MOHAN BABU UNIVERSITY

Sree Sainath Nagar, Tirupati – 517 102

MBU
MOHAN BABU
UNIVERSITY
DREAM. BELIEVE. ACHIEVE

SCHOOL OF COMMERCE AND MANAGEMENT

B.B.A. - Bachelor of Business Administration

(3 Years Degree)

Bachelor of Business Administration (Hons.)

(4 Years Degree)

CURRICULUM AND SYLLABUS

(From 2022-23 Admitted Batches)

FULLY FLEXIBLE CHOICE BASED CREDIT SYSTEM (FFCBCS)

MOHAN BABU UNIVERSITY

Vision

To be a globally respected institution with an innovative and entrepreneurial culture that offers transformative education to advance sustainability and societal good.

Mission

- Develop industry-focused professionals with a global perspective.
- Offer academic programs that provide transformative learning experience founded on the spirit of curiosity, innovation, and integrity.
- Create confluence of research, innovation, and ideation to bring about sustainable and socially relevant enterprises.
- Uphold high standards of professional ethics leading to harmonious relationship with environment and society.

SCHOOL OF COMMERCE AND MANAGEMENT

Vision

To be the preferred choice for commerce and management education recognised for excellence, innovation, entrepreneurship and societal consciousness

Mission

- Impart relevant knowledge of commerce and management, a broad set of skills, and an inquisitive attitude to provide appropriate and distinctive solutions to serve industry and community
- Offer an experience par excellence with our state-of-the-art research, innovation, and incubation ecosystem to realise our learners' fullest entrepreneurial potential
- Provide continued education and research support to working professionals in the field of commerce and management to augment their domain expertise in the cutting-edge technologies used for business developments
- Inculcate the true spirit of societal consciousness in managers of tomorrow in solving challenges in commerce and management.

DEPARTMENT OF MANAGEMENT

Vision

To become the centre of excellence for management education and research in the country, wherein learners are empowered with the advanced management knowledge to effectively utilise their potential in their career and as entrepreneurs for betterment of the society.

Mission

- To provide management knowledge to instil the spirit of curiosity, compassion, courage and commitment through effective teaching learning process.
- To uphold the leadership excellence among the learners through research and mentoring.
- To create an effective learning environment that empowers the learners with the right blend of skills with theory and practice to build a dynamic society.

B.B.A. – Bachelor of Business Administration

PROGRAM EDUCATIONAL OBJECTIVES

After few years of graduation, the graduates of B.B.A. will:

PEO1. Pursue higher education in the field of management in functional areas - Marketing, Finance and Human Resources and Digital Marketing, Business Analytics, Financial Technology, E Commerce and Supply chain management, Digital Transformation, International business, Logistics and supply chain management or any other areas of their interest.

PEO2. Solve key challenges of management in general and functional areas in particular through professional career in industry/teaching/research.

PEO3. Get inspiration to engage in entrepreneurial career.

PEO4. Manage teams through effective leadership skills.

PEO5. Exhibit societal consciousness and ethical behaviour in practicing management along with learnability.

PROGRAM OUTCOMES

On successful completion of the Program, the graduates of B.B.A. will be able to:

PO1. Gain the knowledge of management concepts relevant to corporate issues.

PO2. Analyse the real time problems of the contemporary management.

PO3. Develop solutions to the contemporary management challenges.

PO4. Interpret the emerging issues in management through proper investigations and analysis.

PO5. Utilize appropriate tools and techniques to solve managerial problems.

PO6. Provide solutions for managerial problems with social consciousness.

PO7. Offer sustainable and environmental friendly strategies in solving managerial issues.

PO8. Establish highly ethical and moral standards in the given environment in solving managerial challenges.

PO9. Lead the people and work with teams for acceptable outcomes.

PO10. Communicate effectively in all forms to the stakeholders.

PO11. Manage businesses effectively in a given environment.

PO12. Learn continuously on the contemporary issues and practice in the field of management.

PROGRAM SPECIFIC OUTCOMES

On successful completion of the Program, the graduates of B.B.A. will be able to:

PSO1. Use fundamental knowledge of management domains to solve complex business problems.

PSO2. Use simulated problems, case analysis, projects, and industrial training to gain multidisciplinary knowledge

PSO3. Make competent management professionals through life-long learning who are ethically sound and have an understanding of societal and ecological issues relevant to their profession

Bachelor of Business Administration (3 Years Degree Program)

Basket Wise - Credit Distribution

S. No.	Basket	Credits (Min. - Max.)
1	SCHOOL CORE	36-45
2	PROGRAM CORE	36-42
3	PROGRAM ELECTIVE	30-36
5	UNIVERSITY ELECTIVE	6-9
	TOTAL CREDITS	**Min. 120**

Bachelor of Business Administration (Hons.) (4 Years Degree Program)

Basket Wise - Credit Distribution

S. No.	Basket	Credits (Min. - Max.)
1	SCHOOL CORE	36-45
2	PROGRAM CORE	60-75
3	PROGRAM ELECTIVE	36-54
5	UNIVERSITY ELECTIVE	9-12
	TOTAL CREDITS	**Min. 160**

SCHOOL CORE (36 - 45 Credits)

Course Code	Title of the Course	Lecture	Tutorial	Practical	Project based Learning	Credits	Pre-requisite
		L	T	P	S	C	
22MG102001	Basics of Computers	2	-	2	-	3	-
22MG101001	Corporate Governance and Business Ethics	3	-	-	-	3	-
22MG101002	Business Economics	3	-	-	-	3	-
22MG101003	Basics of Accounting	3	-	-	-	3	-
22MG101004	Critical Analysis & Writing	2	-	-	-	2	-
22MG101005	Leadership in Dynamic Business Environment	3	-	-	-	3	-
22MG101006	Principles of Management	3	-	-	-	3	-
22MG101007	Banking and Insurance	2	-	-	-	2	-
22MG101008	Evolution of Business	3	-	-	-	3	-
22MG101009	Fundamentals of Business Statistics	3	-	-	-	3	-
22MG101010	Entrepreneurship Development	3		-	-	3	-
22MG111001	Seminar	-	-	-	-	1	-
22MG111002	Internship	-	-	-	-	2	-
22MG108001	Capstone Project	-	-	-	-	6	-
Language Basket (Min. 8 Credits to be earned)							
22LG205602	Communicative English	-	1	2	-	2	-

Course Code	Title of the Course	Lecture	Tutorial	Practical	Project based Learning	Credits	Pre-requisite
		L	T	P	S	C	
22LG102407	Essentials of English	2	-	2	-	3	Communicative English
22LG101405	Business English	2	1	-	-	3	Essentials of English
22LG101403	German Language	2	-	-	-	2	-
22LG101404	French Language	2	-	-	-	2	-
Mandatory Courses (Min. 6 Credits to be earned) Earned Credits will not be considered for CGPA							
			-	-	-		
22MG101011	Social Problems and Public Policy	2	-	-	-	2	-
22LG107601	Professional Ethics and Human Values	2	-	-	-	2	-
22CE107601	Environmental Science	2	-	-	-	2	-
22AB107601	NCC/NSS Activities	-	-	-	-	2	-

PROGRAM CORE

(36-42 Credits for 3 years Program); **(60-75 Credits for 4 years Program)**

Course Code	Title of the Course	Lecture	Tutorial	Practical	Project based Learning	Credits	Pre-requisite
		L	T	P	S	C	
22MG101018	Basics of Financial Management	3	-	-	-	3	-
22MG101012	Business Information Systems	3	-	-	-	3	-
22MG101020	Basics of Human Resource Management	3	-	-	-	3	-
22MG101014	Design Thinking	3	-	-	-	3	-
22MG101022	Fundamentals of Marketing Management	3	-	-	-	3	-
22MG101026	Management Accounting	3	-	-	-	3	-
22MG101015	Innovation and Creativity in Business	2	1	-	-	3	-
22MG101016	Services Management	3	-	-	-	3	-
22MG101063	Introduction to Digital Marketing	3	-	-	-	3	-
22MG101019	Marketing Management	3	-	-	-	3	-
22MG101013	Human Resource Management	3	-	-	-	3	-
22MG101027	Operations Management	3	-	-	-	3	-
22MG101023	Introduction to Financial Technology	3	-	-	-	3	-
22MG101029	Business Mathematics	3	-	-	-	3	-
22MG101028	Management Control System	3	-	-	-	3	-
22MG102002	Financial Modelling	3	-	2	-	4	-
22MG101032	Financial Markets & Services	3	1	-	-	4	-
22MG101037	Retail Management	3	-	-	-	3	-

Course Code	Title of the Course	Lecture	Tutorial	Practical	Project based Learning	Credits	Pre-requisite
		L	T	P	S	C	
22MG101038	Customer Relationship Management	3	-	-	-	3	-
22MG101040	Integrated Marketing Communication	3	-	-	-	3	-
22MG101042	Industrial Relations Law	3	-	-	-	3	-
22MG101043	Compensation Management	3	-	-	-	3	-
22MG101044	International Human Resource Management	3	-	-	-	3	-
22MG101064	Indian Economy	3	-	-	-	3	-

PROGRAM ELECTIVE

(30-36 Credits for 3 years Program); **(36-54 Credits for 4 years Program)**

Course Code	Knowledge Area	Title of the Course	Lecture	Tutorial	Practical	Project based Learning	Credits	Pre-requisite
			L	T	P	S	C	
22MG101024	General Management	Business Law	2	1	-	-	3	-
22MG101017		Cost Accounting	2	1	-	-	3	-
22MG101033		Organization Behavior	2	1	-	-	3	-
22MG101031		Business Decision Making	2	1	-	-	3	-
22MG101034		Strategic Management	2	1	-	-	3	-
22MG101036		Leadership Management	3	-	-	-	3	-
22MG101039		Business Research	3	-	-	-	3	-
22MG101021	Finance	Security Analysis and Portfolio Management	3	1	-	-	4	-
22MG101025		Financial Derivatives	3	1	-	-	4	-
22MG101030		Mergers and Acquisition	3	1	-	-	4	-
22MG101048	Marketing	Consumer Behaviour	3	-	-	-	3	-
22MG101035		Rural Marketing	3	-	-	-	3	-
22MG101041		Brand Management	3	-	-	-	3	-
22MG101045	Human Resource Management	Stress Management	3	-	-	-	3	-
22MG101046		Organizational Change and Development	3	-	-	-	3	-
22MG101047		Strategic Human Resource Management	3	-	-	-	3	-
22MG101062		Performance Management	3	-	-	-	3	-

UNIVERSITY ELECTIVE

(6-9 Credits for 3 years Program); (9 - 12 Credits for 4 years Program)

Course Code	Title of the Course	Lecture	Tutorial	Practical	Project based Learning	Credits	Pre-requisite
		L	T	P	S	C	
22EC101701	AI in Healthcare	3	-	-	-	3	-
22CM101701	Banking and Insurance	3	-	-	-	3	-
22AI101701	Bioinformatics	3	-	-	-	3	-
22LG101701	Business Communication and Career Skills	3	-	-	-	3	-
22SS101701	Constitution of India	3	-	-	-	3	-
22CM101702	Cost Accounting and Financial Management	3	-	-	-	3	-
22CB101701	Cyber Laws and Security	3	-	-	-	3	-
22MG101701	Entrepreneurship for Micro, Small and Medium Enterprises	3	-	-	-	3	-
22CE101702	Environmental Pollution and Control	3	-	-	-	3	-
22CB101702	Introduction to Ethical Hacking	3	-	-	-	3	-
22CB101703	Forensic Science	3	-	-	-	3	-
22SS101702	Gender and Environment	3	-	-	-	3	-
22ME101701	Global Strategy and Technology	3	-	-	-	3	-
22SS101703	Indian Economy	3	-	-	-	3	-
22SS101704	Indian History	3	-	-	-	3	-
22SS101705	Indian Tradition and Culture	3	-	-	-	3	-
22AI101702	Introduction to Artificial Intelligence	3	-	-	-	3	-
22AI101703	Introduction to Data Science	3	-	-	-	3	-
22AI101704	Introduction to Machine Learning	3	-	-	-	3	-
22ME101704	Managing Innovation and Entrepreneurship	3	-	-	-	3	-
22LG101702	Personality Development	3	-	-	-	3	-
22CE101703	Planning for Sustainable Development	3	-	-	-	3	-
22CS101702	Web Design Fundamentals	3	-	-	-	3	-
22SS101706	Women Empowerment	3	-	-	-	3	-

Note:

1. If any student has chosen a course or equivalent course from the above list in their regular curriculum then, he/she is not eligible to opt the same course/s under University Elective.
2. The student can choose courses from other disciplines offered across the schools of MBU satisfying the pre-requisite other than the above list.

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22MG102001	**BASICS OF COMPUTERS**	2	-	2	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: The course consists of an introduction to basic vocabulary and terminology related to computer and word processing, Microsoft Word, the Internet, web search and email.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Work with advanced features of MS Word, MS Excel & MS PowerPoint.

CO2. Create powerpoint presentations.

CO3. Be aware of mathematical calculations in MS Excel

CO4. Be aware of MS Access and database

CO5. Able to use basic internet & social networking tools

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	-	-	-	-	-	-	-	-	-	3	-	3
CO2	3	3	3	-	-	-	-	-	-	-	-	2	3	-	3
CO3	3	3	-	-	-	-	-	-	-	-	2	-	3	-	3
CO4	2	3	3	-	-	-	-	-	-	-	-	-	3	-	-
CO5	2	2	1	-	-	-	-	-	-	-	1	-	3	2	1
Course Correlation Mapping	**3**	**3**	**3**	**-**	**-**	**-**	**-**	**-**	-	**-**	**2**	**2**	**3**	-	**3**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: BASICS OF COMPUTERS ***(05 Periods)***

Introduction – Meaning – Characteristics – Types – Advantages and Limitations of a Computer – Computer Input Devices: Key Board – Mouse Scanners – Digital Camera – Touch Screen. Output Devices: Monitors – Printers. Storage Devices: Hard Disk – RAM – CD-ROM, Operating Systems: Windows

Module 2: MS WORD ***(07 Periods)***

Introduction – Menus – Shortcut menus – Tool bars Files: Creating – Opening – Saving – Renaming – Closing Documents and Text Format & Paragraph: Formatting and Paragraphs – Attributes – Moving – Copying – Pasting Bulleting: Bullet and Number lists – Nested lists – Formatting lists Tables : Draw – Insert – Rows & Columns – Moving– Resizing – Table Properties. Page Formatting: Margins Page Size & Orientation – Headers and Footers – Page Numbers – Preview and Printing-mail merge.

Module 3: MS EXCEL ***(06 Periods)***

Introduction to spread sheet – components of EXCEL opening screen Building worksheet. Entering data in worksheet – editing, deleting, copying and moving cells and ranges adjusting column width and row height – inserting and deleting cells, rows and columns using auto-fill – creating and working with formula – functions in EXCEL – Graphs and Charts: Types of charts – elements of a chart – creating a chart

Module 4: MS ACCESS ***(07 Periods)***

Introduction to Access and Database – Database objects – creating database – Creating tables: creating a table using data sheet, design view and table wizard – data types – primary key – entering and modifying data in a table – Creating forms: creating auto forms – creating forms using design view and form wizard – entering and editing records in forms – Creating queries: types of queries – creating queries using query wizard – Creating reports: creating auto reports – creating reports using report wizard.

Module 5: INTERNET ***(05 Periods)***

Internet – Scope – Uses and advantages - Applications of internet in business – Email - Opening an Email Account– Sending and Receiving e-mails using internet Introduction to online shopping

Total Periods: 30

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Perform MS DOS commands in command prompt.
2. Create the Resume in MS word
3. Create an advertisement in MS Word document using page and content borders, patterns, and text formatting.
4. Create organization letterhead by using of MS office
5. Perform Mail-merge in MS word
6. Apply mathematical function and generate students grade sheet in excel
7. Represent sales forecasting of a firm using charts in excel

8. Create a data base in MS Access
9. Create email id
10. Sent a formal email to multiple persons using any emailing application

RESOURCES

TEXT BOOKS:

1 Vikas Guptha, 2012, Comdex Computer Course Kit, Reprint, Wiley – Dream tech, New Delhi.
2. Sanjay Saxena, S. Mohan Naidu, Rajneesh, 2016, Computer Application In Management, Agarwal Amit K Kashyap & Vikas Publishing House, New Delhi.
3. Nasib Singh Gill Handbook of Computer Fundamentals, 2016, 1st Edition, Khanna publication, New Delhi

REFERENCE BOOKS:

1. S.V. Srinivasa Vallaban, 2006, Computer applications in Business, Third edition, Sultan Chand and Sons, New Delhi.
2. Working in Microsoft Office, Ron Mansfield - TMH

VIDEO LECTURES:

1. https://support.microsoft.com/en-us/office/create-a-document-in-word-aafc163a-3a06-45a9-b451-cb7250dcbaa1?wt.mc_id=otc_word#
2. https://edu.gcfglobal.org/en/computerbasics/

WEB RESOURCES:

1. https://www.tutorialspoint.com/basics_of_computers/basics_of_computers_introduction.htm
2. https://testbook.com/learn/computer-fundamentals/

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22MG101001	CORPORATE GOVERNANCE AND BUSINESS ETHICS	3	-	-	-	3

Pre-Requisite -
Anti-Requisite -
Co-Requisite -

COURSE DESCRIPTION: This course makes the student Understand ethical issues related to business and good governance necessary for long term survival of business.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Understand the importance of corporate governance in the day-to-day working of organizations
CO2. Understand the corporate governance practices in India.
CO3. To know the importance ethics in business organizations.
CO4. Analyze the importance of ethics in management and decision-making process.
CO5. Evaluate the problems and inculcate ethics in various business decisions.

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	1	1	1	-	-	3	1	-	-	-	-	1	-
CO2	2	1	1	2	2	1	-	3	-	1	-	-	-	-	1
CO3	1	1	1	-	3	-	1	3	1	1	-	-	1	-	1
CO4	2	2	2	2	3	2	-	3	-	-	-	-	1	-	-
CO5	2	1	1	1	3	1	-	3	-	-	-	-	1	-	-
Course Correlation Mapping	**1**	**1**	**1**	**2**	**3**	**1**	**1**	**3**	**1**	**1**	**-**	**-**	**1**	**1**	**1**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION TO CORPORATE GOVERNANCE ***(09 Periods)***

Concept, and Need for Corporate Governance, Features of good governance, Role played by regulators to improve governance, Rights and privileges of shareholders, investor's problems and protection, Duties and responsibilities of auditors in corporate governance, Indian Perspective of Corporate Governance.

Module 2: CORPORATE GOVERNANCE & CSR ***(09 Periods)***

Ethical issues in Corporate Governance, Factors influencing Corporate Governance, Models of Corporate Governance (Anglo American, Japanese, German& Indian), Theories of Corporate Governance (Agency, Political, Stake holder, Legitimacy, Resource dependency, Stewardship & Social contract theory). Corporate Social Responsibility. Corporate Citizenship.

Module 3: BUSINESS ETHICS AND VALUES ***(09 Periods)***

Meaning, Nature of business ethics, Importance of business ethics, Factors influencing business ethics, Ethical theories, Types of ethical dilemmas. Values: Meaning, Types of values. Role of various agencies in ensuring ethics in corporation

Module 4: ETHICS IN MANAGEMENT ***(09 Periods)***

Ethics in HRM- Importance, Managing ethical issues in HRM; Marketing ethics- Importance, Ethical issues in marketing, Ethical behaviour in relation to suppliers, competitors; Ethics in Finance and Accounts. Business Ethics in Different Organizational Contexts.

Module 5: ETHICS IN DECISION MAKING ***(09 Periods)***

Nature of ethical decision making, Process- Problem identification, Factors influencing ethical decision making- Individual influences (Age & Gender, National and cultural characteristics, Education & employment, psychological factors, Personal values, Personal integrity and moral imagination); Situational influences- (Issue related factors and Context related factors).

Total Periods:45

EXPERIENTIAL LEARNING

1. Learn how to Develop Ethical Practices within Organizations and how to Apply Ethical Principles to Decision-Making.
2. Learn About Values and Ethics, Ethical Behavior, and the Role of Leadership in Promoting Ethical Behavior
3. Understand Various theories and Models for solving Ethical issues that arise in Organizations.
4. Learn About Various Ethical Issues that arise in Business, Including those in Marketing, Finance, Human Resources, and Information Technology.
5. Analyze the CSR activities of various Indian corporations

RESOURCES

TEXT BOOKS:

1 Business Ethics: K Aswathappa, J Usha Rani, Sunanda GundaVajhala; Himalaya Publishing house; First edition 2017

2 Business Ethics and Corporate Governance: Dr. S S Khanka; S Chand and Company Pvt Ltd; First edition 2014.

REFERENCE BOOKS:

1 M.G. Velasquez, Business Ethics, Prentice Hall India Limited, New Delhi, 2010

2 C.S.V. Murthy, Business Ethics, Himalaya Publishing House, 2007

VIDEO LECTURES:

1 https://www.youtube.com/watch?v=t80QDkdz3DI- You Tube

2. https://www.youtube.com/watch?v=HmPijVi1S_8

3 https://www.youtube.com/watch?v=n0uwTBrgqxI - YouTube

WEB RESOURCES:

1 https://archive.nptel.ac.in/courses/110/105/110105079/

2 https://archive.nptel.ac.in/courses/110/105/110105079/

3 http://www.nitttrc.edu.in/nptel/courses/video/110105138/L16.html

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22MG101002	**BUSINESS ECONOMICS**	**3**	**-**	**-**	**-**	**3**

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: The course aims to make the students aware of how the Economy deals in Micro (Small/single) market and get a better understanding of the business environment and real organizational problems.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Understand the principles of Managerial Economics

CO2. Analyze the demand and supply in business

CO3. Apply the production and its cost elements in practice

CO4. Analyze the Market Structure and Pricing practices to solve business problems

CO5. Understand the impact of macroeconomics on business

CO-PO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	-	-	-	-	1	-	1	1	-	-	1	1	-	-
CO2	2	1	1	-	-	1	-	1	1	-	-	1	1	-	-
CO3	2	1	1	-	-	1	-	1	1	-	-	1	-	1	-
CO4	2	1	1	-	-	1	-	1	1	-	-	1	1	-	-
CO5	2	1	1	1	-	1	-	1	1	-	-	1	1	-	-
Course Correlation Mapping	**2**	**1**	**1**	**1**	**-**	**1**	**-**	**1**	**1**	**-**	**-**	**1**	**1**	**1**	**-**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION TO ECONOMICS ***(09 Periods)***

Introduction–Basic concepts, Economic rationale of optimization, Nature and scope of business economics, Macro and Micro economics, Basic problems of an economy, Marginalism, Equi marginalism, Opportunity cost principle, Discounting principle.

Module 2: THEORY OF UTILITY ***(09 Periods)***

Theory of utility, cardinal and ordinal utility theory, law of diminishing marginal utility, law of Equi marginal utility, indifference curves, consumer equilibrium, consumer surplus

Module 3: CONCEPT OF DEMAND AND SUPPLY ***(09 Periods)***

Different concepts of demand, demand curve, Determinants of demand, Law of demand, Demand forecasting methods, Concepts of elasticity. Concept of supply, supply curve, Conditions of supply, Elasticity of supply.

Module 4: PRODUCTION AND COST ANALYSIS ***(09 Periods)***

The production function, Short-run and Long-run production function, law of diminishing returns and returns to scale. Fixed, variable and other cost concepts, least cost-input combination.

Module 5: PRICING IN DIFFERENT MARKET STRUCTURES ***(09 Periods)***

Market – Types – Structures – Features - Price determination (long run and short run) in Perfect Competition, Monopoly, Monopolistic and Oligopoly markets, pricing strategies.

Total Periods:45

EXPERIENTIAL LEARNING

1. To expose students of under graduates in management to basic Micro Economics Concepts and inculcate and the analytical approach to the subject matter.
2. To stimulate the student's interest by showing the relievable and use of various economic theories.
3. To apply economic reasoning to problems of business.

RESOURCES

TEXT BOOKS:

1. Ahuja H.L. Business Economics. S.Chand and Co.New Delhi.2009
2. Koustsoyianni. A Modern Micro Economics. Macmillan New Delhi. 2012

REFERENCE BOOKS:

1. D.M. Mithani, G.K.Murthy. Fundamentals of Business Economics, Himalaya Publishing House, New Delhi. 2009
2. R.Kaweri. Managerial Economics. S.Chand and Co.New Delhi.2010
3. G.N.Zambre. Business Economics. Pimplapure Publishers Nagpur.2011

VIDEO LECTURES:

1. https://nptel.ac.in/courses/110101005
2. https://archive.nptel.ac.in/courses/110/105/110105075

WEB RESOURCES:

1. https://www.geektonight.com/business-economics-notes-pdf
2. https://archive.nptel.ac.in/content/syllabus_pdf/110105075.pdf
3. https://targetstudy.com/courses/bba-be.html

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22MG101003	**BASICS OF ACCOUNTING**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: The course focuses on a detailed understanding of financial accounting, accounting principles, accounting process, and preparation and interpretations of the financial statements.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Understand the process and preparation of journal, ledger and trial balance.

CO2. Understand the process and preparation of final accounts and interpretation of the same.

CO3. Evaluate and apply appropriate methods of charging depreciation of the fixed assets to facilitate decision-making.

CO4. Analyze the financial performance of the companies using the ratios and facilitate the decision making.

CO5. Understand the basics of computerized accounting system and be able to integrate the accounting with IT applications.

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	-	-	1	-	-	-	-	-	-	1	1	-	-
CO2	3	1	-	1	1	-	-	-	-	-	-	1	1	-	-
CO3	3	1	1	1	1	-	-	-	-	-	-	-	-	1	-
CO4	3	1	-	1	1	-	-	-	-	-	-	1	1	-	-
CO5	3	1	1	-	1	-	-	-	-	-	-	1	-	1	-
Course Correlation Mapping	**3**	**1**	**1**	**1**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**1**	**1**	**-**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION TO ACCOUNTING (10 Periods)

Nature and Scope of Accounting – Objectives of Accounting - Functions of Accounting - Advantages and Limitations of Accounting – Generally Accepted Accounting Principles [GAAP] Accounting Cycle – Accounting Standards – Journal – procedure for preparation of Journal. Ledger – Preparation of Ledger Accounts. Trial Balance – Methods and Preparation of Trial Balance (Theory and Problems).

Module 2: FINANCIAL STATEMENTS (10 Periods)

Final Accounts **–** Classification of Receipts and Expenses – Preparation of Final Accounts - Trading Account – Profit & loss Account –Balance Sheet and preparation of Final Accounts with simple adjustments. (Theory and Cases)

Module 3: DEPRECIATION ACCOUNTING (10 Periods)

Causes of depreciation - Factors affecting the depreciation - Computation of Depreciation - Methods of depreciation – Straight Line Method – Diminishing Balancing Method – Annuity Method – Accelerated Methods - Depreciation Fund Method – Insurance Policy Method - Machine hour rate method (Theory and Cases).

Module 4: RATIO ANALYSIS (10 Periods)

Classification of Ratios – Liquidity – Asset Management Ratios – Debt Management Ratio – Profitability Ratios – Market Value Ratios – Managerial uses and Limitations of Ratio Analysis – (Theory and Simple Cases)

Module 5: COMPUTERIZED ACCOUNTING (05 Periods)

Computerized Accounting – Meaning – Features of Computerized Accounting – Accounting Information Systems [AIS] - Accounting Software Packages – Introduction to Tally – Tally and its process.

Total Periods: 45

EXPERIENTIAL LEARNING

1. Students will be given an assignment saying that enter the business transactions in Tally ERP 9
2. Collect the information from the sole trader and prepare the final accounts. Present the summary as a group presentation
3. A group discussion will be conducted for the students about their observations between the company act 1956 and 2013

   Above all will be detailed in CHO.

RESOURCES

TEXT BOOKS:

1. Paul, S. K. 4th edition New Central Book Agency Pvt. Ltd. Financial Accounting For Managers.
2. Ghosh, T. P. 4th edition Taxman Allied Service Financial Accounting.
3. Mohammed Hanif, Amitabh Mukherjee, (Fully solved problems, theory questions and exercises).

REFERENCE BOOKS:

1. SP Jain, K L Narang ; Advanced Accountancy, Kalyani Publishers, New Delhi Vol-I and II.
2. S.N. Maheswari: "Financial Accounting" , Vikas Publishers
3. Jawaharlal: Accounting for Managers, Himalaya Publishing Company, New Delhi.
4. Mukharjee and Hanif (2013),Financial Accounting, Tata Mc-Graw Hill, New Delhi:

VIDEO LECTURES:

1. http://www.digimat.in/nptel/courses/video/110106147/L01.html
2. https://www.digimat.in/nptel/courses/video/110101131/L25.html

Web Resources:

1. https://www.tgct.gov.in/tgportal/staffcollege/DR ACTOs 17.01.2020 to 18.02.2020/ February - 2020 PDF%27s/05.02.2020, 1. S.Srinivas Sir, Chartered Accountant, Accounting Fundamentals.pdf
2. Accounting and Finance | Bloomberg Professional Services
3. Accounting Explained With Brief History and Modern Job Requirements (investopedia.com)

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22MG101004	**CRITICAL ANALYSIS AND WRITING**	2	-	-	-	2

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: Critical Analysis and Writing" explores techniques for evaluating, interpreting, and communicating complex ideas effectively through rigorous analysis, logical reasoning, and persuasive writing across various disciplines.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Understand the logical connections between ideas.

