course of Semester I and Semester II was presented by the chairperson.

Resolution:

After detailed deliberation it was resolved that the proposed syllabus for First Year Semester I & Semester II of B.com (Accounting and Finance) (NEP) is approved and should be implemented from the Academic Year 2023-24.

Proposed by: CA Suket Seth

Seconded by: Ms. Sushma Ahire

Item 1.03: To discuss and approve Credit structure, course structure and proposed syllabus of First year M.Com (Accounting & Finance) as per NEP 2020

Mr Premkumar Nair presented the credit structure of M.Com (Accounting and Finance) as per NEP 2020 as given below:

Semester	Credit
Semester I	22
Semester II	22
Semester III	22
Semester IV	22

Chairperson elaborated the course structure of First Year M.Com (Accounting and Finance) of Semester I and II along with the credits After presenting the course structure, proposed syllabus of each course of Semester I and Semester II was presented by the chairperson

Resolution:

After detailed deliberation it was resolved that the proposed syllabus for First Year of M.com (Accounting and Finance) (NEP) for Semester I & Semester II is approved and should be implemented from the Academic Year 2023-24.

Proposed by: Mr. Preshit Deshmukh

Seconded by: Ms. Sushma Ahire

Item 1.04: To discuss and approve the syllabus of Open Electives provided by the Department.

Chairperson put up the proposal that the department of Accounting and Finance shall offer two open electives with two credits each of 30 hours. In the First term the department of Accounting and Finance proposing to offer Direct tax as an open elective and in the Second term the department of accounting and finance is proposing to offer Direct Tax II as open elective course. Chairperson also explained in detail the proposed syllabus of the open electives.

Resolution:

After detailed deliberation it was resolved that the proposed syllabus for Open Electives offered by the Department of Accounting and Finance is approved and shall be offered to other departments or Programmes from the Academic Year 2023-24.

Proposed by: Ms. Sushma Ahire

Seconded by: CA Suket Seth

Item 1.05: To discuss any other item with the permission of the chairperson

The chairperson asked the chairs to give the right to the Chairperson of Board of Studies (Accounting & Finance) to make any changes in the credit structure, course structure, syllabus, evaluation pattern or any other matters if needed as per the NEP circulars for the benefit of students.

Resolution:

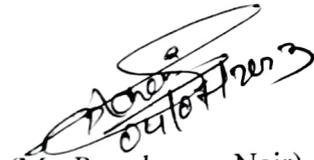
After detailed deliberation it was resolved that the Chairperson of Board of Studies (Accounting & Finance) can make any changes for the benefit of student in accordance with circulars of Government NEP, UGC, and University of Mumbai.

Proposed by: Ms. Sushma Ahire

Seconded by: CA Suket Seth

Item 1.06: Vote of Thanks

The meeting concluded at 1 pm. Mr Premkumar Nair proposed the formal vote of thanks at the end of the meeting.



(Mr. Premkumar Nair)

Chairperson

Board of Studies (Accounting and Finance)

BUSINESS ECONOMICS - II
Course Code: PUCAFIII22 - 357

MODULES AT GLANCE:

Unit No.	Modules	No. of Lectures	Credit Points
1.	Module 1: Introduction to Macroeconomics	15	03
2.	Module 2: Money, Inflation and Monetary Policy	15	
3.	Module 3: Constituents of Fiscal Policy	15	
4.	Module 4: Open Economy: Theory and Issues of International Trade	15	
Total		60	

OBJECTIVES:

- Providing basic and practical knowledge about macroeconomics helps to understand and analyze the economy as a whole.
- To inculcate understanding relating to Functioning of Economy.
- To give practical knowledge through graphs.

LEARNING OUTCOMES:

- 1) Students can get wide knowledge about macroeconomic concepts and graphical explanations.
- 2) Students will get aware of the concept of money and the importance of money in an economy
- 3) Students will get information about the role of government in the economy
- 4) Students can get a holistic understanding of international trade.

SYLLABUS:

Unit No.	Module/Units	No. of Lectures
1.	<p>Module 1: Introduction to Macroeconomics</p> <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 function - effects of Investment Multiplier on Changes in Income and Output. 	15
2.	<p>Module 2: Money, Inflation and Monetary Policy</p> <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 ● Monetary policy: Meaning, objective and instruments, Stagflation, Philips curve 	15

<p>3.</p>	<p>Module 3: Constituents of Fiscal Policy</p> <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 the 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. 	<p>15</p>
<p>4.</p>	<p>Module 4: Open Economy: Theory and Issues of International Trade</p> <ul style="list-style-type: none"> ● The Basis of International Trade: Ricardo’s Theory of comparative cost advantage - The 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 a BOP. ● Foreign Exchange and Foreign Exchange Market: Meaning of foreign exchange market Spot and Forward rate of Exchange. ● Role of Central Bank in foreign exchange rate management, FERA and FEMA Act. ● Exchange Currency appreciation and currency depreciation, currency convertibility. 	<p>15</p>

LEARNER'S SPACE:

1. Students can go for bank visits to understand the actual working of commercial bank
2. Students can engage in discussion on case studies
3. Students can do detailed research on current economic topics
4. Students can do analysis and watch the presentation of Union Budget
5. Students can do a field visit to exporting companies for understanding their working process

JOB ORIENTED/SKILL DEVELOPMENT TOPICS:

1. Fiscal and Monetary Policy framing and implementation
2. Statistician and economic advising
3. Investment advising

RECOMMENDED REFERENCES BOOKS:

1. Ackley. G (1976), Macro-Economic Theory and Policy, Macmillan Publishing Co. New York
2. Ahuja. H.L., Modern Economics — S.Chand Company Ltd. New Delhi.
3. Bhatia H.L.: Public Finance. Vikas Publishing House Pvt. Ltd
4. Dornbush, Fisher and Startz, Macroeconomics, Tata-Mac Graw Hill, New Delhi.
5. Friedman Hilton (1953) Essays in Positive Economics, University of Chicago Press, London
6. Francis Cherunilam International Economics Tata McGraw – Hill Publishing co.Ltd.New Delhi.
7. Gregory .N. Mankiw, Macroeconomics, Fifth Edition (2002) New York: Worth Publishers
8. Jhingan, M.L., Principles of Economics — Vrinda Publications (P) Ltd.
9. Musgrave, R.A and P.B. Musgrave (1976): Public Finance in Theory and Practice, Tata McGraw Hill, Kogakusha, Tokyo
10. Shapiro, E (1996), Macro-Economic Analysis, Golgotha Publication, New Delhi.
11. Singh. S.K. (2014): Public finance in Theory and Practice, S.Chand &co Pvt Ltd, New Delhi
12. Salvatore Dominick – International Economics – John Wiley & sons, Inc Singapore
13. Vaish. M.C. (2010) Macro-Economic Theory 14th edition, Vikas Publishing House(P)Ltd

RECOMMENDED ICT BACKUP: -

1. [https://en.wikipedia.org › wiki › Inflation](https://en.wikipedia.org/wiki/Inflation)
2. [https://en.wikipedia.org › wiki › Monetary_policy_](https://en.wikipedia.org/wiki/Monetary_policy)
3. **Highlights of Union Budget 2021 – YouTube**
4. [https://www.youtube.com › watch](https://www.youtube.com/watch)
5. [https://en.wikipedia.org › wiki › Balance_of_payments](https://en.wikipedia.org/wiki/Balance_of_payments)
6. [https://en.wikipedia.org › wiki › Foreign_portfolio_inv...](https://en.wikipedia.org/wiki/Foreign_portfolio_inv...)

LIST OF MOOC PROGRAMS:

1. DOANEX (Platform edX) – Macroeconomics – The Basics
2. The University of Queensland (Platform edX) – International Economics

EVALUATION SCHEME

EXAMINATION PATTERN

External Exam: 60 Marks

Internal Exam: 40 Marks

External Exam Paper Pattern:

Total Marks: 60

Duration: 2 hours

Question No.	Particulars	Marks
Q.1	Q.1 Objective Questions* (*Multiple Choice/ True or False/ Match the Columns/ Fill in the Blanks) (1 Mark Each) All Modules	15
Q.2	Q.2 Full-length theory Question OR Q.2 Full-length theory Question	15
Q.3	Q.3 Full-length theory Question OR	15

	Q.3 Full-length theory Question	
Q.4	Q.4 Full-length theory Question OR Q.4 Short notes (any 3 out of 5)	15

Note: Full-length questions of 15 marks each can be subdivided into two sub-questions of '08' & '07' marks each

Internal Exam Pattern: 40 Marks

Sr.no	Particulars	Marks
1	Class Test (Theory) Objective Questions (*Multiple Choice/ True or False/ Match the Columns/ Fill in the Blanks) Answer in One Sentence (Concept-based Questions) Answer in Brief	20
2	Assignments Live Projects, Open Book Tests, Home Assignments, Presentations, Survey, Seminars & Workshops	20

SEMESTER-I
MEDIA, GENDER AND CULTURE
Course Code: MM23102MM

COURSE OUTCOME:

CO1. Learners will become Gender-sensitive Indicators for Media contributing to gender equality

CO2. Learners will understand about women's empowerment in all forms of media

CO3. Learners will learn about Media consumption

MODULE AT A GLANCE

Sr. No.	Module/Units	No of lectures	Credit Points
1.	Introduction to Cultural Studies	10	02
2.	Media: Gender and Culture	10	
4.	Globalization and Media Culture	10	
	Total	30	

COURSE CODE	PAPER TITLE	CREDITS	MARKS
MM23102MM	MEDIA, GENDER & CULTURE	02	100
Lectures per week			03
Module	Topics	Details	Lectures
I	Introduction to Cultural Studies		10
	Evolution, Need, Concepts and Theories	Features of cultural studies, Need and significance of cultural studies and media Concepts related to culture- Acculturation, enculturation, ethnocentrism, cultural relativism, cultural shock and its relevance in media	
II	Media: Gender and Culture		10
	1. Construction, Commodification, Impact and Recent Trends	Culture, industry and media- commodification, memes, representation, articulation, popular culture, power, cyber culture Media and its impact on the cultural aspect of the society. Culture industry and communication - with reference to film, TV, social media, advertisements etc.,	
	2. Role and Influence of Media	The influence of media on views of gender (theme, under representation, stereotypes, women and men, stereotype images, roles etc.) Gender equality and media Gender issues in news media (TV, radio, newspapers & online news)	
III	Globalization and Media Culture		10
	Global, Local, Consumer and The Recent Trends	1. Media imperialism 2. Globalization and Local culture- Issues and Perspectives, threat to regional and local identities, Impact of global culture and its relevance in media and gender 3. Consumer culture and media in the era of globalization. 4. Digital Media culture: Recent trends and challenges	

SEMESTER-I
(VEC) BUSINESS ENVIRONMENT

Course Code: MM23108VE

COURSE OUTCOME:

CO1: Learners will understand the term “Business environment” represents the sum of all the individuals, institutions, competing organizations, government, courts, media, investors, and other factors outside the power of the business organizations

CO2: Will understand how business environment affects the business performance.

CO3: Will learn changes in government economic policies, rapid changes in technology, changes in consumer tastes and preferences, increasing market competition, etc.

CO4: Will develop critical analysis about the business organizations’ power and how it affects the business performance immensely.

CO5: This subject helps to gain idea about the factors affecting business world at internal and external level, local and global level.

CO6: Students learn the effects of Liberalisation, Privatisation and Globalisation on the scope of business.

CO7: Students will understand the environmental issues related to the business practices and would feel more responsible towards protection of Nature while being in Business.

MODULE AT A GLANCE

Sr. No.	Modules	No of Lectures	Credit points
1	Introduction to Business Environment	06	02
2	Political and Legal Environment	12	
3	Social Cultural Environment, Technological Environment, Competitive Environment and International Environment	12	
	Total	30	

COURSE CODE	PAPER TITLE	CREDITS	MARKS
MM23108VE	BUSINESS ENVIRONMENT	02	100
Lectures per week	03		

Module	Topics	Details	Lectures
I	Introduction to Business Environment		06
		<ol style="list-style-type: none"> 1. Business: Meaning, Definition, Nature & Scope 2. Business Environment: Meaning, Characteristics, Scope and Significance, Components of Business Environment 3. Internal Environment: Value system, Mission, Objectives, Organizational Structure, Organizational Resources, Company Image, Brand Equity 4. External Environment: Firm, customers, suppliers, distributors, Competitors, Society 	
II	Political and Legal Environment		12
		<ol style="list-style-type: none"> 1. Political Institutions: Role of government in 2. Business, Legal framework in India 3. Economic environment: economic system and economic policies. Concept of Capitalism, Socialism and Mixed Economy 4. Impact of business on Private sector, Public sector and Joint sector. 5. Waste management measures for disposing industrial Waste, Waste water treatment before disposal in water bodies, Adopting pollution control measures, Installation of Pollution control devices. 6. The importance and ways to recycle the wastes (solids and liquid) in systematic way to achieve 'Go Green' concept in the Business world. 	
III	Social Cultural Environment, Technological Environment, Competitive Environment and International Environment		12

		<ol style="list-style-type: none">1. Social and Cultural Environment: Nature, Impact of foreign culture on Business, Traditional Values and its Impact,2. Social Audit - Meaning and Importance of Corporate Governance and Social Responsibility of Business3. Technological environment: Features, impact of technology on Business4. Competitive Environment: Meaning, Michael Porter's Five Forces Analysis, Competitive Strategies5. Challenges faced by International Business and Investment Opportunities for Indian industry	
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SEMESTER I
(IKS)FOUNDATION COURSE- I
Course Code: MM23109IK

COURSE OUTCOME:

CO1: The students would have increased awareness and accountability as a citizen.
CO2: It would bring increased competitiveness and empathy among the students.
CO3: To make students aware about the basic knowledge relating to Human rights, environment and several problems associated with Indian society to make students more known regarding stress and conflicts.

MODULE AT A GLANCE

Sr. No.	Module/Units	No of Lectures	Credit Points
1.	Globalization and Indian Society	10	02
2.	Human Rights	10	
3.	Ecology	10	
	Total	30	

COURSE CODE	PAPER TITLE	CREDITS	MARKS
MM23109IK	FOUNDATION COURSE - I	02	100
Lectures per week	03		

Module	Topics	Details	Lectures
I	Globalization and Indian Society		10
		<ol style="list-style-type: none"> 1. Understanding the concepts of liberalization, privatization and globalization 2. Growth of information technology and communication and its impact manifested in everyday life; Changes in employment sector due to globalization 	
II	Human Rights		10
		<ol style="list-style-type: none"> 1. Indian Constitution: Structure of the Constitution-Preamble 2. Concept of Human Rights- 3. Characteristics of Human Rights 4. Fundamental Rights stated in the Constitution 5. Recent developments in Human rights. 6. Fundamental Duties of the Indian Citizens 	
III	Ecology		10
		<ol style="list-style-type: none"> 1. Importance of Environment Studies in the current developmental context 2. Components of Environment, 3. Types and Structure of Ecology 4. Environmental Degradation- causes and impact on human life; 5. Sustainable development - concept and components. 	

academic council dated 15th July 2023 as per Item Number 1.0.3

**DOMBIVLI SHIKSHAN PRASARAK MANDAL'S,
K.V. PENDHARKAR COLLEGE OF ARTS, SCIENCE AND COMMERCE,
(AUTONOMOUS) DOMBIVLI (EAST), DIST. THANE**

(Affiliated to University of Mumbai)



Faculty of Science

DEPARTMENT OF INFORMATION TECHNOLOGY

(Programme: Bachelor of Science: B.Sc. I.T.)

SYLLABUS FOR

F. Y. B.Sc. I.T. – Information Technology (Semester I and II)

Choice Based Credit System (CBCS)

(as per NEP-2020)

(with effect from the Academic Year: 2023-2024)

SEM I

Course Code	Course Title	Category	Marks	Credits
IT23101MM	Imperative Programming	Major Mandatory	100	2
IT23102MM	Discrete Mathematics	Major Mandatory	100	2
IT23103MM	Imperative Programming Practical	Major Mandatory	50	2
IT23104MN	Digital Electronics	Minor	100	2
IT23105OE	Communication Skills Practical	Open Elective	50	2
AF23105OE	Direct Tax-I	Open Elective	50	2
IT23107VS	Discrete Mathematics Practical	Vocational Skill Course	50	2
IT23108SE	Digital Electronics Practical	Skill Enhancement Course	50	2
IT23109AE	Communication SKills	Ability Enhancement Course	50	2
IT23110VE	Green Computing	Value Education Course	50	2
IT23111IK	IPR & Cyber Law	Indian Knowledge System	50	2
Total Credits: 22				

SEM II

Course Code	Course Title	Category	Marks	Credits
IT23201MM	Object Oriented Programming	Major Mandatory	100	2
IT23202MM	Web Programming	Major Mandatory	100	2
IT23203MM	Object Oriented Programming Practical	Major Mandatory	50	2
IT23204MN	Microprocessor Architecture	Minor	100	2
IT23205OE	Operating System	Open Elective	50	2
AF23205OE	Direct Tax-II	Open Elective	50	2
IT23207VS	Microprocessor Architecture Practical	Vocational Skill Course	50	2
IT23208SE	Web Programming Practical	Skill Enhancement Course	50	2
IT23209AE	Numerical & Statistical Methods Practical	Ability Enhancement Course	50	2
IT23210VE	Numerical & Statistical Methods	Value Education Course	50	2
IT2311CC	Co-Curricular Course	Co-Curricular Course	50	2
Total Credits: 22				

F. Y. BSc. I.T.
SEMESTER- I

B. Sc (Information Technology)		Semester – I	
Course Name: Imperative Programming		Course Code: IT23101MM	
Periods per week		3	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination		
	Internal		

Learning Outcomes:

1. Students will get to know the basic idea about the logic and development of programs.
2. Students will get familiar with operators and I/O library functions available in C.
3. Students will be able to use conditional statements and loops to solve various complex programs and using functions in the program.
4. Students will get familiar with preprocessor directives and arrays.
5. Students will get to know the concept of pointers and structures in c programming.

Unit	Details	No. of Lectures
I	Introduction: Types of Programming languages, History, features and application. Simple program logic, program development cycle, pseudocode statements and Algorithm, flowchart symbols, sentinel value to end a program, programming and user environments, evolution of programming models., desirable program characteristics. Structure of Program with its	

	<p>sections</p> <p>Fundamentals: Compilation and Execution of a program, Character/Token, Symbolic Constants, Type of Operators, Library Functions, Type of Data Input and Output Functions, String functions.</p> <p>Conditional Statements and Loops: Decision Making Within A Program, Conditions, Relational Operators, Logical Connectives, If Statement, If-Else Statement.</p> <p>Loops: While Loop, Do While, For Loop. Nested Loops, Infinite Loops, Switch Statement, use of break, continue, go to statement.</p>	
<p>II</p>	<p>Functions: Overview, defining a function, accessing a function, passing arguments to a function, specifying argument data types, function prototypes, recursion, modular programming and functions, standard library of c functions, prototype of a function: parameter list, return type, function call, block structure, passing arguments to a function: call by reference, call by value. Inline Function</p> <p>Program structure: Storage classes, automatic variables, external variables, static variables, multi file programs, more library functions</p> <p>Preprocessor: Features, #define and #include, Directives and Macros</p>	
<p>III</p>	<p>Arrays: n, processing, passing arrays to functions, Array Operations multidimensional arrays, arrays and string and its functions.</p> <p>Pointers: Fundamentals, declarations, Pointers Address Operators, Pointer Type Declaration, Pointer Assignment, Pointer Initialization, pointer, Pointer with function.</p> <p>Structures and Unions: Structure Variables, Initialization, Structure Assignment, Nested Structure, Structures and Functions, Structures and Arrays: Arrays of Structures,</p>	

	Structures Containing Arrays, Unions.	
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References:

Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Programming with C	Byron Gottfried	Tata McGRAW - Hill	2 nd	1996
2.	Programming Logic and Design	Joyce Farell	Cengage Learning	8 th	2014
3.	“C” Programming”	Brian W. Kernighan and Denis M. Ritchie.	PHI	2 nd	
4.	Let us C	Yashwant P. Kanetkar,	BPB publication		
5.	C for beginners	Madhusudan Mothe	X-Team Series	1 st	2008
6.	21 st Century C	Ben Klemens	OReilly	1 st	2012

B. Sc. (Information Technology)		Semester – I
Course Name: Discrete Mathematics		Course Code: IT23102MM
Periods per week		3
Credits		2
		Marks
Evaluation System	Theory Examination	
	Internal	

Learning Outcomes:

After successful completion of this course students will be able to

1. Simplify and evaluate basic logic statements.
2. Develops reasoning and problem-solving abilities, with an emphasis on proof.
3. Apply rules of inference, tests for validity, and methods of proof including direct and indirect proof forms, proof by contradiction, proof by cases, and mathematical induction and write proofs using symbolic logic and Boolean Algebra
4. Demonstrate the ability to use iterative and recursive processes to prove properties of integers.
5. Demonstrate the ability to use a problem-solving approach in applying counting techniques in order to determine probabilities.

Unit	Details	No. of Lectures
I	<p>Introduction: Introduction to Discrete mathematics and its applications, Variables, The Language of Sets, The Language of Relations and Function</p> <p>Set Theory: Definitions and the Element Method of Proof, Properties of Sets, Disproofs, Algebraic Proofs, Boolean Algebras</p> <p>The Logic of Compound Statements: Logical Form and Logical Equivalence, Converse, inverse and contrapositive of statement Conditional Statements, Valid and Invalid Arguments</p> <p>Relations: Relations on Sets, Reflexivity, Symmetry, and Transitivity, Equivalence Relations, Partial Order Relations</p> <p>Functions: Functions Defined on General Sets, One-to-One and Onto, Inverse Functions, Composition of Functions, Cardinality</p>	(10)

	<p>Counting: Introduction, Possibility Trees and the Multiplication Rule, Possibility Trees and the Multiplication Rule, Counting Elements of Disjoint Sets: The Addition Rule, The Pigeonhole Principle, Counting Subsets of a Set: Combinations, r- Combinations with Repetition Allowed</p> <p>Probability: Introduction to random experiment, Sample space Events and types of events, Axioms and Expected Value, Conditional Probability, Bayes' Formula, and Independent Events</p>	
II	<p>Elementary Number Theory and Methods of Proof: Introduction to Direct Proofs, Rational Numbers, Divisibility, Division into Cases and the Quotient-Remainder Theorem, Floor and Ceiling.</p> <p>Sequences, Mathematical Induction: Sequences, Mathematical Induction, Strong Mathematical Induction and the Well- Ordering Principle for the Integers, Correctness of algorithms.</p> <p>Recursion: Defining sequences recursively, solving recurrence relations by iteration, Second order linear homogeneous recurrence relations with constant coefficients. general recursive definitions and structural induction.</p>	(10)
III	<p>Graphs: Definitions and Basic Properties, Trails, Paths, and Circuits, Matrix Representations of Graphs, Isomorphism of Graphs, Eulerian graph, Planar graph, Graph Colouring</p> <p>Trees: Rooted Trees, spanning trees and shortest paths, Minimum spanning tree by using Prim's Algorithm, Kruskal's Algorithm and Dijkstra's Algorithm</p>	(10)

Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1	Discrete Mathematics with Applications	Sussana S. Epp	Cengage Learning	4 th	2010
2	Discrete Mathematics, Schaum's Outlines Series	Seymour Lipschutz, Marc Lipson	Tata McGraw Hill		2007
3	Discrete Mathematics and its Applications	Kenneth H. Rosen	Tata McGraw Hill		
4	Discrete mathematical Structures	B Kolman RC Busby, S Ross	PHI		
5	Discrete structures	Liu	Tata McGraw Hill		

B. Sc (Information Technology)		Semester – I
Course Name: Digital Electronics		Course Code: IT23104MN
Periods per week		3
Credits		2
		Marks
Evaluation System	Theory Examination	
	Internal	

Learning Outcomes:

After successful completion of this course students will be able to

1. Get information about the Number system and their arithmetic operations.

2. Get in detail study of Boolean algebra as well as K-maps technique.
3. Study in detail about combinational circuits.
4. Get to know about Encoder, decoder and different types of Flip-flop Circuits.
5. Understand in detail about the Counter and Shift register.