CO2. Identify, construct and evaluate arguments.

CO3. Analyze inconsistencies and common mistakes in reasoning.

CO4. Identify the sources for critical analysis sources

CO5. Understand write analytically for academic purpose.

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1	-	1	1	1	-	-	1	1	1	1	-	1	-
CO2	2	1	1	-	1	1	1	-	1	-	-	1	1	-	-
CO3	1	1	2	1	1	1	1	-	-	1	-	1	-	1	-
CO4	1	1	2	1	1	-	1	-	1	-	1	-	1	-	-
CO5	1	2	1	1	1	1	-	1	1	1	-	1	-	1	-
Course Correlation Mapping	**1**	**1**	**2**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**-**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: **INTRODUCTION TO CRITICAL WRITING** ***(06 Periods)***

Understanding the concept of critical thinking, The importance of critical thinking in academic and professional contexts, Recognizing biases and assumptions in thinking, Developing intellectual humility and open-mindedness

Module 2: ANALYTICAL READING SKILLS ***(06 Periods)***

Strategies for active reading and comprehension, Identifying main ideas and supporting details, Analyzing arguments and evidence, Recognizing logical fallacies

Module 3: STRUCTURING CRITICAL ESSAYS ***(06 Periods)***

Overview of essay structure: introduction, body, and conclusion, Crafting a strong thesis statement, Organizing ideas effectively, Incorporating evidence and examples to support arguments

Module 4: EVALUATING SOURCES ***(06 Periods)***

Differentiating between credible and unreliable sources, Assessing the reliability and validity of information, Understanding bias and perspective in sources, Utilizing library resources and databases effectively

Module 5: WRITING CRITICALLY ***(06 Periods)***

Developing a critical voice in writing, Engaging with sources through synthesis and critique, Strategies for revision and refinement, Avoiding plagiarism and maintaining academic integrity

Total Periods: 30

EXPERIENTIAL LEARNING

1. Discuss the importance of critical thinking skills in academic and professional contexts and submit a report
2. Provide examples of situations where critical analysis is essential (e.g., analyzing literature, evaluating scientific research, interpreting data).

   Emphasize the importance of proper citation and referencing to support claims and avoid plagiarism.

REFERENCES

TEXTBOOKS:

1 Anderson, Marilyn. Critical Reasoning, Academic Writing and Presentation Skills. New Delhi: Pearson Education, 2010.

2 Booth, W., G.G. Colomb, J.M. Williams. The Craft of Research. Chicago: University of Chicago Press, 2003.

REFERENCE BOOKS:

1 Rossenwasser, David, Jill Stephen. Writing Analytically. Sixth Edition. Boston: Wadsworth. Cengage Learning, 2012.

2 Tharp, Twyla. The Creative Habit: Learn it and Use it for Life. New York: Simon & Schuster, 2003.

VIDEO LECTURES:

1 https://onlinecourses.nptel.ac.in/noc22_hs05/preview

2 https://onlinecourses.swayam2.ac.in/cec21_ge32/preview

WEB RESOURCES:

1 https://depts.washington.edu/pswrite/Handouts/CriticalAnalysisPapers.pdf

2 https://www.sjsu.edu/writingcenter/docs/handouts/Analytical%20and%20Critical%20Writing.pdf

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22MG101005	LEADERSHIP IN DYNAMIC BUSINESS ENVIRONMENT	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION:

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Use Leadership behavior theories, frameworks, principles, and tactics from emerging and, when problems are identified, intervene to fix them.

CO2. Develop greater confidence and dexterity when enacting a variety of leadership behaviors.

CO3. Investigate the complexities of the dynamic leadership and environment and our relationship with related to business

CO4. The Course highlights to Develop scientific, interpretive, and creative thinking skills.

CO5. Explore the problems we face in understanding the leadership and environment in living sustainability.

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1	1	1	-	-	-	-	-	-	-	-	1	-	-
CO2	1	-	-	1	-	-	1	-	1	-	-	-	-	-	-
CO3	1	1	1	-	1	-	-	-	1	-	-	-	1	-	-
CO4	1	1	-	1	-	-	1	-	-	-	-	-	1	-	-
CO5	1	1	1	-	-	-	1	-	-	-	-	-	-	1	-
Course Correlation Mapping	**1**	**1**	**1**	**1**	**1**	-	**1**	-	1	-	-	-	**1**	-	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION ***(09 Periods)***

Meaning of Business Environment, Factors affecting environment to the business, Internal and external environment, micro environment, macro environment. Types of environment

Module 2: SOCIAL ENVIRONMENT ***(09 Periods)***

Business and society, business and culture, language, culture and organizational behaviour, other social/cultural factors, social responsibility of business.

Module 3: ECONOMIC ENVIRONMENT ***(09 Periods)***

Nature of economy, structure of the economy, economic policies, economic conditions.

Module 4: LEADERSHIP ***(09 Periods)***

Leadership - Traits, Skills and Styles- Leadership Development - Qualities of a Good Leader.

Module 5: NOTABLE LEADERS ***(09 Periods)***

Profiles of a few Inspirational Leaders in Business – Jemshedji Tata - Aditya Birla - Swaraj Paul - L N Mittal - N R Narayana Murthy - Azim Premji, etc

Total Periods: 45

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Conducting Activities like Role Play and Case Analysis
2. Activities like Famous Personality Roles and provide same as Assignments

RESOURCES

TEXT BOOKS:

1. Neelmegham, Business environment, 2011, VrindaPublication
2. Aswathappa k, Essentials of Business environment, Himalaya Publishinghouse.
3. Hurlock, E.B (2006). Personality Development, 28th Reprint. New Delhi: Tata McGraw Hill

REFERENCE BOOKS:

1. Andrews, Sudhir. How to Succeed at Interviews. 21st (rep.) New Delhi.Tata McGraw-Hill 1988
2. Heller, Robert.Effective leadership. Essential Manager series. Dk Publishing, 2002

VIDEO LECTURES:

1. Developing Soft Skills and Personality - Course (nptel.ac.in)
2. Business Environment Models at Modern Era

WEB RESOURCES:

1. The Leadership Psychology of Personality Formation (verywellmind.com)

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22MG101006	**PRINCIPLES OF MANAGEMENT**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course enables the students to study the evolution of management, functions and principles of management, application of the principles in an organization, system and process of effective controlling in the organization.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Understand managerial functions of business organisation.
CO2. Understand the planning process in the organization.
CO3. Understand the principles of Organizing.
CO4. Understand the concept and process of Staffing.
CO5. Demonstrate the ability to direct, leadership and communicate effectively.

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	-	-	-	1	-	-	-	1	-	1	-
CO2	3	1	-	1	-	-	-	1	1	-	-	1	1	-	-
CO3	3	1	-	1	-	-	-	1	1	-	-	1	1	-	-
CO4	3	1	-	-	-	-	-	1	1	-	-	1	-	1	-
CO5	3	1	-	-	-	1	-	-	1	-	-	1	-	-	1
Course Correlation Mapping	**3**	**1**	**-**	**1**	**-**	**1**	**-**	**1**	**1**	**-**	**-**	**1**	**1**	**1**	**1**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION TO MANAGEMENT ***(08 Periods)***

Meaning, definition, concept, scope and principles of management; Evolution of management thought - Management theories- classical, behaviour, system, contingency and contemporary perspectives on management. Management art or science and management as profession. Process and levels of Management. Introduction to Functions (POSDCORB) of Management.

Module 2: PLANNING – IMPORTANCE: ***(08 Periods)***

Planning – Importance, objectives, process, policies and procedures, types of planning, Decision making - Process of decision making, Types of decision, Problems involved in decision making

Module 3: ORGANIZING: ***(09 Periods)***

Meaning, importance, principles of organizing, span of management, Patterns of organization – formal and informal organizations, Common organizational structures; departmentalization, Authority- delegation, centralization and decentralization, Responsibility – line and staff relationship;

Module 4: STAFFING: ***(10 Periods)***

Sources of recruitment, Selection process, Training, Directing, Controlling – Meaning and importance, Function, span of control, Process and types of Control, Motivation, Coordination – Need and types and techniques of co-ordination - Distinction between coordination and co-operation - Requisites for excellent co-ordination - Systems Approaches and co-ordination.

Module 5: EMERGING ISSUES IN MANAGEMENT ***(10 Periods)***

Total Quality management, Technology Management, Talent and Knowledge Management, Leadership, Organizational change and Development, Corporate Social responsibility.

Total Periods:45

EXPERIENTIAL LEARNING

LIST OF EXCERISES:

1. Select students will be given a case on management theory and its relevance to contemporary business practices.
2. Case of Amazon India on Planning and Staffing personnel for its timely delivery in rural area
3. Students will be asked to have group discussion on Technology, Organisation and Management

   Above all will be detailed in CHO.

RESOURCES

TEXT BOOKS:

1 Charles W.L. Hill and Steven L. McShane, Principles of Management, Tata Mc-craw-Hill Company, New Delhi.

2 Griffin, Ricky W., Management. AITBS Publishers and Distributors, New Delhi.

REFERENCE BOOKS:

1 Hitt, MA., J.S. Black and Porter, L.W., Management, Pearson Education, New Delhi

2 Laurie J. M. Management and organizational Behaviour, Pearson, New Delhi

VIDEO LECTURES:

1. NPTEL
2. NPTEL : NOC: Principles of Management (2021) (Management) (digimat.in)

WEB RESOURCES:

1. Introduction to Management – Geeks for Geeks
2. anucde.info/bba1a.pdf
3. https://gfgc.kar.nic.in/punjalakatte/GenericDocHandler/199-b09e53be-ab6f-4952-9f51-b59b167a23ba.pdf

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22MG101007	**BANKING AND INSURANCE**	3	-	-	-	3

Pre-Requisite

Anti-Requisite

Co-Requisite

COURSE DESCRIPTION: Introduction to Banking; Bank-Customer Relationship; Electronic Payment System and Business Models; Introduction to Risk and Insurance; Insurance Overview.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1 Demonstrate the importance of Banking and functions of the Reserve Bank of India and its role in the country's sustainable development.

CO2 Demonstrate the role, relationships, and operations between Banker and Customer.

CO3 Demonstrate the Online Banking system, various types of Electronic Payments, and Business models.

CO4 Demonstrate the concept of risk and principles, functions, and, types of Insurance companies.

CO5 Understand the principles of insurance and its functions.

CO-PO Mapping Table

Course Outcomes	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	-	-	-	-	-	-	2	-	-	-	1
CO2	3	-	-	-	-	-	-	2	-	-	-	1
CO3	3	-	-	-	-	-	-	2	-	-	-	1
CO4	3	-	-	-	-	-	-	2	-	-	1	1
CO5	3	-	-	-	-	-	-	2	-	-	1	1
Course Correlation Mapping	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	-	**-**	**1**	**1**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION TO BANKING ***(09 Periods)***

Meaning - Importance of banking- Functions of banking - Reserve Bank of India: Functions – Role of RBI in sustainable development.

Module 2: BANK-CUSTOMER RELATIONSHIP (09 Periods)

Debtor-creditor relationship, deposit products or services, payment, and collection of cheques. Accounts – Types of accounts, the procedure for opening and closing an account - Loans and Advances- principles of lending.

Module 3 ELECTRONIC PAYMENT SYSTEM&BUSINESS MODELS (09 Periods)

Introduction to Online Banking - types of e-payment system, e-cash, NEFT, RTGS, Credit cards, Electronic Wallet and Debit cards. **Business models**- B2B, B2C, C2C, and B2G.

Module 4 INTRODUCTION TO RISK AND INSURANCE (09 Periods)

Insurance: Definition, Insurance as risk mitigation mechanism, elements of insurance. Concept of risk, risk *Vs* uncertainty.

Module 5 INSURANCE OVERVIEW ***(09 Periods)***

Principles of insurance - insurance types - LIC & GIC – insurance functions, IRDA - Insurance Players in India.

Total Periods: 45

EXPERIENTIAL LEARNING

1. Make a PowerPoint presentation on the banking system in India.
2. Submit a report on the working of insurance companies.
3. Prepare a report on the functions of RBI & IRDA in India.
4. Submit a report on electronic banking facilities provided by Indian banks.

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in course handout.)

RESOURCES

TEXT BOOKS:

1. RanganadhaChary, A.V. and Paul, R.R., *Banking and Financial system*, Kalyani Publisher, New Delhi, 3rdedition, 2016.
2. Sharma, R.K., Shashi K. Gupta and Jagwant Singh, *Banking and Insurance*, Kalyani Publishers, New Delhi, 17th edition, 2014

REFERENCES BOOKS:

1. *Indian Institute of Banking & Finance, Digital Banking*, Taxman Publications Pvt. Ltd., 2016 edition, 2016.
2. Jyotsna Sethi and Nishwan Bhatia, *Elements of Banking and Insurance*, PHI Learning Pvt. Ltd., 2nd edition, 2012.

VIDEO LECTURES:

1. https://www.youtube.com/watch?v=a1_p8zhbAfE
2. https://www.youtube.com/watch?v=bxNw9VB5Y_0

WEB RESOURCES:

1. https://unacademy.com/content/railway-exam/study material/economics/importance-of-banking-sector-in-the-country/
2. https://www.geeksforgeeks.org/ life-insurance-meaning-elements-and-types-of-life-insurance-policies/

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22MG101008	**EVOLUTION OF BUSINESS**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course provides an in-depth understanding of the basic concepts and theories of management while exploring the manager's operational role in all types of organizations. Gain insight into the manager's responsibility in planning, organizing, leading, staffing and controlling within the workplace

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Differentiate between managers and leaders
CO2. Explore the focus of a manager's job
CO3. Evaluate the required skills for a new manager's success
CO4. Assess the five functions of management
CO5. Explain the new model management operating philosophy

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	1	1	1	2	-	2	-	2	-	2	-	-	-
CO2	2	2	3	3	2	2	-	-	-	-	-	2	-	-	-
CO3	2	2	2	2	2	-	-	-	-	2	-	2	-	-	-
CO4	2	2	2	2	2	-	-	-	-	2	-	2	-	-	-
CO5	2	2	2	3	2	-	-	-	-	2	2	2	-	-	-
Course Correlation Mapping	**2**	**2**	**2**	**3**	**2**	**2**	**-**	**2**		**2**	**2**	**2**	**-**	**-**	**-**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: INTRODUCTION TO MANAGEMENT ***(08 Periods)***

Introduction to Management: Definition, Nature and Scope, Functions of Management, Managerial Roles, Theories of Management- Scientific Management, Henry Fayol's 14 principles, systems and contingency theories. Managers Vs Leaders - Managers and Leaders, Manager's Role. Organizational Behavior- Change and Transition, Behavior change, Common Reactions to change, Skills for Today's Manager.

Module 2: EVOLUTION AND FUNDAMENTALS OF BUSINESS ***(10 Periods)***

History of Trade and Commerce in India: Indigenous Banking System, Rise of Intermediaries, Transport, Trading Communities: Merchant Corporations, Major Trade Centers, Major Imports and Exports. Business - Meaning and Characteristics, Objectives, classification, Industry types.

Module 3: FORMS OF BUSINESS ORGANIZATION ***(09 Periods)***

Sole Proprietorship – merits, Limitations. Partnership – types of partners, merits, Limitations. Hindu Undivided Family Business – Concept. Cooperative Societies – concept, types, merits, Limitations. Company – types of company, merits, Limitations, Formation of Company.

Module 4 PUBLIC, PRIVATE AND GLOBAL ENTERPRISES ***(10 Periods)***

Public sector and private sector enterprises – Concept, Forms of public sector enterprises: Departmental Undertakings, Statutory Corporations and Government Company.

Module 5 EMERGING MODES OF BUSINESS ***(08 Periods)***

E-Commerce – Introduction, Meaning, features, types of e-commerce, advantages and disadvantages. Outsourcing – Introduction, Meaning, benefits and limitations of outsourcing. Social Responsibility of Business.

Total Periods: 45

EXPERIENTIAL LEARNING

1. Select any popular management theory of your choice and submit a report on its relevance in real-time practice.
2. Collect an animated video of business evolution and give PPT presentation.
3. Present a case study on planning and organizing importance with role play and submit the report.

RESOURCES

TEXT BOOKS:

1. Stephen P. Robbins (ed) Fundamentals of Management (Pearson publications:2016)
2. Bishwambhar Jha (ed) Fundamentals of Business (Novelty and Company: 2014)

REFERENCE BOOKS:

1. Douglas Haynes, Small Town Capitalism in Western India: Artisans, Merchants and the Making of the Informal Economy (CUP: 2012)
2. Claude Markovits, Merchants, traders, entrepreneurs: Indian business in the colonial era (Palgrave Macmillan: 2008)
3. Raymond A. Noe, Fundamentals of Human Resource Management (MC Graw Hill publications: 2021)

VIDEO LECTURES:

1. Business Development: From Start to Scale - Course (nptel.ac.in)
2. Evolution of Business stages of development of business b.com 1st year semester 1 tuition from home - YouTube

WEB RESOURCES:

1. Kullabs
2. Evolution of Business Organization – indiafreenotes
3. https://www.oasis-open.org/committees/download.php/ 20459/06-09-00014.000.pdf

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22MG101009	**FUNDAMENTALS OF BUSINESS STATISTICS**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course makes students learn and apply statistical tools in daily life and create quantitative models to solve real-world problems in appropriate contexts. Also, able to understand the importance of Statistics in real life by providing the necessary data analysis for solving business problems

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Understand the basics of statistics, tabulation, and graphical representation of data.

CO2. Apply Statistical tools and techniques in Decision making.

CO3. Examine the measures of dispersion and skewness.

CO4. Develop knowledge of Correlation and Regression concepts.

CO5. Interpret the results of statistical tests and make statistically relevant conclusions/decisions.

CO-PO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	-	-	-	-	-	-	-	-	-	3	3	-	-
CO2	3	3	3	-	-	-	-	-	-	-	2	3	3	-	-
CO3	3	3	3	-	-	-	-	-	-	-	2	3	3	-	-
CO4	3	2	3	-	-	-	-	-	-	-	2	3	3	-	-
CO5	**3**	**3**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**3**	**3**	**-**	**-**
Course Correlation Mapping	3	3	-	-	-	-	-	-	-	-	-	3	3	-	-

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: INTRODUCTION ***(09 Periods)***

Introduction to Statistics: Meaning, Definition, Features, Importance and limitations of statistics. Types of Statistics, Types of Variables, Data types, meaning and difference between primary and secondary data, data collection methods. Classification and tabulation of data (problems).

Module 2: MEASURES OF CENTRAL TENDENCY ***(09 Periods)***

Introduction to Measures of Central Tendency. Characteristics of an ideal measure of Central Tendency; Types of Measures of Central Tendency - mean, median, mode, geometric mean and harmonic mean. Merits, Limitations and Suitability of averages. Relationship between averages.

Module 3: MEASURES OF DISPERSION ***(09 Periods)***

Meaning and Significance. Absolute and Relative measures of dispersion Range, Quartile Deviation, Mean Deviation, Standard Deviation, Coefficient of Variation, Moments, Skewness, and Kurtosis.

Module 4: CORRELATION AND REGRESSION ***(09 Periods)***

Meaning, Definition, and Use of Correlation, Scatter diagram, Types of correlation - Karl Pearson's correlation coefficient, Spearman's Rank correlation, Probable Error. Regression- Meaning and utility of Regression analysis, Comparison between Correlation and Regression, regression lines –X on Y, Yon X, Regression Equations, and Regression Co-efficients.

Module 5: INFERENTIAL STATISTICS ***(09 Periods)***

Hypothesis-Procedure for testing hypothesis - Setting of Hypothesis, Types of errors in hypothesis testing - Level of significance, Test of significance for Large and small sample tests, Z and t-tests for mean, Chi-square test for goodness of fit and independence of attributes. Simple problems only.

Total Periods:45

EXPERIENTIAL LEARNING

1. Below is the frequency distribution

Selling Prices (Rs. thousands)	Frequency
15 up to 18	8
18 up to 21	23
21 up to 24	17
24 up to 27	18
27 up to 30	8
30 up to 33	4
33 up to 36	2
Total	80

Construct a histogram. What conclusions can you reach based on the information presented in the histogram?

2. Calculate the arithmetic mean for the wages of workers in a Factory

Wages (Rs).	4 6 8 10 15 16
Workers	5 15 6 7 8 2

3. Calculate the correlation coefficient between X and Y and comment on their relationship.

X	1	3	5	7	8
Y	2	5	7	9	10

4. The following sample observations were randomly selected.

X	4	5	3	6	10
Y	4	6	5	7	7

5. The following sample observations were randomly selected.

X	5	3	6	3	4	4	6	8
Y	13	15	7	12	13	11	9	5

a. Determine the regression equation.
b. Determine the value of Y' when X is 7.

RESOURCES

TEXT BOOKS:

1. Lind, D. A., Marchal, W. C., & Wathen, S. A. (2021). *Basic statistics for business and economics*. McGraw-Hill.
2. Sharma,J.K (2014) Business Statistics 4th edition Delhi: Vikas Publishing House
3. S.P.Gupta, Statistical Methods. Sultan Chand and sons.

REFERENCE BOOKS:

1. Das and Swain, Business statistics for managerial decision, HPH
2. Pillai &Bagavathi (2015) Statistics, S Chand
3. Levin, R. I., & Rubin, D. S. (2014). Statistics for management. Delhi: Pearson.

VIDEO LECTURES:

1. https://www.digimat.in/nptel/courses/video/110107114/L01.html
2. https://www.youtube.com/watch?v=ImpxCMX2i_k&list=PLd605q1Prvz8TlgPXANEQyuDBNb6VSYFj

WEB RESOURCES:

1. https://ug.its.edu.in/sites/default/files/Business%20Statistics.pdf
2. https://www.ascdegreecollege.ac.in/wp-content/uploads/2020/12/Business-Statistics-by-Gupta.pdf
3. http://web.uvic.ca/~nkarlson/col11776-1.34.pdf

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22MG101010	ENTREPRENEURSHIP DEVELOPMENT	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION:

This course is to create awareness about entrepreneurship among students and focuses on motivating students for entrepreneurship. The more focus is given on creativity and innovation.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Understand the concepts of entrepreneurship, its need and scope

CO2. Know the Institutions for Entrepreneurial Development

CO3. Appreciate the role of institution in promoting entrepreneurship

CO4. know the criteria to be followed in project formulation

CO5. Understand the nurturing process of women entrepreneurs

CO-PO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3									1		1	1		
CO2	3	1		1		1		1				1	1		
CO3	3	1		1	2			1				1	1		
CO4	3	1	2	1	1				1	1				1	
CO5	3	1		1	1					1		1			1
Course Correlation Mapping	**3**	**1**	**2**	**1**	**1**	**1**		**1**	**1**	**1**		**1**	**1**	**1**	**1**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: Introduction to Entrepreneurship ***(09 Periods)***

Entrepreneurship - meaning, types and importance of entrepreneurship - Dimensions of entrepreneurship-Qualities of an entrepreneur, factors influencing entrepreneurship

Module 2: Institutions for Entrepreneurial Development ***(09 Periods)***

Agencies - commercial banks –district industries Centre - national small industries corporation –Small industries development organization –small industries service institutions –All India institutions –IDBI-IFCI-ICIIC-IRCBI

Module 3: Mobilizing financial Resources ***(09 Periods)***

Funding new venture - requirement –availability and access to finance –marketing – technology and industrial accommodation-Role of industries-business incubators-angel investors- venture capital and private equity fund

Module 4: Business Plan Preparation ***(09 Periods)***

Significance of writing the business plan/ project proposal - Contents of business plan - Designing business processes — location - layout - planning & control- preparation of project report

Module 5: Women Entrepreneurship ***(09 Periods)***

Women Entrepreneurship – Need – Growth of women Entrepreneurship – Problems faced by Women Entrepreneurs – Development of women Entrepreneurship

Total Periods: 45

EXPERIENTIAL LEARNING

1 Give a seminar on Entrepreneurship as a career and submit a report.

2 Prepare and submit the business plan for a new business.

3 Collect any case study related to women entrepreneurship and present a summary report.

RESOURCES

TEXTBOOKS:

1 Clifford M.Baumback & Joseph R.Mancuso, Entrepreneurship And Venture Management, *Prentice Hall*

2. Kumar A., S.C. Poornima, M.K. Abraham, K. Jayashree (2011); Entrepreneurship Development; New Age International Publishers, 1st Edition.

REFERENCE BOOKS:

1 R.K.R. Kummitha (2016); Social Entrepreneurship: Working towards Greater Inclusiveness; Sage Publications, 1st Edition.

2 A.Sahay, M. S. Chhikara (2007); New Vistas of Entrepreneurship: Challenges &Opportunities; Excel Books, 1st Edition.

3 Kumar A (2012); Entrepreneurship; Pearson, 3rd Edition.

VIDEO LECTURES:

https://onlinecourses.swayam2.ac.in/cec20_mg19/preview

https://www.udemy.com/courses/business/entrepreneurship/

Web Resources:

1. https://www.studocu.com/row/document/comsats-university-islamabad/physiology-b/entrepreneurship-development-notes-sem-1/14595226
2. https://www.edx.org/learn/entrepreneurship

SCHOOLCORE

Course Code	Course Title	L	T	P	S	C
22MG111002	INTERNSHIP	-	-	-	-	2

Pre-Requisite

Anti-Requisite

Co-Requisite

COURSE DESCRIPTION: The course gives an idea of the research project, identify the research problem, review of literature, give idea about data collection and understating the knowledge on statistical tools.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Gain knowledge about research project

CO2. Increase knowledge on research problem

CO3. Improve practice in review of literature

CO4. Well versed in data collection

CO5. Implement knowledge on statistical tools and Proficiency in project preparation

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1		1								2	1		1
CO2		2	1		1							1	1		
CO3				2	1	1						2		1	1
CO4		1		2	2				1			1		1	
CO5			2		2		1	1		1	1		1	1	1
Course Correlation Mapping	**2**	**4**	**3**	**5**	**6**	**1**	**1**	**1**	**1**	**1**	**1**	**6**	**3**	**3**	**3**

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22LG205602	**COMMUNICATIVE ENGLISH**	-	1	2	-	2

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: Communicative English lab imparts the students with knowledge of LSRW, pronunciation, and effective use of language, and acquaint the students to function effectively through Just a Minute and Role Play activities and enhance writing skills. The course deals with LSRW, Phonetics, vocabulary building, speaking practices, and written communication.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Apply appropriate listening, speaking, reading, and writing skills by analyzing the context.

CO2. Demonstrate knowledge of Phonetics by examining and applying sounds of English through Phonetics.

CO3. Analyze sentence structures by applying and demonstrating knowledge of Vocabulary and Grammar.

CO4. Function effectively as an individual and as a member in diverse teams examining and applying speaking skills in Just A Minute, Role Plays, Presentations, and debates.

CO5. Apply appropriate writing skills in writing a letter, Email, and Resume by analyzing the context.

CO-PO Mapping Table:

Course Outcomes	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	2	2	-	-	3	-	2	-	2	-	-	-
CO2	3	2	-	-	2	-	2	-	2	-	-	-
CO3	2	3	-	-	2	-	2	-	2	-	-	-
CO4	2	2	-	-	2	-	2	-	2	-	3	-
CO5	2	2	-	-	3	-	2	-	2	-	-	-
Course Correlation Mapping	**2**	**2**	**-**	**-**	**3**	**-**	**2**	**-**	**2**	**-**	**3**	**-**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Any ten modules are mandatory among the following:

Module 1: JUST A MINUTE, ELOCUTION/IMPROMPTU ***(03 Periods)***

Steps to be followed – Useful tips – Dos & Don'ts – Preparation – Examples

Module 2: PHONETICS ***(03 Periods)***

Sounds of English – Consonants – Vowels – Speech Organs – Phonetic Transcription – Word Accent – Basics of Intonation

Module 3 VOCABULARY BUILDING ***(03 Periods)***

Prefixes & Suffixes – Synonyms & Antonyms – Phrasal verbs – Idioms – One-word substitutes – Words often confused

Module 4 GRAMMAR ***(03 Periods)***

Tenses –Nouns – Word order and error correction

Module 5 GIVING DIRECTIONS ***(03 Periods)***

Useful phrases – Sample conversations - Exercises

Module 6 ROLE PLAYS ***(03Periods)***

Useful tips – Dos & Don'ts – Exercises – Role Plays for practice

Module 7 PUBLIC SPEAKING ***(03 Periods)***

Stage presence – Voice control – Body Language – Rehearsals – Audience – Delivery - Dos & Don'ts – Project Submission

Module 8 LETTER WRITING ***(03 Periods)***

Introduction – Objective – Formats – Types – Exercises

Module 9 **DESCRIBING OBJECTS** ***(03 Periods)***

Jargon – Useful Phrases – Do's & Don'ts – Exercises

Module 10 LISTENING COMPREHENSION ***(03 Periods)***

Introduction – Types of listening – Practice – Benefits of listening – Exercises

Module 11 **INFORMATION TRANSFER** ***(03 Periods)***

Tables – Pie Charts – Venn Diagrams – Graphs – Flow Charts – Steps to be followed – Exercises

Module 12 READING COMPREHENSION ***(03 Periods)***

Introduction – Types of reading – Inferring – Critical analysis – Exercises

Total Periods: 30

RESOURCES

REFERENCES:

1. Lab Manual-2022
2. D. Sudha Rani, *A Manual for English Language Laboratories*, Pearson, Noida, 2010
3. Nira Kumar, English *Language Laboratories*, PHI Learning Pvt. Ltd., New Delhi, 2011.
4. S.P. Dhanavel, English and Soft Skills, Orient Black Swan Private Limited, 2010.

SOFTWARE/TOOLS:

1. K - VAN Solutions.
2. Learning to Speak English 8.1, The Learning Company – 4 CDs.
3. English in Mind, Herbert Puchta and Jeff Stranks with Meredith Levy, Cambridge.
4. Language in Use 1, 2 & 3.
5. Cambridge Advanced Learner's Dictionary - 3rd Edition.
6. Let's Talk English, Regional Institute of English South India
7. Dorling Kindersley Series of Grammar.
8. Speech Solutions
9. Mastering English: Grammar, Punctuation and Composition
10. English Pronunciation Dictionary by Daniel Jones

VIDEO LECTURES:

1. https://nptel.ac.in/courses/109105117
2. https://nptel.ac.in/courses/10910606

WEB RESOURCES:

1. https://goo.gl/IjE45p: Amazon India site – with thousands of different product descriptions
2. https://goo.gl/3ozeO6: 15 ways to calm your nerves before giving a presentation.
3. https://goo.gl/p20ttk: useful site for more language about introducing yourself.
4. https://goo.glsvMHZ1: information and advice about describing line graphs
5. https://goo.gl/NqFJuc: an informative presentation about using line graphs

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22LG107601	**PROFESSIONAL ETHICS AND HUMAN VALUES**	2	-	-	-	2

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course deals with personal conviction, and ethics and describes the accepted principles and standards of conduct regarding moral duties and virtues as applied to an organization. Codes of professional ethics guide the stakeholders of an organization about the desirable and undesirable acts related to the profession.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Demonstrate the principles of ethics, professional values, and social responsibility.
CO2. Analyze the problems in the implementation of moral autonomy and use ethical theories in resolving moral dilemmas.
CO3. Develop suitable strategies to resolve problems that arise in practicing professional ethics and Industrial standards.
CO4. Function as a member, consultant, manager, advisor and leader in multi-disciplinary teams.
CO5. Provide solutions to complex problems associated with professional ethics using analysis and interpretation.

CO-PO Mapping Table:

Course Outcomes	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	-	-	-	-	2	2	2	2	-	-	-
CO2	2	3	2	-	2	2	2	2	2	-	-	-
CO3	2	-	3	-	2	2	2	2	2	-	-	-
CO4	2	-	-	-	-	2	2	2	2	-	3	-
CO5	2	2	3	2	-	3	2	2	2	-	-	-
Course Correlation Mapping	2	3	-	-	2	2	2	2	2	-	3	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: PROFESSIONAL ETHICS ***(06 Periods)***

Scope and aim of ethics, Senses of ethics, Variety of moral issues, Types of inquiry, Moral dilemmas, Moral autonomy-Kohlberg's theory, Gilligan's theory, Consensus, and controversy.

Module 2: PROFESSIONAL IDEALS AND VIRTUES ***(06 Periods)***

Theories on virtues and ideals, Professions, Professionalism, Characteristics, Expectations, Professional responsibility, Integrity, Self-respect, Sense of responsibility, Self-interest, Customs and religion, Self-interest and ethical egoism, Customs and ethical relativism, Religion and divine command ethics, Use of ethical theories, Resolving moral dilemmas and moral leadership.

Module 3: SOCIAL EXPERIMENTATION ***(06 Periods)***

Experimentation, Similarities to standard experiments, Learning from the past and knowledge gained, responsible experimenters, Conscientiousness, Moral autonomy and accountability, The challenger case, Codes of ethics and limitations, Industrial standards and Problems with the law of engineering.

Module 4: RESPONSIBILITIES AND RIGHTS ***(06 Periods)***

Collegiality and loyalty, Respect for authority, Collective bargaining, Confidentiality, Conflict of interests, Occupational crime, Rights of engineers, Professional rights, Whistle- blowing, The BART case, Employee rights, and discrimination.

Module 5: HARMONY WITH PROFESSIONAL ETHICS ***(06 Periods)***

Acceptance of human values; Ethical Human Conduct; Basis for Humanistic Education, Constitution, and Universal Order; Competence in professional ethics; Case studies: Holistic technologies, Management Models and Production Systems; Transition from the present state to Universal Human Order: socially and ecologically responsible engineers, technologists and managers - enriching institutions and organizations.

Total Periods: 30

EXPERIENTIAL LEARNING

1. Demonstrate orally using your experiences of what is naturally acceptable in a relationship – Feeling of respect or disrespect and what is naturally acceptable is to nurture or exploit others.
2. Identify community partners and discuss with a community partner or organization. Prepare a report by identifying and analysing the issues or opportunities.
3. Field experiences may be directed to include a range of time-intensive endeavours that require varying levels of student interaction. Prepare a report on visiting a Juvenile home.
4. Students read a speech in the classroom by former United Nations Secretary-General Kofi Annan on human values.
5. Students are encouraged to bring a daily newspaper to class or to access any news related to the need for human values and note down the points.
6. Bring out the relevance of engineering ethics theory and practice with relevance to current trends.
7. Professional ideals and virtues are important to everyone. Prepare a case study on the professional ideals and virtue of any one of the famous sports personalities from India.

8. Compare the present to the past in engineering experimentations concerning the change in professionalism.
9. Make a study on occupational crime and the role of modern technology in finding solutions.
10. Prepare a case study on how to maintain harmony with different cultural people using professional ethics.

RESOURCES

TEXTBOOKS:

1. Gaur R R, Sangal R & G P Bagaria, Human Values and Professional Ethics, Excel Books, New Delhi, 2010.
2. Govindarajan, M., Nata Govindarajan, M., Natarajan, S. and Senthilkumar, V. S., *Engineering Ethics*, Prentice Hall of India, 2004.
3. Mike W. Martin and Roland Schinzinger, *Ethics in Engineering*, Tata McGraw-Hill, 3rd Edition, 2007.

REFERENCE BOOKS:

1. S. Kannan and K. Srilakshmi, *Human Values and Professional Ethics*, Taxmann Allied Services Pvt Ltd., 2009.
2. Edmund G. Seebauer and Robert L. Barry, *Fundamental of Ethics for Scientists and Engineers*, Oxford University Press, 2001.
3. Charles F. Fledderman, *Engineering Ethics*, Pearson Education, 2nd Edition, 2004.
4. R. Subramanaian, *Professional Ethics*, Oxford Higher Education, 2013.

VIDEO LECTURES:

1. https://www.youtube.com/watch?v=jfGIq_EiXzI
2. https://www.youtube.com/watch?v=QFHOtH54oUc
3. https://www.youtube.com/watch?v=JJshY11nX14
4. https://www.youtube.com/watch?v=TyP09S0UEzA
5. https://www.youtube.com/watch?v=0QMwjV_ZVtc

WEB RESOURCES:

1. https://siiet.ac.in/wp-content/uploads/2020/09/7.1.10-professional-ethics-manual.pdf
2. https://soaneemrana.org/onewebmedia/Professional%20Ethics%20and%20Human%20Values%20by%20R.S%20NAAGARAZAN.pdf
3. https://india.oup.com/productPage/5591038/7421214/9780199475070

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22CE107601	**ENVIRONMENTAL SCIENCE**	2	-	-	-	2

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course provides a detailed discussion on natural resources, ecosystems, biodiversity, environment pollution and control, social issues and environment, human population and environment.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Analyze natural resources to solve complex environmental problems and natural resource management considering society, environment and sustainability.

CO2. Analyze ecosystems and biodiversity to solve complex environmental problems by following environmental ethics considering society, environment and sustainability besides communicating effectively in graphical form.

CO3. Analyze various types of pollution and their control measures to solve environmental problems through appropriate tools and techniques following latest developments considering society, ethics, environment and sustainability.

CO4. Analyze social issues and its impact on environment, environmental acts to solve complex environmental problems considering society, environment and sustainability besides communicating effectively in graphical form.

CO5. Analyze human population and its impact on environment to solve complex environmental problems through team work and using appropriate tools and techniques considering ethics, society, environment and sustainability.

CO-PO Mapping Table:

Course Outcomes	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	3	-	2	-	1	1	-	-	-	1	-
CO2	3	3	-	2	-	1	1	1	-	1	-	-
CO3	3	3	-	2	1	1	1	1	-	-	-	1
CO4	3	3	-	3	-	1	1	1	-	1	-	-
CO5	3	3	-	2	1	1	1	1	1	-	-	-
Course Correlation Mapping	**3**	**3**	**-**	**3**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: NATURAL RESOURCES ***(07 Periods)***

Multidisciplinary nature of environment; Natural Resources: Renewable and non-renewable resources; Forest, Water, Mineral, Food and Energy resources -Causes, Effects, Remedies, Case studies; Role of an individual in conservation of natural resource and equitable use of resources for sustainable lifestyles.

Module 2: ECOSYSTEMS AND BIODIVERSITY ***(07 Periods)***

Ecosystems: Concept of an ecosystem, Structure and function of an ecosystem - Producers, Consumers, Decomposers; Food chains, Food webs, Ecological pyramids – Types; Characteristic features, Structure and functions of forest ecosystem, Desert ecosystem, Aquatic ecosystem.

Biodiversity: Concept and value of biodiversity, Role of biodiversity in addressing new millennium challenges, Hot spots of biodiversity, Threats to biodiversity, Man-wild life conflicts, Endemic, Endangered and extinct species of India, Conservation of biodiversity – In-situ and ex-situ.

Module 3: ENVIRONMENTAL POLLUTION AND CONTROL ***(06 Periods)***

Causes, Adverse effects and control measures of pollution - Air pollution, Water pollution, Soil pollution, Noise pollution, Thermal pollution, Nuclear pollution, Solid waste management – Urban waste, industrial waste; Latest developments in pollution control, Hazards and disaster management – Floods, Earthquakes, Tsunamis, Case studies.

Module 4: SOCIAL ISSUES AND THE ENVIRONMENT ***(06 Periods)***

Sustainable development, Urban problems related to energy, Environmental ethics – Issues, Solutions; Global warming, Acid rain, Ozone layer depletion, Nuclear accidents and case studies, Wasteland reclamation, Consumerism and waste products, Concept of green technologies, Environment justice: National Green Tribunal and its importance; Environment protection act, Air act, Water act, Wildlife protection act, Forest conservation act, Issues involved in enforcement of environmental legislation, Public environmental awareness.

Module 5: HUMAN POPULATION AND THE ENVIRONMENT ***(04 Periods)***

Population growth, Population characteristics and variation among nations, Population explosion, Family welfare programme, Environment and human health, Human rights, Value education, HIV/AIDS, Women and child welfare, Role of information technology in environment and human health; Case studies - Field Work/Assignment/Seminar on Environmental assets – Water bodies/Forest/Grassland/Hill/Mountain.

Total Periods: 30

EXPERIENTIAL LEARNING

1. Visit a nearby villages and know the status of availability of local resources that can be improved through proper education.
2. Make an awareness program in the villages for the development of natural resources, ecosystems and biodiversity.
3. Prepare a document by visiting a local urban waste dumping yard near to the Tirupati city.
4. Visit a local village and find a barren land and make the land into a useful land by planting plants or providing the soil and fertilizers required to improve the soil.
5. Visit a local zoological park and identify the species variety and variability.

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in course handout.)

RESOURCES

TEXT BOOKS:

1. Anubha Kaushik and Kaushik, C.P., *Perspectives in Environmental Studies*, New Age International (P) Ltd. Publications, 6th Edition, 2018.
2. Erach Barucha, *Environmental Studies,* Orient Blackswan, 3rd Edition, 2021.

REFERENCE BOOKS:

1. Cunningham, W. P. and Cunningham, M. A., *Principles of Environmental Science*, Tata McGraw-Hill Publishing Company, New Delhi, 8th Edition, 2016.
2. Benny Joseph, *Environmental Studies*, Tata McGraw-Hill, 2nd Edition, 2009.
3. Anji Reddy, M., *Text Book of Environmental Science and Technology*, BS Publications, Revised Edition, 2014.
4. Rajagopalan, R., *Environmental Studies*, Oxford University Press, 3rd Edition, 2015.

VIDEO LECTURES:

1. http:// nptel.ac.in/courses/109/104/109104047
2. https://www.youtube.com/watch?v=mIPBPG-5dUw

WEB RESOURCES:

1. https://nptel.ac.in/courses/122102006
2. https://www.flame.edu.in/academics/ug/program-structure/major-minor courses/environmental-studies
3. https://www.tutorialspoint.com/environmental_studies/environmental_studies_environment.htm

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22MG101018	**BASICS OF FINANCIAL MANAGEMENT**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course provides a detailed discussion on various sources of finances for corporate and utilization of funds for taking effective decisions related to capital structure, financing and investment in order to achieve maximum business growth.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Understand the different basic concepts of Corporate Finance and practical application of time value of money concept.

CO2. Understand the recent trends of primary and secondary market and importance of cost of capital

CO3. Develop required skills to select optimal capital structure on the basis of cost of capital.

CO4. Provide right investment decisions based on cost- benefit analysis.

CO5. Develop different models for firm's optimum dividend payout.

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	-	-	-	-	-	2	-	-	-	-	2
CO2	3	3	-	2	3	-	-	2	-	-	-	-	-	-	3
CO3	3	2	3	-	-	-	-	-	-	2	2		-	-	3
CO4	3	3	3	-	3	-	-	-	-	-	2	-	-	-	3
CO5	3	2	3	2	3	-	-	-	-	2	2	-	-	-	3
Course Correlation Mapping	**3**	**3**	**3**	**2**	**3**	-	-	**2**	-	**2**	**2**	-	-	-	3

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: FINANCIAL MANAGEMENT FUNCTION ***(08 Periods)***

Introduction to Financial Management*:* Meaning and scope - Profit vs. Wealth maximization- Functions of Financial manager in the modern age- Time value of money-Agency problem.

Module 2: COST OF CAPITAL & LEVERAGE ***(12 Periods)***

Cost of capital: Sources of finance- Estimating the Cost of Capital: meaning- significance - computation of cost of specific sources of finance (cost of Debt, Equity & Preference shares & Retained earnings)- Computation of weighted average cost of capital-Marginal cost of capital (Theory and Problems)

Leverages: Meaning- Types- Financial Leverage- Operational Leverage- Composite Leverage- EBIT and EPS Analysis (Theory and Problems)

Module 3: FINANCING DECISIONS ***(09 Periods)***

Capital Structure: Introduction – Importance – Factors determining Capital Structure-Optimal Capital structure-Theories of Capital Structure: Relevance and Irrelevancy theories- (Theory and Problems)

Module 4 INVESTMENT DECISION ***(10 Periods)***

Capital Budgeting Decisions: Traditional methods, discounted cash flow methods, risk analysis in capital budgeting.
Working capital Management: Operating cycle estimation, Cash management, Inventor management, receivable management.

Module 5 DIVIDEND DECISIONS ***(06 Periods)***

Dividend decisions: influencing factors, forms and special dividends. Walter, Gordon and MM models Linter's model, dividend practices in India. Buy back of shares, taxation of dividends and capital gains.

Total Periods: 45

EXPERIENTIAL LEARNING

1. Take Nifty 50 companies and understand their capital structure.
2. Analyze the financial statements of BSE SENSEX- 30 companies

RESOURCES

TEXT BOOKS:

1. I.M.Pandey, (2015), Financial Management, 11th edition, Vikas Publishing, India
2. James C. Van Horne, Sanjay Dhamija, (2011), Financial Management and Policy, 12th edition, Pearson Education.
3. Eugene F Brigham, Michael C. Ehrhardt, (2014), Financial Management Theory and Practice, 14th edition, Cengage Learning

REFERENCE BOOKS:

1. Khan M.Y, Jain P.K, (2014), Financial Management- Text, Problems and Cases, 7th edition, McGraw Hill.

2. Prasanna Chandra, (2011), Financial Management : Theory and Practice, 8th edition, McGraw Hill, India

VIDEO LECTURES:

1. https://www.digimat.in/nptel/courses/video/110107144/L01.html
2. https://www.youtube.com/watch?v=Sx-dy96_tCQ

WEB RESOURCES:

1. https://students.icai.org/?page_id=5210
2. https://mdu.ac.in/UpFiles/UpPdfFiles/2020/Jan/FinancialManagement.pdf
3. https://backup.pondiuni.edu.in/content/study-material-question-bank

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22MG101012	BUSINESS INFORMATION SYSTEMS	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course is designed to provide the student with a good understanding of the concepts, strategies, and trends associated with Information System. It provides various support systems that can be used for business decisions and to sustain competitive advantage in business world

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Understand the overview of Business Information System
CO2. Know the structure of Business Information System
CO3. Apply the functions of BIS
CO4. Analyze the controlling mechanism of BIS
CO5. Understand the concept of ERP

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-		-	-	-	-	-	1	-	1	1	-	-
CO2	3	1	-	1	-	1	-	1	-	-	-	1	1	-	-
CO3	3	1	-	1	2	-	-	1	-	-	-	1	1	-	-
CO4	3	1	2	1	1	-	-	-	1	1	-	-	-	1	-
CO5	3	1	-	1	1	-	-	-	-	1	-	1	-	-	1
Course Correlation Mapping	**3**	**1**	**2**	**1**	**1**	**1**	**-**	**1**	**1**	**1**	**-**	**1**	**1**	**1**	**1**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: INTRODUCTION TO BIS ***(09 Periods)***

Information Systems in Organizations, Characteristics of MIS, Components of MIS, Benefits of MIS, Example of different Information Systems

Module 2: STRUCTURE OF BIS ***(09 Periods)***

Basic structural concepts, formal and informal information systems - Public and private information systems – MIS Office automation – Decision Support System – Expert system- Knowledge Work Systems - Artificial Intelligence - Group Decision Support Systems (GDSS).

Module 3: BIS DEVELOPMENT AND FUNCTIONS ***(09 Periods)***

Overview of System Development –System development methodologies; SDLC approach, prototyping approach and user development approach- Creating a database environment, data mining and data warehouses.

Module 4: IMPLEMENTATION, EVALUATION, MAINTENANCE AND CONTROL OF BIS ***(09 Periods)***

software life cycle models – verification and validation, Testing security –coding techniques – detection of error – software metrics, software quality assurance –cost benefit analysis – Types of information system Control.

Module 5: ENTERPRISE RESOURCE PLANNING ***(09 Periods)***

Introduction, objectives - Difference between ERP and Conventional Packages - Modules of ERP - Customer Expectation from ERP packages - Suggestions to an ERP vendor - Customer Relationship Management- Supply Chain Management.

Total Periods: 45

EXPERIENTIAL LEARNING

1 Collect and present the case studies on Information System

2 Present the TED talk video on Management Information System

RESOURCES

TEXTBOOKS:

1 James A O „Brien, Management Information Systems, Economy Edition, Tata McGraw Hill, 2017

2 CSV Murthy, Management Information Systems, 1 st Edition, Himalaya Publishing House, 2010.

REFERENCE BOOKS:

1 C Laudon and Jane P.Laudon, Management Information Systems, et al, Pearson Education, 15th edition, 2018.

2 W S Jawadekar, Management Information Systems Text & Cases, 4th Edition, Tata McGraw-Hill, 2013.

3 Ellen F. Monk & Bret J. Wagner, Concept in Enterprise Resources Planning, Fourth Edition, Cengage learning, 2018.

VIDEO LECTURES:

1 https://onlinecourses.nptel.ac.in/noc20_mg60/preview

2 https://onlinecourses.swayam2.ac.in/cec21_ge05/preview

WEB RESOURCES:

1 https://www.scribd.com/document/487456192/unit01-Business-Information-Systems-pdf

2 https://nou.edu.ng/coursewarecontent/LIS%20217%20BUSINESS%20INFORMATION%20SYSTEMS%20AND%20SERVICES.pdf

3 https://nitsri.ac.in/Department/Electronics%20&%20Communication%20Engineering/MIS-Notes_New_-word.pdf

PROGRAM Core

Course Code	Course Title	L	T	P	S	C
22MG101020	**BASICS OF HUMAN RESOURCE MANAGEMENT**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course highlights the basics of contemporary and key human resource management skills that are required by management professionals.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Understand current basic concepts in the functional areas of HRM.
CO2. Evaluate the concepts of Recruitment and Selection, Job Evaluation practices.
CO3. Evaluate the Training and Development activities and Promotion policies of the organizations.
CO4. Analyze the Compensation and Wage Policies, and Merit Rating of the Employees.
CO5. Analyze and Integrate Wage Policy and the conditions of working to retain the employees in the organization.

CO-PO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3					1		1	1			1	1		
CO2	3	1	1			1		1	1			1	1		
CO3	3	1	1			1		1	1			1		1	
CO4	3	1	1			1		1	1			1	1		
CO5	3	1	1	1		1		1	1			1	1		
Course Correlation Mapping	**3**	**1**	**1**	**1**		**1**		**1**	**1**			**1**	**1**	**1**	

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: Introduction ***(08 Periods)***

Importance of Human Resource Management – Meaning, Nature and Scope, Functions and Role of HR Manager – Advisory and service function to other department – HRM planning – objectives and process.

Module 2: Procurement and Development Functions ***(08 Periods)***

Job Analysis, Job description, job specification, recruitment, selection, placement and induction and socialization.

Module 3: Training & development ***(09 Periods)***

Types and method, job change – career planning, promotion, demotion, transfer, separations.

Module 4: Compensation Function ***(10 Periods)***

Job evaluation – Merit rating – Methods of wage, payment, incentive compensation – Types, advantages, perquisites. Wage system in India – Minimum wage, fair wage, living wage.

Module 5: Maintenance and Integration Functions in HRM ***(10 Periods)***

Administration of welfare, amenities & fringe benefits, safety & accident prevention work, accident prevention. Employee grievances and their redressal, administration of discipline.

Total Periods:45

EXPERIENTIAL LEARNING

1. Collect the case studies related to recent trends in HRM and other Contemporary HR Practices and Present them as a seminar.
2. Different Case Studies Will be Given to students as per the topic that will be collected and evaluated.
3. The case studies will be collected as Assignments and the same will be evaluated.

Above all will be detailed in CHO.

RESOURCES

TEXT BOOKS:

1. National. SeemaSanghi Human Resource Management 2011 Macmilan Publication
2. National V.S.P. Rao Human Resource Management 2006 Excel Books
3. Essentials of HRM and Text Cases 2011 Himalaya Publishing House

REFERENCE BOOKS:

1. National . K. Ashwathappa Human Resource Management 2007 Tata McGraw--Hill
2. International Gary Dessler, BijuVarkey Human Resource Management 2016 Pearson Publication, 12thEdition
3. Fundamentals of Human Resource Management by Dr T.Chandrasekhar Yadav 2021 by Asia Pacific Publications

VIDEO LECTURES:

https://hbsp.harvard.edu/cases/

https://open.umn.edu/opentextbooks/textbooks/human-resource-management

https://www.google/services.com/hrm

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22MG101014	DESIGN THINKING	3	-	-	-	3

Pre-Requisite

Anti-Requisite

Co-Requisite

COURSE DESCRIPTION: The objective of the course is to inculcate the fundamental concepts of design thinking, imparting creativity and problem-solving ability, and conceptualize, design and demonstrate innovative ideas using prototypes

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Understand the importance of design thinking
CO2. Demonstrate the critical theories of design, systems thinking, and design methodologies
CO3. Produce great designs, and communicate with high emotional and intellectual impact
CO4. Understand the diverse methods employed in design thinking and establish a workable design thinking framework to use in their practices
CO5. Develop projects in interdisciplinary domain and address social concerns with innovative approaches

CO-PO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	1			1			1				1		
CO2	1		2	1	1	1				1		1		1	1
CO3	1	2	1	1	1	1	1		1		1	1	1	1	1
CO4	2	1	1	1	1	2	1	1		1		1		1	
CO5	1	1	1	1	1	1	1	2	1			1	1	1	1
Course Correlation Mapping	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION ***(09 Periods)***

Traditional design, Design thinking, Existing sample design projects, Study on designs around us, Compositions/structure of a design

Module 2: DESIGN PROCESS ***(09 Periods)***

Innovative design: Breaking of patterns, Reframe existing design problems, Principles of creativity Empathy: Customer Needs, Insight-leaving from the lives of others

Module 3: DESIGN TEAM ***(09 Periods)***

Team formation, Conceptualization: Visual thinking, Drawing/sketching, New concept thinking, Patents and Intellectual Property, Concept Generation Methodologies, Concept Selection, Concept Testing

Module 4: PROTOTYPING ***(09 Periods)***

Prototyping: Principles of prototyping, Prototyping technologies, Prototype using simple things, Wooden model, Clay model, 3D printing; Experimenting/testing.

Module 5: PRODUCT DESIGN ***(09 Periods)***

Sustainable product design, Ergonomics, Semantics, Entrepreneurship/business ideas, Product Data Specification, Establishing target specifications, Setting the final specifications.

Total Periods:45

EXPERIENTIAL LEARNING

1 Discuss any new product with regard to the design thinking process that has been recently introduced

2 Collect a case study on design thinking's importance and present it in the class.

3 Present a video presentation where design thinking is animated and explain the key points in the video.

4 Propose a new prototype of an old product whichever you feel needs an improvement in the product.

RESOURCES

TEXT BOOKS:

1 Tim Brown, Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation, HarperCollins Publishers Ltd

2 Idris Mootee, Design Thinking for Strategic Innovation,2013, John Wiley & Sons Inc

REFERENCE BOOKS:

1 Terwiesch, C. & Ulrich, K.T., 2009. Innovation Tournaments: creating and identifying Exceptional Opportunities, Harvard business press.

2 Stuart Pugh, Total Design: Integrated Methods for Successful Product Engineering, BjarkiHallgrimsson, Prototyping and model making for product design, 2012, Laurence King Publishing Ltd.

VIDEO LECTURES:

1 https://onlinecourses.nptel.ac.in/noc22_mg32/preview

2. https://nptel.ac.in/courses/110106124

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22MG101022	**FUNDAMENTALS OF MARKETING MANAGEMENT**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course enhances students' knowledge as regards to basics of marketing, develop practical insights into application of marketing concepts.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Understand the need and importance of marketing in the current business scenario

CO2. Analyze the need and importance of market segmentation, targeting and positioning.

CO3. Understand the steps involved in designing a marketing mix.

CO4. Evaluate and apply the knowledge of expanded marketing mix.

CO5. Understand the recent trends in marketing.

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	-	-	-	-	-	1	-	1	1	-	-
CO2	3	1	-	1	-	1	-	1	-	-	-	1	1	-	-
CO3	3	1	-	1	2	-	-	1	-	-	-	1	1	-	-
CO4	3	1	2	1	1	-	-	-	1	1	-	-	-	1	-
CO5	3	1	-	1	1	-	-	-	-	1	-	1	-	-	1
Course Correlation Mapping	**3**	**1**	**2**	**1**	**1**	**1**	**-**	**1**	**1**	**1**	**-**	**1**	**1**	**1**	**1**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION TO MARKETING FUNDAMENTALS ***(06 Periods)***

Concept, scope, and Value of marketing, core marketing principles, Marketing and Customer Value.

Module 2: MARKET SEGMENTATION, TARGETING & POSITIONING (STP) ***(09 Periods)***

Market Segmentation, meaning, its benefits, Bases for segmenting Consumer market and Industrial market, Market Targeting, Product positioning concept

Module 3: MARKETING RESEARCH ***(10 Periods)***

Nature & Scope, Marketing Research Process, Questionnaire designing & methods of data collection.

Module 4: MARKETING MIX ***(10 Periods)***

Product, Price, Place, Promotion, Process, People, and Physical evidence.

Module 5: RECENT TRENDS IN MARKETING ***(10 Periods)***

Digital Marketing – Meaning, Importance, Green Marketing - Meaning, Importance, Use of Information Technology in marketing practices – Virtual marketing, E-buying behavior etc.

Total Periods:45

EXPERIENTIAL LEARNING

LIST OF EXERCISES:

1. Mystery Shopping in Super Markets / Malls
2. Storytelling of Customer experiences in the Purchase Process of Goods & Services
3. Field Trip/ Outdoor Learning through interaction with Marketing Executives
4. Business Plan (4Ps) Presentations.
5. Case Discussions and fish bowl exercises on Marketing issues & Challenges

Above all will be detailed in CHO.

RESOURCES

TEXT BOOKS:

1. Kotler.P, &Keller.K.L., Koshy &Jha (2020). Marketing Management, 20th edition, Pearson
2. Saxena, Rajan, Marketing Management, Tata-McGraw Hill, New Delhi.

REFERENCE BOOKS:

1. Kotler & Armstrong, 15th ed., Principles of Marketing Management, Pearson publication.
2. Marshall & Johnston, Marketing Management, McGraw Hill.