Unit	Details	No. of Lectures
I	<p>Number System: Analog System, digital system, numbering system, binary number system, octal number system, hexadecimal number system, conversion from one number system to another, floating point numbers, weighted codes binary coded decimal, non-weighted codes Excess – 3 code, Gray code,</p> <p>Binary Arithmetic: Binary addition, Binary subtraction, Negative number representation, Subtraction using 1's complement and 2's complement, Binary multiplication and division</p> <p>Boolean Algebra and Logic Gates: Introduction, Logic (AND OR NOT), Boolean theorems, Boolean Laws, De Morgan's Theorem, Perfect Induction, Reduction of Logic expression using Boolean Algebra, Deriving Boolean expression from given circuit, exclusive OR and Exclusive NOR gates, Universal Logic gates, Implementation of other gates using universal gates.</p>	(12)
II	<p>Minterm, Maxterm and Karnaugh Maps: Introduction, minterms and sum of minterm form, maxterm and Product of maxterm form, Reduction technique using Karnaugh maps – 2/3/4/5/6 variable K-maps, Grouping of variables in K-maps, K-maps for product of sum form, minimize Boolean expression using K-map and obtain K-map from Boolean expression, Quine McClusky method.</p>	(12)

	<p>Combinational Logic Circuits: Introduction, Multi-input, multi-output Combinational circuits, Code converters design</p> <p>Multiplexer, Demultiplexer, ALU, Encoder and Decoder: Introduction, Multiplexer, Demultiplexer, Implementation of Mux and Demux, Decoder, Encoders.</p>	
III	<p>Sequential Circuits: Flip-Flop: Introduction, Terminologies used, S-R flip-flop, clocked S-R flip-flop, D flip-flop, JK flip-flop, Race-around condition, Master – slave JK flip-flop, T flip-flop, conversion from one type of flip-flop to another, Application of flip-flops.</p> <p>Counters: Introduction, Asynchronous counter, IC 7493 (4-bit binary counter), Synchronous counter, Type JK Design, Synchronous counter ICs, Analysis of counter circuits,</p> <p>Shift Register: Introduction, parallel and shift registers, serial shifting, serial-in serial-out, serial-in parallel-out, parallel-in parallel-out, Ring counter, Applications of shift registers, sequence generator, Seven Segment displays,</p>	(12)

Books and References:					
Sr. No.	Tit le	Author/ s	Publishe r	Editio n	Yea r
1	Digital Electronics and Logic Design	N. G. Palan	Technova		

2	Make Electronics	Charles Platt	O'Reilly	1 st	2010
3	Modern Digital Electronics	R. P. Jain	Tata McGraw Hill	3 rd	
4	Digital Principles and Applications	Malvino and Leach	Tata McGraw Hill		
5	Digital Electronics: Principles, Devices and Applications,	Anil K. Maini	Wiley		2007

Open Elective:

B. Sc (Information Technology)		Semester – I	
Course Name: Direct Tax I		Course Code:AF23105OE	
Periods per week		3	
Credits		2	
		Marks	
Evaluation System	Theory Examination		
	Internal		

Units	Topics	No of Hours
Unit I	Introduction to Income tax and Basis of Charge	06
	Definitions u/s – 2: Assessee, Assessment Year, Assessment, Annual value, Business, Capital asset, Income, Person, Previous Year, Transfer Basis of Charge: Section 3 – 9 – Previous Year, Residential Status, Scope Of Total Income, Deemed Income	
Unit II	Heads of Income & Deductions - I	12

	Salary Income: Section 15 – 17, Including Section 10 relating to House Rent Allowance, Travel Concession, Special Allowance, Gratuity, Pension – Commutation, Leave Encashment, Compensation, Voluntary Retirement, Payment from Provident Fund Income From House Property: Section 22 – 27, Including Section 2 – Annual Value Profits & Gains From Business & Profession : Vocation Section 28-32, 36, 37, 40, 40A, 43B, 44AD, 44ADA & 44AE including.: Section 2 – Business	
Unit III	Heads of Income & Deductions - II	12
	Capital Gains : Section 45, 48, 49, 50, 54 and 55 Income from Other Sources: Section 56 – 59 Deductions 80 A 80 C 80CCC 80CCD 80D 80 DD 80DDB 80E 80EE 80G 80 TTA 80TTB 80U Clubbing of Income Section 60 to 65 Set Off & Carry Forward of Losses Sec: 70 Sec: 71 Sec: 71B Sec: 72 Sec: 73 Sec: 74	

B. Sc (Information Technology)		Semester – I
Course Name: Communication Skills		Course Code: IT23109AE
Periods per week		3
Credits		2
		Mark
Evaluation System	Theory Examination	
	Internal	

Learning Outcomes:

After successful completion of this course students will be able to

1. Understands the process of communication and its effects on giving and receiving messages.
2. Create a resume, a cover on professional level along with the interviewing process.
3. Chiseling of students communication skills to help manage the communication style required in the organization.
4. Understand the need of enhancing internal and external communication.

5. Hone their presentation making and giving skills and make them able to cope with corporate presentation skills.

Unit	Details	No. of Lectures
I	<p>The Seven Cs of Effective Communication: Completeness, Conciseness, Consideration, Concreteness, Clarity, Courtesy, Correctness</p> <p>Understanding Business Communication: Nature and Scope of Communication, Non-verbal Communication, Cross-cultural communication, Technology-enabled Business Communication</p> <p>Writing Business Messages and Documents: Business writing, Business Correspondence, Instructions Business Reports and Proposals, Career building and Resume writing.</p>	(10)
II	<p>Developing Oral Communication Skills for Business: Effective Listening, Business Presentations and Public Speaking, Conversations, Interviews Creative Writing: Business Emails Meetings and Conferences, Group Discussions and Team Presentations, Team Briefing</p>	(10)
III	<p>Understanding Specific Communication Needs: Communication across Functional Areas Corporate Communication, Persuasive Strategies in Business Communication, Ethics in Business Communication, Business Communication Aids</p> <p>Presentation Process: Planning the presentations, executing the presentations, Impressing the audience by performing, Planning stage:</p>	(10)

	Brainstorming, mind maps / concept maps, executing stage: chunking theory, creating outlines, Use of templates. Adding graphics to your presentation: Visual communication, Impress stage: use of font, colour, layout, Importance of practice and performance.	
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Books and References:					
Sr. No.	Title	Author /s	Publisher	Edition	Year
1	Business Communication	Edited by Meenakshi Raman and Prakash Singh	Oxford University Press	Second	
2	Professional Communication	Aruna Koneru	Tata McGraw Hill		
3	Strategies for improving your business communication	Prof. M. S. Rao	Shroff publishers and distributors		2016

B. Sc. (Information Technology)		Semester – II
Course Name: Green Computing		Course Code: IT23110VE
Periods per week		3
Credits		2
		Marks
Evaluation System	Theory Examination	60
	Internal	40

Learning outcomes:

1. Students will get an overview of green computing and they will also get to know various initiatives and standards followed by various countries.
2. Students will get to know various ways to reduce power consumption.
3. They will know how to change their behavior in day-to-day life. They will also get familiar with the advantages of going paperless.
4. Students will learn about the benefits of Recycling and selecting a proper hardware for use.
5. Students will know about green information systems and different ways of keeping the organization green.

Unit	Details	No. of Lectures
I	<p>Overview and Issues:</p> <p>Problems: Toxins, Power Consumption, Equipment Disposal, Company's Carbon Footprint: Measuring, Details, reasons to bother, Plan for the Future, Cost Savings: Hardware, Power.</p> <p>Initiatives and Standards:</p> <p>Global Initiatives: United Nations, Basel Action Network, Basel Convention, North America: The United States, Canada, Australia,</p>	(10)

	<p>Europe, WEEE Directive, RoHS, National Adoption</p> <p>Minimizing Power Usage:</p> <p>Power Problems, Monitoring Power Usage, Servers, Low-Cost Options, Reducing Power Use, Data Deduplication, Virtualization, Management, Bigger Drives, Involving the Utility Company, Low- Power Computers, PCs, Linux, Components, Servers, Computer Settings, Storage, Monitors, Power Supplies, Wireless Devices, Software.</p>	
<p>II</p>	<p>Cooling:</p> <p>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, Data Centre Design, Centralized Control, Design for Your Needs, Put Everything Together.</p> <p>Changing the Way of Work:</p> <p>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.</p> <p>Going Paperless:</p> <p>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.</p>	<p>(10)</p>
<p>III</p>	<p>Recycling:</p> <p>Problems, China, Africa, Materials, Means of Disposal, Recycling, Refurbishing, Make the Decision, Life Cycle, from beginning to end, Life,</p>	<p>(10)</p>

	<p>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 Hardware Considerations:</p> <p>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> <p>Greening Your Information Systems:</p> <p>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. 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, Analyze Data, Conduct Audits, Certifications, Benefits, Realities</p>	
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B. Sc. (Information Technology)	Semester – I
Course Name: IPR & Cyber Law	Course Code: IT23111K
Periods per week	3
Credits	2
	Marks

Evaluation System	Theory Examination	
	Internal	

Learning Outcomes:

After successful completion of this course students will be able to

1. Make Learner Conversant With The Social And Intellectual Property Issues Emerging From ‘Cyberspace.

2. Explore The Legal And Policy Developments In Various Countries To Regulate Cyberspace;

3. Develop The Understanding Of Relationship Between Commerce And Cyberspace;

4. Give Learners In Depth Knowledge Of Information Technology Act And Legal Frame Work Of Right To Privacy, Data Security And Data Protection.

5. Make Study On Various Case Studies On Real Time Crimes.

Unit	Details	No. of Lectures
I	<p>INTRODUCTION TO IPR: Meaning of property, Meaning of Intellectual Property Rights Kinds of Intellectual property rights—Copy Right, Patent, Trade Mark, Trade Secret and trade dress, Design, Layout Design, Geographical Indication, Plant Varieties and Traditional Knowledge.</p> <p>Indian IT act: Information Technology Act, 2000(Complete including digital signature, certifying authorities and E governance). Protection of cyber consumers in India</p> <p>PATENT RIGHTS AND COPY RIGHTS—Meaning of Patent, Types, Inventions which are not patentable, Registration Procedure, Rights and Duties of Patentee, Assignment and licence , Restoration of lapsed Patents, Surrender and Revocation of Patents, Infringement, Remedies & Penalties</p>	(10)

II	<p>COPY RIGHT—Definition &Types of Copy Right, Registration procedure, Assignment & licence , Terms of Copy Right, Piracy, Infringement, Remedies, Copy rights with special reference to software</p> <p>Introduction to cyber crimes: Definition, cybercrime and information security, classes of cybercrime and categories, cyber offences, cybercrimes with mobile and wireless devices.</p>	(10)
III	<p>Hacking, Ethical Hacking. Need and Importance of Cyber law, areas of cyber law Cyber law Provision in India – cyber crimes under IT Act 2000 , IPC & Special Laws, Cyber law and Information Technology Act 2000. Cyber crime Complaints. National cyber security policy – Objectives and Strategies.</p> <p>Introduction to Cyber crimes and cyber forensics ; Kinds of cyber crimes – Fraud and identity theft, cyber stalking; cyber pornography; Cyber terrorism; cyber defamation, Phishing, Hacking etc.; Issues relating to Investigation, Jurisdiction, Evidence</p>	(10)

Open Elective offered by IT Department

B. Sc (Information Technology)

Semester – II

Course Name: Introduction to Web Designing		Course Code:	
Periods per week		3	
Credits		2	
		Marks	
Evaluation System	Theory Examination		30
	Internal	--	20

Learning outcome:

1. Acquire the knowledge about the Internet & its functionality, protocols, different types of web browsers & its working.
2. Develop HTML Scripting language webpage.
3. Create their own scripts.
4. Explain different HTML tags.
5. Demonstrate event handling in javascript.

Unit	Details	No. of Lectures
I	<p>Internet and the World Wide Web: What is the Internet? Introduction to the internet and its applications, E-mail, telnet, FTP, e-commerce, video conferencing, 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 – internet explorer, Netscape navigator, opera, Firefox, chrome, Mozilla. search engine, web saver – apache, IIS, proxy server, HTTP protocol.</p> <p>HTML5: Introduction, Why HTML5? Formatting text by using tags, using lists and backgrounds, Creating hyperlinks and anchors.</p> <p>CSS: Style sheets, CSS formatting text using style sheets, formatting paragraphs using style Sheets.</p>	
II	<p>HTML5 Page layout and navigation: Creating navigational aids: planning site organisation, creating text based navigation bar, creating graphics based navigation bar, creating graphical</p>	

	<p>navigation bar, creating image map, redirecting to another URL, creating division based layouts: HTML5 semantic tags, creating divisions, creating HTML5 semantic layout, positioning and formatting divisions.</p> <p>HTML5 Tables, Forms and Media:</p> <p>Creating tables: creating simple table, specifying the size of the table, specifying the width of the column, merging table cells, using tables for page layout, formatting tables: applying table borders, applying background and foreground fills, changing cell padding, spacing and alignment, creating user forms: creating basic form, using check boxes and option buttons, creating lists, additional input types in HTML5, Incorporating sound and video: audio and video in HTML5, HTML multimedia basics, embedding video clips, incorporating audio on web page.</p>	
III	<p>Core JavaScript (Properties and Methods of Each) : Array, Boolean, Date, Function, Math, Number, Object, String, regExp.</p> <p>Documents and its associated objects: document, link area, Anchor, Image, Applet, layer.</p> <p>Events and Event Handlers : General Information about Events, Defining Event Handlers, event, onAbort, onBlur, onChange, onClick, onDoubleClick, onDragDrop, onError, onFocus, onKeyDown, onKeyPress, onKeyUp, onLoad, onMouseDown, onMouseMove, onMouseOut, onMouseOver, onMouseUp, onMove, onReset, onResize, onSelect, onSubmit, onUnload.</p>	

PRACTICALS:

B. Sc (Information Technology)	Semester – I
Course Name: Imperative Programming Practical	Course Code: IT23103MM
Periods per week	3

Credits	2		
		Marks	
Evaluation System	Practical Examination		50

List of Practical: (Can be done in any imperative language)	
1.	Basic Programs:
a.	Write a program to display the message HELLO WORLD.
b.	Write a program to declare some variables of type int, float and double. Assign some values to these variables and display these values.
c.	Write a program to find the addition, subtraction, multiplication and division of two numbers.
2.	Programs on variables:
a.	Write a program to swap two numbers without using a third variable.
b.	Write a program to find the area of rectangle, square and circle.
c.	Write a program to find the volume of a cube, sphere, and cylinder.
3.	Conditional statements and loops(basic)
a.	Write a program to enter a number from the user and display the month name. If number >13 then display invalid input using the switch case.
b.	Write a program to check whether the number is even or odd.
c.	Write a program to check whether the number is positive, negative or zero.
d.	Write a program to find the factorial of a number.
e.	Write a program to check whether the entered number is prime or not.
f.	Write a program to find the largest of three numbers.
4.	Conditional statements and loops(advanced)
a.	Write a program to find the sum of squares of digits of a number.
b.	Write a program to reverse the digits of an integer.
c.	Write a program to find the sum of numbers from 1 to 100.

d.	Write a program to print the Fibonacci series.
e.	Write a program to find the reverse of a number.
f.	Write a program to find whether a given number is palindrome or not.
g.	Write a program that solve the quadratic equation. $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
h.	Write a program to check whether the entered number is Armstrong or not.
i.	Write a program to count the digit in a number.
5.	Programs on patterns:
a.	Programs on different patterns.
6.	Functions:
a.	Programs on Functions.
7.	Recursive functions
a.	Write a program to find the factorial of a number using a recursive function.
b.	Write a program to find the sum of natural numbers using a recursive function.
8.	Arrays
a.	Write a program to find the largest value that is stored in the array.
b.	Write a program using pointers to compute the sum of all elements stored in an array.
c.	Write a program to arrange the 'n' numbers stored in the array in ascending and descending order.
d.	Write a program that performs addition and subtraction of matrices.
e.	Write a program that performs multiplication of matrices.
9.	Pointers
a.	Write a program to demonstrate the use of pointers.
b.	Write a program to perform addition and subtraction of two pointer variables.

10.	Structures and Unions
a.	Programs on structures.
b.	Programs on unions.

B. Sc (Information Technology)		Semester – I	
Course Name: Digital Electronics Practical		Course Code: IT23108SE	
Periods per week		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
List of Practical			
1.	Study of Logic gates and their ICs and universal gates:		
a.	Study of AND, OR, NOT, XOR, XNOR, NAND and NOR gates		
b.	IC 7400, 7402, 7404, 7408, 7432, 7486, 74266		
c.	Implement AND, OR, NOT, XOR, XNOR using NAND gates.		
d.	Implement AND, OR, NOT, XOR, XNOR using NOR gates.		
2.	Implement the given Boolean expressions using minimum number of gates.		
a.	Verifying De Morgan's laws.		
b.	Implement other given expressions using minimum number of gates.		
c.	Implement other given expressions using minimum number of ICs.		
3.	Implement combinational circuits.		
a.	Design and implement combinational circuit based on the problem given and minimizing using K-maps.		
4.	Implement code converters.		
a.	Design and implement Binary – to – Gray code converter.		
b.	Design and implement Gray – to – Binary code converter.		

c.	Design and implement Binary – to – BCD code converter
d.	Design and implement Binary – to – XS-3 code converter
5.	Implement Adder and Subtractor Arithmetic circuits.
a.	Design and implement Half adder and Full adder.
b.	Design and implement BCD adder.
c.	Design and implement XS – 3 adder.
d.	Design and implement binary subtractor.
e.	Design and implement BCD subtractor.
f.	Design and implement XS – 3 subtractor.
6.	Implement Arithmetic circuits.
a.	Design and implement a 2-bit by 2-bit multiplier.
b.	Design and implement a 2-bit comparator.
7.	Implement Encode and Decoder and Multiplexer and Demultiplexers.
a.	Design and implement 8:3 encoder.
b.	Design and implement 3:8 decoder.
c.	Design and implement 4:1 multiplexer. Study of IC 74153, 74157
d.	Design and implement 1:4 demultiplexer. Study of IC 74139
e.	Implement the given expression using IC 74151 8:1 multiplexer.
f.	Implement the given expression using IC 74138 3:8 decoder.
8.	Study of flip-flops and counters.
a.	Study of IC 7473.
b.	Study of IC 7474.
c.	Study of IC 7476.
d.	Conversion of Flip-flops.
e.	Design of 3-bit synchronous counter using 7473 and required gates.
f.	Design of 3-bit ripple counter using IC 7473.
9.	Study of counter ICs and designing Mod-N counters.
a.	Study of IC 7490, 7492, 7493 and designing mod-n counters using these.
b.	Designing mod-n counters using IC 7473 and 7400 (NAND gates)

10.	Design of shift registers and shift register counters.
a.	Design serial – in serial – out, serial – in parallel – out, parallel – in serial – out, parallel – in parallel – out and bidirectional shift registers using IC 7474.
b.	Study of ID 7495.
c.	Implementation of digits using seven segment displays.

B. Sc. (Information Technology)		Semester – I	
Course Name: Discrete Mathematics Practical		Course Code: IT23107VS	
Periods per week		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
List of Practical: Write the programs for the following using SCILAB			
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.	Counting		
a.	Sum rule principle		
b.	Product rule principle		
c.	Factorial		

d.	Binomial coefficients
e.	Permutations
f.	Permutations with repetitions
g.	Combinations
h.	Combinations with repetitions
i.	Ordered partitions
j.	Unordered partitions
4.	Probability Theory
a.	Sample space and events
b.	Finite probability spaces
c.	Equiprobable spaces
d.	Addition Principle
e.	Conditional Probability
f.	Multiplication theorem for conditional probability
g.	Independent events
h.	Repeated trials with two outcomes
5.	Graph Theory
a.	Paths and connectivity
b.	Minimum spanning tree
c.	Isomorphism
6.	Directed Graphs
a.	Adjacency matrix
b.	Path matrix
7.	Properties of integers
a.	Division algorithm
b.	Primes
c.	Euclidean algorithm
d.	Fundamental theorem of arithmetic
e.	Congruence relation
f.	Linear congruence equation

8.	Algebraic Systems
a.	Properties of operations
b.	Roots of polynomials
9.	Boolean Algebra
a.	Basic definitions in Boolean Algebra
b.	Boolean algebra as lattices
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

B. Sc (Information Technology)		Semester – I	
Course Name: Communication Skills Practical		Course Code: IT23105OE	
Periods per week		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
List of Practical Questions:			
1.	Communication Origami, Guessing Game, Guessing the emotion		
2.	Body Language, Follow All Instructions, Effective Feedback Skills		
3.	The Name Game, Square Talk (Effective Communication), Room 101		

	(Influential and persuasive skills)
4.	Back to Back Communication, Paper Shapes (Importance of two-way communication), Memory Test(Presentation Skills)
5.	Exercises on Communication Principles
6.	Exercises on communication icebreakers
7.	Communication exercises
	For the following practicals, Microsoft Office, Open Office, Libre Office or any other software suite can be used.
8.	Use of word processing tools for communication
	Group Discussion, PPT presentation, Debate
9.	Use of spreadsheet tools for communication
10.	Use of presentation tools for communication

SEMESTER II

B. Sc. (Information Technology)		Semester – II
Course Name: Object Oriented Programming		Course Code:IT23201MM
Periods per week		3
Credits		2
Evaluation System	Theory Examination	60
	Internal	40

Learning outcomes:

1. Students understand the basic concept of OOPs, difference between procedure oriented and object-oriented approach, advantages of OOPs. How OOPs can handle real world problems.
2. students get understanding of Classes and Objects. Understand the use of constructor and destructor.
3. students understand the concept of polymorphism with operator overloading and function overloading. Understand the virtual function and abstract classes.

4. students understand the concept of inheritance. How code reuse can be achieved using inheritance. Understand what is Exception, how exceptions are handled and importance of exception handling.
5. Student Understand the generic classes and generic functions. Understand the use of file handling.

Unit	Details	No. of Lectures
I	<p>Object Oriented Methodology: Introduction, Advantages and Disadvantages of Procedure Oriented Languages, what is Object Oriented? Benefits and Application of OOPS, characteristics of oops, Difference between C and C++, Basic Data Types in C++, Variables in C++, Scope of variables.</p> <p>Principles of OOPS: Basic Concepts of OOPS: Objects, Classes, Data Abstraction and Data Encapsulation, Inheritance, Polymorphism, Dynamic Binding, Message Passing.</p> <p>Functions: Returning values from functions, Reference arguments, Inline function, Default arguments.</p> <p>Classes and Objects: Simple classes (Class specification, class members accessing), Defining member functions, passing object as an argument, Returning object from functions, friend classes, Pointer to object.</p> <p>Constructors and Destructors: Introduction, Default Constructor, Parameterized Constructor and examples, Destructors</p>	(10)
II	<p>Polymorphism: Concept of function overloading, overloaded operators, overloading unary and binary operators, Conversion: Basic conversion (Type casting), Data Conversion between objects and basic types.</p>	(10)

	<p>Exception Handling: Introduction, Exception Handling Mechanism, Concept of throw & catch with example.</p> <p>Inheritance: Introduction, understanding inheritance, Advantages provided by inheritance, choosing the access specifier, Derived class declaration, derived class constructors, class hierarchies, multiple inheritance, multilevel inheritance, containership, hybrid inheritance.</p>	
III	<p>Virtual Functions: Introduction and need, Pure Virtual Functions, Static Functions, this Pointer,</p> <p>Templates: Introduction, Function Template and examples, Class Template and examples.</p> <p>Working with Files: Introduction, File Operations, Various File Modes, File Pointer and their Manipulation</p>	(10)

Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Object Oriented Analysis and Design	Timothy Budd	TMH	3 rd	2012
2.	Mastering C++	K R Venugopal, Rajkumar Buyya, T Ravishankar	Tata McGraw Hill	2 nd Edition	2011
3.	C++ for beginners	B. M. Hirwani	SPD		2013
4.	Effective Modern C++	Scott Meyers	SPD		
5.	Object Oriented Programming with C++	E. Balagurusamy	Tata McGraw Hill	4 th	

6.	Learning Python	Mark Lutz	O' Reilly	5 th	2013
7.	Mastering Object Oriented Python	Steven F. Lott	Pact Publishing		2014

B. Sc (Information Technology)		Semester – II	
Course Name: Web Programming		Course Code: IT23202MM	
Periods per week		3	
Credits		2	
		Marks	
Evaluation System	Theory Examination	60	
	Internal	40	

Learning outcome:

1. Students will get basic knowledge about the Internet & its functionality, protocols, different types of web browsers & its working.
2. Students will learn about HTML Scripting language so they are able to create their own webpage.
3. Students will be able to create their own scripts.
4. PHP is one of the many server-side languages so students can learn to build websites.
5. Students will get advanced knowledge about how to implement databases in PHP using MYSQL, How to create & Set Cookies & Session so they can create their Websites more user-friendly & attractive.