VIDEO LECTURES:

1. https://www.digimat.in/nptel/courses/video/110104068/L01.html
2. https://www.digimat.in/nptel/courses/video/110104070/L01.html

WEB RESOURCES:

1. Basics of Marketing: http://www.umsl.edu/~chewl/ba206.htm.
2. https://www.pdfdrive.com/principles-of-marketing-e154804.html
3. https://ipsedu.in/downloads/MBABooks/principles-of-marketing-philip-kotler.pdf

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22MG101026	**MANAGEMENT ACCOUNTING**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: A study of accounting concepts and reporting techniques applied in a management decision-making context, Students analyze accounting data from real-world case studies and present their analysis, conclusions, and recommendations.

COURSE OUTCOMES: The objective of this course is to gain an understanding of how managers and use financial analytics to formulate and solve business problems and to support managerial decision making.

CO1 Demonstrate the uses of Management Accounting in field of accounting.

CO2 Follow a career in the field of Management Accounting for better decision making.

CO3 Gain experiential learning through well-structured internships.

CO4 to analyses and learn about Ratio Analysis, Cash flow and Funds flow Management.

CO5 To Understand Techniques of Ratio and Cash Management.

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	1	-	-	-	-	2	-	2	3	2	-
CO2	3	-	-	-	1	-	-	-	-	2	-	2	3	2	-
CO3	3	-	2	-	2	-	-	-	-	2	-	2	3	-	2
CO4	3	1	2	-	2	-	-	-	-	2	-	2	3	-	2
CO5	3	-	2	-	2	-	-	-	-	2	1	2	3	-	2
Course Correlation Mapping	**3**	**1**	**2**	**-**	**2**	**-**	**-**	**-**	-	**2**	**1**	**2**	**3**	**2**	**2**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT:

Module 1: INTRODUCTION TO MANAGEMENT ACCOUNTING ***(05 Periods)***

Management Accounting: Meaning – Nature and Importance Scope and Limitations – Functions - Financial Accounting and Cost Accounting vs. Management Accounting – Tools andTechniques of Management Accounting (Theory only)

Module 2: FINANCIAL STATEMENT ANALYSIS ***(10 Periods)***

Financial Statement Analysis - Financial Statement analysis and Interpretation Comparative Statements – Common Size Analysis and Trend Analysis (Theory and Simple Case Studies).

Module 3: MARGINAL COSTING AND BREAK EVEN ANALYSIS ***(10 Periods)***

Marginal Costing – Characteristics – Assumptions – Marginal Cost Equation – Profit Volume Ratio – Break Even Analysis – Graphic Method – uses of break even point – Limitations of Break even charts – Margin of safety – Angle of incidence – Profit Volume graph. (Theory and Simple Case Studies)

Module 4: FUND FLOW STATEMENT ***(10 Periods)***

Fund Flow Statement: Concept of fund – uses and limitations of Funds Flow Statement - preparation of changes in Working Capital – Funds from Operations – Funds Flow Statement. (Theory and Simple Case Studies).

Module 5: CASH FLOW STATEMENT ***(10 Periods)***

Cash Flow Statement: Concept of cash flow – Classification of Cash Flows – Cash Flows from Operating Activities – Cash Flows from Investing Activities – Cash flows from Financing Activities - Preparation of Cash Flow Statement - Uses and Limitations of Cash Flow Analysis (Theory and simple Case Studies).

Total Periods:45

EXPERIENTIAL LEARNING: Case studies, group discussion, Assignments, Field study reports

LIST OF EXPERIMENTS:

1. Assignments and Quiz
2. Seminars
3. Group discussions

RESOURCES

TEXT BOOKS:

1. Wild. J.J., Subramanyam, K.R. Halsey, R.F., Financial Statement analysis, Tata McGraw Hill
2. R.K.Sharma and Shashi K Gupta, "Management Accounting", Kalyani Publishers.
3. Jain and Narang, "Cost Accounting", Kalyani Publishers.

REFERENCE BOOKS:

1. Jain S.P., AND K.L.Narang, Cost Accounting Principles and Practice Kalayani Publishers New Delhi.
2. Rathnam P.V., Rathanm S costing advanced problems and solutions, Kitab Mahal Distributors.
3. Bhar B.K., Cost accounting methods and problems, Academic Publishers, Kolkata.
4. Pillai R.S.N., and V. Bhagavathi: Cost Accounting, Sultan Chand and Co. Ltd, New Delhi.

VIDEO LECTURES:

1. https://www.youtube.com/watch?v=9XTrTqOBtN0
2. https://www.youtube.com/watch?v=eUMwwp5zDW0
3. https://nptel.ac.in/courses/110101003
4. https://opentuition.com/acca/ma/acca-management-accounting-ma-lectures/

WEB RESOURCES:

1. https://www.academia.edu/27871831/MANAGEMENT_ACCOUNTING_STUDY_NOTES
2. https://www.iare.ac.in/sites/default/files/SMA%20lecture%20Notes.pdf
3. https://mdu.ac.in/UpFiles/UpPdfFiles/2021/Apr/4_04-01-2021_16-43-02_Management%20Accounting_MCom-2%20(2).pdf
4. https://www.sscasc.in/wp-content/uploads/downloads/BCOM/Management-Accounting.pdf
5. https://www.geektonight.com/managerial-accounting-pdf/

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22MG101015	**INNOVATION AND CREATIVITY IN BUSINESS**	2	1	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION:
Innovation and creativity are paramount in today's competitive business landscape. This course delves into the fundamental principles, processes, and strategies essential for fostering innovation and nurturing creativity within organizational contexts.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Understand different perspectives on why creativity matters

CO2. Analyze cognitive aspects of creativity and how personality and individual differences might contribute

CO3. Describe ways in which individuals can enhance their own creative potential

CO4. Understand the factors such as culture, leadership, diversity and structure can both help and hinder creativity and innovation

CO5. Evalaute creativity and innovation, including the use of creative swiping and other practices.

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	1	-	-	1	-	-	1	-	-	-	1	-	-
CO2	1	-	2	1	1	1	-	-	-	1	-	1	-	1	1
CO3	1	2	1	1	1	1	1	-	1	-	1	1	1	1	1
CO4	2	1	1	1	1	2	1	1	-	1	-	1	-	1	-
CO5	1	1	1	1	1	1	1	2	1	-	-	1	1	1	1
Course Correlation Mapping	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: FOUNDATIONS OF INNOVATION AND CREATIVITY ***(09 Periods)***

Defining and concept Innovation and Creativity in the context of business, importance of innovation and creativity, distinguish between innovation and creativity, different types of innovation.

Module 2: OVERVIEW OF CREATIVITY ***(09 Periods)***

Meaning and concept of Creativity, Creativity process, factors affecting on Creativity, utilizing team creativity tools, barriers to creativity in business environments.

Module 3: DESIGN THINKING FOR INNOVATION ***(09 Periods)***

Understanding the human-centred design process (Empathize, Define, Ideate, Prototype, and Test), Tools and Techniques for Design Thinking: Brainstorming techniques, user empathy exercises, prototyping tools.

Module 4: MEASURING AND SUSTAINING INNOVATION ***(09 Periods)***

Creating a systematic approach to capturing, managing, and developing new ideas. Evaluating the return on investment (ROI) of innovation initiatives, Strategies for sustaininga culture of innovation over the long term.

Module 5: MANAGING AND IMPLEMENTING INNOVATION ***(09 Periods)***

The role of innovation and creativity in driving growth and competitiveness, The role of leadership in fostering innovation and managing change, Building cross-functional teams for innovation and collaboration.

Total Periods: 45

EXPERIENTIAL LEARNING

1. Innovation vs. Creativity Debate Description: Divide students into small groups and assign each group to research and present arguments on whether innovation and creativity are synonymous or distinct concepts within the business context.
2. Create a simulated business scenario where students act as innovation managers tasked with implementing and measuring the ROI of various innovation initiatives.
3. Assign students to analyze case studies of successful innovation leaders who have effectively managed and implemented innovation within organizations.

RESOURCES

TEXTBOOKS:

1. Business Creativity and Innovation: Perspectives and Best Practices-Len ferman
2. Advanced MIS and Digital Transformation for Increased Creativity and Innovation in Business (Advances in Business Strategy and Competitive Advantage (Absca)) by Gülay Ekren (Editor), Alptekin Erkollar (Editor), Birgit Oberer.

REFERENCE BOOKS:

1. Innovation and Entrepreneurship, Peter F. Drucker
2. The Innovator’s Dilemma: The Revolutionary Book that Will Change the Way You Do Business, Clayton M. Christensen
3. Mapping Innovation: A Playbook for Navigating a Disruptive Age, Greg Satel

VIDEO LECTURES:

1. https://onlinecourses.nptel.ac.in/noc21_mg63/preview
2. https://onlinecourses.nptel.ac.in/noc22_de08/preview

WEB RESOURCES:

1. WWW.Creativity & Innovation at Work | PPT (slideshare.net)
2. WWW.426483-chapter-4-innovation-and creativity.pdf(cambridgeinternational.org)

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22MG101016	**SERVICES MANAGEMENT**	2	-	-	-	2

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: The course has been designed keeping in mind the specific need of managers to understand the concept of service management and various dimensions related with the management of service industry. It also aims to equip students with knowledge, skills and competencies to manage efficiently and effectively.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Understand the concept of service Management

CO2. Apply their knowledge in managing and delivering of quality services

CO3. Know the awareness about the services sector, the challenges and opportunities involved in service sector

CO4. Acquire knowledge on Service Leadership

CO5. Evaluate the concepts of management in Different Service Sectors

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	2	-	-	-	-	-	-	-	1	-	-	-
CO2	3	-	-	1	2	-	-	-	2	-	2	-	-	1	-
CO3	-	3	-	2	1	-	-	-	-	-	-	-	-	1	-
CO4	3	3	-	2	1	1	-	-	-	-	-	-	1	-	3
CO5	3	3	1	2	2	-	-	-	3	-	-	-	1	-	-
Course Correlation Mapping	**3**	**3**	**1**	**2**	**2**	**1**	-	-	**3**	-	**2**	**1**	**1**	**1**	**3**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION TO SERVICE MANAGEMENT ***(09 Periods)***

Meaning of Services-Definition- Differences between goods and services-Characteristics of Services Classification of Services -Service marketing triangle-Evolution of services and Growth of Service Sector in India

Module 2: SERVICE DESIGN ***(09 Periods)***

New Service Development – Design elements – Service Blue printing – process-Service Encounter – triad, creating service orientation - Technology in services –self-service, automation, ecommerce, e-business, technology innovations.

Module 3: SERVICE QUALITY ***(09 Periods)***

Meaning of service quality-Importance of service quality, Service quality models-SERVQUAL GAPS-complain handling and service Recovery

Module 4: SERVICE LEADERSHIP ***(09 Periods)***

Service Leadership-Service Profit Chain-creating a leading service organization-Integrating marketing, Operation, Human Resources- Ethical issues in service Management

Module 5: MANAGEMENT OF DIFFERENT SERVICE SECTORS ***(09 Periods)***

Banking Services-Hotel Services-Management of Insurance Services-Management of Transport services-Management of Consultancy Services-Management of other Services: Tourism, entertainment, Education and Telecommunication: Introduction, Formulation of Marketing mix of these Services.

Total Periods:45

EXPERIENTIAL LEARNING

1. Explain about service quality gap in any one of the service sector
2. Write one service industry and write their growth in India

RESOURCES

TEXTBOOKS:

1 Service Management: Theory and Practice, Bryson, John R, Palgrave MacMillan,2020

2 Service Management:Operations,Strategy,Information Technology,10th Edition, Mc Graw Hill

REFERENCE BOOKS:

1 Service Management and Marketing,Christian groons, John *Wiley* & Sons Ltd

2 Service Marketing ,Dr.Zeithammal,,10th Edition, Mc Graw Hill

VIDEO LECTURES:

1 http://www.digimat.in/nptel/courses/video/110104065/L32.html

2 https://archive.nptel.ac.in/courses/110/105/110105078/

WEB RESOURCES:

1 https://www.revfine.com/tourism-industry/

2 https://www.revfine.com/tourism-industry/

EXPERIENTIAL LEARNING

1. Analyze how the artificial intelligence is used to predict the disease result and Prognosis Assessment of a patient.
2. How does drug discovery happen and how does AI is helping in drug discovery and Labs.
3. Justify that artificial intelligence provide engineering solutions for early detection and Diagnosis of diseases.
4. Demonstrate the prediction of bladder volume of a patient.

(Note: It's an indicative one. Course Instructor may change activities and shall be reflected in course Handout)

RESOURCES

TEXT BOOKS:

1. Dr. Parag Mahajan, *Artificial Intelligence in Healthcare*, MedManthra Publications, First Edition 2019.
2. Arjun Panesar, *Machine Learning and AI for Healthcare Big Data for Improved Health*, Apress Publications, 2019.

REFERENCE BOOKS:

1. Michael Matheny, Sonoo Thadaney Israni, Mahnoor Ahmed, and Danielle Whicher, *Artificial Intelligence in Health Care: The Hope, the Hype, the Promise, the Peril*, National Academy of Medicine Publication, First Edition 2019.

VIDEO LECTURES:

1. https://www.youtube.com/watch?v=-aHBwTQQyNU
2. https://intellipaat.com/blog/artificial-intelligence-in-healthcare/

WEB RESOURCES:

1. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6616181/
2. https://www.ibm.com/topics/artificial-intelligence-healthcare
3. https://builtin.com/artificial-intelligence/artificial-intelligence-healthcare

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22MG101063	INTRODUCTION TO DIGITAL MARKETING	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course is designed to provide the student with a good understanding of the concepts, strategies, and trends associated with digital marketing and provide insights into key strategies using Internet-based platforms. It helps the students to explore the skills in technological based marketing approaches.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Understand basic knowledge about Digital marketing.
CO2. Know various Digital marketing tools used for Business.
CO3. Understand the social media marketing strategies
CO4. Analyze E mail and mobile marketing strategies
CO5. Understand the various data analytics and measurement tools in digital marketing

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	-	-	-	-	-	1	-	1	1	-	-
CO2	3	1	-	1	-	1	-	1	-	-	-	1	1	-	-
CO3	3	1	-	1	2	-	-	1	-	-	-	1	1	-	-
CO4	3	1	2	1	1	-	-	-	1	1	-	-	-	1	-
CO5	3	1	-	1	1	-	-	-	-	1	-	1	-	-	1
Course Correlation Mapping	**3**	**1**	**2**	**1**	**1**	**1**	**-**	**1**	**1**	**1**	**-**	**1**	**1**	**1**	**1**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: INTRODUCTION TO DIGITAL MARKETING ***(09 Periods)***

Origin and Development of Digital Marketing – Traditional vs Digital Marketing – Opportunities & Challenges- Online Marketing Mix

Module 2: DIGITAL MARKETING TOOLS ***(09 Periods)***

Content Marketing – Content creation process – Content pillar - Types – A/B Testing – Display Advertising – Search Engine Marketing –Search Engine Optimization (On page & Off page optimization) - Email Marketing, – Mobile Marketing

Module 3: SOCIAL MEDIA MARKETING ***(09 Periods)***

Introduction, Types of Social Media/Key Terms to Understand, How Social Media Influences Audience and Google, integrating social media into your Website and Blogs, How to Choose Right social media for your Business/Brand

Module 4: EMAIL MARKETING VS MOBILE MARKETING ***(09 Periods)***

Introduction, email marketing process, design and content, delivery, discovery. Concept and Process of mobile marketing: goals, setup, monitor, analyze; Enhancing Digital Experiences with Mobile Apps.

Module 5: DIGITAL ANALYTICS & MEASUREMENT ***(09 Periods)***

Importance of Analytics in digital space – Data capturing in online space – Types – Tracking Mechanism – Google Analytics structure – Conversion tracking – Digital Engagement funnel

Total Periods: 45

EXPERIENTIAL LEARNING

1 Presentations on digital media tools

2 Collect and present the case studies relating to digital marketing

RESOURCES

TEXTBOOKS:

1 Digital Marketing current trends ,vandanahuja,7th edition2015 Oxford University press

2 Understanding Digital Marketing,Damian ryan,4th Edition 2017 publisher

REFERENCE BOOKS:

1 Digital Marketing essentials you always wanted to know,7th edition, Vibrant publishers

2 Journal of Digital & Social Media Marketing

VIDEO LECTURES:

1 https://onlinecourses.swayam2.ac.in/ugc19_hs26/preview

2 https://onlinecourses.swayam2.ac.in/cec19_mg23/preview

WEB RESOURCES:

1 https://www.scribd.com/document/513372531/Digital-marketing-notes

2 https://kamarajcollege.ac.in/wp-content/uploads/Core-14-Digital-Marketing.pdf

3 https://baou.edu.in/assets/pdf/PGDM_203_slm.pdf

4 https://www.tutorialsduniya.com/notes/digital-marketing-notes/#google_vignette

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22MG101019	**MARKETING MANAGEMENT**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: course prepares the student to become skilled in marketing areas, And pricing, and promotional strategies for the effective implementation of the marketing plan

COURSE OUTCOMES: On having completed this course student should be able to:

CO1. Understand the concept of Marketing Management

CO2. understand Marketing information systems in real-time problems

CO3. Apply different Marketing techniques for product analysis.

CO4. Interpret the Marketing data for identifying target customers

CO5. Design contemporary issues of marketing in the present scenario.

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	-	-	-	-	-	-	-	-	-	3	-	3
CO2	3	3	3	-	-	-	-	-	-	-	-	2	3	-	3
CO3	3	3	-	-	-	-	-	-	-	-	2	-	3	-	3
CO4	2	3	3	-	-	-	-	-	-	-	-	-	3	-	-
CO5	2	2	1	-	-	-	-	-	-	-	1	-	3	2	1
Course Correlation Mapping	**3**	**3**	**3**	**-**	**-**	**-**	**-**	**-**	-	**-**	**2**	**2**	**3**	**2**	**3**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: INTRODUCTION TO MARKETING **(05 Periods)**

Definition, importance and Scope of Marketing - Company Orientation towards Marketing - Core Concepts of Marketing – Marketing Management Tasks – Indian Marketing Environment: Demographic, Economic, Socio-Cultural, Politico-Legal and Technological Environment – Marketing Research Process –Market Segmentation – Market Targeting.

Module 2: PRODUCT AND BRAND STRATEGY (10 Periods)

Product strategy: - Product concept – product characteristics and classifications – differentiation – Product and brand relationships – packaging, labelling, warranties and guarantees. New product development process and brand Strategy.

Module 3 PRICING STRATEGY (10 Periods)

Pricing strategy: - setting the price –adapting the price - initiating and responding to price changes. Distribution strategy: designing and managing channels, retailing, wholesaling and logistics.

Module 4 PROMOTIONAL AND MARKETING COMMUNICATION (10 Periods)

Promotional strategy – designing and managing integrated marketing communications - managing mass communications and personal communications

Module 5 DIGITAL MARKETING (10 Periods)

Integrating Online Communication into IMC Process – Online Advertising – Email Marketing – Viral Marketing – Affiliate Marketing – Participatory Communication Networks – Social Media Communities – Interactive Digital Networks – Led Marketing Campaigns – Legal and Ethical Aspects related to Digital Marketing.

Total Periods: 45

EXPERIENTIAL LEARNING

1. Demonstrate the advanced features of Excel by DIY.
2. Prepare a template of a Word document that can be used for report writing.

RESOURCES

TEXTBOOKS:

1. Philip kotler, Kevin Lane Keller, Abraham Koshy&MithileswarJha Marketing: Management – A South Asian Perspective (Pearson Education)
2. Philip Kotler, Gary Armstrong, Prafulla Y. Agnihotri & EhsanulHaque: Marketing Management – A South Asian Perspective (Pearson Education)
3. P.K. Agarwal: Marketing Management – An Indian perspective (PragatiPrakasham)

REFERENCE BOOKS:

1. S.S. Sherlekar: Marketing Management (Himalaya)
2. William D. Perreault, Jr. E. Jerome McCarthy: Basic Marketing – A Global Management Approach (Tata McGraw Hill)
3. MC Carthy , Perrault, Quester: Basic Marketing – A Managerial Approach (IRWIN)

VIDEO LECTURES:

1. NPTEL
2. Information Technology (IT) Management - YouTube

WEB RESOURCES:

1. Information Technology & Its Uses in Business Management | Small Business - Chron.com
2. Managerial Applications of Information Technology | Bartleby

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22MG101013	**HUMAN RESOURCE MANAGEMENT**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course highlights the basics of contemporary and key human resource management skills that are required by management professionals.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Understand current basic concepts in the functional areas of HRM.

CO2. Evaluate the concepts of Recruitment and Manpower planning.

CO3. Evaluate the concepts of Selection and Performance Appraisal.

CO4. Evaluate the Training and Development activities and analyze the Compensation and Wage Policies of the Employees.

CO5. Understand the recent trends in Human Resource Management.

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	-	1	-	1	1	-	-	1	1	-	-
CO2	3	1	1	-	-	1	-	1	1	-	-	1	1	-	-
CO3	3	1	1	-	-	1	-	1	1	-	-	1	-	1	-
CO4	3	1	1	-	-	1	-	1	1	-	-	1	1	-	-
CO5	3	1	1	1	-	1	-	1	1	-	-	1	1	-	-
Course Correlation Mapping	**3**	**1**	**1**	**1**	**-**	**1**	**-**	**1**	**1**	**-**	**-**	**1**	**1**	**1**	**-**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION TO HRM ***(09 Periods)***

Concept of Human Resource Management, Nature, Scope, Importance of HRM, Objectives of HRM, functions of HRM, Changing role of Human Resource Management, Challenges of HRM, Personnel vs Human Resource Management,

Module 2: MANPOWER PLANNING & RECRUITMENT ***(09 Periods)***

Introduction, Objectives of Manpower Planning, Importance of Manpower Planning, Need for Manpower Planning, Manpower Planning Process, Factors influencing Manpower Planning, Recruitment: Sources of Recruitment, methods of recruitment.

Module 3: SELECTION AND PERFORMANCE APPRAISAL ***(09 Periods)***

Selection: Steps in selection Process, types of interviews. Placement, induction, transfer; Performance Appraisal: Objectives of Performance Appraisal, advantages of Appraisal, Methods of Appraisal, Errors in Performance Appraisal.

Module 4: TRAINING & DEVELOPMENT AND COMPENSATION ***(09 Periods)***

Training and Development: Training Vs Development, Need for Training, Benefits of Training, Training Methods; Compensation: Job evaluation, Compensation management, employee benefits, employee welfare and safety.

Module 5: RECENT TRENDS IN HRM ***(09 Periods)***

Employee engagement, Green HRM, Employee enrichment, Employee enlargement, Quality Circles, Work Life Balance, Global HRM, Total Quality management, Hybrid Work Culture.

Total Periods:45

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Collect the case studies related to recent trends in HRM and other Contemporary HR Practices and Present them as a seminar.
2. Different Case Studies Will be Given to students as per the topic that will be collected and evaluated.
3. The case studies will be collected as Assignments and the same will be evaluated.

RESOURCES

TEXT BOOKS:

1. National. Seema Sanghi Human Resource Management 2011 Macmilan Publication
2. National V.S.P. Rao Human Resource Management 2006 Excel Books
3. Essentials of HRM and Text Cases 2011 Himalaya Publishing House

REFERENCE BOOKS:

1. National . K. Ashwathappa Human Resource Management 2007 Tata McGraw--Hill
2. International Gary Dessler, BijuVarkey Human Resource Management 2016 Pearson Publication, 12thEdition
3. Fundamentals of Human Resource Management by Dr T.Chandrasekhar Yadav 2021 by Asia Pacific Publications

VIDEO LECTURES:

1. https://hbsp.harvard.edu/cases/
2. https://www.google/services.com/hrm

WEB RESOURCES:

1. https://www.icmrindia.org
2. https://www.icmrindia.org/case%20volumes/Case%20Studies%20in%20Human%20Resource%20Management%20Vol%20I.htm
3. https://www.citehr.com/ 5 https://www.hr-guide.com

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22MG101027	**OPERATIONS MANAGEMENT**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course deals with the design and operation of the systems for production of goods and services. It will explore the approaches and analyze strategic decisions in operations management with a focus on designing products and processes, allocating scarce resources to strategic alternatives, and do long-range capacity and facility planning

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Identify the elements of operations management and various transformation processes to enhance productivity and competitiveness

CO2. Evaluate concepts of facilities location and maintenance in the production department

CO3. Analyse and evaluate Production Schedule for Competitive Advantage

CO4. Explain the key terms, Methods, and techniques of inventory control in the field of Production practices in the organization.

CO5. Assess the tools and techniques for project review and evaluation

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	2	1	-	-	-	-	-	-	-	-	-	-	-
CO2	1	1	2	2	-		2		1			-	-	-	-
CO3	2	2	1	2	1	-	-	1	-	-	2		-	-	-
CO4	3	1	2	2	1	-	-	-	-	-	-	2	-	-	-
CO5	2	2	1	2	1	1	-	-	-	-	-	1	-	-	-
Course Correlation Mapping	**2**	**2**	**2**	**2**	**1**	**1**	**2**	**1**	1	**-**	**2**	**-**	-	-	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION ***(09 Periods)***

Introduction to operations: Nature, scope and Importance, Evolution Scope and Development Stages of Operation Management, Operations strategy: As a competitive weapon & Concept of productivity

Module 2: PLANT LOCATION AND LAYOUT ***(09 Periods)***

Plant location-Plant Layout-Classification and merits. Plant Maintenance Methods-Breakdown, Preventive and Productive maintenance. Replacement Policies-Unit and Group Replacement policies

Module 3: CAPACITY PLANNING ***(10 Periods)***

Planning Capacity Across the Organization, Planning Long-Term Capacity, Capacity Timing and Sizing Strategies

Module 4: MATERIALS MANAGEMENT ***(09 Periods)***

Materials Handling, Role of purchase department, Inventory Basics, ERP, KANBAN System, Lean operations and JIT.

Module 5: PERT & CPM ***(08 Periods)***

Concepts of project Management, CPM, PERT and Project Network Crashing and Cost Analysis, Applications of Network techniques.

Total Periods:45

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Give a seminar on operation strategy as a competitive tool and submit a report.
2. Generate the idea of a new product and develop a prototype product.
3. Collect any case study of material management related to manufacturing company and present a summary report.

RESOURCES

TEXT BOOKS:

1. Richard B. Chase, Ravi Shankar and F. Robert Jacobs (2014); Operations & Supply Chain Management; McGraw-Hill - 2014 (14th Edition)
2. Chary S. N. Theory and Problems in Production & Operations Mgt.; Tata McGraw Hill (14th Edition).

REFERENCE BOOKS:

1. Krajewski Lee; Operations Mgt. Process for Value Chains; Prentice Hall (8th Edition)
2. Russell S. Roberta & Taylor, Operations Mgt., Prentice Hall (4th Edition).

VIDEO LECTURES:

1. Operations Management: Understanding and Using It (investopedia.com)
2. https://nptel.ac.in/courses/112107238

WEB RESOURCES:

1. https://www.iare.ac.in/sites/default/files/lecture_notes/IARE_OM_NOTES.pdf
2. https://mrcet.com/downloads/digital_notes/ME/III year/POM NOTES.pdf
3. Operations Management - Overview, Responsibilities, Skills Required (corporatefinanceinstitute.com)

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22MG101023	**INTRODUCTION TO FINANICAL TECHNOLOGY**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course helps students to understand the introduction to methods and tools useful in decision-making in the financial industry, which may from time to time include: Bank tech, Data tech, and Reg Tech and Eco system of Fintech Applications in real time scenario.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1 Demonstrate competencies in financial analysis and decision making

CO2 Pursue a career in the field of Risk management, Investment banking and allied professions in the field of Finance and Accounting

CO3 Gain experiential learning through well-structured internships and live-projects.

CO4 to analyses and learn about Banking operations through Fintech applications.

CO5 To Understand Survival analysis and Fin tech application

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	1	-	-	-	-	2	-	2	3	2	-
CO2	3	-	-	-	1	-	-	-	-	2	-	2	3	2	-
CO3	3	-	2	-	2	-	-	-	-	2	-	2	3	-	2
CO4	3	1	2	-	2	-	-	-	-	2	-	2	3	-	2
CO5	3	-	2	-	2	-	-	-	-	2	1	2	3	-	2
Course Correlation Mapping	**3**	**1**	**2**	**-**	**2**	**-**	**-**	**-**	-	**2**	**1**	**2**	**3**	**2**	**2**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT:

Module 1: INTRODUCTION TO FINTECH ***(05 Periods)***

Introduction to the Fintech -FinTech Architecture-FinTech Technologies-Latest Trends and future of FinTech-Applications of FinTech-Use cases of FinTech in banks-Fintech startups- Fintech unicorns and business models

Module 2: PREDICATIVE ANALYTICS ***(10 Periods)***

Predicative Analysis: Simple linear regression, Multiple linear regression- logistic and Multinominal regression- Forecasting Techniques: Application of Predicative Analytics.

Module 3: DIGITAL FINTECH ***(10 Periods)***

Digital Finance-Introduction – Brief History of Financial Innovation – Digitization of Financial Services -Popular Payments Technologies- Payment Stacks in India- B2B & B2B2C solutions- Innovative Products in Mobile based, Credit Cards, POS based ecosystem- Blockchain and Cryptocurrencies and its Applications.