Unit	Details	No. of Lectures
I	<p>Internet and the World Wide Web: What is the Internet? Introduction to the internet and its applications, E-mail, telnet, FTP, e-commerce, video conferencing, e-business.</p> <p>HTML5: Introduction, Why HTML5? Formatting text by using tags, using lists and backgrounds, Creating hyperlinks and anchors. Style sheets, CSS formatting text using style sheets, formatting paragraphs using style Sheets.</p> <p>HTML5 Page layout and navigation: Creating navigational aids: planning site organization, creating text based navigation bar, creating graphics based navigation bar, creating graphical navigation bar, creating image map, redirecting to another URL, creating division based layouts: HTML5 semantic tags, creating divisions, creating HTML5 semantic layout, positioning and formatting divisions.</p> <p>HTML5 Tables, Forms and Media: Creating tables: creating simple table, specifying the size of the table, specifying the width of the column, merging table cells, using tables for page layout, formatting tables: applying table borders, applying background and foreground fills, changing cell padding, spacing and alignment, creating user forms: creating basic form, using check boxes and option buttons, creating lists, additional input types in HTML5, Incorporating sound and video: audio and video in HTML5, HTML multimedia basics, embedding video clips, incorporating audio on web Page.</p>	(10)
II	<p>Core JavaScript (Properties and Methods of Each) : Array, Boolean, Date, Function, Math, Number, Object, String, regExp</p> <p>Documents and its associated objects: document, link area, Anchor, Image, Applet, layer</p>	(10)

	<p>Events and Event Handlers : General Information about Events, Defining Event Handlers, event, onAbort, onBlur, onChange, onClick, onDbClick, onDragDrop, onError, onFocus, onKeyDown, onKeyPress, onKeyUp, onLoad, onMouseDown, onMouseMove, onMouseOut, onMouseOver, onMouseUp, onMove, onReset, onResize, onSelect, onSubmit, onUnload</p> <p>INTRODUCTION TO JSON</p>	
III	<p>PHP:</p> <p>Why PHP and MySQL? Server-side scripting, PHP syntax and variables, comments, types, control structures, branching, looping, termination, functions, passing information with PHP, GET, POST, formatting form variables, superglobal arrays, strings and string functions, regular expressions, arrays, number handling, basic PHP</p> <p>errors/problems</p> <p>Advanced PHP and MySQL : PHP/MySQL Functions, Integrating web forms and databases, Displaying queries in tables, Building Forms from queries, String and Regular Expressions, Sessions, Cookies and HTTP, E-Mail</p>	(10)

Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Web Design The Complete Reference	Thomas Powell	Tata McGraw Hill		-
2.	HTML5 Step by Step	Faithe Wempen	Microsoft Press		2011

3.	PHP 5.1 for Beginners	Ivan Bayross Sharanam Shah,	SPD		2013
4.	PHP Project for Beginners	SharanamShah, Vaishali Shah	SPD		2015
5.					
6.	PHP 6 and MySQL Bible	Steve Suehring, Tim Converse, Joyce Park	Wiley		2009
7.	Head First HTML 5 programming	Eric Freeman	O'Reilly		2013
8.	JavaScript 2.0: The Complete Reference	Thomas Powell and Fritz Schneider	Tata McGraw Hill	2 nd	

B. Sc. (Information Technology)		Semester – II
Course Name: Microprocessor Architecture		Course Code: IT23204MN
Periods per week		3
Credits		2
		Marks
Evaluation System	Theory Examination	
	Internal	

Learning outcomes:

1. Student get basic information regarding microprocessor 8085&8155
2. Students get information regarding assembly language programme

3. Student get information regarding stack, counters and time delays in 8085 microprocessors
4. Student get basic information regarding various code conversion in 8085 microprocessors
5. Students get detailed information regarding new Processors in the market.

Unit	Details	No. of Lectures
I	<p>Microprocessor, microcomputers, and Assembly Language:</p> <p>Microprocessor, Microprocessor Instruction Set and Computer Languages, , Applications.</p> <p>Microprocessor Architecture and Microcomputer System: Microprocessor Architecture and its operations, Memory, I/O Devices, Microcomputer System, Logic Devices and Interfacing.</p> <p>8085 Microprocessor Architecture and Memory Interface: Introduction, 8085 Microprocessor unit, 8085-Based Microcomputer, Memory Interfacing, Interfacing the 8155 Memory Segment, Illustrative Testing and Troubleshooting Memory Interfacing Circuit, Interfacing Input Devices, Memory Mapped I/O</p> <p>8086 pin diagram.</p>	(10)
II	<p>Introduction to 8085 Assembly Language Programming:</p> <p>The 8085 Programming Model, Instruction Classification, Instruction, Data and Storage, Writing assembling and Execution of a simple program, Data Transfer Operations, Arithmetic Operations, Logic Operation, Branch Operation, Writing Assembly Languages Programs, Debugging a Program. Looping, Counting and Indexing, Additional Data Transfer and 16-Bit Arithmetic Instructions, Arithmetic Instruction Related to Memory, Logic Operations: Rotate, Logics Operations: Compare, Counters and Time Delays, Illustrative Program: Hexadecimal Counter, Illustrative Program: Generating Pulse Waveforms, Debugging Counter and Time-Delay Programs. Stacks and Sub-Routines:</p>	(10)

	Stack, Subroutine, Restart, Conditional Call, Return Instructions, Advanced Subroutine concepts. Code Conversion, BCD Arithmetic, and 16-Bit Data Operations: BCD-to-Binary Conversion, Binary-to-BCD Conversion, BCD-to- Seven-Segment-LED Code Conversion, Binary-to-ASCII and ASCII- to-Binary Code Conversion, BCD Addition, BCD Subtraction,	
III	<p>Software Development System and Assemblers:</p> <p>Microprocessors-Based Software Development system, Operating System and Programming Tools, Assemblers and Cross-Assemblers, Writing Program Using Cross Assemblers.</p> <p>Interrupts:</p> <p>The 8085 Interrupt, 8085 Vectored Interrupts, Restart as S/W Instructions, Additional I/O Concepts and processes.</p> <p>The Pentium and Pentium Pro microprocessors: Introduction, Special Pentium registers, Memory management, Pentium instructions, Pentium Pro microprocessor, Special Pentium Pro features.</p> <p>Core 2 and later Microprocessors: Introduction, Pentium II software changes, Pentium IV and Core 2, i3, i5, i7, i9 processors specification., SUN SPARC Microprocessor: Architecture, Register file, data types and instruction format</p>	(10)

Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Microprocessors Architecture, Programming and Applications with the 8085.	Ramesh Gaonkar	PENRAM	Fifth	2012

2.	Computer System Architecture	M. Morris Mano	PHI		1998
3.	Structured Computer Organization	Andrew C. Tanenbaum	PHI		

B. Sc. (Information Technology)		Semester – II
Course Name: Numerical and Statistical Methods		Course Code: PIT23210VE
Periods per week		3
Credits		2
		Marks
Evaluation System	Theory Examination	
	Internal	

Learning outcomes:

1. Develops the mathematical skills of the students in the areas of numerical methods.
2. Develops problem solving skills with both theoretical and computational oriented problems.
3. Develops problem solving skills with both theoretical and computational oriented problems.
4. Understand numerical techniques to find the roots of nonlinear equations and solutions of systems of linear equations.
5. Explores the basic concepts of modern probability theory and its applications for decision-making in economics, business, and other fields of social sciences.

Unit	Details	No. of Lectures
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<p>I</p>	<p>Introduction to Numerical Analysis and their applications.</p> <p>Approximations and Round-Off Errors: Significant Figures, Accuracy and Precision, Error Definitions, Round-Off Errors</p> <p>Truncation Errors and the Taylor Series: The Taylor Series, Error Propagation, Total Numerical Errors, Formulation Errors and Data Uncertainty</p> <p>Interpolation: Forward Difference, Backward Difference, Newton's Forward Difference Interpolation, Newton's Backward Difference Interpolation, Lagrange's Interpolation.</p> <p>Solutions of Algebraic and Transcendental Equations: The Bisection Method, The Newton-Raphson Method, The Regula-falsi method, The Secant Method.</p> <p>Solution of simultaneous algebraic equations (linear) using iterative methods: Gauss Elimination Method, Gauss-Jordan Method, Gauss-Seidel Method.</p>	<p>(10)</p>
<p>II</p>	<p>Numerical differentiation and Integration: Numerical differentiation, Numerical integration using Trapezoidal Rule, Simpson's $1/3^{\text{rd}}$ and $3/8^{\text{th}}$ rules.</p> <p>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.</p>	<p>(10)</p>
<p>III</p>	<p>Random variables: Discrete and Continuous random variables, Probability density function, Probability distribution of random variables, Expected value, Variance.</p> <p>Distributions:</p>	<p>(10)</p>

	<p>Discrete distributions: Binomial, Poisson, Bernoulli, Continuous distributions: uniform distributions (derivation of mean and variance only and state other properties and discuss their applications) Normal distribution states all the properties and its applications.</p> <p>Correlation and regression: Correlation , Linear Regression, Multiple Linear regression, General Linear Least Squares, Nonlinear Regression, Linear Programming: Linear optimization problem, Formulation and Graphical solution, Basic solution and Feasible solution.</p>	
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Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Introductory Methods of Numerical Methods	S. S. Shastri	PHI	Vol – 2	
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.	Fundamentals of Mathematical Statistics	S. C. Gupta, V. K. Kapoor			
5.	Elements of Applied Mathematics	P.N.Wartikar and	A. V. Griha,	Volume 1 and 2	

		J.N.Wartikar	Pune		
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B. Sc (Information Technology)		Semester – I	
Course Name: Operating Systems		Course Code: IT23205OE	
Periods per week		3	
Credits		2	
		Marks	
Evaluation System	Theory Examination		30
	Internal	-	20

Learning Outcomes:

After successful completion of this course students will be able to

1. To learn about system design so they can extend the features of operating system solve any problem occurring in operating system.
2. Understand how program memory addresses relate to physical memory addresses, memory management in base-limit machines, and swapping.
3. Get broad idea about Input and output devices & its functionality as well as the power management.
4. Learn about virtualization so they get knowledge about how virtualization process will take place.
5. Get familiar with different types of operating system & its functionality in detail.

OPEN ELECTIVES

Unit	Details	No. of Lectures
I	<p>Introduction: What is an operating system? computer hardware, different operating systems, operating system concepts, system calls, operating system structure.</p> <p>Processes and Threads: Processes, threads, interprocess communication, scheduling, IPC problems.</p> <p>Memory Management: No memory abstraction, memory abstraction: address spaces, virtual memory, design issues for paging systems, implementation issues, and segmentation.</p>	(10)
II	<p>File Systems: Files, directories, file system implementation, file-system management and optimization, MS-DOS file system, UNIX V7 file system, CD ROM file system, What is Shell? Basic Shell commands.</p> <p>Input-Output: Principles of I/O hardware, Principles of I/O software, I/O software layers, disks, clocks, user interfaces: keyboard, mouse, monitor, thin clients, power management</p> <p>Deadlocks: Resources, introduction to deadlocks, deadlock detection and recovery, deadlock avoidance, deadlock prevention.</p>	(10)
III	<p>Virtualization and Cloud: History, requirements for virtualization, type 1 and 2 hypervisors, techniques for efficient virtualization, hypervisor microkernels, memory virtualization, I/O virtualization Clouds.</p> <p>Multiple Processor Systems Multiprocessors, multicomputer, distributed systems.</p> <p>Case Study on LINUX and ANDROID: History of Unix and Linux, Linux Overview, Processes in Linux, Memory</p>	(10)

	management in Linux, I/O in Linux, Linux file system, security in Linux.	
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B. Sc (Information Technology)		Semester – I	
Course Name: Direct Tax II		Course Code:AF23205OE	
Periods per week		3	
Credits		2	
		Marks	
Evaluation System	Theory Examination		30
	Internal		20

Units	Topics	No of Hours
Unit I	Tax rates of Individual	10
	Slab rates as per new and old tax regime, partial integration, special rates, rebate, surcharge, H&E cess	
Unit II	Return of Income & Assessments	10
	Sec 139 Excluding u/s 139(4A), 139(4B), 139(4C) & 139 (4D) Summary assessment Sec 143(1), Scrutiny assessment Sec. 143(3), Best Budget Assessment Sec. 144, Faceless Assessment Sec. 144B, Income Escaping Assessment Sec. 147 & 148A, Faceless Assessment of income escaping assessment Sec. 151A	
Unit III	Tax Deduction at Source Advance Tax, Interest Payable	10
	Deduction of Taxes at Source Sec: 192 Sec: 194A Sec: 194C Sec: 194H Sec: 194I Sec: 194J Advance Tax U/S 207, 208, 209, 210 & 211 Interest Payable U/S 234A, 234B, 234C	

Open Elective offered by IT Department

B. Sc. (Information Technology)		Semester – II	
Course Name: Office Automation		Course Code: IT23206OE	
Periods per week		3	
Credits		2	

		Marks
Evaluation System	Theory Examination	30
	Internal	20

Learning outcomes:

Students will be able to

- Indicate the names and functions of the Word interface components.
- Create, edit, save, and print documents to include documents with lists and tables.
- Format text and to use styles.
- Add a header and footer to a document.
- Add a footnote to a document.
- Add a graphic to a document.
- Work with Cells and Worksheets.
- Calculate Your Data.
- Format your Workbook.
- Add Charts and Graphics.
- Collaborate with Others.
- Analyze your Data.
- Create, edit, save, and print presentations.
- Format presentations.
- Add a graphic to a presentation.
- Create and manipulate simple slide shows with outlines and notes.

Unit	Details	No. of Lectures
I	Word Processing; MS Word: Features, Creating, Saving and Opening Documents in Word, Interface, Toolbars, Ruler, Menus, Keyboard 100 Shortcut, Editing, Previewing, Printing, & Formatting a Document, Advanced Features of MS Word, Find & Replace, Using Thesaurus, Using Auto- Multiple Functions, Mail Merge, Handling Graphics, Tables &	(10)

	Charts, Converting a word document into various formats like- Text, Rich Text format, Word perfect, HTML,PDF etc..	
II	<p>Worksheet- MS-Excel: Worksheet basics, creating worksheet, entering into worksheet, heading information, data, text, dates, alphanumeric values, saving & quitting worksheet,</p> <p>Using Basic Functions: sum,avg,count,max,min</p> <p>Mathematical Function: Sumif,sumifs,if,nested if,AND,OR,NOT</p> <p>Text Function: Upper,lower,left,mid,right,trim,concat Sorting data Graph,charts</p>	(10)
III	<p>MS Power Point: Creating slide show with animations. Autocentnt Wizard,creating a lank presentation, autolayout, Power point screen:screen layout and Views, insert a new slide,applying design template, changing slide layout,reordering and hiding slides, slide show and editing custom slide. Resizing a text box ,Text box properties>Delete a text bo,Bulleted lists,Numbered lists,Adding notes,Video and Audio, Adding text Editing options,Formatting text,Replace fonts,Line spacing ,Change case Spelling check, Color schemes , Adding clip art,Adding an image from a file Editing graphic,AutoShapes,WordArt,Backgrounds, Action buttons Slide animation Animation preview Slide transitions Slide show options Slide master Header and footer Slide numbers Date and time</p>	(10)

PRACTICALS

B. Sc. (Information Technology)	Semester – II
Course Name: Object Oriented Programming	Course Code: IT23203MM

Practical			
Periods per week		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
List of Practical: To be implemented using Object-Oriented language			
1.	Classes and methods		
a.	Design an employee class for reading and displaying the employee information, the getInfo() and displayInfo() methods will be used respectively. Where getInfo() will be private method		
b.	Design the class student containing getData() and displayData() as two of its methods which will be used for reading and displaying the student information respectively. Where getData() will be a private method.		
c.	Design the class Demo which will contain the following methods: readNo(), factorial() for calculating the factorial of a number, reverseNo() will reverse the given number, isPalindrome() will check the given number is palindrome, isArmstrong() which will calculate the given number is armStrong or not. Where readNo() will be a private method.		
d.	Write a program to demonstrate function definition outside class and accessing class members in function definition.		
2.	Using friend functions.		
a.	Write a friend function for adding the two complex numbers, using a single class		
b.	Write a friend function for adding the two different distances and display its sum, using two classes.		
c.	Write a friend function for adding the two matrix from two different classes and display its sum.		
3.	Constructors and method overloading.		
a.	Design a class Complex for adding the two complex numbers and also show the use of constructor.		

b.	Design a class Geometry containing the methods area() and volume() and also overload the area() function .
c.	Design a class StaticDemo to show the implementation of static variable and static function.
4.	Operator Overloading
a.	Overload the operator unary(-) for demonstrating operator overloading.
b.	Overload the operator + for adding the timings of two clocks, And also pass objects as an argument.
c.	Overload the + for concatenating the two strings. For e.g “Py” + “thon” = Python
5.	Inheritance
a.	Design a class for single level inheritance using public and private type derivation.
b.	Design a class for multiple inheritance.
c.	Implement the hierarchical inheritance.
6.	Virtual functions and abstract classes
a.	Implement the concept of method overriding.
b.	Show the use of virtual function
c.	Show the implementation of abstract class.
7.	String handling
a.	String operations for string length , string concatenation
b.	String operations for string reverse, string comparison,
c.	Console formatting functions.
8.	Exception handling
a.	Show the implementation of exception handling
b.	Show the implementation for exception handling for strings
c.	Show the implementation of exception handling for using the pointers.

9.	File handling
a.	Design a class FileDemo open a file in read mode and display the total number of words and lines in the file.
b.	Design a class to handle multiple files and file operations
c.	Design a editor for appending and editing the files
10.	Templates
a.	Show the implementation for the following
b.	Show the implementation of template class library for swap function.
c.	Design the template class library for sorting ascending to descending and vice-versa

B. Sc. (Information Technology)		Semester – II	
Course Name: Microprocessor Architecture Practical		Course Code: IT23207VS	
Periods per week		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50

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 the contents of memory location 4001H from the memory location 2000H and place the result in memory location 4002H.
b.	Subtract two 8-bit numbers.
c.	Add the 16-bit number in memory locations 4000H and 4001H to the 16-bit number in memory locations 4002H and 4003H. The most significant eight bits of the two numbers to be added 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.
d.	Add the contents of memory locations 40001H and 4001H and place the result in the memory locations 4002H and 4003H.
e.	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.
f.	Find the 1's complement of the number stored at memory location 4400H and store the complemented number at memory location 4300H.
g.	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 results 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 a 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
c.	Write a set of instructions to alter the contents of the flag register in 8085.
d.	Write a program to count number of l's in the contents of D register and store the count in the B register.
5.	Multiple memory locations.
a.	Calculate the sum of a 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 an 8 bit number. So, ignore carries. Store the sum at memory location 4300H. b. Consider the sum to be a 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.
d.	Find the number of negative elements (most significant bit 1) in a block of data. The length of the block is in memory location 2200H and the block itself begins in memory location 2201H. Store the number of negative elements in memory location 2300H
e.	Find the largest number in a block of data. The length of the block is in memory location 2200H and the block itself starts from memory location 2201H. Store the maximum number in memory location 2300H. Assume that the numbers in the block are all 8 bit unsigned binary numbers.
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 a 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 2Sample problem:
c.	Calculate the sum of a series of odd 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 16-bit. Store the sum at memory locations 2300H and 2301H.
d.	Find the square of the given numbers from memory location 6100H and store the result from memory location 7000H
e.	Search the given byte in the list of 50 numbers stored in the consecutive memory locations and store the address of memory location in the memory locations 2200H and 2201H. Assume byte is in the C register and the starting address of the list is 2000H. If byte is not found store 00 at 2200H and 2201H
f.	Two decimal numbers, six digits each, are stored in BCD package form. Each number occupies a sequence of byte in the memory. The starting address of first number is 6000H Write an assembly language program that adds these two numbers and stores the sum in the same format starting from memory location 6200H
g.	Add 2 arrays having ten 8-bit numbers each and generate a third array of results. It is necessary to add the first element of array 1 with the first element of array-2 and so on. The starting addresses of array 1, array2 and array3 are 2200H, 2300H and 2400H, respectively

7.	Assembly programs on memory locations.
a.	Write an assembly language program to separate even numbers from the given list of 50 numbers and store them in the another list starting from 2300H. Assume starting address of 50 number list is 2200H
b.	Write assembly language program with proper comments for the following: A block of data consisting of 256 bytes is stored in memory starting at 3000H. This block is to be shifted (relocated) in memory from 3050H onwards. Do not

	<p>shift the block or part of the block anywhere else in the memory.</p>
c.	<p>Add even parity to a string of 7-bit ASCII characters. The length of the string is in memory location 2040H and the string itself begins in memory location 2041H. Place even parity in the most significant bit of each character.</p>
d.	<p>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</p>
e.	<p>Write an assembly language program to generate fibonacci numbers.</p>
f.	<p>Program to calculate the factorial of a number between 0 to 8.</p>
8.	String operations in assembly programs.
a.	<p>Write an 8085 assembly language program to insert a string of four characters from the tenth location in the given array of 50 characters</p>
b.	<p>Write an 8085 assembly language program to delete a string of 4 characters from the tenth location in the given array of 50 characters.</p>
c.	<p>Multiply the 8-bit unsigned number in memory location 2200H by the 8-bit unsigned number in memory location 2201H. Store the 8 least significant bits of the result in memory location 2300H and the 8 most significant bits in memory location 2301H.</p>
d.	<p>Divide the 16-bit unsigned number in memory locations 2200H and 2201H (most significant bits in 2201H) by the B-bit unsigned number in memory location 2300H store the quotient in memory location 2400H and remainder in 2401H</p>
e.	<p>DAA instruction is not present. Write a subroutine which will perform the same task as DAA.</p>
9.	Calculations on memory locations.

a.	To test RAM by writing '1' and reading it back and later writing '0' (zero) and reading it back. RAM addresses to be checked are 40FFH to 40FFH. In case of any error, it is indicated by writing 01H at port 10
b.	Arrange an array of 8 bit unsigned no in descending order
c.	Transfer ten bytes of data from one memory to another memory block. Source memory block starts from memory location 2200H where as destination memory block starts from memory location 2300H
d.	Write a program to find the Square Root of an 8 bit binary number. The binary number is stored in memory location 4200H and the square root in 4201H.
e.	Write a simple program to Split a HEX data into two nibbles and store it in memory
10.	Operations on BCD numbers.
a.	Add two 4 digit BCD numbers in HL and DE register pairs and store result in memory locations, 2300H and 2301H. Ignore carry after 16 bit.
b.	Subtract the BCD number stored in E register from the number stored in the D register
c.	Write an assembly language program to multiply 2 BCD numbers

B. Sc. (Information Technology)		Semester – II	
Course Name: Web Programming Practical		Course Code: IT23208SE	
Periods per week		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical	2½	50

		Examination	
List of Practicals			
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 demonstrating all Style sheet types		
2.	Image maps, Tables, Forms and Media		
a.	Design a web page with Imagemaps.		
b.	Design a web page demonstrating different semantics		
c.	Design a web page with different tables. Design a webpages using table so that the content appears well placed.		
d.	Design a web page with a form that uses all types of controls.		
e.	Design a web page embedding with multimedia features.		
3.	Java Script		
a.	Using JavaScript design, a web page that prints factorial/Fibonacci series/any given series.		
b.	Design a form and validate all the controls placed on the form using Javascript.		
c.	Write a JavaScript program to display all the prime numbers between 1 and 100.		
a.	Write a JavaScript program to accept a number from the user and display the sum of its digits.		
d.	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).		
e.	Write a javascript program to design a simple calculator.		
4.	Control and looping statements and Java Script references		
a.	Design a web page demonstrating different conditional statements.		
b.	Design a web page demonstrating different looping statements.		
c.	Design a web page demonstrating different Core JavaScript references (Array,		

	Boolean, Date, Function, Math, Number, Object, String, regExp).
5.	Basic PHP I
a.	Write a PHP Program to accept a number from the user and print it factorial.
b.	Write a PHP program to accept a number from the user and print whether it is prime or not.
6.	Basic PHP II
a.	Write a PHP code to find the greater of 2 numbers. Accept the no. from the user.
b.	Write a PHP program to display the following Binary Pyramid: <pre> 1 0 1 1 0 1 0 1 0 1 </pre>
7.	String Functions and arrays
a.	Write a PHP program to demonstrate different string functions.
b.	Write a PHP program to create a one dimensional array.
8.	PHP and mysql
a.	Write a PHP code to create: <ul style="list-style-type: none"> ● Create a database College ● 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 the 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.	Design a PHP page for authenticating a user.
9.	Email
a.	Write a program to send email with attachment.

10.	Sessions and Cookies
a.	Write a program to demonstrate use of sessions and cookies.

B. Sc. (Information Technology)		Semester – II	
Course Name: Numerical and Statistical Methods Practical		Course Code: IT23209AE	
Periods per week		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
List of Practical (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:		
a.	Program to solve algebraic and transcendental equations by bisection method.		
b.	Program to solve algebraic and transcendental equations by false position method.		
c.	Program to solve algebraic and transcendental equations 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 systems of equations using Gauss Jordan method.
b.	Program for solving linear systems of equations using Gauss Seidel method.
5.	Numerical Differentiation
a.	Programming 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 rd rule.
c.	Program for numerical integration using Simpson's 3/8 th rule.
7.	Solution of differential equations
a.	Program to solve differential equation using Euler's method
b.	Program to solve differential equations using modified Euler's method.
c.	Program to solve differential equation using Runge-kutta 2 nd order and 4 th order methods.
8.	Random variables and distributions
a.	Program to generate random variables.
b.	Program to fit binomial distribution.
c.	Program to fit Poisson distribution.
9	Distributions
a.	Program for Uniform distribution.

b.	Program for Bernoulli distribution
c.	Program for Negative binomial distribution.
10.	Correlation and Regression
a.	Program for Correlation
b.	Program for Linear regression.
c.	Program for multiple linear regression.
d.	Program for nonlinear regression

Academic Council dated_15th July, 2023- as per Item Number: 1.0.3



**DOMBIVLI SHIKSHAN PRASARAK MANDAL'S,
K.V. PENDHARKAR COLLEGE OF ARTS, SCIENCE AND COMMERCE,
(AUTONOMOUS) DOMBIVLI (EAST), DIST. THANE
(Affiliated to University of Mumbai)**

**Faculty of Science
DEPARTMENT OF COMPUTER SCIENCE
(Programme: Bachelor of Science, B.Sc.)**

SYLLABUS FOR

**F. Y. B.Sc. – COMPUTER SCIENCE (Semester I and II)
Choice Based Credit System (CBCS)
(as per NEP-2020)
(with effect from the Academic Year: 2023-2024)**

**BOS Chairperson
Mrs.Smita Sonawane.
CS Department**

**Prof. Dr. K. R. Jagdeo
I/C Principal**

F.Y.B.Sc. (Semester -I and II)
Computer Science Syllabus
Credit Based Semester and Grading System
To be implemented from the Academic year 2023-2024
SEMESTER -I SEMESTER -II

Sr. No	Course code	Course Title	Category	Total Marks	Credits
01	CS23101MM	Programming with Python-I	Major Mandatory	100	2
02	CS23102MM	Descriptive Statistics and Introduction to Probability.	Major Mandatory	100	2
03	CS23103MM	Practicals of Programming with Python- I and Practical of Descriptive Statistics and Introduction to Probability.	Major Mandatory	100	2
04	CS23104MN	Soft skill Development	Minor	100	2
05	CS23105OE	Discrete Mathematics	Generic / Open Elective(OE)	50	2
06	AF23105OE	Direct Tax-I	Generic / Open Elective(OE)	50	2
07	CS23106AE	Soft skill Development practical	Ability Enhancement Courses(AE)	50	2
08	CS23107VS	Practicals of Computer Organization and Design and Discrete Mathematics	Vocational Skill Course (VS)	100	2
09	CS23108IK	Cyber Law in India	Course on Indian Knowledge System(IK)	50	2

10	CS23109SE	Computer Organization and Design	Skill Enhancement Courses(SE)	100	2
11	CS23110VE	Green Technologies-I	Value Education Courses(VE)	50	2
Total Credit-22					

Sr. No	Course code	Course Title	Category	Total Marks	Credits
01	CS23201MM	Programming with Python-II	Major Mandatory	100	2
02	CS23202MM	Statistical Methods and Testing of Hypothesis	Major Mandatory	100	2
03	CS23203MM	Practical of Programming with Python- II and Statistical Methods and Testing of Hypothesis	Major Mandatory	100	2
04	CS23204MN	Data Structure	Minor	100	2
05	CS23205OE	Calculus	Generic / Open Elective(OE)	50	2
06	23205OE	Digital Freelancing	Generic / Open Elective(OE)	50	2
07	CS23206AE	Practical of Green Technologies-II	Ability Enhancement Courses(AE)	50	2
08	CS23207VS	Practicals of Data Structure and Linux	Vocational Skill Course (VS)	100	2
09	CS23208SE	Linux	Skill Enhancement Courses(SE)	100	2

10	CS23209CC	A.NCC B. NSS C. Performing arts D. Certificates courses E. Sports activities	Co-curricular Course (CC)	50	2
11	CS23210VE	Green Technologies-II	Value Education Courses(VE)	50	2
	Total Credit-22				

Semester I – Theory

Course Code: CS23101MM	Programming with Python I (Credits : 2 Lectures/Week: 50 min. each)
<p>Learning Objectives :</p> <ul style="list-style-type: none"> ● The objective of this paper is to introduce various concepts of programming to the students using Python.. <p>Expected Learning Outcomes :</p> <ul style="list-style-type: none"> ● Students should be able to understand the concepts of programming before actually starting to write programs. ● Students should be able to develop logic for Problem Solving. ● Students should be made familiar about the basic constructs of programming such as data, operations, conditions, loops, functions etc. ● Students should be able to apply the problem solving skills using syntactically simple language i.e.Python (version: 3.X or higher) 	

Unit I	<p>Reasons for Python as the learner’s first programming language. Introduction to the IDLE interpreter (shell) and its documentation. Expression evaluation: similarities and differences compared to a calculator; expressions and operators of types int, float, boolean. Built-in function type. Operator Precedence.</p> <p>Enumeration of simple and compound statements</p> <p>The expression statement : The assert statement, whose operand is a boolean expression (values true or false). The assignment statement, dynamic binding of names to values, (type is associated with data and not with names); automatic and implicit declaration of variable names with the assignment statement; assigning the value None to a name. The del (delete) statement.</p> <p>Input/output with print and input functions</p> <p>Simple & formatted print(%). A statement list (semicolon- separated list of simple statements on a single line) as a single interpreter command. The import statement for already-defined functions and constants. The augmented assignment statement. The built-in help() function. Interactive and script modes of IDLE, running a script, restarting the shell.</p> <p>The role of indentation</p> <p>for delimiting the body of a compound statement; calling a previously defined function. Compound data types str, tuple and list (enclosed in quotes, parentheses and brackets, respectively). Indexing individual elements within these types. Strings and tuples are immutable, lists are mutable. Built-in functions min, max, sum. Interactive solution of model problems, (e.g., finding the square root of a number or zero of a function)</p>	10 L
Unit II	<p>The compound statement def : to define function, advantages of functions, function parameters, formal parameters, actual parameters, global and local variables.</p> <p>The conditional statements : if, if-else, if-elif-else.</p> <p>The iterative statements : while, while-else, for-else. The range function, the iterative for statement. The continue statement to skip over one iteration of a loop, the break statement to exit the loop.</p>	10 L

	<p>Nested compound statements.</p> <p>Dictionaries: concept of key-value pairs, techniques to create, update and delete dictionary items.</p> <p>Problem-solving using compound types and statements.</p>	
Unit III	<p>Anonymous functions : Lambda definition</p> <p>List comprehensions : In detail various applications, shorthand use.</p> <p>Brief introduction to object-oriented programming; using the built-in dir() function, enumerate the methods of strings, tuples, lists, dictionaries. Using these methods for problem-solving with compound types.</p>	10 L

Textbooks:

1. Practical Programming: An Introduction to Computer Science Using Python 3, Paul Gries , Jennifer Campbell, Jason Montojo, Pragmatic Bookshelf, 2nd Edition, 2014
2. Programming through Python, M. T Savaliya, R. K. Maurya & G M Magar, Sybgen Learning India, 2020

ICT Reference :

1. https://www.python-course.eu/python3_formatted_output.php
2. <https://www.geeksforgeeks.org/python-dictionary/>
3. <https://realpython.com/python-lambda/>

Pedagogy:

1. Traditional teaching can be associated with presentations
2. Projected demo with hands-on will make concept more clear
3. To check their understanding assignments can be taken for debugging & output tracing
4. IDLE & shell can be explain in Lab sessions instead classroom

Course code : CS23102MM	Descriptive Statistics and Introduction to Probability (Credits : 2 Lectures/ Week: 50 min. each)	
<p>Learning Objectives :</p> <ul style="list-style-type: none"> • The purpose of this course is to familiarize students with basics of Statistics. • This will be essential for prospective researchers and professionals to know these basics. <p>Expected Learning Outcomes :</p> <ol style="list-style-type: none"> 1. Enable learners to know descriptive statistical concepts 2. Better understanding of Statistical Concept and data collection in statistical analysis. 3. Enable study of probability concept required for Computer learners. 		
Unit I	<p>Introduction to Statistics: Advantages and disadvantages. Data collection methods for primary data and secondary data</p> <p>Data Presentation : Data types : attribute, variable, discrete and continuous variable Data presentation : frequency distribution, histogram o give, curves, stem and leaf display Data Aggregation : Measures of Central tendency: Mean, Median, mode for raw data, discrete, grouped frequency distribution.</p> <p>Measures dispersion: Range, Quartiles, Deciles, percentiles, Quartile deviation, Variance, standard deviation, coefficient of variation for raw data, discrete and grouped frequency distribution, quartiles, Real life examples.</p>	10L
Unit II	<p>Moments: Raw moments, central moments, relation between raw and central moments</p> <p>Measures of Skewness and Kurtosis: based on moments, quartiles, relation between mean, median, mode for symmetric, asymmetric frequency curve.</p> <p>Correlation and Regression: bivariate data, scatter plot, correlation, nonsense correlation, Karl pearson’s coefficients of correlation, independence.</p> <p>Linear regression: fitting of linear regression using least square regression, coefficient of determination, properties of regression coefficients (only statement)</p>	10L
Unit III	<p>Probability: Random experiment, sample space, events types and operations of events</p> <p>Probability definition: classical, axiomatic, Elementary Theorems of probability (without proof) $0 \leq P(A) \leq 1$, $P(A \cup B) = P(A) + P(B) - P(A \cap B)$ $P(A') = 1 - P(A)$</p> <p>Conditional probability, ‘Bayes’ theorem, independence, Examples on Probability</p>	10L

Text Book :

1. Trivedi, K.S.(2001) : Probability, Statistics, Design of Experiments and Queuing theory, with applications of Computer Science, Prentice Hall of India, New Delhi.

Additional References :

1. Ross, S.M. (2006): A First course in probability. 6th Edⁿ Pearson
2. Kulkarni, M.B., Ghatpande, S.B. and Gore, S.D. (1999): common statistical tests. Satyajeeet Prakashan, Pune
3. Gupta , S.C. and Kapoor, K (1987) Fundamentals of Mathematical Statistics, Chand and Sons, New Delhi

ICT Ref. :

1. <https://slideplayer.com/slide/6569685/>
2. <https://slideplayer.com/slide/3489383/>
3. <http://www.ddegjust.ac.in/studymaterial/mcom/mc-106.pdf>
4. <https://byjus.com/maths/graphical-representation/>
5. <http://www.ddegjust.ac.in/studymaterial/mcom/mc-106.pdf>
6. <http://www.ddegjust.ac.in/studymaterial/mcom/mc-106.pdf>
7. <https://m.youtube.com/watch?v=m9a6rg0tNSM>
8. <https://www.tutorialspoint.com/statistics/kurtosis.htm>
9. <http://www.ddegjust.ac.in/studymaterial/mcom/mc-106.pdf>
10. <https://www.youtube.com/watch?v=8cEB3dWW7IM>
11. <https://byjus.com/maths/multiplication-rule-probability/>
12. <https://byjus.com/maths/tree-diagram/>

Pedagogy :

1. Group discussions on how to analyze data , which are the kinds of data, how to represent data?
2. By creating powerpoint presentations and videos for collection and representation of data.
3. Visualization of graphs and exploration of data for example to visually understand least squares regression and the effect of outliers done by using Software “R”.
4. Written and oral presentations based on Probability and operations on Probability, Parametric and non-parametric tests used for Sampling.
5. Projects, either group or individual based on data analysis or for recommendation system for marketing purpose

Course Code : CS23104MN	Soft Skills Development (Credits : 2 Lectures/Week: 50 min each)	
Learning Objectives : <ul style="list-style-type: none"> ● To help learners develop their soft skills and develop their personality together with their technical skills. ● Developing professional, social and academic skills to harness hidden strengths, capabilities and knowledge equip them to excel in real work environments and corporate life. ● Understand various issues in personal and profession communication and learn to overcome them Expected Learning Outcomes : <ol style="list-style-type: none"> 1. To know about various aspects of soft skills and learn ways to develop personality together with their technical skills. 2. Developing professional, social and academic skills to harness hidden strengths, capabilities and knowledge equip them to excel in real work environments and corporate life. 3. Understand the importance and type of communication in personal and professional environments. 4. To provide insight into much needed technical and non-technical qualities in career planning. 5. Learn about Leadership, team building, decision making and stress management 		
Unit I	Introduction to Soft Skills and Hard Skills Personality Development: Knowing Yourself, Positive Thinking, Johari’s Window, Communication Skills, Non-verbal Communication, Physical Fitness. Emotional Intelligence: Meaning and Definition, Need for Emotional Intelligence, Intelligence Quotient versus Emotional Intelligence Quotient, Skills to Develop Emotional Intelligence Etiquette and Mannerism: Introduction, Professional Etiquette, Technology Etiquette Communication Today: Significance of Communication, GSC’s 3M Model of Communication, Virtues of Listening, Fundamentals of Good Listening, Need for Intercultural, Communication, Communicating Digital World.	10 L
Unit II	Academic Skills : Employment Communication: Introduction, Resume, Curriculum Vitae, Scannable Resume, Developing an Impressive Resume, Formats of Resume, Job Application or Cover Letter Professional Presentation: Nature of Oral Presentation, Planning a Presentation, Preparing the Presentation, Delivering the Presentation Job Interviews: Introduction, Importance of Resume, Definition of Interview, Background Information, Types of Interviews, Preparatory Steps for Job Interviews, Interview Skill Tips, Changes in the Interview Process, FAQ During Interviews Group Discussion: Introduction, Ambience/Seating Arrangement for Group Discussion, Importance of Group Discussions, Difference between Group Discussion, Panel Discussion and Debate, Traits, Types of Group Discussions, topic based and Case based Group Discussion, Individual Traits Practical Assignment : Developing own resume, MOCK interview session,	10 L

	Conduction of GD	
Unit III	<p>Professional Skills :</p> <p>Creativity at Workplace: Introduction, Current Workplaces, Creativity, Motivation, Nurturing Hobbies at Work, The Six Thinking Hat Method</p> <p>Ethical Values: Ethics and Society, Theories of Ethics, Correlation between Values and Behavior, Nurturing Ethics, Importance of Work Ethics, Problems in the Absence of Work Ethics</p> <p>Leadership and Team Building: Leader and Leadership, Leadership Traits, Culture and Leadership, Leadership Styles and Trends, Team Building, Types of Teams</p> <p>Decision Making and Negotiation: Introduction to Decision Making, Steps for Decision Making, Decision Making Techniques, Negotiation Fundamentals, Negotiation Styles, Major Negotiation Concepts</p> <p>Stress and Time Management: Stress, Sources of Stress, Ways to Cope with Stress</p> <p>Practical Assignment : Presentations on Problems in the Absence of Work Ethics, Sources of Stress</p>	10 L

Text book:

1. Soft Skills: An Integrated Approach to Maximize Personality, Gajendra S. Chauhan, Sangeeta Sharma, Wiley India

Additional References:

1. Personality Development and Soft Skills, Barun K. Mitra, Oxford Press
2. Business Communication, ShaliniKalia, Shailja Agrawal, Wiley India
3. Soft Skills - Enhancing Employability, M. S. Rao, I. K. International
4. Cornerstone: Developing Soft Skills, Sherfield, Pearson India

ICT References :

1. <https://thriveglobal.com/stories/7-reasons-why-you-need-to-learn-about-personality-development/>
2. <https://www.urbanpro.com/personality-development/top-10-personality-development-tips>
3. <https://www.slideshare.net/angelinakanodia/johari-window-ppt-new>
4. <https://www.slideshare.net/sanchita1410/emotional-intelligence-24288292>
5. <https://www.youtube.com/watch?v=44QeZUIo10I>

Pedagogy :

1. By conducting Seminars, Live mock drills, Competitions, showing Online Videos etc. we can teach students Personality Development, Etiquette and Mannerism, Job Interviews, Group Discussion & Leadership and Team Building, Stress Management
2. We can provide Experts live interaction, Knowing industry practices.
3. Other topics can explain well with PPT

Course Code: CS23105OE	Discrete Mathematics (Credits : 2 Lectures/Week: 50 min. each)	
<p>Learning Objectives :</p> <ul style="list-style-type: none"> ● The purpose of the course is to familiarize the prospective learners with mathematical structures that are fundamentally discrete. ● This course introduces sets and functions, forming and solving recurrence relations and different counting principles. ● These concepts are useful to study or describe objects or problems in computer algorithms and programming languages. <p>Expected Learning Outcomes :</p> <ol style="list-style-type: none"> 1. To provide an overview of the theory of discrete objects, starting with relations and partially ordered sets. 2. Study about recurrence relations, generating function and operations on them. 3. Give an understanding of graphs and trees, which are widely used in software. 4. Provide basic knowledge about models of automata theory and the corresponding formal languages. 		
Unit I	<p>Recurrence Relations : Functions: Definition of function. Domain, co domain and the range of a function. Direct and inverse images. Injective, surjective and bijective functions. Composite and inverse functions. Relations: Definition and examples. Properties of relations , Partial Ordering sets, Linear Ordering Hasse Diagrams , Maximum and Minimum elements, Lattices Recurrence Relations: Definition of recurrence relations : Formulating recurrence relations, Solving recurrence relations - Backtracking method, Linear homogeneous recurrence relations with constant coefficients, Solving linear homogeneous recurrence relations with constant coefficients of degree two when characteristic equation has distinct roots and only one root, Particular solutions of non linear homogeneous recurrence relation. Solution of recurrence relation by the method of generation functions, Applications- Formulate and solve recurrence relation for Fibonacci numbers, Tower of Hanoi, Intersection of lines in a plane, Sorting Algorithms.</p>	10 L
Unit II	<p>Counting Principles , Languages and Finite State Machine : Permutations and Combinations : Partition and Distribution of objects, Permutation with distinct and indistinct objects, Binomial numbers, Combination with identities: Pascal Identity, Vandermonde's Identity, Pascal triangle, Binomial theorem, Combination with indistinct objects. Counting Principles : Sum and Product Rules, Two-way counting, Tree diagram for solving counting problems, Pigeonhole Principle (without proof); Simple examples, Inclusion Exclusion Principle (Sieve formula) (Without proof). Languages, Grammars and Machines : Languages , regular Expression and Regular languages, Finite state Automata, grammars, Finite state machines, Gödel numbers.</p>	10 L

Unit III	<p>Graphs and Trees :</p> <p>Graphs : Definition and elementary results, Adjacency matrix, path matrix, Representing relations using digraphs, Warshall’s algorithm- shortest path , Linked representation of a graph, Operations on graph with algorithms – searching in a graph; Insertion in a graph, Deleting from a graph, Traversing a graph- Breadth-First search and Depth-First search. Database applications of BST.</p> <p>Trees : Definition and elementary results. Ordered rooted tree, Binary trees, Complete and extended binary trees, representing binary trees in memory, traversing binary trees, binary search tree, Algorithms for searching and inserting in binary search trees, Algorithms for deleting in a binary search tree.</p>	10 L
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Textbook:

1. Discrete Mathematics and Its Applications, Seventh Edition by Kenneth H. Rosen, McGraw Hill Education (India) Private Limited. (2011)
2. Norman L. Biggs, Discrete Mathematics, Revised Edition, Clarendon Press, Oxford 1989.
3. Data Structures Seymour Lipschutz, Schaum’s out lines, McGraw- Hill Inc.

Additional References:

1. Elements of Discrete Mathematics: C.L. Liu , Tata McGraw- Hill Edition .
2. Concrete Mathematics (Foundation for Computer Science): Graham, Knuth, Patashnik Second Edition, Pearson Education.
3. Discrete Mathematics: SemyourLipschutz, Marc Lipson, Schaum’s out lines, McGraw- Hill Inc.
4. Foundations in Discrete Mathematics: K.D. Joshi, New Age Publication, New Delhi.