Module 4: REGTECH ECOSYSTEM ***(10 Periods)***

Evolution of RegTech- RegTech Ecosystem: Financial Institutions- RegTech Ecosystem Startups - Challenges- Regulators- Use Case of AI in Smart Regulation and Fraud Detection- Regulatory Sandboxes- Smart Regulation- New Challenges of AI and Machine Learning.

Module 5: DATA TECH ***(10 Periods)***

Data Tech - Introduction - History of Data Regulation – Data in Financial Services –Application of Data Analytics in Finance - Methods of Data Protection: GDPR Compliance and Personal Privacy- Robo Advisory- and business models- Business aspects of FinTech in Capital Markets

Total Periods:45

EXPERIENTIAL LEARNING:

1. Assign projects that involve collecting and analyzing financial data. Students can use tools like Excel, SPSS, to gain practical experience in data analysis and financial modeling.
2. Facilitate internships or industry projects where students can work with financial analysts or in finance-related roles.
3. Develop real-life financial case studies for Analyzing actual business situations helps students apply theoretical concepts to practical problems.
4. Encourage students to undertake research projects on current financial trends, market behavior, or the impact of economic policies. This can enhance their analytical and research skills.

RESOURCES

TEXT BOOKS:

1. Sheeba Kapil, Financial Valuation and Modelling, Wiley, 1e,2022.
2. R. Narayanaswamy, Financial Accounting-Managerial Perspective, PHI,7e,2022.
3. Timothy Mayes, Financial Analysis with MS Excel, Cengage, 7e, 2013.
4. Agustin Rubini, "Fintech in a Flash: Financial Technology Made Easy", Zaccheus, 3rd Edition, 2018.

REFERENCE BOOKS:

1. Simon Bennings, Financial Modelling-Using Excel, MIT Press, Camberidge,3e
2. Cairns, A.J. G (2004), "Interest Rate Models: An Introduction", Princeton University Press, ISBN: 9780691118949
3. Theo Lynn, John G. Mooney, Pierangelo Rosati, Mark Cummins, "Disrupting Finance: FinTech and Strategy in the 21st Century", Palgrave, 1st edition, 2018 4.
4. Abdul Rafay, "FinTech as a Disruptive Technology for Financial Institutions", IGI Global, January, 2019 5.

VIDEO LECTURES:

1. https://www.youtube.com/watch?v=k_pVXpX-X38
2. https://www.youtube.com/watch?v=kJy3NOpCbWc
3. https://www.udemy.com/course/financial-analytics-in-practice/
4. https://www.caclubindia.com/coaching/professional-analysis-of-financial-statements-3685.asp

WEB RESOURCES:

1. Students have to bring their laptops installed with R and R Studio. Download R from http://cran.rproject.org/ and R Studio from http://www.rstudio.com/products/rstudio/download/
2. Brealey, et al.] Richard Brealey, Stewart Myers, and Franklyn Allen, 2015. Principles of Corporate Finance, various editions, McGraw-Hill.
3. [Foote] William G. Foote. 2017. Financial Engineering Analytics: A Topical Manual Using R. Manuscript available here.
4. https://personal.ntu.edu.sg/nprivault/MH8331/financial_risk_analytics.pdf
5. https://online-execed.wharton.upenn.edu/financial-analytics

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22MG101029	**BUSINESS MATHEMATICS**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION:

This course enables knowledge on various mathematical tools, techniques and models which help in dealing with real-life business problems and provide solutions.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Understand the basic concepts of indices and functions.

CO2. Apply the concept of matrices to solving business problem.

CO3. Understand the concept of Calculus and Methods of differentiations and Integration.

CO4. Analyze the basic concepts of economics and their importance in business decisions.

CO5. Apply the results of mathematical calculations to help evaluate various options in reaching financial decisions.

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	-	1	-	-	-	-	-	-	-	1	1	-	-
CO2	3	1	-	1	-	-	-	-	-	-	-	1	1	-	-
CO3	3	1	-	1	-	-	-	-	-	-	-	1	-	1	-
CO4	3	1	-	1	1	-	-	-	-	-	-	1	1	-	-
CO5	3	1	-	1	1	-	-	-	-	-	1	1	-	1	1
Course Correlation Mapping	**3**	**1**	**-**	**1**	**1**	**-**	**-**	**-**	**-**	**-**	**1**	**1**	**1**	**1**	**1**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: BASIC MATHEMATICS ***(09 Periods)***

Theory of Indices: Definition, types of indices, properties of indices, basic problems on indices. Functions and its applications to business, limits of function and continuity.

Module 2: VECTORS AND MATRICES ***(08 Periods)***

Geometrical and physical interpretation of vectors, Introduction to Matrices Multiplication of Matrices, Inverse of a Matrix, Rank of a Matrix and Matrix applications in management.

Module 3: ELEMENTARY CALCULUS ***(09 Periods)***

Differentiation: Definition, rules of differentiation, logarithmic differentiation, partial differentiation of first and second order, maxima &minima. Integration: Definition, some standard rules of integration, integration by substitution.

Module 4: APPLICATION OF CALCULUS ***(10 Periods)***

Elasticity of demand, Average revenue, Marginal revenue, Average cost, Marginal cost, Total cost, Consumer's surplus, Supply curve of short period and long period in perfect competition, Maximum revenue, Minimum Cost.

Module 5: MATHEMATICS FOR FINANCE ***(09 Periods)***

Progressions: Arithmetic and Geometric progressions and their applications. Simple interest, Compound interest, Annuity, Concept of present value and amount of sum types of annuities, present value and amount of an annuity including the cases of continuous compounding, problems relating to sinking fund.

Total Periods: 45

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Select any three products observe demand and supply or Demand and Price in the market. Using the data Construct the relationship.
2. A finance company has offices located in every division, every district and every taluka in a certain state in India. Assume that there are 5 divisions, 30 districts and 200 taluka in the state. Each office has one Head Clerk, One Cashier, One Clerk and One Peon. A divisional office has, in addition, an Office Superintendent,2 Clerks, one Typist and one Peon. A district office has in addition, one clerk and one peon. The basic monthly salaries are as follows: Office Superintendent Rs. 5000; Head Clerk Rs.2000; Cashier Rs.1750;Clerk and Typist Rs. 1500 and Peon Rs. 1000. Using matrix notations find.
    a. The total number of posts of each kind in all the offices taken together,
    b. The total basic monthly salary bill of each kind of office, and
    c. The total basic monthly salary bill of all the offices taken together.
3. Identify any five products. Gather information about the price and quantity demanded. Classify them according to whether their demand is elastic or inelastic
4. Identify any two or three banks/NBFCs. Gather Information about the schemes and interest rates. Do a comparative study and summarize the report.

RESOURCES

TEXT BOOKS:

1. M. Raghavachari :Mathematics for Management An Introduction, Tata McGraw Hill
2. Dr.C.Sancheti and V.K.Kapoor,Business Mathematics, Sultan Chand & Sons.

REFERENCE BOOKS:

1. J.K Sharma, Business Mathematics Theory & Applications, Ane Books Pvt. Ltd.
2. J.K Singh, Business Mathematics, Himalaya Publishing House.
3. Dr.Amarnath Dikshit & Dr.Jinendra Kumar Jain , Business Mathematics, Himalaya Publishing House.

VIDEO LECTURES:

1. NPTEL :: Mathematics - NOC:Matrix Analysis with Applications
2. Basic Calculus - 1 - Course (nptel.ac.in)
3. NPTEL :: Mathematics - NOC:Basic Calculus 1 and 2

WEB RESOURCES:

1. ICAI - The Institute of Chartered Accountants of India
2. (PDF) An Introduction to Business Mathematics (researchgate.net)
3. Std12-BM-EM.pdf (tn.gov.in) (*https://textbookcorp.tn.gov.in/Books/12/Std12-BM-EM.pdf*)

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22MG101028	MANAGEMENT CONTROL SYSTEMS	3	-	-	-	3

Pre-Requisite

Anti-Requisite

Co-Requisite

COURSE DESCRIPTION: This course will provide students with a conceptual framework of how financial decisions are undertaken in multinational companies and to familiarize students on managing the Finance function in a global context.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Comprehend the basic concepts in designing effective Management Control Systems.
CO2. Understand the importance of performance management
CO3. Apply the concepts in Budgeting and Responsibility Centre Accounting.
CO4. Implement the management control process
CO5. Understand the service organizations' management

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	-	-	-	-	-	-	-	2	3	-	-	3	-
CO2	3	3	-	3	3	-	-	2	-	3	3	-	-	-	3
CO3	3	2	3	-	-	-	-	-	-	2	3		-	-	3
CO4	3	3	3	-	3	-	-	-	-	-	2	-	-	-	3
CO5	3	2	3	2	3	-	-	-	-	2	3	-	-	-	3
Course Correlation Mapping	**3**	**3**	**3**	**2**	**3**	-	-	**2**	-	**2**	**2**	-	-	-	3

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: FUNDAMENTALS OF MANAGEMENT CONTROL: ***(8 Periods)***

Nature of Management Control Systems, Basic concepts, Boundaries of Management Control, Impact of the Internet on Management Control, Management control environment, Goal congruence, Informal factors that influence goal congruence. Formal control systems- types of organizations, Functions of the controller.

Module 2: PERFORMANCE MANAGEMENT ***(8 Periods)***

Performance measurement – Difficulties in implementing performance measurement systems, interactive control. Strategic Planning and Management Control.

Module 3: RESPONSIBILITY CENTRES ***(10 Periods)***

Revenue centres, Expenses centres, Administrative and support centres, Research and Development centres, Marketing centres, Profit centres, General considerations. Business units as profit centres – Other profit centres, Measuring profitability. Transfer pricing – Objectives of transfer prices, Transfer pricing methods. Pricing corporate services. Administration of transfer prices.

Module 4 MANAGEMENT CONTROL PROCESS ***(10 Periods)***

Strategic planning, Nature of strategic planning, Analysing proposed new programs, Analysing ongoing programs. strategic planning process – Understanding strategies, Concept of strategies, Corporate level strategies, Business unit strategies. Budget preparation – Nature of a budget, Other budgets, Budget preparation process.

Module 5 SERVICE ORGANIZATIONS ***(08 Periods)***

Service organizations in general, professional service organizations, Financial service organizations, Health care organizations, Non-profit organizations. Multinational organizations, Cultural differences.

Total Periods: 45

EXPERIENTIAL LEARNING

1. Do an analytical study about the management of service organizations.
2. Analyze the budgets of large, medium and small organizations.

RESOURCES

TEXT BOOKS:

1. Management Control Systems, Robert Anthony and Vijay Govindarajan, McGraw Hill Publication, 12th edition.
2. Management Control Systems, Pradip Kumar Sinha, Excel Publication, Latest Edition.
3. Management Control Systems, N Ghosh, PHI Publication, Latest Edition.
4. Modern Management Control Systems, Kenneth A Merchant, Pearson Publication, Latest Edition.

VIDEO LECTURES:

1. https://www.youtube.com/watch?v=NWO7H0vFH_I
2. https://www.youtube.com/watch?v=VFlKLZKUzC0

WEB RESOURCES:

1. https://ebooks.lpude.in/management/mba/term_4/DMGT514_MANAGEMENT_CONTROL_SYSTEMS.pdf
2. https://dde.pondiuni.edu.in/files/StudyMaterials/MBA/MBA3Semester/General/4ManagementControlSystem.pdf

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22MG102002	**FINANCIAL MODELLING**	3	-	2	-	4

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: An introduction to methods and tools useful in decision-making in the financial industry, which may from time to time include: macroeconomic event studies, analysis of term structures, equity data analysis, Asset Portfolio management etc.

COURSE OUTCOMES: After thoroughly studying this chapter, we should be able to:

CO1 Demonstrate competencies in financial analysis and decision making

CO2 Pursue a career in the field of Risk management, Investment banking and allied professions in the field of Finance and Accounting

CO3 Gain experiential learning through well-structured internships and live-projects.

CO4 nalyse and learn about India through association of ideas in the texts and the external contexts

CO5 Understand Survival analysis and its application- Six Sigma through R

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	1	-	-	-	-	2	-	2	3	2	-
CO2	3	-	-	-	1	-	-	-	-	2	-	2	3	2	-
CO3	3	-	2	-	2	-	-	-	-	2	-	2	3	-	2
CO4	3	1	2	-	2	-	-	-	-	2	-	2	3	-	2
CO5	3	-	2	-	2	-	-	-	-	2	1	2	3	-	2
Course Correlation Mapping	**3**	**1**	**2**	**-**	**2**	**-**	**-**	**-**	-	**2**	**1**	**2**	**3**	2	**2**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT:

Module 1: INTRODUCTION TO FINANCIAL MODELLING ***(05 Periods)***

Introduction to Financial Modelling – Types and Purposes of Business Models – Rules for Model Design–Model Layout Flow Charting – Steps to Building a Model – Best Practice-Principles of Modelling – Documentation – Preparing and Presentation of Model Results – Model Review – Auditing a Model- Modelling with Excel functions.

Module 2: FINTECH & MARKETING METRICS ***(10 Periods)***

Financial Analysis Techniques - Ratio analysis, Du-Point Analysis – Cash Budgeting – Master Budgeting - Profit Planning - Loan Amortization - Capital Budgeting Decisions – Sensitivity Analysis – Scenario Analysis with Scenario Manager –Marketing Metrics and Demand Curve-Estimating Demand Curves –Computing Marketing Metrics – Take Rate, Churn, Customer Satisfaction – Customer life Time Value – Cost Per Click – Transaction Conversion Rate – Bounce Rate- Quality Control Charts.

Module 3: ASSET PORTFOLIO MODELS ***(10 Periods)***

Asset Portfolio Models**:** Basics of portfolio construction, Markowitz Theorem, Diversification and Portfolio Optimization Modelling Volatility and Risk: Characteristics of volatility. Modelling volatility using ARCH/GARCH models. Measuring and modelling risk- Production Order Quantity Model – Acceptance Sampling – Material Requirement Planning.

Module 4: MODELLING CREDIT RISK ***(10 Periods)***

Modelling Credit Risk: Corporate Liabilities as contingent claims, Endogenous default boundaries and optional Capital Structure, Intensity Modelling, rating based term-structure models, Credit risk and interest-rate Swaps, modelling dependent defaults Derivative Pricing: Modelling derivative prices: Binomial Model, Black Scholes model. Portfolio management- Process-Calculation of Portfolio Mean and Variance: Covariance Matrix.

Module 5: RANDOM ANALYTICS ***(10 Periods)***

Stochastic Analytics: Introduction to Stochastic models- Markov models- Renewal theory-Markov decision process and application in Sequential decision making. Analytics under uncertainty: Survival analysis and its application- Six Sigma and Problem-Solving Methodology-Lean Thinking- dynamic price and revenue management- insurance loss models.

Total Periods:45

EXPERIENTIAL LEARNING:

LIST OF EXPERIMENTS:

1. Financial Analytics lab
2. R Programming
3. SPSS using Excel

RESOURCES

TEXT BOOKS:

1. Sheeba Kapil, Financial Valuation and Modelling, Wiley, 1e,2022.
2. R. Narayanaswamy, Financial Accounting-Managerial Perspective, PHI,7e,2022.
3. Timothy Mayes, Financial Analysis with MS Excel, Cengage, 7e, 2013.
4. Vijay Gupta, Financial Analysis using Excel, VJ Books Inc, Canada.

REFERENCE BOOKS:

1. Simon Bennings, Financial Modelling-Using Excel, MIT Press, Camberidge,3e
2. Cairns, A.J. G (2004), "Interest Rate Models: An Introduction", Princeton University Press, ISBN: 9780691118949
3. John Y. Campbell, Andrew W. Lo, & A. Craig MacKinlay (1997), "The Econometrics of Financial Markets", Princeton University Press, ISBN: 9780691043012
4. Ruey S. Tsay (2010), "Analysis of Financial Time Series", 3rd Edition, Wiley, ISBN: 978-0-470- 41435-4

VIDEO LECTURES:

1. https://www.youtube.com/watch?v=k_pVXpX-X38
2. https://www.youtube.com/watch?v=kJy3NOpCbWc
3. https://www.udemy.com/course/financial-analytics-in-practice/
4. https://www.caclubindia.com/coaching/professional-analysis-of-financial-statements-3685.asp

WEB RESOURCES:

1. Students have to bring their laptops installed with R and R Studio. Download R from http://cran.rproject.org/ and R Studio from http://www.rstudio.com/products/rstudio/download/
2. Brealey, et al.] Richard Brealey, Stewart Myers, and Franklyn Allen, 2015. Principles of Corporate Finance, various editions, McGraw-Hill.
3. [Foote] William G. Foote. 2017. Financial Engineering Analytics: A Topical Manual Using R. Manuscript available here.
4. https://personal.ntu.edu.sg/nprivault/MH8331/financial_risk_analytics.pdf
5. https://online-execed.wharton.upenn.edu/financial-analytics

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22MG101032	**FINANCIAL MARKETS & SERVICES**	3	1	-	-	4

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course the course is to make students aware of how financial markets function and equip the students to realize the role played by the financial intermediaries and the challenges faced by them while rendering the financial services.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Understand the structure and importance of Indian financial system

CO2. Understand the recent trends of financial markets.

CO3. Develop required skills to manage merchant banking and other intermediary services

CO4. Provide insights about evaluation of leasing services

CO5. Offer different types of specialized financial services to the clients

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	-	-	-	-	-	-	-	3	3	-	2	2	-
CO2	3	2	-	3	3	-	-	2	-	3	3	-	-	-	3
CO3	3	2	3	-	-	-	-	-	-	2	2	-	-	-	3
CO4	2	3	3	-	3	-	-	-	-	-	2	-	-	-	3
CO5	3	3	3	3	3	-	-	-	-	2	2	-	-	-	3
Course Correlation Mapping	**3**	**3**	**3**	**3**	**3**	-	-	**2**	-	**2**	**2**	-	-	-	3

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: COMPONENTS OF FINANCIAL SYSTEM ***(8 Periods)***

Components of Financial System: Financial Markets, Financial Institutions, Financial Services and Financial Instruments- Role of financial system in the economic development– **Financial services industry**: Nature and scope of financial services–Different kinds of financial services–role of financial services in the economic development.

Module 2: FINANCIAL MARKETS IN INDIA ***(10 Periods)***

Financial markets in India: Capital market: Primary and Secondary markets- Stock markets in India- Role of Securities & Exchange Board of India -SEBI guidelines on primary market- Money market and instruments.

Module 3: MERCHANT BANKING SERVICES ***(09 Periods)***

Merchant Banking Services: Offer document- Issue Management- intermediaries- Responsibilities of lead managers –Underwriting Services- Role of Registrar-Stock Broking Services–Portfolio management services.

Module 4 LEASE FINANCING ***(10 Periods)***

Lease financing: Different types of leases–Evaluating a financial lease–Factoring-Forfaiting- Reverse Mortgage–Housing finance– Insurance Services.

Module 5 NBFCS ***(08 Periods)***

NBFCs: Types and Overview of regulations for NBFCs in India- **Specialized Financial Services:** Venture Capital- Depository services–NSDL & CDSL- **Credit rating**: Importance-Credit rating agencies in India-rating procedures.

Total Periods: 45

EXPERIENTIAL LEARNING

1. Take the recent IPOs and understand the role played by the Merchant banker and other intermediaries.
2. Analyze the credit rating procedures adopted by ICRA, CRISIL and CARE etc.,

RESOURCES

TEXT BOOKS:

1. Frederic S Mishkin & Stanley Y. Eakins: Financial Markets and Institutions (Pearson Education)
2. MY Khan: Indian Financial System (Tata McGraw–Hill)
3. MY. Khan: Financial Services ((Tata McGraw–Hill)
4. Guruswamy S : Financial Services (Tata McGraw-Hill)

VIDEO LECTURES:

1. https://www.digimat.in/nptel/courses/video/110105121/L01.html
2. https://www.digimat.in/nptel/courses/video/110105121/L33.html
3. https://www.digimat.in/nptel/courses/video/110105121/L48.html

WEB RESOURCES:

1. https://www.himpub.com/documents/Chapter1321.pdf
2. https://www.geektonight.com/financial-markets-and-services-notes/
3. http://tumkuruniversity.ac.in/oc_ug/comm/notes/FINANCIALMARKETANDSERVICES.pdf

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22MG101037	**RETAIL MANAGEMENT**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course provides the student with a comprehensive view of retailing, an analysis of the retail environment and exposure to issues and developments in the industry. Retailing is changing today, and the successful business will know how to identify, adapt, and plan with these changes.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Analyze the fundamental concepts and how the retail industry works.
CO2. Understand the areas of accountability for retail management.
CO3. Understand the retailing practices
CO4. Understand the big picture of retailing and its connect to information systems.
CO5. Understand the impact of retailing on the economy and its role in society

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	-	1	-	1	1	-	-	1	1	-	-
CO2	3	1	1	-	-	1	-	1	1	-	-	1	1	-	-
CO3	3	1	1	-	-	1	-	1	1	-	-	1	-	1	-
CO4	3	1	1	-	-	1	-	1	1	-	-	1	1	-	-
CO5	3	1	1	1	-	1	-	1	1	-	-	1	1	-	-
Course Correlation Mapping	**3**	**1**	**1**	**1**	**-**	**1**	**-**	**1**	**1**	**-**	**-**	**1**	**1**	**1**	**-**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: INTRODUCTION TO RETAILING *(09 Periods)*

Definition and scope, evolution of retailing, types of retail, trends in retailing industry, benefits of retailing, retailing environment.

Module 2: PURCHASING AND PRICING *(09 Periods)*

Purchase management: Merchandise purchasing, open to buy, open to buy planning, analyzing the merchandise performance, Pricing strategies:-every day pricing, competitive based pricing, price skimming, market-oriented pricing, marginal cost pricing. Retail price strategies: - mark-up pricing, vendor pricing, competitive pricing, psychological pricing.

Module 3: RETAIL MARKETING AND PROMOTION ***(09 Periods)***

Nature and scope: relationship marketing, market strategies, retail research Understanding the retail customer: retail market, population analysis, demographic analysis, consumer behavior Retail promotion Mix: - Retail promotion programme, retail advertising media, promotional budget. Customer services: - customer services, services quality gaps, service recovery.

Module 4: INFORMATION SYSTEM IN RETAILING ***(09 Periods)***

Acquiring and using formation strategies, technology in retail, information sources, retail information system.

Module 5: RETAILING IN INDIA ***(09 Periods)***

Evolution and trends in organized retailing, Indian organized retail market, FDI in Indian organized retail sector, retail scenario in India, future trends of retail in India.

Total Periods:45

EXPERIENTIAL LEARNING

1. Collect the case studies related to recent trends in retailing and other Contemporary Practices and Present them as a seminar.
2. Different Case Studies Will be Given to students as per the topic that will be collected and evaluated.
3. The case studies will be collected as Assignments and the same will be evaluated.

RESOURCES

TEXT BOOKS:

1. Berman Berry, Evans J.R.- Retail Management- A Strategic Management Approach, IX Edition , Pearson Education, New York, 2006
2. Sinha, Uniyal- Managing Retailing, Oxford University Press, Delhi

REFERENCE BOOKS:

1. Nair Suja- Retail Management, V Edition, HPH, Mumbai, 2006
2. Pradhan Swapna- Retailing Management-Text and Cases, II Edition, Tata Mc Graw Hill, India, 2007

VIDEO LECTURES:

1. https://archive.nptel.ac.in/courses/110/107/110107158/
2. https://study.com/academy/topic/Retail-marketing-communications.html

WEB RESOURCES:

1. https://www.retaildogma.com/learn/
2. https://www.tutorialspoint.com/retail_management/retail_management_quick_guide.htm

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22MG101038	**CUSTOMER RELATIONSHIP MANAGEMENT**	3	-	-	-	3

Pre-Requisite -
Anti-Requisite -
Co-Requisite -

COURSE DESCRIPTION: This course deals with familiarizing the students with emerging trends in customer relations in the Indian Business and effectively managing the relations to increase customer loyalty.

COURSE OUTCOMES: After successful completion of the course, students will be able to:
CO1. Realize that customer relations change the business opportunities
CO2. Apply CRM concepts in different business markets
CO3. Gain knowledge to use appropriate technological tools for CRM
CO4. Manage and implement customer-centric marketing opportunities
CO5. Assess the impact of channels on CRM.

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	-	1	-	-	-	-	1	1	1	-	-
CO2	3	-	-	-	-	1	1	-	-	-	-	1	-	1	-
CO3	3	1	-	-	-	-	-	-	1	-	-	1	1	-	-
CO4	3	1	-	-	-	1	-	-	-	-	-	1	1	-	-
CO5	3	1	-	-	-	1	-	1	-	-	-	-	-	-	1
Course Correlation Mapping	**3**	**1**	**-**	**-**	**-**	**1**	**1**	**1**	**1**	**-**	**1**	**1**	**1**	**1**	**1**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION TO RURAL MARKETING ***(09 Periods)***
CRM- meaning definition - importance – Features of good CRM programme - Implementing CRM initiatives – Role of CRM in improving Customer relationships – – Advantages of CRM – Steps for successful CRM – CRM system, selection and implementation process.

Module 2: UNDERSTANDING THE RURAL CONSUMER ***(09 Periods)***
Service quality themes in CRM – CRM in services (Hospitality, Telecom, Banking, Airlines, Insurance, travel and tourism, Transportation and Logistics)–CRM in product markets.

Module 3: MARKETING MIX IN RURAL MARKETING ***(10 Periods)***
Components of ECRM solutions – Data mining and CRM – Campaign management– Sales force automation- Customer service and support– –Evaluating technologicalSolutions for CRM.

Module 4: INNOVATION IN RURAL MARKETING ***(09 Periods)***

Defining CRM strategy – CRM implementation Road map – Customer centric marketing and processes – Issues in implementing a technology solution for CRM -Budgeting for attraction VS retention–Customer retention plans-Evaluating retention programmes.

Module 5: FUTURE OF RURAL MARKETING ***(08 Periods)***

Importance of channels for CRM –Role of traditional channels in CRM–Key factors affecting CRM– Major challenges facing CRM through traditional channels – Emerging channel trends that impact CRM – Recent opportunities and challenges for CRM.

Total Periods:45

EXPERIENTIAL LEARNING

1. Collect various cases relating to CRM and discuss the same with different teams with different contexts and experience their learning and writing assignments.
2. Present Videos how CRM plays a vital role in an organizations to enhance the revenue and customer network for an organization.
3. Giving assignments to students to write observations on recent CRM issues how companies are playing effective retention strategies to retain customers with an excellent relationship.

REFERENCES

TEXT BOOKS:

1. Buttle, F. (2009). *Customer Relationship Management: Concepts and Technologies.* Routledge.
2. Berndt, A., & Galland, M. F. (2012). *Customer Relationship Management: Integrating Marketing Strategy and Information Technology.* Wiley.

REFERENCE BOOKS:

1. Kumar, V., & Reinartz, W. (2018). *Customer Relationship Management: A Databased Approach.* Wiley.
2. Peppers, D., & Rogers, M. (2016). Managing Customer Relationships: A Strategic Framework (3rd ed.). Wiley.

VIDEO LECTURES:

1. https://www.youtube.com/watch?v=DE077z2kxVkhttps://www.youtube.com/watch?v=FmqYLM-c2s4
2. https://www.youtube.com/watch?v=6KLUm-Ych74

WEB RESOURCES:

1. https://www.sana-commerce.com/blog/what-is-the-role-of-customer-relationship-management-in-e-commerce/
2. https://en.wikipedia.org/wiki/Customer_relationship_management

PROGRAM ELECTIVE

Course Code	Course Title	L	T	P	S	C
22MG101040	**INTEGRATED MARKETING COMMUNICATION**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course is designed to provide the learner a good understanding of the concepts, strategies, and trends associated with the marketing communications. To help the learner to explore the current marketing environment, key promotional strategies, and trends in marketing.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Provide an overview of Advertising
CO2. Understand the dimensions of media
CO3. Design sales promotion and campaign
CO4. Analyse how to enhance sales value through the appropriate promotional campaign and personal selling strategies.
CO5. Assess public relations and publicity.

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	-	1	-	1	1	-	-	1	1	-	-
CO2	3	1	1	-	-	1	-	1	1	-	-	1	1	-	-
CO3	3	1	1	-	-	1	-	1	1	-	-	1	-	1	-
CO4	3	1	1	-	-	1	-	1	1	-	-	1	1	-	-
CO5	3	1	1	1	-	1	-	1	1	-	-	1	1	-	-
Course Correlation Mapping	**3**	**1**	**1**	**1**	**-**	**1**	**-**	**1**	**1**	**-**	**-**	**1**	**1**	**1**	**-**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: INTRODUCTION TO ADVERTISEMENT ***(09 Periods)***

Concept –definition-scope-Objectives-functions-principles of advertisement – Social, Economic and Legal Implications of advertisements – setting advertisement objectives

Module 2: ADVERTISEMENT MEDIA ***(09 Periods)***

Media plan – Type and choice criteria – Reach and frequency of advertisements – Cost of advertisements - related to sales – Media strategy and scheduling. design and execution of advertisements -Message development – Different types of advertisements – Layout – Design appeal -Copy structure

Module 3: SALES PROMOTION ***(09 Periods)***

Scope and role of sale promotion – Definition – Objectives of sales promotion - salespromotion techniques – Trade oriented and consumer oriented. Sales promotion – Requirement identification – Designing of sales promotion campaign

Module 4: PERSONAL SELLING ***(09 Periods)***

Introduction – Meaning – Functions- Personal selling process – Evaluation – Compensation.