ICT Ref.:

1. [https://math.libretexts.org/Bookshelves/Combinatorics_and_Discrete_Mathematics/Book%3A_A_Spiral_Workbook_for_Discrete_Mathematics_\(Kwong\)/07%3A_Relations/7.02%3A_Properties_of_Relations](https://math.libretexts.org/Bookshelves/Combinatorics_and_Discrete_Mathematics/Book%3A_A_Spiral_Workbook_for_Discrete_Mathematics_(Kwong)/07%3A_Relations/7.02%3A_Properties_of_Relations)
2. <https://www.cs.cmu.edu/~cburch/survey/recurse/hanoitime.html>
3. <https://www.youtube.com/watch?v=giPQti7oSKc>
4. <https://www.britannica.com/science/permutation>
5. <https://www.youtube.com/watch?v=bvE2-dwNbCA>
6. <https://www.youtube.com/watch?v=AVVdiInFbEE>
7. <https://www.tutorialspoint.com/graphs-and-its-traversal-algorithms>
8. https://www.tutorialspoint.com/data_structures_algorithms/binary_search_tree.htm

Pedagogy:

1. Traditional teaching can be associated with presentations
2. To check their understanding assignments can be taken for debugging & output tracing

Course Code: AF23105OE	Direct Tax -I (Credits : 2 Lectures/Week: 3)	
Unit I	Introduction to Income tax and Basis of Charge 06 Definitions u/s – 2: Assessee, Assessment Year, Assessment, Annual value, Business, Capital asset, Income, Person, Previous Year, Transfer Basis of Charge: Section 3 – 9 – Previous Year, Residential Status, Scope Of Total Income, Deemed Income	10L
Unit II	Heads of Income & Deductions - I 12 Salary Income: Section 15 – 17, Including Section 10 relating to House Rent Allowance, Travel Concession, Special Allowance, Gratuity, Pension – Commutation, Leave Encashment, Compensation, Voluntary Retirement, Payment from Provident Fund Income From House Property: Section 22 – 27, Including Section 2 – Annual Value Profits & Gains From Business & Profession : Vocation Section 28- 32, 36, 37, 40, 40A, 43B, 44AD, 44ADA & 44AE including.: Section 2 – Business	10L
Unit III	Heads of Income & Deductions - II 12 Capital Gains : Section 45, 48, 49, 50, 54 and 55 Income from Other Sources: Section 56 – 59 Deductions 80 A 80 C 80CCC 80CCD 80D 80 DD 80DDB 80E 80EE 80G 80 TTA 80TTB 80U Clubbing of Income Section 60 to 65 Set Off & Carry Forward of Losses Sec: 70 Sec: 71 Sec: 71B Sec: 72 Sec: 73 Sec: 74	10L

<p style="text-align: center;">Unit II</p>	<p>7. Credit card & Online Banking Frauds 8. Obscenity, Pornography & Child Pornography 9. Cyber Defamation, Defacement, 10. Illegal online selling & Gambling 11. Denial of Service Attacks 12. Cyber terrorism 13. Software Piracy & illegal downloading</p> <p>2. Reasons for Cyber Crimes. 3. Cyber Criminal Mode and Manner of Committing Cyber Crime 4. Information Technology Act 2000: a. Evolution of the IT Act, Genesis and Necessity b. Salient features of the IT Act, 2000, various authorities under IT Act and their powers : Penalties & Offences, amendments.</p>	<p style="text-align: center;">10 L</p>
<p style="text-align: center;">Unit III</p>	<p>Case Study On Cyber Crimes:</p> <p>1. Harassment Via EMails, 2. Email 3. Spoofing,, 4. Cyber Pornography (Exm.MMS), 5. Cyber-Stalking 6. & so on</p>	<p style="text-align: center;">10 L</p>

Text book :

1. K.Kumar, "Cyber Laws: Intellectual property & E Commerce, Security", 1st Edition, Dominant Publisher, 2011.
2. Rodney D. Ryder, "Guide To Cyber Laws", Second Edition, Wadhwa And Company, New Delhi, 2007.
3. Information Security policy & implementation Issues, NIIT, PHI.

Additional References :

1. Cyber Security Understanding Cyber Crimes, Computer Forensics and Legal Perspectives by Nina Godbole and Sunit Belpure, Publication Wiley
2. IPR & Cyber Laws by Harsha Deshpande, Sheth Publication.
3. Vakul Sharma, "Handbook Of Cyber Laws" Macmillan India Ltd, 2nd Edition, PHI, 2003.
4. Justice Yatindra Singh, "Cyber Laws", Universal Law Publishing, 1st Edition, New Delhi, 2003.
5. Sharma, S.R., "Dimensions Of Cyber Crime", Annual Publications Pvt. Ltd., 1st Edition, 2004.
6. Augustine, Paul T., "Cyber Crimes And Legal Issues", Crescent Publishing Corporation, 2007.

ICT Reference :

1. https://onlinecourses.swayam2.ac.in/cec20_cs15/preview
2. <https://www.youtube.com/watch?v=KsLpoKRgF4U&t=463s>
3. <https://www.youtube.com/watch?v=OYQordD3BIU>
4. <https://www.youtube.com/watch?v=C4d2Ws2VMQ0>

Course Code: CS23109SE	Computer Organization and Design (Credits : 2 Lectures/Week: 50 min.each)	
<p>Learning Objectives : To understand the structure and operation of modern processors and their instruction sets.</p> <p>Expected Learning Outcomes :</p> <ol style="list-style-type: none"> 1) To learn about how computer systems, work and underlying principles 2) To understand computer number systems 2) To understand the basics of digital electronics needed for computers 3) To understand the basics of instruction set architecture for reduced and complex instruction sets 4) To understand the basics of processor structure and operation 5) To understand how data is transferred between the processor and I/O devices 		
Unit I	<p>Computer Abstractions and Technology: Basic structure and operation of a computer, functional units and their interaction.</p> <p>Computer Number Systems: Representation of numbers and characters. Binary, Octal, Hexadecimal conversions & arithmetic's.</p> <p>Logic circuits and functions: Combinational circuits and functions, Basic logic gates and functions, truth tables, logic circuits and functions. Minimization with Karnaugh maps. Synthesis of logic functions with. and-or-not gates, nand gates, nor gates. Fan-in and fan-out requirements; tristate buffers. Half adder, full adder, ripple carry adder. (Flip flops) Gated S-R and D latches, edge-triggered D latch. Shift registers and registers. Decoders, multiplexers.</p>	10 L
Unit II	<p>Instruction set architectures: Memory organization, addressing and operations; word size, big-endian and little endian arrangements. instructions, sequencing.</p> <p>Instruction sets for RISC and CISC Examples Altera NIOS II and Freescale Cold Fire). Operand addressing modes: pointers; indexing for arrays. Machine language, assembly language, assembler directives.</p> <p>Types of machine instructions: arithmetic, logic, shift, etc.</p> <p>Instruction sets, RISC and CISC examples.</p>	10 L
Unit III	<p>Basic Processor Unit: Main components of a processor: registers and register files, ALU, control unit, instruction fetch unit, Interfaces to instruction and data memories. Datapath. Instruction fetch and execute; Executing arithmetic/logic, memory access and branch instructions.</p> <p>Basic I/O : Accessing I/O devices, data transfers between processor and I/O devices. Interrupts and exceptions: interrupt requests and processing.</p> <p>Introduction to Embedded systems: Overall concept of embedded system, Need & application</p>	10 L

Text books :

1. Carl Hamacher et al., Computer Organization and Embedded Systems, 6 ed., McGraw- Hill 2012

Additional References :

1. Patterson and Hennessy, Computer Organization and Design, Morgan Kaufmann, ARM Edition, 2011
2. R P Jain, Modern Digital Electronics, Tata McGraw Hill Education Pvt. Ltd. , 4th Edition, 2010

ICT Ref. :

1. <https://youtu.be/VTGcansb9zM>
2. <https://youtu.be/MPMX7TKcGis>
3. <https://youtu.be/umqLvHYeGiI>
4. <https://youtu.be/7qPznqr4ndI>
5. <https://youtu.be/MwBPkoU28kg>
6. <https://youtu.be/TRCt9OpuHdY>
7. <https://youtu.be/PDYuYGHT668>

_Pedagogy :

1. Live demonstration of the computer & its internal hardware can be provided.
2. more practice and problem solving exercises.
3. Traditional teaching method using PPT containing diagrams

Course Code: CS23110VE	Green Technologies - I (Credits : 2 Lectures/Week:50 min. each)	
Learning Objectives : <ul style="list-style-type: none"> ● To familiarize with the concept of Green Computing and Green IT infrastructure for making computing and information system environments sustainable. ● Encouraging optimized software and hardware designs for development of Green IT Storage, Communication and Services. To highlight useful approaches to embrace green IT initiatives. Expected Learning Outcomes: <ol style="list-style-type: none"> 1. Learning about green IT can be achieved in and by hardware, software, network communication and data center operations. 2. Understand the strategies, frameworks, processes and management of green IT. 		
Unit I	Introduction of 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. Changing the Way of Work: Old Behaviors, starting at the Top, Process Reengineering with Green in Mind, Analyzing the Global Impact of Local Actions, Steps: Water, Recycling, Energy, Pollutants, Teleworkers and Outsourcing, Telecommuting, Outsourcing, how to Outsource.	10 L
Unit II	Going Paperless: 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. Green Industrial Processes: Pollution statistics from various industries like polymer, textile, pharmaceutical, dyes, pesticides and wastewater treatment. A greener approach towards all these industries	10 L
Unit III	Green Compliance: Protocols, Standards, and Audits: Protocols and Standards, ISO 14000-2004 Standard, Various initiatives by stakeholders, Green Audits and types, Audit and use of Carbon emission management software Introduction to green chemistry and technology: Twelve principles of green chemistry, Green technology-definition, importance, factors affecting green technology. Role of industry, government and institutions; industrial ecology, role of industrial ecology in green technology	10 L

Text book :

1. Green IT, Toby Velte, Anthony Velte Robert Elsenpeter, McGraw Hill.

2. Rashmi Sanghi and M.M. Srivastava, Green Chemistry-Environment Friendly Alternatives, NarosaPublishing House, New Delhi 2009.
3. Paul L. Bishop, Pollution prevention –Fundamentals and Practices, McGraw-Hill- international 2000.
4. Pollution Prevention: Fundamentals and Practice, Bishop P. L. McGraw-Hill, Boston, 2000.
5. Green IT,Deepak Shikarpur ,Vishwakarma Publications

Additional References :

1. Chemistry for Environmental Engineering and Science, Sawyer C.N, McCarty P.L and Parkin G.F. 5 th ed. McGraw-Hill Professional, 2003.
2. Environmental Chemistry with Green Chemistry, Das A. K. Books and Allied (P) Ltd., Kolkata, India, 2012.
3. Green Chemistry: Environmentally Benign Reactions, Ahluwalia, V.K. Ane Books India, New Delhi, India, 2006. Green Chemistry: An Introductory Text, Lancaster M. Royal Society of Chemistry, Cambridge, 2002.

ICT Reference :

1. <https://www.youtube.com/watch?v=GQboNg4lwqs>
2. <https://www.youtube.com/watch?v=tiz4Rol8tcE>

Pedagogy :

1. Traditional teaching can be associated with some PPT sessions or YouTube videos
2. Assignments can be taken for better understanding.

Semester I

Practical for Major, Minor subjects

Course code : CS23103MM: Practical list of Programming with Python I

1. Installing and setting up the Python IDLE interpreter. Executing simple statements like expression statement (numeric and Boolean types), assert, assignment, delete statements; the print function for output.
2. Script and interactive modes; defining a function in the two modes; executing a script; interactively executing a statement list (semicolon-separated sequence of simple statements); the input function.
3. Programs based on lists, conditional constructs, the for statement and the range function; interactively using the built-in functions len, sum, max, min
4. Programs related to string manipulation
5. Programs based on the while statement; importing and executing built-in functions from the time, math and random modules
6. Programs using break and continue statements.
7. Programs related to dictionaries
8. Programs using list comprehensions and anonymous functions
9. Programs using the built-in methods of the string, list and dictionary classes

Course code : CS23103MM: Practical List of Descriptive Statistics and Introduction to Probability

((To be implemented using R))

1. Frequency distribution and data presentation
2. Measures of central tendency
3. Data entry using, functions, c(), scan (), Creating vectors, Mathematical Operations: ** +/~/ / ^ ,exp, log, log10, etc, creating vector of text type, useful functions: data, frame, matrix operations, seq(), split() etc.
4. Frequency distribution using cut(), table()
5. Data presentation
6. Summary Statistics (measures of central tendency, dispersion)
7. Measures of skewness and kurtosis
8. Correlation and regression
9. Probability
10. Conditional probability

Pedagogy :

1. Traditional teaching can be associated with some PPT sessions or YouTube videos
2. Case Studies for Better Understanding.

Course code: CS23106AE: Soft Skill Development**Practical list of Soft Skill Development**

1. Creating and formatting a word document.
2. Preparing a PowerPoint presentation on an E-Commerce website.
3. Team building has radically evolved as a technique to develop and manage effective teams in the workplace.
4. Importance of communication skills
5. Exercises on Communication Principles
6. Use of word processing tools for communication
7. Use of spreadsheet tools for communication
8. Use of presentation tools for communication
9. Learning Objectives of Soft skills
10. How to develop Interpersonal Relations like Empathy, Sympathy

Course code: CS23107VS: Computer Organization and Design

Practical list of Computer Organization and Design

1. Study and verify the truth table of various logic gates (NOT, AND, OR, NAND, NOR, EX-OR, and EX-NOR).
2. Simplify given Boolean expression and realize it.
3. Design and verify a half/full adder
4. Design and verify half/full subtractor
5. Design a 1 bit magnitude comparator using combinational circuits.
6. Design and verify the operation of flip-flops using logic gates.
7. Verify the operation of a counter.
8. Verify the operation of a 4 bit shift register.
9. Using SPIM, write and test a machine program that reads two integers, adds them and returns a sum. Using SPIM, write and test a program that reads in a positive integer using the SPIM system calls. If the integer is not positive, the program should terminate with the message "Invalid Entry"; otherwise the program should give a message "Valid entry".

Note :

- Practical No. 1 to 8 can be performed using any open source simulator (like MultimediaLogic) (Download it from <https://sourceforge.net/projects/multimedialogic/files/latest/download>)**
- Practical No. 9 and 10 are required to be done using SPIM. SPIM is a self contained simulator that will run MIPS R2000/R3000 assembly language programs. # Latest version is available at <https://sourceforge.net/projects/spimsimulator/>**

Course code: CS23107VS: Practical list of Discrete Mathematics

1. Graphs of standard functions such as absolute value function, inverse function, logarithmic and exponential functions, flooring and ceiling functions, trigonometric functions over suitable intervals.
2. Partial ordering sets, Hasse diagram and Lattices.
3. Recurrence relation.
4. Different counting principles.
5. Finite state Automata and Finite state machines.
6. Warshall's Algorithm.
7. Shortest Path algorithms.
8. Operations on graph.
9. Breadth and Depth First search algorithms.
10. Concept of searching, inserting and deleting from binary search trees.

Semester II – Theory

Course Code : CS23201MM	Programming with Python II (Credits : 2 Lectures/Week: 50 min. each)	
Learning Objectives: <ul style="list-style-type: none"> ● The objective of this course is to provide a comprehensive study of the C programming language, stressing upon the strengths of C, which provide the students with the means of writing modular, efficient, maintainable, and portable code Expected Learning Outcomes : <ol style="list-style-type: none"> 1. Students should be able to write, compile and debug programs in C language. 2. Students should be able to use different data types in a computer program. 3. Students should be able to design programs involving decision structures, loops and functions. 4. Students should be able to explain the difference between call by value and call by reference 5. Students should be able to understand the dynamics of memory by the use of pointers. 		
Unit I	Python File Input-Output : Opening and closing files, various types of file modes, reading and writing to files, manipulating directories. Iterables, iterators and their problem solving applications. Exception handling : What is an exception, various keywords to handle exceptions such try, except, else, finally, raise. Regular Expressions : Concept of regular expression, various types of regular expressions, using match function. OOP : Features of object oriented programming language, implementing inheritance	10 L
Unit II	GUI Programming in Python (using Tkinter/wxPython/Qt) : What is GUI, Advantages of GUI, Introduction to GUI library. Layout management, Widgets such as : frame, label, button, checkbutton, entry, listbox, message, radiobutton, text, spinbox, etc.	10 L
Unit III	GUI : events and bindings, fonts, colours, drawing on canvas, line, oval, rectangle, etc. Database connectivity in Python : Installing mysql connector, accessing connector module module, using connect, cursor, execute & close functions, reading single & multiple results of query execution, executing different types of statements, executing transactions, understanding exceptions in database connectivity.	10 L

Text books :

1. Paul Gries , Jennifer Campbell, Jason Montojo, Practical Programming: An Introduction to Computer Science Using Python 3, Pragmatic Bookshelf, 2/E 2014

Additional References :

1. James Payne , Beginning Python: Using Python 2.6 and Python 3, Wiley India, 2010

2. A. Lukaszewski, MySQL for Python: Database Access Made Easy, Pact Publisher, 2010

ICT Ref. :

1. https://www.tutorialspoint.com/python/python_reg_expressions.htm
2. <https://opensource.com/resources/python/gui-frameworks>
3. <https://www.youtube.com/watch?v=g60QghtJmjY>

Pedagogy :

1. Traditional teaching can be associated with presentations
2. Projected demo with hands-on will make concept more clear
3. To check their understanding assignments can be taken for debugging & output tracing

Course Code : CS23202MM	Statistical Methods and Testing of Hypothesis (Credits : 2 Lectures/Week:50 min. each)	
<p>Learning Objectives:</p> <ul style="list-style-type: none"> • The purpose of this course is to familiarize students with basics of Statistics. This will be essential for prospective researchers and professionals to know these basics. <p>Expected Learning Outcomes :</p> <ol style="list-style-type: none"> 1. Enable learners to know descriptive statistical concepts 2. Enable study of probability concept required for Computer learners 3. Learner’s will get an idea about proper selection of variation tests 		
Unit I	<p>Standard distributions : random variable; discrete, continuous, expectation and variance of a random variable, pmf, pdf, cdf, reliability. Introduction and properties : without proof for following distributions: binomial, normal,chi-square, t, F.</p>	10 L
Unit II	<p>Hypothesis testing : one sided, two sided hypothesis, critical region, p-value, confidence intervals. Student’s t distribution, normal distribution, F distribution, chi- square distribution Analysis of variance : one-way, two-way analysis of variance</p>	10 L
Unit III	<p>Difference between parametric and non-parametric test : Non-parametric tests : need of non-parametric tests, sign test, Wilcoxon’s signed rank test, run test, Kruskal-Walis tests. Post-hoc analysis of one-way analysis of variance : Duncan’s test Chi- square test of association</p>	10 L

Text Book :

1. Trivedi, K.S.(2009) : Probability, Statistics, Design of Experiments and Queuing theory, with applications of Computer Science, Prentice Hall of India, New Delhi

Additional References :

1. Ross, S.M. (2006): A First course in probability. 6th Edⁿ Pearson
2. Kulkarni, M.B., Ghatpande, S.B. and Gore, S.D. (1999): Common statistical tests. SatyajeetPrakashan, Pune
3. Gupta, S.C. and Kapoor, V.K. (2002) : Fundamentals of Mathematical Statistics,S. Chand and Sons, New Delhi
4. Gupta, S.C. and Kapoor, V.K. (4th Edition) : Applied Statistics, S. Chand and Son's, New Delhi
5. Montgomery, D.C. (2001): Planning and Analysis of Experiments, Wiley.

ICT Ref. :

1. <https://www.youtube.com/watch?v=CfZa1daLjwo>
2. https://www.youtube.com/watch?v=vqojqDds_eo
3. <https://www.youtube.com/watch?v=3PWKQiLK41M>
4. <https://www.youtube.com/watch?v=Q1yu6TQZ79w>
5. https://www.youtube.com/watch?v=2tuBREK_mgE
6. <https://www.youtube.com/watch?v=gHBL5Zau3NE>
7. <https://www.youtube.com/watch?v=h5Glm738j84><https://www.youtube.com/watch?v=xLYgEUAOyTQ>
8. <https://www.youtube.com/watch?v=z6qZK5w3Zxc>
9. <https://keydifferences.com/difference-between-parametric-and-nonparametric-test.html>
10. <https://www.youtube.com/watch?v=OypCNBPmGBY>

Pedagogy:

1. Group discussions on how to analyze data , which are the kinds of data, how to represent data
2. By creating power point presentations and videos for collection and representation of data.
3. Visualization of graphs and exploration of data for example to visually understand least squares regression and the effect of outliers done by using Software “R”.
4. Written and oral presentations based on Probability and operations on Probability, Parametric and non-parametric test used for Sampling.
5. Projects, either group or individual based on data analysis or for a recommendation system for marketing purpose.

Course code: CS23204MN	Data Structures (Credits : 2 Lectures/Week: 50 min. each)	
Objectives. <ul style="list-style-type: none"> ● To explore and understand the concepts of Data Structures and its significance in programming. Provide and holistic approach to design, use and implement abstract data types. ● Understand the commonly used data structures and various forms of its implementation for different applications using Python. Expected Learning Outcomes: <ol style="list-style-type: none"> 1. Learn about Data structures, its types and significance in computing 2. Explore about Abstract Data types and its implementation 3. Ability to program various applications using different data structure in Python. 		
Unit I	Abstract Data Types : Introduction, The Date Abstract Data Type, Bags, Iterators. Application Arrays : Array Structure, Python List, Two Dimensional Arrays, Matrix Abstract Data Type, Application Sets and Maps : Sets-Set ADT, Selecting Data Structure, List based Implementation, Maps-Map ADT, List Based Implementation, Multi-Dimensional Arrays-Multi-Array ADT, Implementing Multiarrays, Application. Algorithm Analysis : Introduction, Finding complexity of algorithm: time and space. Searching and Sorting : Searching-Linear Search, Binary Search, Sorting-Bubble, Selection and Insertion Sort, Working with Sorted Lists-Maintaining Sorted List, Maintaining sorted Lists.	10 L
Unit II	Linked Structures : Introduction, Singly Linked List-Traversing, Searching, Prepending and Removing Nodes, Bag ADT-Linked List Implementation. Comparing Implementations, Linked List Iterators, More Ways to Build linked Lists, Applications-Polynomials Stacks : Stack ADT, Implementing Stacks-Using Python List, Using Linked List, StackApplications-Balanced Delimiters, Evaluating Postfix Expressions Queues : Queue ADT, Implementing Queue-Using Python List, Circular Array, Using List, Priority Queues- Priority Queue ADT, Bounded and unbounded Priority Queues Advanced Linked List : Doubly Linked Lists-Organization and Operation, Circular Linked List-Organization and Operation, Multi Lists	10 L
Unit III	Recursion : Recursive Functions, Properties of Recursion, Its working, Recursive Applications Hash Table : Introduction, Hashing-Linear Probing, Clustering, Rehashing, Separate Chaining, Hash Functions Advanced Sorting : Merge Sort, Quick Sort, Sorting Linked List Binary Trees : Tree Structure, Binary Tree-Properties, Implementation and Traversals, Expression Trees, Heaps and Heapsort, Search Trees	10 L

Text book :

1. Data Structure and algorithm Using Python, Rance D. Necaie, 2016 Wiley India Edition
2. Data Structure and Algorithm in Python, Michael T. Goodrich, RobertomTamassia, M. H. Goldwasser, 2016 Wiley India Edition

Additional References:

1. Data Structure and Algorithmic Thinking with Python- NarasimhaKarumanchi, 2015, Careermonk Publications
2. Fundamentals of Python: Data Structures, Kenneth Lambert, Delmar Cengage Learning

ICT Ref. :

1. <https://www.youtube.com/watch?v=m9n2f9lhtw>
2. <https://www.youtube.com/watch?v=qp8u-frRAnU>
3. <https://www.youtube.com/watch?v=f5dU3xoE6ms>

Pedagogy :

1. Traditional teaching can be associated with presentations
2. Projected demo with hands-on will make concept more clear
3. To check their understanding assignments can be taken for debugging & output tracing

Course Code: CS23205OE	Calculus (Credits : Lectures/Week: 50 min. each)	
Learning Objectives : <ul style="list-style-type: none">● The course is designed to have a grasp of important concepts of Calculus in a scientific way.● It covers topics from as basic as definition of functions to partial derivatives of functions in a gradual and logical way.● The learner is expected to solve as many examples as possible to a get compete clarity and understanding of the topics covered. Expected Learning Outcomes : <ol style="list-style-type: none">1. Understanding of Mathematical concepts like limit, continuity, derivative, integration of functions.2. Ability to appreciate real world applications which uses these concepts.3. Skill to formulate a problem through Mathematical modeling and simulation.		

Unit I	DERIVATIVES AND ITS APPLICATIONS : Review of Functions, limit of a function, continuity of a function, derivative function. Derivative In Graphing And Applications: Analysis of Functions: Increase, Decrease, Concavity, Relative Extrema; Graphing Polynomials, Rational Functions, Vertical Tangents. Absolute Maxima and Minima, Applied Maximum and Minimum Problems, Newton's Method.	10 L
Unit II	INTEGRATION AND ITS APPLICATIONS : An Overview of the Area Problem, Indefinite Integral, Definition of Area as a Limit; Sigma Notation, Definite Integral, Evaluating Definite Integrals by Substitution, Area Between Two Curves, Length of a Plane Curve. Numerical Integration: Simpson's Rule. Modeling with Differential Equations, Separation of Variables, Slope Fields, Euler's Method, First-Order Differential Equations and Applications.	10 L
Unit III	PARTIAL DERIVATIVES AND ITS APPLICATIONS : Functions of Two or More Variables Limits and Continuity Partial Derivatives, Differentiability, Chain Rule, Directional Derivatives and Gradients, Tangent Planes and Normal, Vectors, Maxima and Minima of Functions of Two Variables.	10 L

Textbook :

1. Calculus: Early transcendental (10th Edition): Howard Anton, Irl Bivens, Stephen Davis, John Wiley & sons, 2012.

Additional References :

1. Calculus and analytic geometry (9th edition): George B Thomas, Ross L Finney, Addison Wesley, 1995
2. Calculus: Early Transcendentals (8th Edition): James Stewart, Brooks Cole, 2015.
3. Calculus (10th Edition): Ron Larson, Bruce H. Edwards, Cengage Learning, 2013.
4. Thomas' Calculus (13th Edition): George B. Thomas, Maurice D. Weir, Joel R. Hass, Pearson, 2014.

ICT Ref.:

1. <https://brilliant.org/wiki/extrema/>
2. <https://byjus.com/maths/applications-of-derivatives/>
3. <https://innertowords.com/application-of-derivatives-in-economics-and-commerce/>

Pedagogy :

1. Traditional teaching can be associated with presentations
2. Projected demo with hands-on will make concept more clear
3. To check their understanding assignments can be taken for debugging & output tracing

Course code: CS23208SE	Linux (Credits : 2 Lectures/Week: 50 min. each)	
<p>Learning Objectives.</p> <ul style="list-style-type: none"> To understand the structure and operation of modern processors and their instruction sets <p>Expected Learning Outcomes:</p> <ol style="list-style-type: none"> To learn about how computer systems work and underlying principles To understand the basics of digital electronics needed for computers To understand the basics of instruction set architecture for reduced and complex instruction sets To understand the basics of processor structure and operation. To understand how data is transferred between the processor and I/O devices 		
Unit I	<p>Introduction : History of Linux, Philosophy, Community, Terminology, Distributions, Linux kernel vs distribution. Why learn Linux? Importance of Linux in software ecosystem: web servers, supercomputers, mobile, servers.</p> <p>Installation : Installation methods, Hands on Installation using CD/DVD or USB drive.</p> <p>Linux Structure : Linux Architecture,, Filesystem basics, The boot process, init scripts, runlevels, shutdown process, Very basic introductions to Linux processes, Packaging methods:rpm/deb, Graphical Vs Command line.</p>	10 L
Unit II	<p>Graphical Desktop : Basic Desktop Operations, Installing and Updating Software, Text editors: gedit, vi, vim, emacs, Graphics editors,Multimedia applications.</p> <p>Command Line : Command line mode options, Shells, Basic Commands, General Purpose Utilities, Installing Software, User management, Environment variables, Command aliases.</p> <p>Linux Documentation : man pages, GNU info, help command, More documentation sources</p> <p>File Operations : Filesystem, Filesystem architecture, File types, File attributes, Working with files, Backup, compression</p>	10 L
Unit III	<p>Security : Understanding Linux Security, Uses of root, sudo command, working with passwords, Bypassing user authentication, Understanding ssh</p> <p>Networking : Basic introduction to Networking, Network protocols : http, ftp etc., IP address, DNS, Browsers, Transferring files, ssh, telnet, ping, traceroute, route, hostname, networking GUI.</p> <p>Basic Shell Scripting : Features and capabilities, Syntax, Constructs, Modifying files, Sed, awk command, Scripting File manipulation utilities, Dealing with large files and Text, String manipulation, Boolean expressions, File tests, Case, Debugging, Regular expressions</p>	10 L

Text book :

1. Unix Concepts and Applications by Sumitabha Das.
2. Official Ubuntu Book, 8th Edition, by Matthew Helmke& Elizabeth K. Joseph with Jose Antonio Rey and Philips Ballew, Prentice Hall

Additional References:

1. Linux kernel Home: <http://kernel.org>
2. Open Source Initiative: <https://opensource.org/>
3. The Linux Foundation: <http://www.linuxfoundation.org/>

ICT Ref. :

1. <https://youtu.be/oEDItVVZqe>
2. <https://youtu.be/Dx2dJUPsJ>
3. <https://www.thegeekstuff.com/2010/09/linux-file-system-structure/>
4. <https://www.computerhope.com/unix/sudo.ht>
5. <https://www.geeksforgeeks.org/>

Pedagogy:

- Linux distributions can be better taught by installing more than one type of them by guiding students.
- Various modes of installations can be taught to the students that is either by using usb/network.
- Network management tools can also be demonstrated in the practical slots

Course code : CS23210VE	Green Technologies-II (Credits : 2 Lectures/Week :50 min. each)	
<p>Learning Objectives :</p> <ul style="list-style-type: none"> • To familiarize with the concept of Green Computing and Green IT infrastructure for making computing and information system environment sustainable. • Encouraging optimized software and hardware designs for development of Green IT Storage, Communication and Services. To highlight useful approaches to embrace green IT initiatives. <p>Expected Learning Outcomes :</p> <ol style="list-style-type: none"> 1. Learn about green IT can be achieved in and by hardware, software, network communication and data center operations. 2. Understand the strategies, frameworks, processes and management of green IT 		

<p>Unit I</p>	<p>Green IT Overview: Environmental Concerns and Sustainable Development, Environmental Impacts of IT ,Holistic Approach to Greening IT, Greening IT, Applying IT for Enhancing Environmental Sustainability, Green IT Standards and Eco-Labeling of IT, Green Washing, Green IT: Burden or Opportunity.</p> <p>Green Devices and Hardware: Introduction, Life Cycle of a Device or Hardware, Reuse, Recycle and Dispose</p> <p>Green Software: Introduction, Processor Power States, Energy-Saving Software Techniques, Evaluating and Measuring Software Impact to Platform Power</p>	<p>10 L</p>
<p>Unit II</p>	<p>Green Data Centres: Data Centres and Associated Energy Challenges, Data Centre IT Infrastructure, Data Centre Facility Infrastructure: Implications for Energy Efficiency, IT Infrastructure Management, Green Data Centre Metrics</p> <p>Green Data Storage: Introduction, Storage Media Power Characteristics, Energy Management Techniques for Hard Disks, System- Level Energy Management</p> <p>Green Networks and Communications: Introduction, Objectives of Green Network Protocols, Green Network Protocols and Standards Enterprise.</p>	<p>10 L</p>
<p>Unit III</p>	<p>Enterprise Green IT Readiness: Introduction, Readiness and Capability, Development of the G-Readiness Framework, Measuring an Organization's G-Readiness</p> <p>Sustainable IT Services: Creating a Framework for Service Innovation: Introduction, Factors Driving the Development of Sustainable IT, Sustainable IT Services (SITS), SITS Strategic Framework</p> <p>Green Enterprises and the Role of IT: Introduction, Organizational and Enterprise Greening, Information Systems in Greening Enterprises, Greening the Enterprise: IT Usage and Hardware, Inter-organizational Enterprise Activities and Green Issues.</p>	<p>10 L</p>

Text book :

1. Harnessing Green IT: Principles and Practices, San Murugesan, G. R. Ganadharan, Wiley & IEEE.

Additional References :

1. Green IT, Deepak Shikarpur, Vishwkarma Publications, 2014.
2. Green Communications: Principles, Concepts and Practice- Samdanis et al, J. Wiley

ICT References :

1. <https://www.slideshare.net/sc09b093/it-effects-on-environment>
2. <https://www.computerweekly.com/blog/Green-Tech/8-ways-to-make-your-software-applications-more-energy-efficient>
3. <https://www.slideshare.net/IGBCGreenBuildingCon/presentation-on-green-data-centres>
4. <https://goodtipsntricks.blogspot.com/2015/08/energy-management-techniques-for-hard.html>
5. <https://www.slideshare.net/ranjanagore/enterprise-green-it-strategy>
6. <https://www.youtube.com/watch?v=2f5m-jBf81Q>

Pedagogy :

1. *PPT, Online videos*
2. Industry Visits, Industry Expert officials interaction, Live Demos

Semester II

Practical list for Major, Minor subject

Course code: CS23203MM Practical list for Programming with Python II

1. Programs to read and write files.
2. Programs with iterables and iterators.
3. Program to demonstrate exception handling.
4. Program to demonstrate the use of regular expressions.
5. Program to show draw shapes & GUI controls.
6. Program to create server-client and exchange basic information.
7. Program to send email & read contents of URL.

Course code: CS23203MM Practical list Statistical Methods and Testing of Hypothesis

1. Problems based on binomial distribution
2. Problems based on normal distribution
3. Property plotting of binomial distribution
4. Property plotting of normal distribution
5. Plotting pdf, cdf, pmf, for discrete and continuous distribution
6. t test, normal test, F test
7. Analysis of Variance
8. Non parametric tests- I
9. Non- Parametric tests – II Post-hoc analysis of one-way analysis

Course code: CS23206 AE: Green Technologies-II

Practical list for Green Technologies-II

- 1 Familiarization with renewable energy gadgets
2. To study about Battery Free FlashLight
3. To study gasifier
4. To study all about Green Building
5. To study briquetting machine
- 6.To study about Traffic Wind Turbine
- 7.Familiarization with different solar energy gadgets
8. Green Roof Technology
9. To study about solar lighting
10. To study and Built a project onEco Cooler

Practical list for Data Structure and Linux

Course code: CS23207VS: Data structures

1. Implement Linear Search to find an item in a list.
2. Implement binary search to find an item in an ordered list.
3. Implement Sorting Algorithms
 - a) Bubble sort
 - b) Insertion sort
 - c) Quick sort
 - d) Merge Sort
4. Implement use of Sets and various operations on Sets.
5. Implement working of Stacks. (pop method to take the last item added off the stack and a push method to add an item to the stack)
6. Implement Program for
 - a) Infix to Postfix conversion
 - b) Postfix Evaluation
7. Implement the following
 - a) A queue as a list which you add and delete items from.
 - b) A circular queue. (The beginning items of the queue can be reused).
8. Implement Linked list and demonstrate the functionality to add and delete items in the Linked list.
9. Implement Binary Tree and its traversals. Recursive implementation of
 - a. Factorial
 - b. Fibonacci
 - c. Tower of Hanoi

Course code: CS23207VS: Linux

1. Linux Installation :

- a. Install your choice of Linux distribution e.g. Ubuntu, Fedora, Debian.
- b. Try different installation media like CD/DVD, USB Drive to install.
- c. Customize desktop environment by changing different default options like changing default background, themes, screensavers.

2.
 - a. **Screen Resolution:** Ascertain the current screen resolution for your desktop.
 - b. **Networking:** Get the current networking configuration for your desktop. Are you on a wired or a wireless connection? What wireless networks are available, if any?
 - c. **Time Settings** Change the time zone of your system to (or New York Time if you are currently in Indian time). How does the displayed time change? After noting the time change, change the time zone back to your local time zone.

3. Installing and Removing Software:

- a. **Install gcc package.** Verify that it runs, and then remove it.

4. Documentations:

- a. **Finding Info Documentation:** From the command line: bring up the info page for the grep

command. Bring up the usage section.

- b. Finding man pages From the command line: Bring up the man page for the 'ls' command. Scroll down to the EXAMPLES section.
- c. Finding man pages by Topic What man pages are available that document file compression?
- d. Finding man pages by Section From the command line, bring up the man page for the printf library function. Which manual page section are library functions found?
- e. Command-Line Help List the available options for the mkdir command. How can you do this?

5. Command line operations:

- a. Install any new package on your system
- b. Remove the package installed
- c. Find the passwd file in / using find command
- d. Create a symbolic link to the file you found in last step
- e. Create an empty file example.txt and move it in /tmp directory using relative pathname.
- f. Delete the file moved to /tmp in the previous step using absolute path.
- g. Find the location of ls, ps, bash commands.

6. File Operations:

- a. Explore mounted filesystems on your system.
- b. What are different ways of exploring mounted file systems on Linux?
- c. Archive and backup your home directory or work directory using tar, gzip commands.
- d. Use dd command to create files and explore different options to dd.
- e. Use diff command to create diff of two files.
- f. Use patch command to patch a file. And analyze the patch using diff command again.

7. Use environment

- a. Which account are you logged in? How do you find out?
- b. Display /etc/shadow file using cat and understand the importance of shadow file. How it's different than passwd file.
- c. Get you current working directory.
- d. Explore different ways of getting command history, how to run previously executed commands without typing it?
- e. Create aliases to most commonly used commands like.

8. Linux Editors: vim/emacs

- a. Create, modify, search, navigate a file in editor.
- b. Learn all essential commands like search, search/replace, highlight, show line numbers.

9. Linux Security:

- a. Use of sudo to change user privileges to root
- b. Identify all operations that require sudo privileges
- c. Create a new user and add it to the sudo configuration file.
- d. Set password for new user.
- e. Modify the expiration date for new users using password ageing.
- f. Delete newly added users.

10. Network:

- a. Get the IP address of your machine using ifconfig.
- b. If IP is not set, then assign an IP address according to your network settings.
- c. Get the hostname of your machine.
- d. Use ping to check the network connectivity to remote machines.

e. Use telnet/ssh to connect to remote machines and learn the difference between the two.

f. Troubleshooting network using traceroute, ping, route commands.

11. Shell Scripting

a. Searching with grep: Search for your username in the /etc/passwd file.

b. Parsing files with awk: Display in a column a unique list of all the shells used for users in /etc/passwd. Which field in /etc/passwd holds the shell (user command interpreter in the manual page)? How do you make a list of unique entries, that is, no repeated entries?

c. Searching and substituting with sed: Search all instances of the user command interpreter (shell) equal to /bin/false in /etc/passwd and substitute with /bin/bash using sed.

d. Exit status: write a script which does ls to a non-existent file. Display an exit status of the previous command. Now create the file and again display the exit status. In each task send the ls output to /dev/null

e. Working with files: Write a shell script which will ask the user for a directory, create that directory and switch to it and tell the user where you are using the pwd command. Now use touch to create some new files followed by displaying the filenames.

f. Environment variables: Write a script which displays all environment variables on the system.

g. Functions: Write a script that asks the user for a number (1,2 or 3) which is used to call a function with the number in its name. The function then displays a message with the function number within it, example: "This message is from function number 4."

h. Arithmetic: Write a script which will work as an arithmetic calculator to add, subtract, multiply, divide. The user should pass an argument on the command line a letter (a,s,m or d) and two numbers. If the wrong number of arguments are passed then display an error message. Make use of functions to perform operations.

i. Case Statements: Write a script that will be given a month number as the argument and will translate this number into a month name. The result will be printed to stdout.

j. Script Arguments and Usage Information: Write a script that takes exactly one argument, a directory name. The script should print that argument back to standard output. Make sure the script generates a usage message if needed and that it handles errors with a message.

k. Randomness: Create a script that takes a word as an argument from the user, then appends a random number to the word and displays it to the user. Put in a check to make sure the user passed in a word, displaying a usage statement if a word was not passed as an argument.

l. Strings: Write a script that will read two strings from the user. The script will perform three operations on the two strings:

i. Use the test command to see if one of the strings is of zero length and if the other is of non-zero length, telling the user of both results.

ii. Determine the length of each string and tell the user which is longer or if they are of equal length.

iii. Compare the strings to see if they are the same. Let the user know the result.

12. Processes

a. Background and Foreground Jobs: Create a job that writes the date to an output file thrice, with a gap of 60 seconds and 180 seconds. Check whether the job is running and bring it to the foreground job. Stop the foreground job and make it run in the background. Finally, kill the background job and verify its status.

b. Scheduling a One-Time Backup: Create a job using at to back up files in one directory to another 10 minutes from now.

c. Scheduling Repeated Backups: Set up a cron job to backup the files in one directory to another every day at 10 am. Put the commands in file called mycron

Examination Evaluation Scheme

The College will conduct all the semesters at the end of each semester. **The student will have to secure a minimum of 40% marks in the examination for all the above theory & practical courses. For Theory there will be separate passing in internal & external.**

I. Internal Exam-40 Marks

(i) Class Test– 20 Marks

20 marks Test – Duration 40 mins

It will be conducted either using any open source learning management system such as Moodle (Modular object-oriented dynamic learning environment) Or a test based on an equivalent online course on the contents of the concerned course(subject) offered by or built using MOOC (Massive Open Online Course) platform.

(ii) 15 Marks – Assignment based on some of the self learning topics from the syllabus. (Assignment- Question Answer from/PPT presentation /Seminar in the class etc)

(iii) **5 Marks** - Active participation in routine class instructional deliveries Overall conduct as a responsible student, manners, skill in articulation, leadership qualities demonstrated through organizing co-curricular activities, etc.

II. External Examination- 60 Marks

(i) Duration - 2.00 Hours.

(ii) Theory question paper pattern:- All questions are compulsory. Question Based on Marks:

Q.1 Unit I,II and III 15 (Objective)

Q.2 Unit I 15 (3 out of 6 each of 5M OR any 1 out of 2 7M +any 2 out of 4 8M(4+4))

Q.3 Unit II 15 (3 out of 6 each of 5M OR any 1 out of 2 7M +any 2 out of 4 8M(4+4))

Q.4 Unit III 15 (3 out of 6 each of 5M OR any 1 out of 2 7M +any 2 out of 4 8M(4+4))

- All questions shall be compulsory with internal choice within the questions.
- Each Question may be subdivided into sub questions as a, b, c, d, e & f etc & the allocation of Marks depends on the weightage of the topic.

III Practical Examination

- Each Major subject carries 50 Marks : 40 marks + 05 marks (journal)+ 05 marks(viva)
- Minimum 75 % practical from each core subject are required to be completed and written in the journal.

(Certified Journal is compulsory for appearing at the time of Practical Exam)

PROPOSED SYLLABUS FOR
COMMERCE PAPER I & II at First Year B.COM
Under Choice Based Credit, Grading & Semester System with effect from the
Academic Year 2020-21

SEMESTER-I
COMMERCE-I

Title of the Course: Introduction to Business

Course Code: UBCOMFSI.2

Number of credits: 03

Lectures per week: 03

Total lectures required: 45

Course objective: To provide learner a comprehensive framework of modern business & entrepreneurial world.

Course Outcomes: on completion of course

- ❖ Learner will have understanding about the concepts, strategies, recent trends and factors associated with the business in modern era.
- ❖ Learner will become familiar the process & formalities of business unit promotion.
- ❖ Learner will get entrepreneurial mind set.

Syllabus

Module 1 Business

(12 lectures)

Introduction: Concept, Features, Functions, Scope and Significance of business. Traditional and Modern Concept of business

Objectives & Strategies of Business: Steps in setting business objectives, classification of Business objectives, Reconciliation of Economic and Social Objectives. Strategy alternatives in the changing scenario, Restructuring and turnaround strategies

Industry 4.0: History of industrial revolution, Concept & Components of industry 4.0, Prospects & Challenges in industry 4.0

Module 2 Business Environment

(11 lectures)

Introduction: Concept and Constituents of Internal and External Business Environment, Importance of business environment, Inter-relationship between Business and Environment

International Trade: Present status of India's International trade, Import -Export procedure & Documentation,

International Environment – Current Trends in the World, International Trading Environment – WTO and Trading Blocs and their impact on Indian Business.

Module 3 Project Planning

(12 lectures)

Introduction: Business Planning Process; Concept and importance of Project

Planning; Project Report; feasibility Study types and its importance

Business Unit Promotion: Concept and Stages of Business Unit Promotion,

Location – Factors determining location, and Role of Government in Promotion.

Statutory Requirements in Promoting Business Unit: Licensing and Registration procedure, Filing returns and other documents, Other important legal provisions

(10 lectures)

Module 4 Entrepreneurship

Introduction: Concept and importance of entrepreneurship, factors Contributing to Growth of Entrepreneurship

The Entrepreneurs: Types of Entrepreneurs, Competencies of an Entrepreneurs, Entrepreneurship Training & development centers in India, Problems and Promotion schemes for women entrepreneurs

Startups & Incubation: Concept of Startup & Proposed action plan under startup initiative, Case studies, Concept of Incubation, facilities under incubation & leading incubation centers in India. *and accelerators.*

Case studies on contemporary role models in Indian startups their values & Bus. Philosophy.
Learners Space: Enthusiastic Advanced learner can study following topics to enrich their knowledge & explore further in the topics covered under the syllabus.

- ✓ Present Status of Industry 4.0 in India
- ✓ Import-Export Policy of India
- ✓ National policy on Innovation & Startup Cell
- ✓ Concept of Startup accelerator

Sub: Commerce- III

Title of the course:

Management: Functions & Challenges

Course code: PUCCOIII22-321

Number of credits: 03

Lectures per week: 03

Total lectures required: 45

Course Objective: To provide the learner a comprehensive framework on the conceptual knowledge of management and develop awareness of the evolution of management to enhance the management application skills of students.

Syllabus

Module 1: Introduction to Management

Management- Concept, Nature, Functions.

(11 lectures)

Evolution of Management Thoughts Classical Approach: Scientific Management – F.W. Taylor's Contribution, Classical Organization Theory: Henri Fayol's Principles, Neo Classical: Human Relations Approach – Elton Mayo's Hawthorne experiments

Modern Management Approach-Peter Drucker's Dimensions of Management, Management skills and competency in 21st century.

Indian Management Thoughts: Origin & Significance of Indian Ethos to Management.

Module 2: Planning & Decision Making

(10 lectures)

Planning - Steps, Importance, Components.

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.

Module 3: Organizing

(12 lectures)

Organizing-Steps, Organization Structures – Line organization – Concept and features, Features of Line & Staff Organization, Matrix Organization, Virtual Organization, Formal v/s Informal Organization.

Departmentation -Meaning -Bases,

Span of Management- Factors Influencing Span of Management.

Delegation of Authority- Concept of power and Authority, Barriers to Delegation, Principles of Effective Delegation. Decentralization: Factors Influencing Decentralization, Centralization v/s Decentralization.

Module 4: Directing and controlling

(12 lectures)

Motivation – Concept, Importance, Influencing factors. Importance of Communication, Barriers to effective Communication

Leadership- Concept, Functions, Styles, Qualities of a good leader, Leader v/s manager

Controlling – Concept, Steps, Techniques of Controlling -PERT, CPM, Budgetary Control, Management Audit, HR metrics.

❖ **List of reference books with respect to the new topics added to commerce syllabus:**

✓ Change Management: The People Side of Change by Jeffrey M. Hiatt, Timothy J. Creasey.

✓ Leading Change, With a New Preface by John P. Kotter

Sub: Advertising- I

**Title of the course:
Advertising- I**

Course code: PUCCOIII22-323

Number of credits: 03

Lectures per week: 03

Total lectures required: 45

Course Objectives: To provide basic conceptual and application based knowledge about various dimensions of advertising and to give an essence of the various career opportunities in the field of advertising.

Syllabus

Module 1: Introduction to Advertising

(12 lectures)

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.

Module 2: Advertising Agency

(11 lectures)

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, and Dubbing.

Module 3: Economic & Social Aspects of Advertising

(11 lectures)

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)

Module 4: Brand Building and Special Purpose advertising

(11 lectures)

Brand Building: 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, Co-branding, Ad spends, Ad agencies, Innovation and Ads (use of AI, E-LOGO)

❖ List of reference books with respect to the new topics added to commerce syllabus:

- Strategic Brand Management by Ram Kishen and Nalini Dutta
- Co-Branding: The Science of Alliance by Interbrand - T. Blackett and R. Boad
- Brand Identity Essentials, Revised and Expanded: 100 Principles for Building Brands by Kevin Budelmann, Yang Kim.