Module 5: PUBLICITY AND PUBLIC RELATIONS ***(09 Periods)***

Introduction – Meaning – Objectives –Scope-Functions-integrating PR in to Promotional Mix-Marketing Public Relation function- Process of Public Relations-advantages and disadvantages of PR.

Total Periods:45

EXPERIENTIAL LEARNING

1. Collect the case studies related to recent trends in personal selling and other Contemporary Practices and Present them as a seminar.
2. Different Case Studies Will be Given to students as per the topic that will be collected and evaluated.
3. The case studies will be collected as Assignments and the same will be evaluated.

RESOURCES

TEXT BOOKS:

1. George E Belch and Michel A Belch, Advertising Promotion, Tata McGraw Hill, 10th edition, 2014
2. Wells, Moriarty & Burnett, Advertising, Principles & Practice, Pearson Education, 7th Edition, 2007.

REFERENCE BOOKS:

1. Marketing communication, Prentice Hall of India, New Delhi, 3rd Edition,2006.
2. S. H. H. Kazmi and Satish K Batra, Advertising & Sales Promotion, Excel Books,New Delhi, 3rd Revised edition, 2008

VIDEO LECTURES:

1. https://archive.nptel.ac.in/courses/110/107/110107158/
2. https://study.com/academy/topic/integrated-marketing-communications.html
3. https://www.udemy.com/course/integrated-marketing

WEB RESOURCES:

1. https://www.slideshare.net/RushabhSheth16/internet-advertising-integrated-marketing-communication
2. https://www.teacheron.com/online-integrated_marketing_communications-tutors
3. https://www.classcentral.com/course/integrated-marketing-communications-5509

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22MG101042	**INDUSTRIAL RELATIONS LAWS**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: The objective of the course is to provide an understanding of the legal framework and focus on industrial relations importance. The student able to know the causes of industrial disputes and conflicts. As HR specialist while framing of HR policies and regulations this course helps.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Understand the concepts and significance of Industrial Relations
CO2. To know about how to deal Industrial Disputes and Various Dispute Resolution Techniques
CO3. Understand the legal framework in India
CO4. Laws relating to Remuneration.
CO5. Focus on Laws relating to Social Security Measures.

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	2	1	-	-	-	-	-	-	-	-	1	-	-
CO2	1	1	2	2	-	-	2	-	1	-	-	-	1	1	-
CO3	2	2	1	2	1	-	-	1	-	-	2	-	-	-	1
CO4	3	1	2	2	1	-	-	-	-	-	-	2	-	1	-
CO5	2	2	1	2	1	1	-	-	-	-	-	1	1	-	1
Course Correlation Mapping	**2**	**2**	**2**	**2**	**1**	**1**	**2**	**1**	**1**	**-**	**2**	**-**	**1**	**1**	**1**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: INDUSTRIAL RELATIONS ***(09 Periods)***

Concepts, Significance, trends in India, objectives and functions, structure, types, trade unions Act, 1926

Module 2: INDUSTRIAL DISPUTES & CONFLICTS ***(09 Periods)***

Causes, Types, Consequences, Prevention, Settlement, Conciliation, Arbitration, Adjudication. Causes of Grievances & Disputes. Role IR Officer. Government Machinery for Industrial Relations. Industrial Disputes Act ,1947 - preventive
and settlement machinery

Module 3: LEGAL FRAME WORK IN INDIA ***(10 Periods)***

Evolution of labour laws in India – labour legislations – meaning, importance and relevance to HRM. Industrial employment (standing orders) Act,1946 – Factories Act 1948

Module 4: LAWS RELATING TO REMUNERATION: ***(09 Periods)***

Payment of wages Act, 1936, Minimum wages Act, 1948 – Payment of Bonus Act, 1965

Module 5: LAWS RELATING TO SOCIAL SECURITY ***(08 Periods)***

Work men's compensation Act,1923 – ESI Act, 1948 – Maternity benefits Act,- 1961

Total Periods:45

EXPERIENTIAL LEARNING

1. Present a case involving a dispute between an employer and employees regarding industrial relations and analyze the case, identify the relevant industrial relationship laws applicable, discuss how those laws were interpreted and applied in the case,
2. Review a specific industrial relationship law or regulation in their jurisdiction (such as the National Labor Relations Act in the United States or the Industrial Relations Code in India) and summarize key provisions, analyze the purpose and impact of the law
3. Students to choose a topic related to industrial relationship laws for a research paper. Topics could include recent developments in labor legislation, the impact of technological advancements on workplace relations, or the role of international labor standards.

RESOURCES

TEXTBOOKS:

1. Flanders, A. (1975). "The Fawcett Report, 1968-1971: A Review of Industrial Relations in British Establishment." Routledge.
2. Kochan, T. A., Katz, H. C., & McKersie, R. B. (1986). "The Transformation of American Industrial Relations." Basic Books.

REFERENCE BOOKS:

1. Bamber, G. J., Lansbury, R. D., & Wailes, N. (2004). "International and Comparative Employment Relations: Globalisation and the Developed Market Economies." Sage Publications.
2. Budd, J. W. (2004). "Employment with a Human Face: Balancing Efficiency, Equity, and Voice." Cornell University Press.

VIDEO LECTURES:

1 https://www.youtube.com/watch?v=rpIIj8kbPBQ

2 https://www.youtube.com/watch?v=6J-VvleH06k

WEB RESOURCES:

1 https://labour.gov.in/sites/default/files/ir_gazette_of_india.pdf

2 https://baou.edu.in/assets/pdf/PGDHR_201_slm.pdf

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22MG101043	**COMPENSATION MANAGEMENT**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This Course is designed to provide the student with a thorough knowledge of various methods and practices of Compensation Management.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Understand the concept of Compensation Management and its approaches
CO2. Analyse the classification of compensation and the strategies of Compensation
CO3. Understand the preparation of a Wage Structure
CO4. Understand the factors influencing Performance based pay
CO5. Evaluate the importance of wage boards

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1	1	1	1	2	-	2	-	2	-	2	3	1	1
CO2	2	2	3	1	2	2	-	-	-	-	-	2	2	2	3
CO3	1	1	2	2	2	-	-	-	-	2	-	2	2	2	2
CO4	1	1	2	1	2	-	-	-	-	2	-	2	2	2	2
CO5	1	1	2	1	2	-	-	-	-	2	2	2	2	2	2
Course Correlation Mapping	**1**	**1**	**2**	**1**	**2**	**2**	**-**	**2**	-	**2**	**2**	**2**	**2**	**2**	**2**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: COMPENSATION ***(09 Periods)***

Definition - Compensation Responsibilities – Compensation System Design Issues – Compensation Philosophies – Compensation Approaches

Module 2: COMPENSATION CLASSIFICATION ***(09 Periods)***

Compensation Classification - Types - Incentives - Fringe Benefits – Strategic Compensation Planning – Determining Compensation – The wage Mix – Development of Base Pay Systems – The Wage Curve – Pay Grades – Salary Matrix – Compensation as a Retention Strategy

Module 3: WAGE STRUCTURE ***(10 Periods)***

Theories of Wages - Wage Fixation - Wage Payment – Salary Administration - Executive Compensation – Incentive Plans – Team Compensation – Gain Sharing Incentive Plan – Enterprise Incentive Plan – Profit Sharing Plan- ESOPs – Compensation Management in Multi-National organizations.

Module 4: PERFORMANCE-BASED PAY SYSTEMS ***(09 Periods)***

Methods of Rewarding of Sales Personnel - Pay - Commission - Pay and Commission - Performance Based Pay Systems - Incentives - Executive Compensation Plan and Packages - Perceptions of Pay Fairness – Legal Constraints on Pay Systems.

Module 5: WAGE BOARDS ***(08 Periods)***

Pay Commissions - Employee Benefits – Benefits Need Analysis – Funding Benefits – Benchmarking Benefit Schemes - Employee Benefit Programmes – Security Benefits –Creating a Work Life Setting – Designing Benefit Packages

Total Periods:45

EXPERIENTIAL LEARNING

1. Present the seminar on different methods of Compensation Methods.
2. Different Case Studies Will be Given to students as per the topic that will be collected and evaluated.

RESOURCES

TEXT BOOKS:

1. Richard Thrope & Gill Homen, STRATEGIC REWARD SYSTEMS, Prentice Hall India, New Delhi
2. Michael Armstrong & Helen Murlis, HAND BOOK OF REWARD MANAGEMENT, Crust Publishing House.

REFERENCE BOOKS:

1. Dewakar Goel, PERFORMANCE APPRAISAL AND COMPENSATION MANAGEMENT, PHI Learning, New Delhi.
2. Richard.I. Henderson, COMPENSATION MANAGEMENT IN A KNOWLEDGE BASED WORLD, Prentice Hall India, New Delhi

VIDEO LECTURES:

1 https://nptel.ac.in/courses/110105137

2 https://www.digimat.in/nptel/courses/video/122108038/L27.html

WEB RESOURCES:

1 https://www.igntu.ac.in/eContent/IGNTU-eContent-638670815118-MBA-TourismandTravelManagement-2-RohitRaviundraBorlikar-MBAT201-OBHRM-3.pdf

2 https://sircrrpgcourses.ac.in/admin/uploads/3119Final-24-08-2020-compensation%20management.2.0-Unit-I-MrsVViswasanthi.pdf

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22MG101044	**INTERNATIONAL HUMAN RESOURCE MANAGEMENT**	**3**				**3**

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course provides an understanding of the role of human resource management in international contexts. The main objective of this course is familiarize the students about the implications of the globalization process, challenges that changes in the international economy and manage the diversity of HRM in an international context and the key HR challenges facing organizations working internationally.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. understand the concept of IHRM and apply them effectively in the real time business.

CO2. demonstrate Cultural differences across the countries to manage the employees from different cultures.

CO3. Analyze the global staffing and compensation practices within the context of human resource management.

CO4. Determine organizational growth by designing and implementing appropriate cross-cultural training and development programs.

CO5. Knowledge of relevant Global Industrial Relations and employee relations across the countries.

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	1	1	1	2	-	2	-	2	-	2	3	1	1
CO2	2	2	3	3	2	2	-	-	-	-	-	2	2	2	3
CO3	2	2	2	2	2	-	-	-	-	2	-	2	2	2	2
CO4	2	2	2	2	2	-	-	-	-	2	-	2	2	2	2
CO5	2	2	2	3	2	-	-	-	-	2	2	2	2	2	2
Course Correlation Mapping	**2**	**2**	**2**	**3**	**2**	**2**	**-**	**2**	-	**2**	**2**	**2**	**2**	**2**	**2**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: INTERNATIONAL HUMAN RESOURCE MANAGEMENT ***(09 Periods)***

concept, importance, functions, expanding role, Global issues and challenges, Differences between Domestic Human Resource Management and Global Human Resource Management.

Module 2: SOCIAL AND CULTURAL VARIABLES IN GLOBAL ORGANIZATIONS ***(09 Periods)***

Cross Cultural Differences, Understanding Culture, Cross Cultural Research Methodologies - Hofetede's Hermes Study, Cultural Issues.

Module 3: GLOBAL STAFFING AND COMPENSATION PRACTICES ***(09 Periods)***

Human Resource Planning, Recruitment and Selection for global Assignment, Selection process Expatriate and Repatriate. International Compensation - Key components, Approaches to International Compensation-, Differentiating HCN'S, PCN`S and TCN`S.

Module 4: APPRAISAL AND TRAINING AND DEVELOPMENT IN THE GLOBAL PERSPECTIVE ***(09 Periods)***

Performance Management Process, Important consideration for Global Performance Management, Planning and Implementing Global Performance Appraisal. Training and development - need, cross cultural training, Areas of international training and development.

Module 5: GLOBAL INDUSTRIAL RELATIONS AND PEOPLE MANAGEMENT ***(09 Periods)***

Trade Unions, Grievances, Techniques of grievances, Collective bargaining, Disputes/Conflicts, Quality Circles and Participative Management.

Total Periods:45

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Present the seminar on different compensations for Expatriates, HCNs and TCNs.
2. Different Case Studies Will be Given to students as per the topic that will be collected and evaluated.

RESOURCES

TEXT BOOKS:

1. Monir Tayeb. "*International Human Resource Management*". Oxford, 2007.
2. Dowling, P.J. and Welth, D.E. "*International Human Resource Management. Managing people in a multinational context"*. London: Thomson, 2004.
3. P. Subba Rao: "*Personnel and Human Resource Management – Text and Cases*", HimalayaPublishing House, Mumbai, 2010.

REFERENCE BOOKS:

1. Jackson, T.: "*International dimensions of human resource management*". London, 2002.
2. S.C. Gupta, "International Human Resource Management", Trinity, 2e. 2017.
3. Charles M Vance and Yongsunpaik, "*Managing Global Work force*", PHI., 2009.

VIDEO LECTURES:

1. https://youtu.be/sWmkYV5D8pI
2. https://youtu.be/c8_avX9miag

WEB RESOURCES:

1. https://www.abdn.ac.uk/study/postgraduate-taught/degree-programmes/1197/msc-international-human-resource-
2. https://books.google.com/books/about/International_Human_Resource_Management.html?id=lCxUDwAAQBAJ
3. https://www.beds.ac.uk/howtoapply/courses/postgraduate/next-year/international-human-resource-management/

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22MG101064	**INDIAN ECONOMY**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: The course focuses on major policy regimes of government and also try to resolve problems from agriculture, industry and service sector of India. Students will understand the change in policy focus from central planning to process of market integration of the Indian Economy with other markets in the world

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Understand the basics of the Indian economy and its importance.

CO2. Understand the economic environment of the nation

CO3. Evaluate various planning approaches toward Indian economic growth.

CO4. Analyze the resources and their allocation for economic development.

CO5. Understand the basics of economic policies and their importance in nation-building.

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	-	-	1	-	-	-	-	-	-	1	1	-	-
CO2	3	1	-	1	1	-	-	-	-	-	-	1	1	-	-
CO3	3	1	1	1	1	-	-	-	-	-	-	-	-	1	-
CO4	3	1	-	1	1	-	-	-	-	-	-	-	1	-	-
CO5	3	1	1	-	1	-	-	-	-	-	-	1	-	1	-
Course Correlation Mapping	**3**	**1**	**1**	**1**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**1**	**1**	**-**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION (10 Periods)

Overview of Indian Economy, Trends towards market economy, problems of underdevelopment – meaning, Main problems, reasons, of underdevelopment.

Module 2: ECONOMY DEVELOPMENT (10 Periods)

Development- Factors and measure, Meaning of Economic development, National income, Per capital income, Quality of life, Capital Formation – Savings, Investment

Module 3: PLANNING (10 Periods)

Planning in India, Meaning, Importance, Main reasons of adopting, planning in India, Objectives of planning, Economic development, moderation, stability, self sufficiency, employment etc, foreign aid, Employment.

Module 4: RESOURCES (10 Periods)

Allocation of Resources, Private and Public Sector, Public Sector – role and growth, Achievements of the public sector, Private Sector – Importance Problems, New foreign Trade Policy.

Module 5: ECONOMIC POLICIES (05 Periods)

Present Economic Policy, Main feature, Globalization, Expansion of Private sector, moremarket orient approach. Public distribution system, Industrial policy – 1948, 1956, 1977, 1980, 1990, 1991, 2000-2001 Industrial Licensing, Monetary and Fiscal Policy.

Total Periods: 45

EXPERIENTIAL LEARNING

1. Conduct a case study on a specific sector (e.g., agriculture, IT, textiles) and analyze its development, challenges, and future prospects.
2. Study a particular state in India and analyze its economic growth, challenges, and policy measures.
3. Critically analyze a recent economic policy implemented by the Indian government and its impact on the economy
4. Research and discuss the implications of the Goods and Services Tax (GST) on the Indian economy

RESOURCES

TEXT BOOKS:

1. Ahluwalia, I. J., & Little, I. M. D. (Eds.). (1998). India's Economic Reforms and Development: Essays for Manmohan Singh. Oxford University Press.
2. Bhagwati, J., & Panagariya, A. (2013). Why Growth Matters: How Economic Growth in India Reduced Poverty and the Lessons for Other Developing Countries. PublicAffairs.
3. Basu, K. (2007). The Oxford Companion to Economics in India. Oxford University Press.

REFERENCE BOOKS:

1. Panagariya, A. (2008). India: The Emerging Giant. Oxford University Press.
2. Dreze, J., & Sen, A. (2013). An Uncertain Glory: India and its Contradictions. Princeton University Press.
3. Kapila, U. (Ed.). (2021). Indian Economy Since Independence (32nd ed.). Academic Foundation.

VIDEO LECTURES:

1. https://www.youtube.com/watch?v=CKZIrC6FFX0
2. https://www.digimat.in/nptel/courses/video/109104184/L01.html

WEB RESOURCES:

1. https://dea.gov.in/sites/default/files/The%20Indian%20Economy%20-%20A%20Review_Jan%202024.pdf
2. https://www.senat.fr/international/anglais/intervention_singh_anglais.pdf
3. https://cdn.visionias.in/value_added_material/85cb6-highlights-of-the-indian-economy--a-review.pdf

PROGRAM ELECTIVE

Course Code	Course Title	L	T	P	S	C
22MG201024	**BUSINESS LAWS**	2	1	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: It is that branch of law that consists of laws relating to trade, industry, and commerce. Business laws also encompass the law governing contracts, sales, agency and employment law, business organizations, property and bailments.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Students will be able to understand different types of Agreements and Contracts, and different modes of discharge of Contracts.

CO2. Learn and adopt the rules regarding the Contract of Sale.

CO3. Understand the concept of partnership deeds and rights and liabilities of partners

CO4. Develop knowledge of laws related to the Company Act

CO5. Understand laws relating to the Consumer and Environmental Protection Act.

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	1	-	1	-	-	-	1	-	-	1	1	-	-
CO2	1	2	1	-	-	1	-	1	-	1	1	2	1	-	-
CO3	1	1	-	1	-	-	1	-	1	-	1	-	1	-	-
CO4	1	-	2	-	-	1	-	-	1	1	1	-	1	-	-
CO5	1	1	-	1	1	2	1	1	1	2	1	-	1	-	-
Course Correlation Mapping	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**-**	**-**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: THE LAW OF CONTRACT ***(09 Periods)***

Agreement and contract; void and void-able contracts; Capacity of parties; free consent; legality of object and consideration; performance and discharge of contracts; indemnity and guarantee; bailment and agency

Module 2: THE LAW RELATING TO SALE OF GOODS ***(09 Periods)***

Sale and agreement to sell, conditions and warranties, transfer of property doctrine of caveat emptor, auction sale; unpaid seller; The Laws Relating to Carriage of Goods – Introduction, carriage of goods by land; carriage by sea; carriage by air

Module 3 THE LAWS RELATING TO PARTNERSHIP ***(09 Periods)***

The Partnership Act; Nature, test and types of partnership; partnership deed, right and liabilities of partners; registration; dissolution

Module 4 THE LAWS RELATING TO COMPANIES ***(09 Periods)***

The Companies – Definition and types of companies, promotion and incorporation; memorandum and articles of association and prospectus; Shares and debentures, borrowing powers, directors, meeting and resolutions, Winding up

Module 5 THE LAWS OF CONSUMER PROTECTION AND ENVIRONMENT PROTECTION ***(09 Periods)***

Consumer Protection Act. , 1986; Environment Protection Act., 1986

Total Periods: 45

EXPERIENTIAL LEARNING

1 Collect a case study on labour contract laws and submit the summary report

2 Demonstrate the types of partnership in a role play and discuss the agenda points

3 Give a PPT presentation on laws relating to companies and their establishments in India Vs USA

RESOURCES

TEXTBOOK:

1. Indrejeet Dagar and Anurag Agnihotri, Business laws: Test and Problems, Sage Texts, 2020.
2. Satish B Mathur, Business Law, Tata McGraw Hill. K.R. Bulchandani, Business Law for Management, Himalya Pulications, 4e.

REFERENCE BOOKS:

1. S.N. Maheshwari and S.K. Maheshwari, A Manual of Business Law, Himalaya
2. Dr. B. K. Singh, Dr. Angad Tiwary, Business Law, SBPD Publications, 2021

VIDEO LECTURES:

1. https://www.youtube.com/watch?v=HrF9D2V8Ixk
2. https://www.youtube.com/watch?v=DhrUKluIkOM

WEB RESOURCES:

1. https://www.mca.gov.in/Ministry/pdf/CompaniesAct2013.pdf
2. https://consumeraffairs.nic.in/acts-and-rules/consumer-protection

PROGRAM ELECTIVE

Course Code	Course Title	L	T	P	S	C
22MG101017	**COST ACCOUNTING**	2	1	-	-	3

Pre-Requisite -
Anti-Requisite -
Co-Requisite -

COURSE DESCRIPTION: This course develops and understanding of Cost accounting and cost classification, preparation of cost sheet and quotations. It also enables the students to understand the preparation of overhead costing, contract costing – process costing and marginal costing.

COURSE OUTCOMES: This course aims at giving in-depth knowledge of Cost Accounting and methods of costing.

CO1 To define the Concept of Cost Accounting
CO2 To recognize the Elements of Cost Accounting
CO3 To identify with the different costing methods used in business
CO4 To evaluate the contract costing
CO5 To discuss the Concept of Standard Costing and analyze the variances

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	1	-	-	-	-	2	-	2	3	2	-
CO2	3	-	-	-	1	-	-	-	-	2	-	2	3	2	-
CO3	3	-	2	-	2	-	-	-	-	2	-	2	3	-	2
CO4	3	1	2	-	2	-	-	-	-	2	-	2	3	-	2
CO5	3	-	2	-	2	-	-	-	-	2	1	2	3	-	2
Course Correlation Mapping	**3**	**1**	**2**	**-**	**2**	**-**	**-**	**-**	-	**2**	**1**	**2**	**3**	2	**2**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: INTRODUCTION ***(05 Periods)***

Cost Accounting – Objectives – Scope – Advantages and limitations – Cost Accounting vs. Financial Accounting and Cost Accounting vs. Management Accounting – Concept of Cost – Cost Classification.

Module 2: UNIT COSTING ***(10 Periods)***

Cost Classification – preparation of cost sheet and Quotations.

Module 3: *ELEMENTS OF COST* ***(10 Periods)***

Material Cost – Direct and indirect material cost – Meaning – Need and essentials of requisition for stores – Control –Functions of purchase department – Issue of material for production – Pricing methods (LIFO, FIFO & Weighted Methods of Pricing the material simple cases)
Overheads – Classification – Allocation, apportionment and absorption of overheads. (including problems).

Module 4: OVERHEADS AND METHODS OF COSTING ***(10 Periods)***

Methods of Costing: Job and Contract Costing (Simple Numerical Problems on Contract Costing.)

Module 5: STANDARD COSTING AND VARIANCE ANALYSIS ***(10 Periods)***

Standard costing: Standard Cost and Standard Costing – Types of Standards – Advantages and Limitations of Standard Costing – Steps involved in Standard Costing.

Total Periods:45

EXPERIENTIAL LEARNING

1. Present a case report on Budgeting Challenge: Real-life Scenarios in Cost Accounting
2. Give a seminar on Target Costing Challenge: Setting Profitable Prices in Competitive Markets
3. Conduct a simulation game on "Activity-Based Costing Game: Analyzing Costs for Strategic Decision Making"

RESOURCES

TEXT BOOKS:

1. Jain S.P. Narang, K.L., Agrawal simmi, Cost and Management Accounting, Kalyani Publishers, New Delhi
2. Sharma R.K., Gupta Shashi, Cost and Management Accounting, Kalyani Publishers
3. Maheswari S.N. Advanced Problems and Solutions in Cost Accounting, Sultan Chand & Sons.

REFERENCE BOOKS:

1. Rathnam P.V., Rathanm S costing advanced problems and solutions, Kitab Mahal Distributors.
2. Bhar B.K., Cost accounting methods and problems, Academic Publishers, Kolkata.
3. Pillai R.S.N., and V.Bhagavathi: Cost Accounting, Sultan Chand and Co. Ltd, New Delhi

VIDEO LECTURES:

1. https://www.youtube.com/watch?v=tfErl0bWpRs&list=PLaAhQ2ofZZRBTKhB-Moy11opzd18YAstV
2. https://www.youtube.com/watch?v=Dk63lDcbeU0

WEB RESOURCES:

1. https://icmai.in/upload/Students/Syllabus2016/Inter/Paper-8-New.pdf
2. https://www.icsi.edu/media/webmodules/publications/FULL_BOOK_PP-CMA-2017-JULY_4.pdf
3. https://static.careers360.mobi/media/uploads/froala_editor/files/Introduction-to-Cost-and-Management-Accounting.pdf

PROGRAM ELECTIVE

Course Code	Course Title	L	T	P	S	C
22MG101033	**ORGANISATIONAL BEHAVIOUR**	2	1	-	-	3

Pre-Requisite

Anti-Requisite

Co-Requisite -

COURSE DESCRIPTION: This course enables the students to know the principles in an organization, the system and process of effective controlling in the organization.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Interpret the scope of organizational behavior and its significance.
CO2. Understand the managerial strategies in achieving the organizational goals of an organization
CO3. Demonstrate the impact of motivation and leadership in group dynamics.
CO4. Solve organizational conflicts through negotiation and team building.
CO5. Improve the results – performance outcome through human behavior and organizational behaviour can aid them in their purist of the goals.

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	-	-	-	2	-	2	-	2	-	2	2	1	1
CO2	1	-	2	1	-	2	-	-	-	-	-	2	2	2	3
CO3	2	-	2	-	1	-	-	-	-	2	-	2	2	2	2
CO4	1	2	-	1	-	-	-	-	-	2	-	2	2	2	2
CO5	1	2	1	-	-	-	-	-	-	2	2	2	2	2	2
Course Correlation Mapping	**2**	**2**	**2**	**3**	**2**	**2**		**2**		**2**	**2**	**2**	**2**	**2**	**2**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION ***(09 Periods)***

Nature and scope – Linkages with other social sciences- Individual roles and organizational goals – perspectives of human behavior - Perception– perceptualprocess

Module 2: LEARNING ***(09 Periods)***

Learning - Learning Process- Theories- (Pavlov, Skinner and Thorndike) - Personality and Individual Differences - Determinants of Personality - Values, Attitudes and Beliefs .

Module 3: MOTIVATION AND LEADERSHIP ***(09 Periods)***

Definition and nature of motivation, Theories of Motivation (Maslow, Alderfer) - Leadership –Traits-Styles –Leadership skills– Challenges to leaders– Groups – stages formation of groups – Group Dynamics – Collaborative bargaining Processes in Work Groups - Johari -Window theory.

Module 4: ORGANIZATIONAL CONFLICTS ***(09 Periods)***

causes and consequences-conflict and Negotiation Team Building, Conflict Resolution in Groups and problem solving Techniques Stress, types of stress causative factors of stress in organizations, preventive measures

Module 5: ORGANIZATIONAL COMMUNICATION ***(09 Periods)***

Communication, types and process, importance and barriers – Organizational change - change process - resistance to change – Organizational development and OD interventions.

Total Periods:45

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Collect the case studies related to recent topics in OB and other Contemporary OB Practices and Present them as a seminar.
2. Different Case Studies Will be Given to students as per the topic that will be collected and evaluated.
3. The case studies will be collected as Assignments and the same will be evaluated.

RESOURCES

TEXT BOOKS:

1. Robbins.P. Stephen (2006), Organizational Behaviour, Pearson Education, New Delhi.
2. Luthans Fred (1998), Organizational Behaviour, Tata Mc Graw Hill International Edition, New Delhi
3. K.Aswathappa "Organisational Behaviour-Text, Cases and Games", HimalayaPublishingHouse, New Delhi, 2008.

REFERENCE BOOKS:

1. Steven L Mc Shane, Mary Ann Von Glinow, Radha R Sharma: "Organisational Behaviour",TMH Education, NewDelhi,2008
2. PareekUdai (2007), Understanding Organizational Behaviour, Oxford University Press, New Delhi
3. Jerald Greenberg and Robert.A. Baron, (2009), Organizational Behaviour, PHI learning Private Ltd., New Delhi.

VIDEO LECTURES:

1. https://www.youtube.com/watch?v=Sg64udtQ300&list=PL3Y_p3e-Lne2no2K5cNa8y7ti1uqCjZw8
2. https://www.youtube.com/watch?v=pHg3ZfGk5j0

WEB RESOURCES:

1. https://www.icmrindia.org
2. https://www.citeob.com/ 5 https://www.ob-guide.com

PROGRAM ELECTIVE

Course Code	Course Title	L	T	P	S	C
22MG101031	**BUSINESS DECISION MAKING**	2	1	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE OUTCOMES: After successful completion of the course, students will be able to understanding of various decision-making models and their applications in real-world business scenarios

CO1. Demonstrate an understanding of various decision-making models and their applications in real-world business scenarios.

CO2. Apply quantitative and qualitative decision-making tools to analyse and solve complex business problems effectively.

CO3. Evaluate and manage risks associated with business decisions, including the identification and mitigation of potential risks.

CO4. Recognize and address ethical dilemmas in business decision making by applying ethical frameworks and principles.

CO5. Formulate strategic decisions that align with organizational goals and effectively communicate these decisions to stakeholders.