❖ Recommended reference books:

- Advertising and Promotion : An Integrated Marketing Communications Perspective George Belch and Michael Belch, 2015, 10th Edition, McGraw Hill Education
- Contemporary Advertising, 2017, 15th Edition, William Arens, Michael Weigold and Christian Arens, Hill Higher Education
- Strategic Brand Management – Kevin Lane Keller, 4th Edition, 2013 – Pearson Education Limited
- Kleppner's Advertising Procedure – Ron Lane and Karen King, 18th edition, 2011 – Pearson Education Limited
- Advertising: Planning and Implementation, 2006 – Raghuvir Singh, Sangeeta Sharma – Prentice Hall
- Advertising Management, 5th Edition, 2002 – Batra, Myers and Aaker – Pearson Education
- Advertising Principles and Practice, 2012 - Ruchi Gupta – S.Chand Publishing
- Brand Equity & Advertising- Advertising's role in building strong brands, 2013- David A. Aker, Alexander L. Biel, Psychology Press
- Brand Positioning – Strategies for Competitive Advantage, Subroto Sengupta, 2005, Tata McGraw Hill Publication.
- The Advertising Association Handbook - J. J. D. Bullmore, M. J. Waterson, 1983 - Holt

T.Y.B.Com. Semester V

Commerce V
(Marketing)

1 Introduction to Marketing

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, industry

4.0 tech for customer engagement

Market Targeting- Concept, Five patterns of Target market Selection

Case Studies

2 Marketing Decisions

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

Case Studies

3 Marketing Decisions

Physical Distribution- Concept, Factors influencing Physical Distribution,

Marketing Channels (Traditional & Contemporary Channels)

Supply Chain Management-Concept, Components of SCM, Supply chain

4.0

- 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

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

T.Y.B.Com. Semester VI

Commerce VI
(Human Resource Management)

01.Human Resource Management

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,

02.Human Resource Development

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 Role of Industry 4.0 in Training & development

• Performance Appraisal- Concept, Benefits, Limitations, Methods

Potential Appraisal-Concept, Importance, Role of Industry 4.0 in performance Appraisal

- Career Planning- Concept, Importance
- Succession Planning- Concept, Need
- Mentoring- Concept, Importance
- Counseling- Concept, Techniques.
- Case Studies

03. Human Relations

- 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) Role of Industry 4.0 in Reward Management

- 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
- Case Studies

04. Trends In Human Resource Management

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.

SEMESTER III

SUB: HUMAN RESOURCE MANAGEMENT

COURSE CODE: PPCCOIII22-202

NO. OF LECTURES: 60

NO. OF CREDITS: 06

Objectives of the course:

1. Able to comprehend the role, functions and functioning of human resource department of the organizations.
2. Acquaint about International HRM and its different aspects to have an understanding of requirements to work in MNCs or any international markets.

SYLLABUS

Module 1: Human Resource Management (HRM)

(15 Lectures)

Concept, Traditional HRM v/s Strategic HRM , Objectives of HRM, Organization Structure of HRM Department – Changing Role of H.R. Manager.

Human Resource Planning- Concept, Factors affecting HRP, Information Management in HRP – HRIS (Human Resource Information System), Job Analysis, Psychological and Behavioral Issues in HRP.

Recruitment and Selection of managerial personnel - Factors affecting recruitment process, Role of Recruitment agencies, Online process of selection

Module 2: Human Resource Development

(15 Lectures)

Training and Development - Designing of the effective training programme Evaluation of the effective training programme, Challenges before trainers, Management Development Programme – Techniques,

Training and development budgeting

Performance Appraisal- Process, Guidelines for conducting appraisal Interviews, Ethical aspects in performance appraisal.

Career Advancement and Succession Planning- Self-Development Mechanism and Knowledge enrichment, Managing Promotion and Transfers, Managing dismissal, Succession Planning- Problems and Issues, Culture as a factor in Succession Planning.

Module 3: Latest Development in H.R.M. And Labour Legislation

Industrial Relation Act – Prominent features and recent changes in Trade Union Act 2016, Factories Act 1961, Industrial Disputes Act 1950. **(15 Lectures)**

Prominent features and recent changes to Child and Women Labour Act 1986, Social Security Act 2016, Prevention of Sexual harassment Act, 2013, Human rights in HRM

Prominent features and recent changes to Employees Acts like payment of Gratuity Act 2015, Provident Fund Act 1952, Minimum Wages Act 2016 and Payment of Wages Act 1991, Workmen Compensation Act 2014/ESI Scheme.

Module 4: Emerging Issues in H.R.M

(15 Lectures)

Work life balance – Stress and its Impact on Job Performance, Role of organization in ensuring mental and physical health of employees, Need and Importance, Employee Engagement, Managing Millennial (Gen Y)

Talent Management – Concept, Importance, Process, Talent Management and VUCA Environment (Volatility, Uncertainty, Complexity, Ambiguity), International HRM – Concept, Characteristics, HR. Practices at Global level Case Studies related to Human Resource Management Practices and Work Culture.

Recommended Reference Books:

1. Biswajeet Pattanayak, Human Resource Management, PHI Learning; Fifth edition
2. T.V. Rao, Performance Management: Toward Organizational Excellence, SAGE Response; Second edition.

SUB: ENTREPRENEURIAL MANAGEMENT

COURSE CODE: PPCCOIII22-212

NO. OF LECTURES: 60

NO. OF CREDITS: 06

Objectives of the course:

1. To develop knowledge about entrepreneurship culture in India.
2. To familiarize learners about creation of Entrepreneurial Ventures
3. To acquaint students about Special Government initiatives and assistance for promotion and development of Entrepreneurship.

- a. To develop knowledge about the project management process, Preparation of project report and feasibility studies.

SYLLABUS

Module 1: Entrepreneurship Development Perspective

Entrepreneurship - Concept, Factors affecting growth of Entrepreneurship, Types of Entrepreneurs.. (15 Lectures)

Entrepreneurial Culture - Elements of culture.

Theories of Entrepreneurship- Schumpeter Dynamic Entrepreneurship Innovation Theory, Theory of High Achievement by McClelland, Theory of Personnel Resourcefulness.

Emerging types in entrepreneurs: Technopreneurship, netpreneurs, ecopreneurship. Case Studies

Module 2: Creating Entrepreneurial Venture

(15 Lectures)

Entrepreneurial Environment- Significance, SWOC Analysis, Problems of Entrepreneurship

Financial Analysis of Entrepreneurial Venture- Significance, Tools of Financial Analysis, Sources of development finance

Social Entrepreneurship- Features, Importance, Types, Women Entrepreneurs - concept and special Government schemes for women entrepreneurs in India.

Module 3: Project Management

(15 Lectures)

Project - Concepts and Classification of Project, Search of Business Idea, Project Cycle.

Project formulation-Steps for project formulation, Project Design and network analysis - concept and network analysis techniques: PERT/ CPM.

Project Management - Concept, Phases, Project Identification and Project Feasibility Analysis.

Module 4: Assistance and Incentives for Promotion and Development of Entrepreneurship

(15 Lectures)

Incentives - Need, Promotion and development Entrepreneurship-Types of Assistance and incentives

Fiscal, Financial, Promotional, Marketing, and Organisational.

NPSD - National Policy for Skill Development and Entrepreneurship 2015.

Khadi and Village Industries Commission (KVIC)

Udyog aadhar: Online registration for MSME

Institutions in aid of Entrepreneurship Development - The National Institute for Entrepreneurship and small business development, District Industry Centre (DIC), National Alliance of young Entrepreneurs.

SIIDBI 2.0 (STHAPAN, Ubharte Sitaare, ARISE)

Recommended Text/Reference Books:

- Skill Development and Entrepreneurship in India by Rameshwari Pandya
- Skill Development in India By Dr. B Ramaswamy, Dr. R. Sasikala P, Dr. M B Gururaj
- Skill and Entrepreneurship Development Strategies for India By Gangadhar Banerjee
- Entrepreneurship Essentials By Baljeet Gujral BUUKS Publications 2021
- Management of Small Industries – Vasant Desai – Himalaya Publishing House, Mumbai.
- Entrepreneurial Development – C.B. Gupta and N.P. Srinivasan – Sultan chand & Sons.

SUB: MARKETING STRATEGIES AND PRACTICES

COURSE CODE: PPCCOIII22-217

NO. OF LECTURES: 60

NO. OF CREDITS: 06

Objectives of the course:

1. To provide an analytical framework to understand the emerging world of marketing.
2. To make the learners familiar with current challenges and issues in marketing.
3. To develop the understanding of the learners towards various marketing strategies
4. To enable the learners to understand the marketing environment and equip the learners to assess marketing strategy requirements of a business
5. To develop understanding of learners relating to new marketing trends and building customer value.

SYLLABUS

Module 1: Introduction to Marketing Strategies & Plans

(15 Lectures)

Introduction: Marketing Strategies – Concept, Evolution, Role/ Importance, Types, Formulation of Marketing Strategies- Steps

Marketing Opportunities and New Marketing Strategies: Holistic, New Brand, Service, Green and Guerrilla Marketing Strategies Analysing Marketing Opportunities, Future of Marketing

Marketing Plans: Marketing Planning- Importance, Types and Content, Strategic Business Unit - Structure, SWOT Analysis, Effective Marketing Plan.

Module 2: Developing Marketing Strategies

(15 Lectures)

Marketing Mix: Marketing Strategy Implementation - Steps, Marketing Mix 4 P's - Importance, Alternative Marketing Mix Propositions- Profit, People, and Planet.

Defensive Marketing Strategies: Importance, Types, Offensive V/S Defensive Marketing Strategies, Position Defense Strategies, Managing Brand-Based Competitive Advantage

Strategies for Matured Markets and during decline

Case study related to defensive, offensive strategies

Case Studies on Marketing Strategies of Successful and Unsuccessful Brands.

Module 3: Market Environmental Trends & Building Customer Value

(15 Lectures)

Customer Value: Applying Customer Value and Satisfaction, Customer Relationship Management (CRM)- Concepts and Techniques, VRIO Analysis, Porter's Competency Model, and Customer Perceived Value (CPV).

Customer Loyalty: Importance, Consumer Behaviour - Impact of Personal, Cultural, Social and Psychological Factors, Competing Through Innovation

Marketing Ethics, Sustainable Marketing & Developmental Marketing

Module 4: Recent Trends in Marketing Strategies

(15 Lectures)

Emerging Strategies: 21st Century Marketing Strategies, Global Marketing Strategies, and Strategies for Entering Emerging Market.

E-Marketing: Concept, Pros and Cons, Digital Marketing - Concept and features, Experiential Marketing - Concept and features, Hospitality Marketing Management.

Social Marketing: Social Marketing - Importance, Barriers, Trends in Marketing Practices in India and across Globe.

SUB: ADVERTISING AND SALES MANAGEMENT

COURSE CODE: PPCCOIV22-507

NO. OF LECTURES: 60

NO. OF CREDITS: 06

Objectives of the course:

1. To learn and understand the basic concepts and terminology in advertising.
2. To understand and effectively utilize creative elements in advertising campaigns.
3. To understand the meaning of advertising agencies and their selection.
4. To know wide perspective of sales force management, its recruitment and selection.

5. To acquaint students with the social and regulatory framework of advertising.

SYLLABUS

Module 1: Advertising Fundamentals and Media

(15 Lectures)

Basics of Advertising: Concept and Features, Significance, Classification of Advertising, Integrated Marketing Communication (IMC) - Elements, Behavioral Model (E.K. Strong AIDA), DAGMAR Model (Russell Colley), Hierarchy of Effects (Lavidge and Steiners)

Ad Agency: Various Functional Department, Types, Measures for gaining and reasons for losing clients, Evaluation Criteria for Selecting an Advertising Agency,

Media: New Media Options, Forms of Digital Media, Media Objectives, Criteria for Selecting Suitable Media, Methods of Setting Advertising Budget

Module 2: Creativity, Social and Regulatory Framework of Advertising

(15 Lectures)

Creativity & Research: Developing advertising copy - print, broadcast and digital media, Pre-test and post-test methods.

Society: Socio-economic contribution and criticisms of advertising, professional courses and careers in the field of advertising

Regulatory framework of advertising: Legal Framework of Advertising, Role of Information and Broadcasting Ministry (IBM), Self-Regulatory Bodies – Advertising Standards Council of India (ASCI) and Indian Broadcasting Foundation (IBF)

Module 3: Sales Management

(15 Lectures)

Introduction: Sales Management - Features, Functions and Importance, Art of Selling – Types, Process, Sales force automation, Qualities of an Effective Salesman.

Sales force management: Selection Procedure, Sources of sales force recruitment, Training Methods, Motivational Factors and Compensation methods of sales personnel.

Recent trends - Importance of Customer Feedback, Sales Management - Data Mining, Role of IT, Sales management challenges in the 21st century

Module 4: Sales Planning and Controlling

(15 Lectures)

Sales planning: Concept, Process, Sales Forecasting - Methods and Limitations.

Sales controlling: Concept of Sales Budget and Sales Audit, Sales Quota - Methods and Types, Objectives and Factors Determining and Designing Sales Territory

Case Studies

Recommended Text/Reference Books:

- Arden, T.G., and S.E. Edwards. 2009. Best Practice Guide for Customer Service Managers
- Bowersox, D.J., and M.B. Cooper. 1992. Strategic Marketing Channel Management. New York: McGraw Hill.
- Advertising & Integrated Brand Promotion By Chris Allen, Richard Semenik, Thomas O'Guinn, Publisher of the Book: CENGAGE Learning Custom Publishing
- **Advertising, Sales & Promotion Management** by Chunawalla, S. A., **Publisher:** Himalaya Publishing House.

SUB: RETAIL MANAGEMENT

COURSE CODE: PPCCOIV22-512

NO. OF LECTURES: 60

NO. OF CREDITS: 06

Objectives of the course:

1. To provide understanding of retail management concepts and types of retailers.
2. To provide understanding of ethical aspects of retail management.
3. To create awareness about emerging trends in retail management.

SYLLABUS

Module 1: Introduction to Retail Management

(15 Lectures)

Retailing: Concept, Scope and Importance of Retailing and Retail Management, Retail Formats, Functions of Retailers, Retail Environment - Economic, Legal, Technological & Competitive

Retail sector in India: Organized and Unorganized retailers, Size, and Drives of Retail changes, FDI in Retailing in Indian Context

Recent Trends in Retailing: Modern Retail Formats, Mall System, Challenges Faced by the Retail Sector, and Ethics in Retailing.

Module 2: Retail Management Strategy

(15 Lectures)

Retail Strategies: Promotional Strategies, Retail Planning Process, Retail Pricing Strategies, Case Studies related to retail strategies

Relationship Marketing Strategies: CRM in Retailing, Retail Value Chain, Retail life Cycle, Retail - Market Segmentation - Concept and Significance

Consumer Strategies: Consumer Behavior in Retail Context, Buying Decision Process, Customer Service as a Part of Retail Strategy.

Module 3: Retail Location, Layout and Merchandising

(15 Lectures)

Retail Location & Merchandising: Importance, Types, Steps involved in choosing a Retail Location.

Merchandising: Concept and Merchandising Planning Process, Retail Branding, Merchandising Buying, factors influencing merchandising, Visual Merchandising

Store Design and Layout: Store Design - Elements, Store Layout - Importance, Steps for Designing

Module 4: Use of Technology and Career options

(15 Lectures)

Technologies: Use of Technologies in retailing - Electronic Data Interchange (EDI), Radio Frequency Identification (RFI), Data Base Management system, Kiosks

E-Retailing: Formats, Challenges, Green Retailing - Concept and Importance

Retail as a Career: Various Career Options, Responsibilities of Store Manager, Functions of Merchandising Manager

Recommended Reference Books:

1. Swapna Pradhan : Retail management : Tata McGraw Hill
2. Ramaswami, V.S and Namakumari, S: Marketing Management Mac Millan India New Delhi.
3. Rajan Saxena, Marketing Management, 3rd ed, Tata MCGraw Hill, New Delhi, 1509

PROPOSED SYLLABUS FOR

M.Com. Part-I

Semester-I

SUB: STRATEGIC MANAGEMENT

COURSE CODE: PPCCOI21-801

NO. OF LECTURES: 60

NO. OF CREDITS: 06

Objectives of the course:

1. To enable the learners to understand new forms of Strategic Management concepts and their use in business.
2. To provide information pertaining to Business, Corporate and Global Reforms.
3. To develop analytical skills of the learners required to deal with business issues.

Desired Outcome: Learner will be able to develop strategic solutions to business problems.

SYLLABUS:

Sr.No	Modules/ Units
1.	Introduction to Strategic Management (15 Lectures) <ul style="list-style-type: none">• Concept of Strategic Management, Strategic Management Process, Vision, Mission and Goals, Benefits and Risks of Strategic Management. Business Environment: Components of Environment- Micro and Macro and Environmental Scanning. <ul style="list-style-type: none">• Levels of Strategies: Corporate, Business and Operational Level Strategy.• Functional Strategies: Human Resource Strategy, Marketing Strategy, Financial Strategy, Operational Strategy.

2.	<p>Strategy Formulation, Implementation and Evaluation (15 Lectures)</p> <ul style="list-style-type: none"> • Strategic Formulation: Stages and Importance, Formulation of Alternative Strategies: Mergers, Acquisitions, Takeovers, Joint Ventures, Diversification, Turnaround, Divestment and Liquidation. • Strategic Analysis and Choice: Issues and Structures, Corporate Portfolio Analysis, BCG Matrix, GE Nine Cell Matrix, , McKinsey's 7s Framework Porter's Five Force model • Strategic Implementation: Steps, Importance and Problems, Resource Allocation Importance & Challenges • Strategic Evaluation and Control: Importance, Limitations and Techniques, criteria for evaluation and the evaluation process, strategic control process, types of internal & external controls, Difference Between Strategic Control and Operational Control. • Budgetary Control: Advantages, Limitations
3.	<p>Business, Corporate and Global Strategies (15 Lectures)</p> <ul style="list-style-type: none"> • Corporate Restructuring Strategies: Concept, Need and Forms, Corporate Renewal Strategies: Concept, Internal and External factors and Causes. • Strategic Alliance: Concept, Types, Importance, Problems of Indian Strategic Alliances and International Businesses • Public Private Participation: Importance, Problems and Governing Strategies of PPP Model. • Information Technology Driven Strategies: Importance, Limitations and contribution of IT sector in Indian Business.
4.	<p>Emerging Strategic Trends (15 Lectures)</p> <ul style="list-style-type: none"> • Business Process Outsourcing and Knowledge Process Outsourcing in India: Concept and Strategies. Reasons for growing BPO and KPO businesses in India. • Reengineering Business Processes- Business Reengineering, Process Reengineering and Operational Reengineering • Disaster Management: Concept, Problems and Consequences of Disasters, Strategies for Managing and Preventing disasters and Cope up Strategies. • Start-up Business Strategies and Make in India Model: Process of business startups and its Challenges, Growth Prospects and government initiatives in Make in India Model with reference to National manufacturing, Contribution of Make in India Policy in overcoming industrial sickness.

References:

1. Strategic Management - Fred R. David, Published by Prentice Hall International.
2. Strategic Management - Bern Banerjee
3. Strategic Management - Thomas L. Wheelers & J David Hunger Addison, Wesley publishers.
4. Strategic Management - A Multi Perspective Approach, Edited by Mark Jenkins & Veroruque Ambrosini Palgrave.

SUB: BUSINESS ETHICS AND CORPORATE SOCIAL RESPONSIBILITY**COURSE CODE: PPCCOI21-804****NO. OF LECTURES: 60****NO. OF CREDITS: 06****Objectives of the course:**

1. To familiarize the learners with the concept and relevance of Business Ethics in the modern era
2. To enable learners to understand the scope and complexity, Research, development. Evaluation and implementation of Corporate Social responsibility in the global and Indian context

Desired Outcomes:

Students will become more responsible towards Business ethics and Corporate Governance and will implement Corporate Social responsibility while working in the Corporate World.

Sr.No	Modules/ Units
1.	Introduction to Business Ethics (15 Lectures) • Business Ethics – Concept, Characteristics, Importance and Need for business ethics. Indian Ethos, Ethics and Values, Work Ethos, • Sources of Ethics, Concept of Corporate Ethics, code of Ethics-Guidelines for developing code of ethics, Ethics Management Programme, Ethics Committee. Organization Structure and Ethics

	<ul style="list-style-type: none"> • Various approaches to Business Ethics – Theories of Ethics- Friedman’s Economic theory, Kant’s Deontological theory, Mill & Bentham’s Utilitarianism theory • Gandhian Approach in Management and Trusteeship, Importance and relevance of trusteeship principle in Modern Business, Gandhi’s Doctrine of Satya and Ahimsa, • Emergence of new values in Indian Industries after economic reforms of 1991
2.	<p>Indian Ethical Practices and Corporate Governance (15 Lectures)</p> <ul style="list-style-type: none"> • Ethics in Marketing and Advertising, Human Resources Management, Finance and Accounting, Production, Information Technology, Copyrights and Patents • Corporate Governance: Concept, Importance, Evolution of Corporate Governance, Principles of Corporate Governance • Regulatory Framework of Corporate Governance in India, SEBI LODR Regulations 2015 with respect to Transparency and Corporate Governance, Audit Committee, Role of Independent Directors, Protection of Stake Holders, Changing roles of corporate Boards. • Elements of Good Corporate Governance, Failure of Corporate Governance and its consequences.
3.	<p>Introduction to Corporate Social Responsibility (15 Lectures)</p> <ul style="list-style-type: none"> • Corporate Social Responsibility: Concept, Scope & Relevance and Importance of CSR in Contemporary Society. • Corporate philanthropy, Models for Implementation of CSR, Drivers of CSR, Prestigious awards for CSR in India. • CSR and Indian Corporations- Legal Provisions and Specification on CSR, A Score Card, Future of CSR in India. • Role of NGO’s and International Agencies in CSR, Integrating CSR into Business
4.	<p>Areas of CSR and CSR Policy (15 Lectures)</p> <ul style="list-style-type: none"> • CSR towards Stakeholders-- Shareholders, Creditors and Financial Institutions, Government, Consumers, Employees and Workers, Local Community and Society. • CSR and environmental concerns. • Designing CSR Policy- Factors influencing CSR Policy, Role of HR Professionals in CSR • Global Recognitions of CSR- ISO- 14000-SA 8000 – AA 1000 – Codes formulated by UN

	<p>Global Compact – UNDP, Global Reporting Initiative; major codes on CSR.</p> <ul style="list-style-type: none">• CSR and Sustainable Development• CSR through Triple Bottom Line in Business
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Recommended ICT Backup:

https://books.google.co.in/books?id=al6zP7foCSEC&source=gbs_similarbooks

<https://books.google.co.in/books?id=UBMCxwii5vsC&printsec=>

[frontcover&source=gbs_ge_summary_r&cad=0](https://books.google.co.in/books?id=UBMCxwii5vsC&printsec=frontcover&source=gbs_ge_summary_r&cad=0)

- Recommended References Books:**
1. Business Ethics: An Indian Perspective by A.C. Fernando
 2. Corporate Ethics, Governance, And Social Responsibility: Precepts And Practices by A.C. Fernando.

SEMESTER II

SUB: RESEARCH METHODOLOGY FOR BUSINESS

COURSE CODE: PPCCOII21-701

NO. OF LECTURES: 60

NO. OF CREDITS: 06

Objectives of the course:

1. To familiarize the learners with the concept of Research.
2. To enable learners to understand the scope and complexity, Research in academic & Business scenario.
3. To make the learners familiar with the basic statistical tools and techniques applicable for research.
4. To enable the learners in understanding and developing the most appropriate methodology for their research
5. To enable learners understand how to draft research report.

Desired Outcomes:

1. Learners will get acquainted with the basics of research.
2. Learners will be able to frame hypothesis, research design and other technical aspects of Research.
3. Learners will get able to prepare research project report useful to society at large.

Sr. No.	Modules/Units
1.	Introduction to Research (15 Lectures) <ul style="list-style-type: none">• Features and Importance of research in business, Objectives and Types of research- Basic, Applied, Descriptive, Analytical and Empirical Research.• Formulation of research problem, Research Design, significance of Review of Literature

	<ul style="list-style-type: none"> • Hypothesis: Formulation, Sources, Importance and Types • Sampling: Significance, Methods, Factors determining sample size
2.	<p>Research Process (15 Lectures)</p> <ul style="list-style-type: none"> • Stages in Research process • Data Collection: Primary data: Observation, Experimentation, Interview, Schedules, Survey, • Limitations of Primary data • Secondary data: Sources and Limitations, • Factors affecting the choice of method of data collection <p>Questionnaire: Types, Steps in Questionnaire Designing, Essentials of a good questionnaire</p>
3.	<p>Data Processing and Statistical Analysis (15 Lectures)</p> <ul style="list-style-type: none"> • Data Processing: Significance in Research, Stages in Data Processing: Editing, Coding, Classification, Tabulation, Graphic Presentation • Statistical Analysis: Concept of reliability and validity Tools and Techniques, Measures of Central Tendency, Measures of Dispersion, Correlation Analysis and Regression Analysis • Testing of Hypotheses – Parametric Test-t test, f test, z test Non-Parametric Test -Chi square test, ANOVA, Factor Analysis, • Interpretation of data: significance and Precautions in data interpretation
4.	<p>Research Reporting and Modern Practices in Research (15 Lectures)</p> <ul style="list-style-type: none"> • Research Report Writing: Importance, Essentials, Structure/ layout, Types • References and Citation Methods: APA (American Psychological Association) CMS (Chicago Manual Style) MLA (Modern Language Association) • Footnotes and Bibliography • Modern Practices: Ethical norms in research, Plagiarism, Role of Computers in Research Scholarly publishing

Learner's space: Contacting and interviewing Industry persons who can share their implemented practices or just give an overview of Research in Business

Recommended ICT Backup: [https://www.cusb.ac.in/images/cusb-files/2020/el/cbs/MCCOM2003CO4%20\(Business%20Research%20Method\) Research Methodology C.R.Kothari.pdf](https://www.cusb.ac.in/images/cusb-files/2020/el/cbs/MCCOM2003CO4%20(Business%20Research%20Method)Research%20MethodologyC.R.Kothari.pdf)

Recommended References Books: Plagiarism, the Internet, and Student Learning: Improving Academic Integrity by Wendy Sutherland smith

Research Methodology- C R Kothari

Marketing Research- Dr. Naresh Malhotra

SUB: E-COMMERCE

COURSE CODE: PCCCOI21-704

NO. OF LECTURES: 60

NO. OF CREDITS: 06

Objectives of the course:

1. To provide an analytical framework to understand the emerging world of ecommerce
2. To make the learners familiar with current challenges and issues in ecommerce
3. To develop the understanding of the learners towards various business models
4. To enable to understand the Web- based Commerce and equip the learners to assess e-commerce requirements of a business
5. To develop understanding of learners relating to Legal and Regulatory Environment and Security issues of e-commerce.

Desired Outcome: Learner will be able to apply his commercial knowledge effectively in the Web Based Commerce.

SYLLABUS:

Sr. No	Modules/ Units
1.	<p>Introduction to Electronic Commerce – (15 Lectures)</p> <p>Evolution and Models</p> <ul style="list-style-type: none"> • Evolution of E-Commerce-Introduction, History/Evolution of Electronic Commerce, Roadmap of E-Commerce in India, Main activities, Functions and Scope of Ecommerce. • Benefits and Challenges of E-Commerce, E-Commerce Business Strategies for Marketing, Sales and Promotions. • Business Models of E-Commerce- Characteristics of Business to Business(B2B), Business to Consumers (B2C), Business to Government (B2G) • Concepts of other models of E-commerce. • Business to Consumer E-Commerce process, Business to Business E-Commerce Need and Importance, alternative models of B2B E-Commerce. • E-Commerce Sales Product Life Cycle (ESLC) Model <p>Emerging trends in E-commerce</p>
2.	<p>World Wide Web and E-enterprise (15 Lectures)</p> <ul style="list-style-type: none"> • World Wide Web-Reasons for building own website, Benefits of Website, Registering a Domain Name, Role of web site in B2C E-commerce; push and pull approaches; Web site design principles. • EDI and paperless trading; Pros & Cons of EDI; Related new technologies use in Ecommerce. • Applications of E-commerce and E-enterprise - Applications to Customer Relationship Management- Types of E-CRM, Functional Components of E-CRM. • Managing the E-enterprise- Introduction, Managing the E-enterprise, Comparison between Conventional • E-organization, Organization of Business in an E-enterprise, Benefits and Limitations of E- enterprise.
3.	<p>E-marketing and Electronic Payment System (15 Lectures)</p> <ul style="list-style-type: none"> • E-Marketing- Scope and Techniques of E-Marketing, Traditional web

	<p>promotion; Web counters; Web advertisements, Role of Social media.</p> <ul style="list-style-type: none"> • E-Commerce Customer Strategies for Purchasing and support activities, Planning for Electronic Commerce and its initiatives, The pros and cons of online shopping, Justify an Internet business. • Electronic Payment System-Characteristics of E-payment system, SET Protocol for credit card payment, prepaid e-payment service, post-paid E-payment system, Types of payment systems. • Operational, credit and legal risks of E-payment system, Risk management options for E-payment systems, Set standards / principles for E-payment.
4.	<p style="text-align: center;">Legal and Regulatory Environment and (15 Lectures)</p> <p>Security issues of E-commerce</p> <ul style="list-style-type: none"> • Introduction to Cyber Laws-World Scenario, Cyber-crime& Laws in India and their limitations, Hacking, Web Vandals, E-mail Abuse, Software Piracy and Patents. • Taxation Issues, Protection of Cyber Consumers in India and Importance of Electronic Records as Evidence. • Security Issues in E-Commerce- Risk management approach to Ecommerce Security - Types and sources of threats, Protecting electronic commerce assets and intellectual property. • Security Tools, Client server network security, Electronic signature, Encryption and concepts of public and private key infrastructure <p>FDI policy on E-commerce</p>

Books for reference:

- 1) Laudon, Kenneth C. and Carol GuercioTraver (2002) E-commerce: business, technology, society. (New Delhi : Pearson Educatin)
- 2) Bharat Bhasker, Electronic Commerce – Frame work technologies and Applications, 3rd Edition- Tata McGrawHill Publications, 2008.
- 3) KamleshK.Bajaj and Debjani Nag, Ecommerce- the cutting edge of Business, Tata McGrawHill Publications, 2008

- 4) **Introduction to E-commerce (jeffrey) Tata- Mcgrawhill**
- 5) **E-Business and Commerce- Strategic Thinking and Practice (Brahm) biztantra**
- 6) **Web Technology : Ramesh Bangia**

FYBMS

1. Principles of Management

Modules at a Glance

Sr. No.	Modules	Lectures	Credit
1	Nature of Management	15	4
2	Planning and Decision Making	15	
3	Organising	15	
4	Directing, Leadership, Co-ordination and Controlling	15	
TOTAL			

Objective: To make the students aware about Management philosophy towards business, customers and employees. Global trends which influence management principles.

Learning Outcomes: To be more practical by adding company visits at small level. It will help students to actually understand the role of management and functions of various departments and management

Total no. of Credits: 04

	Modules/Units	Lectures (60)
UNIT-I	Nature of Management <ul style="list-style-type: none"> • Management: Concept, Significance, Role & Skills, Levels of Management, Concepts of PODSCORB, Managerial Grid. • Evolution of Management thoughts, Contribution of F.W Taylor, Henri Fayol and Contingency Approach 	15
UNIT-II	Planning and Decision Making <ul style="list-style-type: none"> • Planning: Meaning, Importance, Elements, Process, Limitations and MBO. • Decision Making: Meaning, Importance, Process, Techniques of Decision Making 	15
UNIT-III	Organizing <ul style="list-style-type: none"> • Organizing: Concepts, Structure (Formal & Informal, Line & Staff and Matrix), Meaning, Advantages and Limitations • Departmentation: Meaning, Basis and Significance • Span of Control: Meaning, Graicunas Theory, Factors affecting span of Control Centralization vs Decentralization • Delegation: Authority & Responsibility relationship 	15
UNIT-IV	Directing, Leadership, Co-ordination and Controlling <ul style="list-style-type: none"> • Directing: Meaning and Process • Leadership: Meaning, Styles and Qualities of Good Leader • Co-ordination as an Essence of Management • Controlling: Meaning, Process and Techniques • Recent Trends: Green Management & CSR • Environmental and Global context of Management • Organization culture and Environment • Current trends and issues in Management. • Crisis Management at the corporate level 	15

Foundation Course –I

Modules at a glance

Sr.	Modules	Lectures	Credit
1	Indian Society – Unity in Diversity and conflict	10	02
2	Concept of Labor force diversity	10	
3	Management of Ancient India & its importance in	10	
		30	

Objectives:

- To help the learner understand the inter-disciplinary approach of social fabric.
- To sensitize learners on the socio-economic concerns in India with specific focus on the issues of the youth.
- To help learners articulate their views on the contemporary social issues.

Learning Outcomes:

- The successful completion of course will enable the learner to understand factual aspects of Indian society.
- It will help create awareness and empathy among learners about various issues faced by youth.
- It will help ingrain social responsibility and participatory approval towards society.

Total no of Credits: 2

	Modules/Units	Lectures
UNIT-1	Indian Society – Unity in Diversity and conflict 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.	10
UNIT-2	Concept of Labor force diversity- Meaning of labor force diversity, Features, significance and Dimensions of diversity, advantages of workforce and disadvantages of workforce diversity ,positive and negative effects of workforce diversity in workplace and its impact, Ethical and legal issues in managing diversity.	10
UNIT-3	Management of Ancient India & its importance in modern management system- Indian ethics & features history of ancient Indian ethos- relevance and principles practiced by companies, Management lessons from scriptures- Vedas, Mahabharata, Kuran, Bible, Gurukul system of learning, western vs Ancient Management.	10

SYBMS

5- Production and Total Quality Management (VSC) Credit:02

Sr No	Modules	No of lectures Total 60.
1.	Production Management	10
2.	Materials Management	10
3.	Productivity, TQM, Quality Improvement Strategies	10

Modules at a Glance

Proposed syllabus

	Modules/Units	Lectures (30)
UNIT-I	<p>Production Management</p> <ul style="list-style-type: none"> Objectives, Components–Manufacturing systems: Intermittent and Continuous Production Systems. Product Development, Classification and Product Design. Plant location & Plant layout– Objectives, Principles of good product layout, types of layout. <i>Location Strategies: Introduction, Location Planning Process</i> Importance of purchase management. 	10
UNIT-II	<p>Materials Management</p> <ul style="list-style-type: none"> Materials Management: Concept, Objectives and importance of materials management Various types of Material Handling Systems. Inventory Management: Importance–Inventory Control Techniques ABC, VED, FSN, GOLF, XYZ, SOS, HML. EOQ: Assumptions limitations & advantages of Economic Order Quantity, Simple numerical on EOQ , Lead Time, Reorder Level, Safety Stock. <i>Just-In-Time</i> : Introduction, Characteristics of JIT, Key Processes to Eliminate Waste, Implementation of JIT, Pre-requisites for implementation, JIT Inventory and Supply Chains 	10
UNIT-III	<p>Productivity, TQM & Quality Improvement Strategies</p> <ul style="list-style-type: none"> Basics Of Productivity &TQM: Concepts of Productivity, modes of calculating productivity. Importance Of Quality Management, factors affecting quality; TQM– concept and importance, Cost of Quality, Philosophies and Approaches To Quality: Edward Deming, J. Juran , Kaizen , P. Crosby’s philosophy. Product & Service Quality Dimensions, SERVQUAL Characteristics of Quality, Quality Assurance, Service Gap Analysis, Quality Circle : Objectives Of Quality Circles, Ishikawa Fish Bone, Applications in Organizations. Simple numerical on productivity Quality Improvement Strategies: Lean Thinking, Kepner Tregor Methodology of problem solving, Six Sigma 	10

2. Ethics and Governance (SEC) Credit:02

Modules at a Glance

Sr. No.		No. of Lectures
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1	Introduction to Ethics and Business Ethics	10
2	Ethics in Marketing, Finance and HRM, CSR	10
3	Corporate Governance	10
Total		30

Sr. No.	Modules / Units
1	<p>Introduction to Ethics and Business Ethics</p> <ul style="list-style-type: none"> • Ethics: Concept of Ethics, Evolution of Ethics, Nature of Ethics- Personal, Professional, Managerial, Types – Transactional, Participatory and Recognition • Business Ethics: Meaning, Objectives, Purpose and Scope of Business Ethics Towards Society and Stakeholders, Role of Government in Ensuring Business Ethics, Principles of Business Ethics, 3 Cs of Business Ethics – Compliance, Contribution and Consequences, Myths about Business Ethics Ethical Performance in Businesses in India
2	<p>Ethics in Marketing, Finance ,HRM and CSR</p> <ul style="list-style-type: none"> • Ethics in Marketing: Ethical issues in Marketing Mix, Unethical Marketing Practices in India, Ethical Dilemmas in Marketing, Ethics in Advertising and Types of Unethical Advertisements • Ethics In Finance: Scope of Ethics in Financial Services, Ethics of a Financial Manager – Legal Issues, Balancing Act and Whistle Blower, Ethics in Taxation, Corporate Crime - White Collar Crime and Organized Crime, Major Corporate Scams in India, Role of SEBI in Ensuring Corporate Governance, Cadbury Committee Report, 1992 • Ethics in Human Resource Management: Importance of Workplace Ethics, Guidelines to Promote Workplace Ethics, Importance of Employee Code of Conduct, Ethical Leadership • CSR: Meaning Evolution of CSR, Types of Social Responsibility Aspects of CSR- Responsibility, Accountability, Sustainability and Social Contract
3	<p>Corporate Governance</p> <ul style="list-style-type: none"> • Concept, History of Corporate Governance in India, Need for Corporate Governance • The 4 P's of Corporate Governance • Significance of Ethics in Corporate Governance, Principles of Corporate Governance, Benefits of Good Governance, Issues in Corporate Governance • Theories- Agency Theory, Shareholder Theory, Stakeholder Theory and Stewardship Theory • Corporate Governance in India, Emerging Trends in Corporate Governance, Models of Corporate Governance, Insider Trading.

TYBMS

Core Course (CC)

5. Logistics and Supply Chain Management

Modules at a Glance

Current syllabus

Sr No	Modules	No of lectures Total 60.
1.	Overview of Logistics and Supply Chain Management	15
2.	Elements of Logistics Mix	15
3.	Inventory Management, Logistics Costing, Performance Management and Logistical Network Analysis	15
4.	Recent Trends in Logistics and Supply Chain Management	15

Proposed syllabus

Total No of Credit points- 04

Sr. No.	Modules/Units	Lectures (60)
UNIT-I	<p>Overview of Logistics and Supply Chain Management:</p> <p>a) Introduction to Logistics Management • Meaning, Basic Concepts of Logistics- Logistical Performance Cycle, Inbound Logistics, Inprocess Logistics, Outbound Logistics, Logistical Competency, Integrated Logistics , Reverse Logistics and Green Logistics • Objectives of Logistics, Importance of Logistics, Scope of Logistics, Logistical Functions/Logistic Mix, Changing Logistics Environment</p> <p>b) Introduction to Supply Chain Management • Meaning, Objectives, Functions, Participants of Supply Chain, Role of Logistics in Supply Chain, Comparison between Logistics and Supply Chain Management, Channel Management and Channel Integration</p> <p>c) Customer Service: Key Element of Logistics • Meaning of Customer Service, Objectives, Elements, Levels of customer service, Rights of Customers</p> <p>d) Demand Forecasting • Meaning, Objectives ,Approaches to Forecasting, Forecasting Methods, Forecasting Techniques, (Numerical on Simple Moving Average, Weighted Moving Average)</p>	15
UNIT-II	Elements of Logistics Mix:	15

	<p>a) Transportation • Introduction, Principles and Participants in Transportation, Transport Functionality, Factors Influencing Transportation Decisions, Modes of Transportation- Railways, Roadways, Airways, Waterways, Ropeways, Pipeline, Transportation Infrastructure, Intermodal Transportation</p> <p>b) Warehousing & Material Handling• Introduction, Warehouse Functionality, Benefits of Warehousing, Warehouse Operating Principles, Types of Warehouses, Warehousing Strategies, Factors affecting Warehousing, Revision of Material Handling</p> <p>c) Materials Handling • Meaning, Objectives, Principles of Materials Handling, Systems of Materials Handling, Equipments used for Materials Handling, Factors affecting Materials Handling Equipments</p> <p>C) Information and Control: Introduction, Objectives, Role of logistics information systems, Requirements and Components, Concepts and Technologies, Technology Applications, Principles of Logistical Information System, Types of Logistical Information System, Logistical Information Functionality, Information Technology Infrastructure</p> <p>d) Packaging • Introduction, Objectives of Packaging, Functions/Benefits of Packaging, Design Considerations in Packaging, Types of Packaging Material, Packaging Costs</p>	
UNIT-III	<p>Inventory Management, Logistics Costing, Performance Management and Logistical Network Analysis:</p> <p>a) Inventory Management • Meaning, Objectives, Functions, Importance, Techniques of Inventory Management (Numericals - EOQ and Reorder levels)</p> <p>b) Logistics Costing • Meaning, Total Cost Approach, Activity Based Costing, Mission Based Costing</p> <p>c) Performance Measurement in Supply Chain • Meaning, Objectives of Performance Measurement, Types of Performance Measurement, Dimensions of Performance Measurement, Characteristics of Ideal Measurement System</p> <p>d) Logistical Network Analysis • Meaning, Objectives, Importance, Scope, RORO/LASH</p>	15
UNIT- IV	<p>Recent Trends in Logistics and Supply Chain Management:</p> <p>a) Recent Trends: Circular Supply Chain, Cloud-Based Solutions, Increased Visibility, Risk Management and Resiliency, Customization, Artificial Intelligence and Automation</p> <p>b) Modern Logistics Infrastructure • Golden Quadrilateral, Logistics Parks, Deep Water Ports, Dedicated Freight Corridor, Inland Container Depots/Container Freight Stations, Maritime Logistics, Double Stack Containers/Unit Trains</p>	15

	<p>c) Logistics Outsourcing • Meaning, Objectives, Benefits/Advantages of Outsourcing, Third Party Logistics Provider, Fourth Party Logistics Provider, Drawbacks of Outsourcing, Selection of Logistics Service Provider, Outsourcing-Value Proposition</p> <p>d) Logistics in the Global Environment • Managing the Global Supply Chain, Impact of Globalization on Logistics and Supply Chain Management, Global Logistics Trends, Global Issues and Challenges in Logistics and Supply Chain Management</p>	
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Electives Courses (EC)

HR –3. Workforce Diversity

Modules at a Glance

Sr No	Modules	No of lectures Total 60.
1.	Workforce Diversity - An Overview	15
2.	Workforce Diversity and HRM Functions	15
3.	Strategies to Manage Diversity	15
4.	Issues in Managing Diversity and Recent Trends	15

Proposed syllabus

Total No of Credit points- 03

SN	Modules/Units	Lectures (60)
UNIT-I	Workforce Diversity - An Overview <ul style="list-style-type: none"> • Meaning of Workforce • Workforce Diversity - Meaning, Features and Significance • Dimensions of Workforce Diversity • Advantages and Limitations of having a diverse workforce • Positive and Negative effects of workforce diversity in workplace 	15
UNIT-II	Workforce Diversity and HRM Functions <ul style="list-style-type: none"> • Steps to Recruiting and Retaining a Diverse Workforce • Workforce Diversity and HRM Functions – Diversity and Recruitment, Diversity and Supervision, Diversity and Training, Diversity and Compensation, Diversity and Performance Management, Diversity and Work life Balance • Role of Recruiter in Hiring Diversified Workforce • Workforce Diversity – Key to Organizational Performance • Workforce Diversity as a Determinant of Sustainable Competitive Advantage 	15
UNIT-III	Strategies to Manage Diversity <ul style="list-style-type: none"> • Organizational Strategies for Managing Workforce Diversity – 	15

	<p>Workplace Inclusion Strategies through Corporate Leadership, Diversity Training and Mentoring</p> <ul style="list-style-type: none"> • Diversity Management Programmes - Concept • Corporate Culture and Diversity at workplace • Techniques of Managing Work Force Diversity • Approaches to Diversity Management System 	
UNIT-IV	<p>Issues in Managing Diversity and Recent Trends</p> <ul style="list-style-type: none"> • Best Practices in Achieving Workforce Diversity • Diversity and Multi-culturism • Global workforce diversity management • Recent Trends of Diversity • Role of Technology in Handling Workforce Diversity • Workforce Diversity Management for Creativity and Innovation • Ethical and Legal Issues in Managing Diversity • Challenges and Barriers in Workplace diversity and Inclusion 	15

Electives Courses (EC)

HR – 4. Indian Ethos in Management

Modules at a Glance

SN	Modules	No. of Lectures
1	Indian Ethos – An Overview	15
2	Work Ethos and Values	15
3	Stress Management	15
4	Indian Systems of Learning	15
Total		60

Proposed syllabus

Total No of Credit points- 03

SN	Modules/ Units	Lecture
1	Indian Ethos – An Overview	15
	<p>Indian Ethos Meaning, Features, Need, History, Relevance, Principles Practised by Indian Companies, Requisites, Elements, Role of Indian Ethos in Managerial Practices Management Lessons from Scriptures: Management Lessons from Vedas, Management Lessons from Mahabharata, Management Lessons from Bible, Management Lessons from Quran, Management Lessons from Kautilya's Arthashastra Indian Heritage in Business, Management, Production and Consumption. Ethics v/s Ethos Indian Management v/s Western Management</p>	

2	Work Ethos and Values	15
	<p>Work Ethos: Meaning, Levels, Dimensions, Steps, Factors Responsible for Poor Work Ethos</p> <p>Values: Meaning, Features, Values for Indian Managers, Relevance of Value Based Management in Global Change, Impact of Values on Stakeholders: Employees, Customers, Government, Competitors and Society.</p> <p>Values for Managers, Trans-Cultural Human Values in Management and Management Education, Secular v/s Spiritual Values in Management,</p> <p>Importance of Value System in Work Culture</p>	
3	Stress Management	15
	<p>Stress Management: Meaning, Types of Stress at Work, Causes of Stress, Consequences of Stress</p> <p>Stress Management Techniques: Meditation : Meaning, Techniques, Advantages, Mental Health and its Importance in Management, Brain Storming, Brain Stilling, Yoga: Meaning, Significance</p> <p>Leadership: Meaning, Contemporary Approaches to Leadership, Joint Hindu Family Business – Leadership Qualities of Karta</p> <p>Motivation: Meaning, Indian Approach to Motivation, Techniques</p>	
4	Indian Systems of Learning	15
	<p>Learning: Meaning, Mechanisms</p> <p>Gurukul System of Learning : Meaning, Features, Advantages, Disadvantages</p> <p>Modern System of Learning: Meanings, Features, Advantages, Disadvantages</p> <p>Karma: Meaning, Importance of Karma to Managers, Nishkama Karma</p> <p>Laws of Karma: The Great Law, Law of Creation, Law of Humility, Law of Growth, Law of Responsibility, Law of Connection</p> <p>Corporate Karma: Meaning, Methodology, Guidelines for good Corporate Karma</p> <p>Self-Management: Personal growth and Lessons from Ancient Indian Education System</p> <p>Personality Development: Meaning, Determinants, Indian Ethos and Personality Development</p>	