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	-	-	-	1	-	1	1	-	-	1	1	-	-
CO2	2	3	2	1	-	1	-	1	1	-	-	1	1	-	-
CO3	3	2	2	1	-	1	-	1	1	-	-	1	-	-	-
CO4	3	2	2	1	1	1	-	1	1	-	-	1	-	1	1
CO5	3	1	2	-	1	1	-	1	1	-	-	1	1	-	-
Course Correlation Mapping	**3**	**2**	**2**	**1**	**1**	**1**	**-**	**1**	**1**	**-**	**-**	**1**	**1**	**1**	**1**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION TO BUSINESS DECISION MAKING ***(09 Periods)***

The Role of Financial Reporting in Capital Markets, From Business Activities to Financial Statements - Influences of the Accounting System on Information Quality, Accrual Accounting, Accounting Conventions and Standards, Managers' Reporting Strategy, Auditing
From Financial Statements to Business Analysis - Business Strategy Analysis, Accounting Analysis, Financial Analysis, Prospective Analysis.

Module 2: DECISION-MAKING MODELS AND FRAMEWORKS ***(09 Periods)***

Industry Analysis - Degree of Actual and Potential Competition, Bargaining Power in Input and Output Markets
Competitive Strategy Analysis - Sources of Competitive Advantage, Achieving Competitive Advantage, Sustaining Competitive Advantage, Applying Competitive Strategy Analysis
Corporate Strategy Analysis - Sources of Value Creation at the Corporate Level - Applying Corporate Strategy Analysis

Module 3: FUNDAMENTALS OF DECISION MAKING ***(09 Periods)***

Introduction to Business Decision Making: Understanding the importance of decision-making in business, Types of decisions in a business context, The decision-making process: Steps and stages.
Decision-Making Models and Tools: Rational decision-making model, SWOT analysis anddecision Trees.

Module 4: DECISION-MAKING TECHNIQUES ***(09 Periods)***

Financial Decisions-making techniques: payback Period, NPV and IRR.
Quantitative Decision Making Techniques: Cost-benefit analysis, Linear programming and Statistical decision-making.
Computerised Decision- making techniques: Introduction to decision support systems (DSS) Using data analytics and AI for decision support, Benefits and challenges of DSS.

Module 5: DECISION-MAKING IN CRISIS AND UNCERTAINTY ***(09 Periods)***

Decision-making during crises and emergencies, Adaptive decision-making, Scenario analysis in crisis management, Sustainability in business decisions, Encouraging innovation through decision-making, Measuring the impact of sustainable decisions

Total Periods:45

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Class participation and engagement
2. Individual and group assignments
3. Quizzes and tests
4. Case study analysis

RESOURCES

TEXT BOOKS:

1. "Business Decision Making" by John Adair, Publisher: Kogan Page India
2. "The Art of Decision Making" by Joseph Bikart

REFERENCE BOOKS:

1. "Strategic Management: Text and Cases" by Azhar Kazmi ,Publisher: McGraw-Hill Education
2. "Data Analysis for Business Decisions" by Frank S. Budnick Publisher: McGraw-Hill Education India
3. "Strategic Management: Concepts and Cases" by Fred R. David Publisher: Pearson Education
4. "Quantitative Techniques for Decision Making" by C. R. Kothari and Vikas Gupta Publisher: PHI Learning
5. "Business Analytics: Data Analysis and Decision Making" by Christian S. Albright, Wayne L. Winston, and Christopher Zappe Publisher: Cengage Learning India

VIDEO LECTURES:

1. https://www.youtube.com/watch?v=raqi4gjMLm8&list=PLnD8JdB5BhfQAqqcyN7fe0posEQX9rvwO
2. https://www.youtube.com/watch?v=mdr1UHuSCGM

WEB RESOURCES:

1. http://196.188.170.250:8080/jspui/bitstream/123456789/225/1/A%20Handbook%20on%20the%20Interaction%20of%20information%2C%20system%20and%20optimization.Pdf
2. https://www.ascdegreecollege.ac.in/wp-content/uploads/2020/12/Business-Statistics- by-Gupta.pdf
3. http://web.uvic.ca/~nkarlson/col11776-1.34.pdf

PROGRAM ELECTIVE

Course Code	Course Title	L	T	P	S	C
22MG101034	**STRATEGIC MANAGEMENT**	2	1	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course enhances students' knowledge on Strategic management is a comprehensive and dynamic field that focuses on the formulation, implementation, and evaluation of strategies to help organizations achieve their long-term objectives and gain a sustainable competitive advantage

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. To understand the Strategic Management Process

CO2. To apply analytical tools for Strategic decision-making

CO3. To formulate effective Business strategies

CO4. To implement and align strategies within the organizations

CO5. To evaluate and adapt Strategies in dynamic environments

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	3	-	1	2	-	3	2	1	3	-	2	-	-
CO2	-	3	-	-	3	2	-	2	-	-	-	-	3	-	-
CO3	-	3	3	2	2	2	-	-	3	-	-	-	1	3	-
CO4	-	-	-	-	-	2	2	2	3	2	3	3	-	2	3
CO5	1	1	-	1	2	-	2	1	2	3	3	3	-	1	3
Course Correlation Mapping	**2**	**2**	**3**	**2**	**2**	**2**	**2**	**2**	2	**2**	**3**	**3**	**2**	**2**	**3**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION TO STRATEGIC MANAGEMENT ***(09 Periods)***

Introduction- Definition, Strategic Management process –Developing a strategic vision, Mission, Objectives, Policies – Factors that shape a company's strategy – Environmental Scanning -Concepts of Core Competence.

Module 2: STRATEGIC ANALYSIS AND CHOICE ***(09 Periods)***

Strategic Analysis and Choice: Tools and techniques- Porter's Five Force Model, BCG Matrix, GE Model, SWOT Analysis and TOWS Matrix,. Market Life Cycle Model - and the Experience Curve

Module 3: STRATEGY FORMULATION ***(09 Periods)***

Strategy Formulation: Formulation of strategy at corporate, business and functional levels. Strategy Alternatives:- Stability Strategy, Growth Strategy, Retrenchment Strategy, and Combination Strategy

Module 4: STRATEGY IMPLEMENTATION ***(09 Periods)***

Types of Strategies: Offensive strategy, Defensive strategy, vertical integration, horizontal strategy; Tailoring strategy to fit specific industry and company situations, – Planningsystems for implementation

Module 5: STRATEGY EVALUATION AND CONTROL ***(09 Periods)***

Establishing strategic controls - Role of the strategist - benchmarking to evaluate performance - strategic information systems – Guidelines for proper control- Strategic surveillance -strategic audit

Total Periods: 45

EXPERIENTIAL LEARNING

1. Prepare a brief report of SWOT analysis of any company.
2. Prepare a case study analysis for class room presentation.

REFERENCES

TEXTBOOKS:

1 P. SubbaRao, Strategic Management, Himalaya,2010

2 Azar Kazmi, Strategic Management and Business Policy, Tata McGraw Hill Education, 2009

REFERENCE BOOKS:

1 V.S.P. Rao, Strategic Management – Text and Cases, Excel books,2009

2 Fred R. David, Strategic Management A competitive approach Concepts and Cases , Pearson, 16th edition,2019

VIDEO LECTURES:

1. https://youtu.be/ZmRK9wc3hjI?si=uxWxBM2TAyzNfGuJ.

2 https://youtu.be/d2GoZDOXzzw?si=-Ax6n42txJ7cFwwi

WEB RESOURCES:

1 https://study.sagepub.com/lynch9e

2 https://str.aom.org/teaching/all-levels

PROGRAM ELECTIVE

Course Code	Course Title	L	T	P	S	C
22MG101036	**LEADERSHIP MANAGEMENT**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: The aim the course is to develop a knowledge on the conditions, techniques, and activities which facilitate the development of leaders and leadership

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Recognize the implications of leadership style and its impact on team and organization performance

CO2. Identify and critically assess assumptions that influence decisions and actions on management, leadership, teamwork and relationship building

CO3. Evaluate your leadership capacity using an action learning approach to development

CO4. To increased knowledge and skills to design and change to contribute to working environments in which everyone is able to contribute to organizational learning and success.

CO5. To strengthen his/her leadership skills like interpersonal skills, team development, conflict management, communication and change skills.

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	-	1	-	1	1	-	-	1	1	-	-
CO2	3	1	1	-	-	1	-	1	1	-	-	1	1	-	-
CO3	3	1	1	-	-	1	-	1	1	-	-	1	-	1	-
CO4	3	1	1	-	-	1	-	1	1	-	-	1	1	-	-
CO5	3	1	1	1	-	1	-	1	1	-	-	1	1	-	-
Course Correlation Mapping	**3**	**1**	**1**	**1**	**-**	**1**	**-**	**1**	**1**	**-**	**-**	**1**	**1**	**1**	**-**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION TO LEADERSHIP MANAGEMENT ***(09 Periods)***

Introduction to Leadership: Importance of leadership, Roles of a Leader, Overview of Organizational Leadership, Defining an Organization, Organizational Leadership, Differences between leadership and management in organizations.

Module 2: LEADERSHIP THEORIES ***(09 Periods)***

Theories of Leadership, Leadership Traits, Leadership Skills, Leadership Styles – Leadership Traits and Ethics

Module 3: LEADERSHIP BEHAVIOR AND MOTIVATION ***(09 Periods)***

Leadership Behavior, Process Theories: Reinforcement Theory, Normative leadership theory, and Maslow Theory

Module 4: LEADING WITH EFFECTIVE COMMUNICATION ***(09 Periods)***

Communication Process, Barriers to Effective Communication, Nonverbal Communication and Types, Ethical Communication

Module 5: LEADING HIGH-PERFORMANCE TEAMS ***(09 Periods)***

Difference Between —Group and —Team, Stages of Team Development, Resolving Conflict and Negotiation, Conflict Resolution Mechanism

Total Periods:45

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Each class participant will be assigned to a leadership development group (LDG) with five other people.
2. Then discuss the kind of support network you plan to establish in the future and discover your authentic leadership.
3. The case studies will be collected as Assignments and the same will be evaluated.

RESOURCES

TEXT BOOKS:

1. Bennis, W. (1994). On becoming a leader. (Rev. ed). Reading, MA: Perseus Books
2. Bryman, A. (1996). Leadership in organizations. In Clegg S. R., Hardy, C. and Nord, W. R. (Eds). Handbook of Organization Studies, pp.276-292. London: Sage.

REFERENCE BOOKS:

1 French, J. R. P. Jr. and Raven, B. (1962). The bases of social power. In D. Cartwright (Ed), Group Dynamics: Research and Theory (pp. 259-269). New York: Harper and Row

2. Hersey, P. and Blanchard, P. (1969). The life cycle theory of leadership. Training and Development Journal.
3. Hersey, P. and Blanchard, P. (1969). The life cycle theory of leadership.

VIDEO LECTURES:

1. https://hbsp.harvard.edu/cases/LTB
2. https://open.umn.edu/opentextbooks/textbooks/LSTB

WEB RESOURCES:

1. https://kpmg.com/in/en/home/services/learning-academy/course-LeadershipManagement-professionals-training.html
2. https://www.citehr.com/ 5 https://www.hr-guide.com
3. https://www.icmrindia.org

PROGRAM ELECTIVE

Course Code	Course Title	L	T	P	S	C
22MG101039	**BUSINESS RESEARCH**	3	-	-	-	3

Pre-Requisite

Anti-Requisite

Co-Requisite

COURSE DESCRIPTION: The course gives an overview of the research process including research problem definition, research design, data collection, data analysis, writing of reports, and ethical issues involved. This course is also meant to be a foundation for the Business Research Projects that the students are expected to do in their 3rd year of management studies.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Get the foundational knowledge about business research.

CO2. develop an understanding of the basic framework of the research process

CO3. Understand the process of sampling and its methods applicable in various scenarios.

CO4. Design a survey measurement scale and questionnaire for research.

CO5. Develop a knowledge of data sources and report writing.

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes										Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1	1	1	2	1	-	-	-	-	1	-	-	1	-
CO2	1	1	1	1	-	1	-	1	-	1	-	-	1
CO3	1	1	1	-	-	-	1	-	1	1	1	-	1
CO4	1	2	2	1	-	2	-	1	-	-	1	-	-
CO5	2	1	1	1	2	1	-	-	-	-	1	-	-
Course Correlation Mapping	**1**	**1**	**1**	**1**	**2**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION TO BUSINESS RESEARCH ***(09 Periods)***

Definition-Types of Business Research. Scientific Investigation, Technology and Business Research: Information needs of Business - Role of Business Research in Managerial Decisions.

Module 2: RESEARCH PROCESS ***(09 Periods)***

Problem Identification: Broad Problem Area-Preliminary Data Gathering. Literature Survey - Hypothesis Development - Statement of Hypothesis- Procedure for Testing of Hypothesis

Module 3: SAMPLING ***(09 Periods)***

Sampling meaning, enumeration vs. sampling, probability and non-probability sampling, sampling techniques, sample size determination, simple problems

Module 4: SCALE MEASUREMENTS ***(09 Periods)***

Measurement of Variables- Operational Definitions and Scales-Nominal and Ordinal Scales- Rating Scales- Ranking Scales- Reliability and Validity

Module 5: DATA SOURCES AND SURVEY ***(09 Periods)***

Primary and Secondary Sources of Data - Data Collection Methods- - Observational Surveys: Questionnaire Construction: Organizing Questions- Structured and Unstructured Questionnaires, Research Reports-Components- Guidelines for Preparing a Good Research report - Oral Presentation

Total Periods:45

EXPERIENTIAL LEARNING

1. Select any case study related to sample size determination and submit an assignment
2. For each of the following situations, decide whether the research should be exploratory descriptive or casual. Elaborate briefly on the reasons for your choice.
   a) Identify target market demographics for a shopping center.
   b) Establishing the functional relationship between advertising and sales.
   c) Investigate consumer reactions to the idea of new laundry detergent that prevents shrinkage in hot water.
   d) Estimate sales potential for a new lathe machine.
3. Prepare a questionnaire on customer OTT buying behavior and collect a sample of 100 observations.

RESOURCES

TEXT BOOKS:

1. Research Methodology – methods & Techniques, C.R. Kothari, Vishwa prakashan.
2. Research Methods for Business–A Skill Building Approach, Uma Sekaran, John Wiley & Sons (Asia) Pte.Ltd, Singapore.
3. Research Methodology(Concepts and cases) Deepak Chawla Neena Sondhi-Vikas publishing
4. Business Research Methods 8e, Zikmund- Babin-Carr- Adhikari-Griffin-Cengage learning

REFERENCE BOOKS:

1. Business Research Methods, Donald R Cooper and Pamela S Schindler,9/e,Tata McGrawHill Publishing Company Limited.
2. Methodology and Techniques of Social Science Research, Wilkinson & Bhandarkar, Himalaya Publishing House
3. Research Methodology in Management, Michael, V.P., Himalaya Publishing House.
4. Research Methodology, Dipak Kumar. Bhattacharya, Excel Books.

VIDEO LECTURES:

1. https://onlinecourses.swayam2.ac.in/cec20_mg14/preview
2. https://onlinecourses.nptel.ac.in/noc22_ge08/preview
3. https://www.youtube.com/watch?v=FkhFSSL-AZY

WEB RESOURCES:

1. https://study.sagepub.com/sites/default/files/Wilson%202014%20-%20CH1.pdf
2. https://egyankosh.ac.in/bitstream/123456789/12267/1/Unit-1.pdf

PROGRAM ELECTIVE

Course Code	Course Title	L	T	P	S	C
22MG101021	SECURITY ANALYSIS AND PORTFOLIO MANAGEMENT	3	1	-	-	4

Pre-Requisite -
Anti-Requisite -
Co-Requisite -

COURSE DESCRIPTION: This course develops an understanding of what is security and Portfolio Management and Phases of Portfolio Management. Financial Markets - Investment – Securities Market. Bond Evaluation - Risk and Return Analysis of stocks. Fundamental Analysis and Technical Analysis. Portfolio Risk and return and portfolio selection – Portfolio Evaluation and Revision.

COURSE OUTCOMES: After successful completion of the course, students will be able to:
CO1 understand basic Knowledge on Financial Markets and various investment avenues.
CO2 examine bond evaluation process
CO3 Analyze the stock market by Fundamental Analysis and Technical Analysis
CO4 Avaluate the Portfolio Selection
CO5 Appraise the evaluation of mutual funds and Revision

CO-PO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	1	-	-	-	-	2	-	2	3	2	-
CO2	3	-	-	-	1	-	-	-	-	2	-	2	3	2	-
CO3	3	-	2	-	2	-	-	-	-	2	-	2	3	-	2
CO4	3	1	2	-	2	-	-	-	-	2	-	2	3	-	2
CO5	3	-	2	-	2	-	-	-	-	2	1	2	3	-	2
Course Correlation Mapping	**3**	**1**	**2**	**-**	**2**	**-**	**-**	**-**	-	**2**	**1**	**2**	**3**	2	**2**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: INTRODUCTION ***(05 Periods)***

Investment: Meaning – Features - Speculation and Gambling – Financial Markets – Money Market – Capital Market - Investment objectives – Investment Process – Investment avenues – Real Assets – Financial Assets – GDR – ADR- IDR.

Module 2: RISK AND RETURN AND BOND EVALUATION ***(10 Periods)***

Risk – Return Framework: Meaning of Risk and Return – Measurement of Return – Risk Systematic and Unsystematic Risk – Risk Measurement (Theory and Case Studies)
Bond Characteristics, Prices, Yields, Yield Curve – Determinants of interest Rates, Interest Rate Risk – Duration of the Bond and Immunization (Theory and Case Studies)

Module 3: FUNDAMENTAL AND TECHNICAL ANALYSIS ***(10 Periods)***

Fundamental Analysis: Meaning – Importance – Objectives – Economic Analysis – Industry Analysis – Company Analysis. Technical Analysis – Meaning – Dow Theory – Gaps - Difference between fundamental analysis and technical analysis. (Theory and Case Studies)

Module 4: PORTFOLIO ANALYSIS ***(10 Periods)***

Portfolio – Approaches in construction of portfolio – determination – portfolio risk and return analysis – Reduction of portfolio Risk Through Diversification. Portfolio with more than two Assets. selection – Markowitz Model – simple diversification – The Markowitz Model – Efficient Frontier – Capital Asset Pricing Model – CAPM theory – Capital Market Line – Security Market Line (Theory and Case Studies).

Module 5: PERFORMANCE EVALUATION ***(10 Periods)***

Mutual Funds – Meaning – Structure of mutual funds – Classification of Mutual Funds – Exchange traded funds – Evaluation of portfolios – Sharpe – Treynor and Jensen. Portfolio Revision (Theory and Case Studies).

Total Periods:45

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Present a case summary report on Bond evaluation of a bank.
2. Present a TED talk on trends in security analysis and portfolio management
3. Write an assignment on governing body role in security analysis and portfolio management

RESOURCES

TEXTBOOKS:

1. Bodie, Kane, Marcus, Mohanty. Investments. McGraw Hill, 2019
2. Kannadhasan. Fixed Income Securities, Valuation and Risk Management. 2022. Cengage

REFERENCE BOOKS:

1. Chandra Prasanna, Investment Analysis and Portfolio Management, Tata McGrwahill Publishing company Ltd.,
2. Punithavathy Pandian, Security Analysis and Portfolio Management, Vikas Publishing House Pvt. Ltd.,
3. Kevin, S., Security Analysis and Portfolio Management, PHI Publishers.

VIDEO LECTURES:

1. https://www.youtube.com/watch?v=ope5Y3Mrsaw&list=PLEC357A2BC142F57E
2. https://www.youtube.com/watch?v=tzasFmP1CpA

WEB RESOURCES:

1. https://kanchiuniv.ac.in/coursematerials/IM%20UNIT-%20I%20(2).pdf
2. https://josephscollege.ac.in/lms/Uploads/pdf/material/IAPM.pdf
3. https://backup.pondiuni.edu.in/sites/default/files/investment%26portfolio-260214.pdf

PROGRAM ELECTIVE

Course Code	Course Title	L	T	P	S	C
22MG101025	**FINANCIAL DERIVATIVES**	3	1	-	-	4

Pre-Requisite -
Anti-Requisite -
Co-Requisite -

COURSE DESCRIPTION: This course develops an understanding of what is derivative, and the main structure of the derivatives market, types of derivative Products and derivatives market trading process. Forwards, Futures, Options and Swaps their futures and their calculations – pay offs etc., Block Schole and Binomial model of options measurements.

COURSE OUTCOMES: This course aims at giving in-depth knowledge of Financial Derivatives and its products Forwards – Futures – Options and Swaps.

CO1 To understand basic Knowledge of Financial Derivatives
CO2 To examine the Futures and its investment
CO3 To Analyze the options
CO4 To evaluate the options strategies
CO5 To know the Swaps

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	1	-	-	-	-	2	-	2	3	2	-
CO2	3	-	-	-	1	-	-	-	-	2	-	2	3	2	-
CO3	3	-	2	-	2	-	-	-	-	2	-	2	3	-	2
CO4	3	1	2	-	2	-	-	-	-	2	-	2	3	-	2
CO5	3	-	2	-	2	-	-	-	-	2	1	2	3	-	2
Course Correlation Mapping	**3**	**1**	**2**	**-**	**2**	**-**	**-**	**-**	-	**2**	**1**	**2**	**3**	2	**2**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: INTRODUCTION ***(05 Periods)***

Derivatives: Introduction – Evolution – Structure of Derivatives Market –Types of Derivatives – Underlying assets – Participants in Derivatives markets – Spot markets –Derivatives Trading process and technical terminologies used in derivatives trading.

Module 2: FORWARDS AND FUTURES ***(10 Periods)***

Forwards and Futures – Meaning – Evolution of Forwards and futures - Difference between forwards futures contracts – terminologies in futures contract – Futures Trading Process – Mode of Settlement – Role of clearing house – Types of Traders – Types of Orders – Marking – to Market – initial margin – maintenance margin - Pricing of Forwards and Futures – Pay offs of Forwards and Futures - Hedging strategies (Theory and Cases).

Module 3: OPTIONS PRICING ***(10 Periods)***

Options Pricing: Options – Salient features of Options - Types of Options – Moneys of Options – Pay off function of Call and Put Options – Valuation of Pricing – Black - Scholes Model – Assumptions – Option pricing on dividend paying stocks – Binomial Model – One period – Two period – Options strategies (Theory and Cases).

Module 4: OPTIONS STRATEGIES ***(05 Periods)***

Options strategies – Bullish – Bearish – Non-directional strategies – Straddle – Strangle – Strip –Put – Call Parity.

Module 5: SWAPS ***(10 Periods)***

Swaps: Meaning – Features of SWAPS – Terminologies of swaps - Types of SWAPS – Interest Rate Swap – Currency Swap – Equity Swap – Commodity Swaps - Facilitators of Swaps – Mechanics of interest rate swaps – Valuation of interest rate swaps – Valuation of Currency Swaps (Theory and Cases).

Total Periods:45

EXPERIENTIAL LEARNING

1. Choose a specific type of financial derivative (e.g., options, futures, swaps) and write a research paper discussing its characteristics, pricing models, applications, and risks.
2. Analyze a case study where derivatives were used effectively or ineffectively in managing financial risk.
3. Develop a spreadsheet model to price a specific type of derivative (e.g., a European call option, an interest rate swap). Explain the assumptions and methodology used in your model.

RESOURCES

TEXTBOOKS:

1. John C. Hull, Sankarshan Basu: Options, Futures and Other Derivatives.
2. Rajiv Srivastava. Derivatives and Risk Management. OUP
3. Dhamija, An introduction to derivatives and Risk Management, Chance,

REFERENCE BOOKS:

1. John C. Hull, Sankarshan Basu: Options, Futures and Other Derivatives.
2. Rajiv Srivastava. Derivatives and Risk Management. OUP
3. Kevin, S., "Commodity and Financial Derivatives" PHI publishers,

VIDEO LECTURES:

1. https://www.youtube.com/playlist?list=PLLy_2iUCG87CTB2vv9njHaJbmQoa9S5gK
2. https://archive.nptel.ac.in/courses/110/107/110107128/

WEB RESOURCES:

1. https://ebooks.lpude.in/management/mba/term_4/DMGT513_DERIVATIVES_AND_RISK_MANAGEMENT.pdf
2. https://www.imf.org/external/bopage/pdf/98-1-20.pdf
3. https://www.iare.ac.in/sites/default/files/lecture_notes/IARE_FD_NOTES.pdf

PROGRAM ELECTIVE

Course Code	Course Title	L	T	P	S	C
22MG101030	**MERGERS AND ACQUISITIONS**	3	1	-	-	4

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: To provide a concrete understanding of Mergers & Acquisitions To familiarize the concepts to the students with the current issues in M&A To expose the students about the process and methods of M&A, measures to evaluate the performance of M&A.

COURSE OUTCOMES: After completion of the course, the students will be able to:

CO1 Demonstrate uses of Mergers and Acquisitions for decision-making.

CO2 Pursue a career in the field of corporate restructuring, Investment analysis.

CO3 Gain experiential learning through well-structured internships and live-projects.

CO4 Analyze and learn about M& A Applications and its impact on firm.

CO5 Understand different theories of valuation of mergers and acquisitions.

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	1	-	-	-	-	2	-	2	3	2	-
CO2	3	-	-	-	1	-	-	-	-	2	-	2	3	2	-
CO3	3	-	2	-	2	-	-	-	-	2	-	2	3	-	2
CO4	3	1	2	-	2	-	-	-	-	2	-	2	3	-	2
CO5	3	-	2	-	2	-	-	-	-	2	1	2	3	-	2
Course Correlation Mapping	**3**	**1**	**2**	**-**	**2**	**-**	**-**	**-**	-	**2**	**1**	**2**	**3**	2	**2**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT:

Module 1: BUSINESS ALLIANCES ***(05 Periods)***

Business Alliances: Introduction - Various Forms of Business Alliances – types of mergers - Strategic Choice of Type of Business Alliance - Who should go for Merger and Acquisition and Take-over - Defining and Selecting Target - Pricing of Mergers

Module 2: MERGERS ***(10 Periods)***

Mergers: Characteristics of Merger, Divestitures, sell off, spin off, Equity carveout, Going private, demergers and Leveraged buyouts. Calculating share exchange ratio.

Module 3: ACQUISITIONS ***(10 Periods)***

Acquisitions: Negotiation/Approach for Merger, Acquisition and Take-over - Contracting - Implementation of Merger and Acquisition - Managing Post-Merger Issues - Legalities Involved in Merger, Acquisition and Take-over - Ethical Issues of Merger and Take-over – Defensive tactics for mergers.

Module 4: ISSUES ***(10 Periods)***

Issues: Reasons for Mergers - Accounting for Mergers - Financing the Mergers and Takeovers - Corporate Restructuring - Divestment and Abandonment.

Module 5: THEORIES ***(10 Periods)***

Theories: Theories of Merger – tax aspects in mergers & acquisitions – Different approaches in the valuation of mergers and acquisitions – Cross border mergers – Funding options for mergers.

Total Periods:45

EXPERIENTIAL LEARNING:

LIST OF EXPERIMENTS:

1. Choose a prominent merger or acquisition from recent years (e.g., Disney's acquisition of Fox, Amazon's acquisition of Whole Foods) and analyze the motivations behind the deal
2. Select two companies that have recently merged and conduct a financial analysis comparing their performance before and after the merger.
3. Analyze the impact of mergers and acquisitions on different stakeholders, including shareholders, employees, customers, suppliers, and the broader community.

RESOURCES

TEXT BOOKS:

1. Patrick A.Gaughan, Mergers and Acquisitions Corporate Restructuring, Wiley Publishers, 6th Edition, 2015.
2. Rabi Narayan Kar/Minakshi, Mergers Acquisitions & Corporate Restructuring - Strategies & Practices. Paperback.
3. Donald M. DePamphilis, Mergers, Acquisitions, and Other Restructuring Activities: An Integrated Approach to Process, Tools, Cases, and Solutions. Academic Press, 6thEdition, 2011.

REFERENCE BOOKS:

1. Karn Gupta, Global Corporate Restructuring & Mergers & Acquisitions in India: Corporate Restructuring: Global Analytics & Indian Position. Lap Lambert Academic Publishing, 2013.
2. Donald M. DePamphilis, Mergers, Acquisitions, and Other Restructuring Activities. Academic Press, 5th Edition, 2010.
3. Sheeba Kapil, Kanwal N. Kapil. Mergers and Acquisitions: Valuation, Leveraged Buyouts and Financing (WIND). Paperback WILEY, 2015.

VIDEO LECTURES:

1. https://youtu.be/NtXV3YGr988
2. https://youtu.be/WBHzCDgEtVQ
3. https://youtu.be/p0Bx6UtherQ
4. https://youtu.be/9zn2lWCwVOg

WEB RESOURCES:

1. https://www.investopedia.com/terms/m/mergersandacquisitions.asp
2. https://www.nishithdesai.com/fileadmin/user_upload/pdfs/Research%20Papers/Mergers___Acquisitions_in_India.pdf
3. https://corporatefinanceinstitute.com/resources/valuation/mergers-acquisitions-ma/
4. https://www.wallstreetmojo.com/top-best-mergers-and-acquisitions-ma-books/

PROGRAM ELECTIVE

Course Code	Course Title	L	T	P	S	C
22MG101048	**CONSUMER BEHAVIOUR**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course enhances students' knowledge as regards to develop an understanding of underlying concepts and issues in Consumer behaviour in marketing

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Understand the need of consumer behavioural study, differences between organizational buying behaviour and consumer buying behaviour

CO2. Define Social Class and its impact on consumer decisions

CO3. Analyze the role of motivation in consumption behaviour

CO4. Study the role of marketing communication in consumer behaviour

CO5. Understand the consumer behaviour in the new millennium

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-		-	-	-	-	-	1	-	1	1	-	-
CO2	3	1	-	1	-	1	-	1	-	-	-	1	1	-	-
CO3	3	1	-	1	2	-	-	1	-	-	-	1	1	-	-
CO4	3	1	2	1	1	-	-	-	1	1	-	-	-	1	-
CO5	3	1	-	1	1	-	-	-	-	1	-	1	-	-	1
Course Correlation Mapping	**3**	**1**	**2**	**1**	**1**	**1**	**-**	**1**	**1**	**1**	**-**	**1**	**1**	**1**	**1**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION TO CONSUMER BEHAVIOUR ***(09 Periods)***

Consumer behaviour – Meaning, Definition – Scope and Application of consumer behaviour – Consumer Involvement – Nature and Characteristics of Indian Consumers –Introduction to Industrial Buying behaviour.

Module 2: ENVIRONMENTAL INFLUENCES ON CONSUMER BEHAVIOUR ***(09 Periods)***

Environmental influences on consumer behaviour – cultural influences – social class, reference group and family influence – opinion leadership – marketing implication.

Module 3: CONSUMER BUYING BEHAVIOUR ***(09 Periods)***

Consumer buying behaviour - Marketing implications - Consumer perceptions – Learning and attitudes - Motivation and personality – Psychographics - Values and Lifestyles.

Module 4: MARKETING COMMUNICATION ***(09 Periods)***

Strategic marketing applications - Market segmentation strategies - Positioning strategies-- Marketing Communication -Communications strategy

Module 5: GLOBAL CONSUMER BEHAVIOUR ***(09 Periods)***

The Global consumer behaviour and online buying behaviour – Consumer buying habits and perceptions – Issues of privacy and ethics.

Total Periods: 45

EXPERIENTIAL LEARNING

1 Storytelling of Customer experiences in the Purchase Process of FMCG

2 Field Trip/ Outdoor Learning through interaction with Online Marketing Executives

3 Collect the case relating to the online buying behaviour of the consumer

4 Different Case Studies Will be Given to students as per the topic that will be collected and evaluated.

RESOURCES

TEXTBOOKS:

1 Loudon and Della Bitta: Consumer Behaviour: Concepts and Application, Tata Mc-Graw Hill,2010

2 Michael R. Solomon, consumer behaviour, PHI Learning Private Limited, New Delhi, 2011

REFERENCE BOOKS:

1 Paul Green Berg-Customer Relationship Management -Tata McGraw Hill, 2002

2 Barry Berman and Joel R Evans — Retail Management — A Strategic Approach-Prentice Hall of India, Tenth Edition, 2006

3 Gibson G Vedamani — Retail Management — Functional Principles and Practice, Jaico Publishing House, Second Edition, 2004

VIDEO LECTURES:

1. https://onlinecourses.nptel.ac.in/noc20_mg14/preview

2 https://www.udemy.com

WEB RESOURCES:

1 https://www.studocu.com

2 https://www.scribd.com

3 https://www.tutorialsduniya.com

PROGRAM ELECTIVE

Course Code	Course Title	L	T	P	S	C
22MG101035	**RURAL MARKETING**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course deals with Understanding the product life cycle and brand management in the rural market context. Exploring rural retailing strategies and opportunities. Marketing strategies specific to the Indian rural market, including segmentation, competitive strategies, and distribution

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Understand various aspects of rural marketing and develop an insight into rural marketing.

CO2. Identify the challenges and opportunities in the field of rural marketing.

CO3. Analyse concepts and techniques in the area of rural marketing.

CO4. Apply adaptations to the rural marketing mix to meet the needs of rural consumers.

CO5. Understand the concept and methodology for conducting the research in the rural market.

CO-PO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	2	1	-	-	-	-	-	-	-	-	-	-	-
CO2	1	1	2	2	-		2		1			-	-	-	-
CO3	2	2	1	2	1	-	-	1	-	-	2		-	-	-
CO4	3	1	2	2	1	-	-	-	-	-	-	2	-	-	-
CO5	2	2	1	2	1	1	-	-	-	-	-	1	-	-	-
Course Correlation Mapping	**2**	**2**	**2**	**2**	**1**	**1**	**2**	**1**	**1**	**-**	**2**	**-**	-	-	-

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: INTRODUCTION TO RURAL MARKETING ***(09 Periods)***

Definition, Concepts, Nature, Size and scopes of Indian rural marketing, Rural Demand, Buying Characteristics, Rural Market Structure, Demographic, Physical Economic Environment,

Module 2: UNDERSTANDING THE RURAL CONSUMER ***(09 Periods)***

Rural Community in India, Profile of Rural markets, Segmenting the Rural Market, Target and Positioning, Rural Consumer Behavior, Rural Buyer Characteristics, Consumer Buying Decision Process, Factors Affecting Consumer Behavior – Cultural, Social, Technological Economic and Political.

Module 3: MARKETING MIX IN RURAL MARKETING ***(10 Periods)***

Product: Concept and Product Mix Decisions, Pricing Strategy: Objectives, Policies and Strategies, Promotion: Advertising, Sales Promotions,

Module 4: INNOVATION IN RURAL MARKETING ***(09 Periods)***

Significance of innovation in rural markets, The intervention of IT in Rural Markets: Importance and Initiatives, The emergence of Organized retailing in Rural India.

Module 5: FUTURE OF RURAL MARKETING ***(08 Periods)***

Changing Role of Rural Sector in India; Rural Income and Demand, Problems in Marketing of agricultural inputs in Rural India

Total Periods:45

EXPERIENTIAL LEARNING

1. Give a seminar on operation strategy as a competitive tool and submit a report.
2. Generate the idea of a new product and develop a prototype product.
3. Collect any case study of material management related to manufacturing company and present a summary report.

TEXT BOOKS:

1. R V Badi, Rural Marketing, text and cases,2008 excel book
2. U C Mathur, Rural marketing, Text and Cases, 2008, excel books

REFERENCE BOOKS:

1. Raozada Sumesh and Agarwal Vishal (2010): Scope and Challenges in Rural Marketing In India , Excel Books , ISBN 978-81-7466-842-0
2. Krishnama charyulu C.S.G. & Ramakrishnan Lalitha (2011), Rural Marketing Text & Cases, Pearson Education ISBN:978-81-317-3263-2

VIDEO LECTURES:

1. https://www.youtube.com/watch?v=b2-wHE8Cwdw
2. https://www.youtube.com/watch?v=kDomlMHGRrc

WEB RESOURCES:

1. https://ebooks.lpude.in/management/mba/term_4/DMGT509_RURAL_MARKETING.pdf
2. https://epgp.inflibnet.ac.in/epgpdata/uploads/epgp_content/S000032SW/P001729/M021655/ET/1509102407Module-32_e-Text.pdf

PROGRAM ELECTIVE

Course Code	Course Title	L	T	P	S	C
22MG101041	**BRAND MANAGEMENT**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course highlights the basics of contemporary and key brand management skills that are required by management professionals.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1 To understand concept of branding

CO2 To understand the dimensions of brand identity

CO3 To assess the brand positioning and repositioning strategies

CO4 To develop the idea of building Brand in various sectors

CO5 evaluate the different brand promotion methods

CO-PO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	-	1	-	1	1	-	-	1	1	-	-
CO2	3	1	1	-	-	1	-	1	1	-	-	1	1	-	-
CO3	3	1	1	-	-	1	-	1	1	-	-	1	-	1	-
CO4	3	1	1	-	-	1	-	1	1	-	-	1	1	-	-
CO5	3	1	1	1	-	1	-	1	1	-	-	1	1	-	-
Course Correlation Mapping	**3**	**1**	**1**	**1**	**-**	**1**	**-**	**1**	**1**	**-**	**-**	**1**	**1**	**1**	**-**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: Introduction to branding ***(9 Periods)***

Brand – Meaning, Definition, Functions of Brand ,Role of Brand, Concept of branding , Types of Branding, Advantages of Branding ,Significance of branding ,Strategic brand Management Process , Branding challenges and opportunities

Module 2: Brand identity ***(9 Periods)***

Brand Identity: concept, elements ,brand identity prism, benefits of brand identity, brand buiding , Steps involved in Building Brands , Brand loyalty, brand failures, co-brands, store brands

Module 3: Brand Positioning and brand equity ***(9 Periods)***

Brand positioning-Meaning, Brand positioning and repositioning strategies, Brand Equity-Meaning, Sources, , types of brand equity: cost based, price brand and customer-based brand equity, Need for measuring brand equity, Keller's CBBE Model

Module 4: Building brands in different sectors ***(9 Periods)***

Branding in the Industrial sector, Retail Sector, Service sector, Banking Sector and Insurance Sector.

Module 5: Brand Communication & extension ***(9 Periods)***

Advertising and brand building, Brand promotion methods, Brand extension - Different types of brand extension – Factors influencing Decision for extension – Re-branding and re-launching

EXPERIENTIAL LEARNING

1. Pick any brand, identify all its elements and assess their ability to contribute to brand equity according to the choice criteria.
2. Identify any two brands of same category and Evaluate the positioning of each brands, its target market
3. Analyze the impact of celebrities on brand promotion and their successes and failures.

RESOURCES

TEXTBOOKS:

1. Strategic Brand Management: Building, Measuring, and Managing Brand Equity, by Kevin lane Keller;Ambi M. G. Parameswaran ,Fourth edition; Pearson Education India, 2015
2. Product and Brand Management-Tapan K. Panda Paperback: 888 pages Publisher: Oxford University Press; First edition ,January 2016

REFERENCE BOOKS:

1. Product & Brand Management – Text & Cases, Prof.K. Venugopal Rao, Himalaya, 2015
2. Product and brand management by U C Mathur;Publisher: Excel Books (December 2012)
3. David Aaker,Managing BrandEquity,FreePress,2009

VIDEO LECTURES:

https://www.digimat.in/nptel/courses/video/110107161/L10.html

http://www.infocobuild.com/education/audio-video-courses/business-management/MarketingManagement2-IIT-Kanpur/lecture-38.html

Web Resources:

1. https://www.icmrindia.org/
2. https://hbr.org/topic/subject/brand-management
3. https://www.udemy.com/course/brand-management

PROGRAM ELECTIVE

Course Code	Course Title	L	T	P	S	C
22MG101045	**STRESS MANAGEMENT**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: The student can able to understand the nature and consequences of stress and also the impact of stress on work

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Understand personal, environmental, and organizational causes of stress
CO2. Analyze the stress issues related to diverse ethnic populations
CO3. Understand the Behavioural aspects of the stress
CO4. Understand the relationship of stress and Work performance
CO5. Evaluate the strategies of stress management and career counseling

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1	2	1	-	-	-	1	-	-	1	-	1	-	-
CO2	1	1	1	1	-	1	-	1	-	1	-	-	-	1	-
CO3	1	2	1	1	2	1	-	1	-	1	-	1	-	-	1
CO4	1	2	1	1	2	1	1	1	-	1	-	1	1	-	-
CO5	1	1	1	1	2	1	1	1	1	-	1	-	1	1	-
Course Correlation Mapping	**1**	**1**	**1**	**1**	**2**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION TO STRESS MANAGEMENT ***(09 Periods)***

Meaning and nature of stress, Sources of stress (Neuro-endocrinology, personality, environment, intrapersonal and interpersonal sources of stress), Stressful Behaviour and Health Status- somatic and anxiety problems, Theoretical models of Stress

Module 2: COGNITIVE APPRAISAL OF STRESS ***(09 Periods)***

General adaptation to stress; Consequences of stress; Physiological and psychological changes associated with the stress response. Stress and Memory; Stress and Other Cognitive Variables; Stressful environmental conditions on performance.

Module 3: BEHAVIORAL ASPECTS OF STRESS ***(10 Periods)***

Behavioural aspects of Stress: Adaptive and Maladaptive Behaviour; Individual and Cultural Differences: Across the Lifespan; College and Occupational Stress

Module 4: STRESS AND WORK PERFORMANCE ***(09 Periods)***

Role of communication in managing stress and work performance: Emotional regulation and coping; Emotional intelligence and conflict management: Emotional Basis and Stress; Stress and Conflict in Relationships.

Module 5: STRESS AND COPING, ASSESSMENT MANAGEMENT AND COUNSELING TECHNIQUES ***(08 Periods)***

Prevention of stress Challenging Stressful Thinking; Problem Solving; Strategies of Synthesis and Prevention: Resilience and Stress; Optimal functioning; Making changes last; Smallchanges and large rewards.

Total Periods:45

EXPERIENTIAL LEARNING

1. Collect a case study on Work Place Stress and Present a PPT
2. Write an assignment on Stress coping strategies in health care center
3. Discuss a situation wherein emotional stress is involved and submit a report

RESOURCES

TEXT BOOKS:

1. Bramer, L.M. and Shostrom, E.L. (1982). Therapeutic Psychology. Fundamentals of Counseling and Psychotherapy. New Jersey Prentice Hall
2. Barlow, Rapee, and Perini(2014), 10 Steps to Mastering Stress: A Lifestyle Approach, USA
3. Chen, D.D. (2017). Stress Management and Prevention: Applications to Daily Life, Taylor and Francis, 3rd Edition.

REFERENCE BOOKS:

1. Clayton,M, (2011).Brilliant stressmanagement How to manage stress in any situation's 1st edition, Greart Britain Pearson Education
2. Roy,S (2012) Managing stress, Sterling Publication

VIDEO LECTURES:

1 https://onlinecourses.nptel.ac.in/noc19_ge26/preview

2 https://archive.nptel.ac.in/courses/121/105/121105009/

WEB RESOURCES:

1 https://www.uakron.edu/armyrotc/MS1/14.pdf

2 http://www.gov.pe.ca/photos/original/StressManage.pdf

3 https://apps.who.int/iris/bitstream/handle/10665/331901/9789240003910-eng.pdf

PROGRAM ELECTIVE

Course Code	Course Title	L	T	P	S	C
22MG101046	**ORGNAIZATIONAL CHANGE AND DEVELOPMENT**	3	-	-	-	3

Pre-Requisite -
Anti-Requisite -
Co-Requisite -

COURSE DESCRIPTION: This course emphasizes the theories and practices of managing change and the Organizational development Process. This course examines the forces that have been driving organizations to change and development, explore the dimensions of change and the approaches of the developmental process.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Understand organizational change and resistance to change at various levels
CO2. Provide knowledge of the theories and models of organizational changes
CO3. Understand the organizational development and various theories of OD
CO4. Develop intervention strategies
CO5. Develop skills in organizational analysis through different diagnostic approaches

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	-	1	1	-	-	-	-	1	1	1	1	1	-	-
CO2	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-
CO3	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-
CO4	-	1	-	-	2	1	-	-	-	1	1	1	-	-	-
CO5	-	1	2	-	-	-	-	-	1	-	1	1	1	-	-
Course Correlation Mapping	**1**	**1**	**2**	**1**	**2**	**1**	**-**	**-**	**1**	**1**	**1**	**1**	**1**	**-**	**-**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: ORGANIZATION CHANGE ***(09 Periods)***

Introduction to Organization Change: meaning and nature of Organization Change. Forces change, types of organizational change, Resistance to Change at individual and organization level.

Module 2: MODELS OF ORGANIZATIONAL CHANGE ***(09 Periods)***

Lewin Model of Organization change, McKinsey 7 S Model, Kotter's Model, Burke – Litwin Model, Work Redesign Model, ADKAR Model, Bridges' Transition Model and Grief Model

Module 3: ORGANIZATION DEVELOPMENT ***(09 Periods)***

Concept, Nature and Scope of O.D.; Process of O.D.; Underlying Assumptions & Values; Foundations of OD: Action Research, Survey Feedback, Systems Theory, Participation and Empowerment.

Module 4: O.D. INTERVENTIONS ***(09 Periods)***

Team Interventions, Inter–group Interventions, Personal, Interpersonal and group process interventions, Structural Interventions.

Module 5: IMPLEMENTATION AND ASSESSMENT OF O.D ***(09 Periods)***

Implementation – conditions for failure and success in O.D. Efforts. Some key considerations and issues in OD.

Total Periods: 45

EXPERIENTIAL LEARNING

1 Case Studies on Organization change and development, Teamwork.

2 Presentations on various interventions by the students, Quiz after every module.

3 PPT on Different models of Organizational change in different companies.

RESOURCES

TEXTBOOKS:

1 Marketing Management –Philip Kottler, Kevin Lane Keller, 15th Edition, Pearson, 2010.

2 Product & Brand Management – Text & Cases, Prof.K.Venugopal Rao,Himalaya, 2015

REFERENCE BOOKS:

1 Product Management in India, Ramanuj Majumdar, PHI 2010

2 Compendium of Brand Management, Chunawalla. S.A, Himalaya 2014

3 Brand Management – Text & Cases , Harsh V Verma , Excel 2000

VIDEO LECTURES:

1 https://onlinecourses.nptel.ac.in/noc22_mg82/preview

2 https://archive.nptel.ac.in/courses/110/107/110107161/

WEB RESOURCES:

1 https://ebooks.lpude.in/management/mba/term_4/DMGT508_PRODUCT_AND_BRAND_MANAGEMENT.pdf

2 https://www.ddegjust.ac.in/studymaterial/mba/mm-408.pdf

3 https://www.studocu.com/in/document/xim-university/business-management/product-brand-management-notes-for-management-students/25175362

PROGRAM ELECTIVE

Course Code	Course Title	L	T	P	S	C
22MG101047	STRATEGIC HUMAN RESOURCE MANAGEMENT	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: To understand the concept of SHRM Practices in a critical understanding of therelationship between the HR strategy and corporate strategies.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Understand HR as a critical success factor and the need for investing in HR.

CO2. Analyze corporate companies achieve success by ensuring linkage between HR strategy and business strategy.

CO3. Apply various approaches Learnt to evaluating HRM function in his/her organization.

CO4. Understand the importance of strategic human resource Planning and Acquisition.

CO5. Analyze the importance of Work-Life balance and integration

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	1	2	2	2	-	2	-	2	-	2	3	1	1
CO2	1	2	3	2	1	2	-	-	-	-	-	2	2	2	3
CO3	1	-	2	3	1	-	-	-	-	2	-	2	2	2	2
CO4	1	2	2	1	1	-	-	-	-	2	-	2	2	2	2
CO5	1	1	2	1	3	-	-	-	-	2	2	2	2	2	2
Course Correlation Mapping	**2**	**2**	**2**	**3**	**2**	**2**	**-**	**2**	-	**2**	**2**	**2**	**2**	**2**	**2**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION ***(09 Periods)***

Introduction– Definition – Components – HR as Assets – The VRIO Framework – The Investment Perspective of HR – Risks involved in investing in HR – Factors determining the investment orientation

Module 2: EVOLUTION OF SHRM ***(09 Periods)***

Objectives of SHRM – Differences between HRM and SHRM – Link between HR strategy and Business strategy – **Strategic Fit**: A Conceptual Framework – Different Approaches to SHRM: Best Fit Approach, Configuration Approach – Best PracticeApproach – HR Practices Life Cycle.

Module 3: HR ENVIRONMENT: ***(09 Periods)***

Environment Trends and HR challenges – HRM: A changing function – **HR Evaluation**: Definition and overview – Contemporary Approaches to HR Evaluation: Balanced Score Card – HR Score Card – Bench Marking – Business Excellence Model (BEM)

Module 4: HUMAN RESOURCE PLANNING ***(09 Periods)***

Relationship between Business strategy, HR strategy and HRP: Classification by Porter - Classification by Miles and Snow; Significance of HRP – Macro HRP– Micro HRP – Objectives of HRP; **HR Acquisition**: New approaches to Recruitment Advantages and Disadvantages of Internet recruitment – Compensation system in the globalized environment.

Module 5: TRAINING AND DEVELOPMENT ***(09 Periods)***

Significance **–** Special forms - New Developments – **Career Management**: An SHRM Approach – Work-life balance – Work-life Integration – Work-life Initiatives and their benefits – Strategic Approach to Work-life Integration.

Total Periods:45

EXPERIENTIAL LEARNING

1. Give a training needs analysis case and ask the students to find out the training needs
2. Implement various training methods, observe and submit a report on its effectiveness.
3. The case studies will be collected as Assignments and the same will be evaluated.

RESOURCES

TEXT BOOKS:

1. Tanuja Agarwala, Strategic Human Resource Management, 7thImpression, Oxford UniversityPress, NewDelhi,2009.
2. Charles R. Greer: Strategic Human Resource Management – A General Managerial Approach, 2nd Edition, 7th Impression, Pearson Education, NewDelhi,2009.

REFERENCE BOOKS:

1. Kesho Prasad: Strategic Human Resource Management – Text and Cases, McMillan, 2005.
2. Rajeesh Viswanathan: Strategic Human Resource Management,1stEdition,Himalaya Publishing House, Mumbai,2010.
3. Jeffrey A. Mello: Strategic HRM, Thomas Learning, NewDelhi,2002.

VIDEO LECTURES:

1. https://hbsp.harvard.edu/cases/
2. https://open.umn.edu/opentextbooks/textbooks/Strategiec HRM

WEB RESOURCES:

1. https://kpmg.com/in/en/home/services/learning-academy/course-shrm-development-professionals
2. https://www.citehr.com/ 5 https://www.hr-guide.com
3. https://www.icmrindia.org

PROGRAM ELECTIVE

Course Code	Course Title	L	T	P	S	C
22MG101062	**PERFORMANCE MANAGEMENT**	3	-	-	-	3

Pre-Requisite -
Anti-Requisite -
Co-Requisite -

COURSE DESCRIPTION: This course identifies the knowledge and skills needed for effective management of individual and team performance and examines the design of performance management systems that aim to transform organizational objectives into performance outcomes.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. To understand the concept of Performance Management.
CO2. To understand the Communication of Performance Management for enhancing employee performance.
CO3. To acquire the knowledge of Appraisal methods and reward system.
CO4. To determine performance management and development of employees.
CO5. To develop a thorough understanding of relevant performance-related concepts

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	1	1	1	2	-	2	-	2	-	2	3	1	1
CO2	2	2	3	3	2	2	-	-	-	-	-	2	2	2	3
CO3	2	2	2	2	2	-	-	-	-	2	-	2	2	2	2
CO4	2	2	2	2	2	-	-	-	-	2	-	2	2	2	2
CO5	2	2	2	3	2	-	-	-	-	2	2	2	2	2	2
Course Correlation Mapping	**2**	**2**	**2**	**3**	**2**	**2**	**-**	**2**	-	**2**	**2**	**2**	**2**	**2**	**2**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: INTRODUCTION TO PERFORMANCE MANAGEMENT ***(09 Periods)***

Scope and Significance, Advantages of Performance Management, Performance management process, Performance Planning, Performance Appraisal, Performance Mentoring, Performance Management Strategic Planning.

Module2: COMMUNICATION OF PERFORMANCE EXPECTATIONS ***(09 Periods)***

Job Description Defining Performance and Choosing a measurement approach measuring results and Behaviors. Gathering performance Information – Presentation, Information and Taking Corrective action. Metrics- Types of Metrics - Critical Success Factors Indicators.

Module3: PERFORMANCE APPRAISAL METHODS & REWARD SYSTEM ***(09 Periods)***

Traditional methods -Ranking, Grading, paired comparison, critical incidents method. Modern Methods -MBO, 360-degree appraisal, HRA, Assessment Centers. Job evaluation, Techniquesof Job evaluation, salary and wage fixation methods –Fringe benefits -Incentives and bonus systems –Maintenance of pay roll system.

Module4: PERFORMANCE MANAGEMENT AND EMPLOYEE DEVELOPMENT ***(09 Periods)***

Performance Management Skills, performance Management Framework, Employee Assessment system, Role of HR Professionals in Performance management.

Module5: RELEVANT PERFORMANCE RELATED CONCEPTS ***(09 Periods)***

Benchmarking, Six Sigma, Competency Mapping, Balance Scorecard, Coaching, Job Analysis, High Performance Work Teams, Steps for Building High Performance Work Teams.

Total Periods:45

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Present the seminar on different methods of Performance Appraisal.
2. Different Case Studies Will be Given to students as per the topic that will be collected and evaluated.

RESOURCES

TEXT BOOKS:

1. Michael, Armstrong, "*Performance Management*". Kogan Page. London, 1999.
2. Chadha, P. "*Performance Management: It's About Performing – Not Just Appraising*". McMillan India Ltd. 2003.
3. Boyett.J.H and conn H.P "*Maximizing performance Management*", Glenbrdige publishing , oxford, 1995.

REFERENCE BOOKS:

1. Herman Aguinis, "*Performance management*", 3e, Pearson, 2014.
2. Prem Chadha, "*Performance Management*," Macmillan, 2012.
3. Soumendra Narian Bagchi, "*Performance Management*", 2e, Cengage Learning 2013.

VIDEO LECTURES:

1. https://www.youtube.com/watch?v=OFwFznQ2e6w
2. https://youtu.be/REO6glkSdjg

WEB RESOURCES:

1. www.cipd.org › Knowledge hub › Factsheets
2. www.recruiterslineup.com › top-10-online-employee-perf..

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22EC101701	**AI IN HEALTHCARE**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course provides a detailed discussion on Concepts of Artificial Intelligence (AI) in Healthcare; The Present State and Future of AI in Healthcare Specialties; The Role of Major Corporations in AI in Healthcare; Applications of AI in Healthcare.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1 Understand the fundamental concepts of AI in Healthcare sector.

CO2 Analyse the present state and future of AI in Healthcare specialties for different scenarios.

CO3 Apply design concepts and metrics for AI in Healthcare.

CO4 Demonstrate basic concepts and terminologies of future applications of Healthcare in AI.

CO5 Develop AI applications through AI techniques for healthcare

CO-PO Mapping Table

Course Outcomes	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	2	2	2	-	-	-	-	-	-	-	-
CO2	2	3	-	2	-	2	2	-	-	-	-	-
CO3	2	-	2	2	-	-	-	-	-	-	-	-
CO4	2	-	-	-	2	2	-	-	-	-	-	-
CO5	-	-	3	-	-	-	-	-	-	-	-	-
Course Correlation Mapping	2	-	3	2	2	2	2	-	-	-	-	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION TO ARTIFICIAL INTELLIGENCE IN HEALTHCARE ***(08 Periods)***

Introduction to AI in Healthcare, Benefits & Risks, AI in the health sector, AI versus human intelligence, The future of AI in health sector, AI & Neural networks.

Module 2: THE PRESENT STATE & FUTURE OF AI IN HEALTHCARE SPECIALTIES ***(10 Periods)***

Artificial Intelligence in: preventive healthcare, Radiology, Pathology, Surgery,Anesthesiology, Psychiatry, Cardiology, Pharmacy, Dermatology, Dentistry, Orthopedics, Ophthalmology.

Module 3: THE ROLE OF MAJOR CORPORATIONS IN AI IN HEALTHCARE ***(08 Periods)***

IBM Watson, The role of Google & Deep mind in AI in Healthcare, Baidu, Facebook & AI in Healthcare, Microsoft & AI in Healthcare.

Module 4: FUTURE OF HEALTHCARE IN AI ***(10 Periods)***

Evidence-based medicine, personalized medicine, Connected medicine, Virtual Assistants, Remote Monitoring, Medication Adherence, Accessible Diagnostic Tests, Smart Implantables, Digital Health and Therapeutics, Incentivized Wellness, Block chain, Robots, Robot-Assisted Surgery, Exoskeletons, Inpatient Care, Companions, Drones, Smart Places, Smart Homes, Smart Hospitals.

Module 5: APPLICATIONS OF AI IN HEALTHCARE ***(09 Periods)***

Case Study 1: AI for Imaging of Diabetic Foot Concerns and Prioritization of Referral for Improvements in Morbidity and Mortality.

Case Study 2: Outcomes of a Digitally Delivered, Low-Carbohydrate, Type 2 Diabetes Self-Management.

Case Study 3: Delivering A Scalable and Engaging Digital Therapy.

Case Study 4: Improving Course Outcomes for Junior Doctors through the Novel Use of Augmented and Virtual Reality for Epilepsy.

Case Study 5: Big Data, Big Impact, Big Ethics: Diagnosing Disease Risk from Patient Data.

Total Periods: 45

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22CM101701	**BANKING AND INSURANCE**	3	-	-	-	3

Pre-Requisite

Anti-Requisite

Co-Requisite

COURSE DESCRIPTION: Introduction to Banking; Bank-Customer Relationship; Electronic Payment System and Business Models; Introduction to Risk and Insurance; Insurance Overview.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1 Demonstrate the importance of Banking and functions of the Reserve Bank of India and its role in the country's sustainable development.

CO2 Demonstrate the role, relationships, and operations between Banker and Customer.

CO3 Demonstrate the Online Banking system, various types of Electronic Payments, and Business models.

CO4 Demonstrate the concept of risk and principles, functions, and, types of Insurance companies.

CO5 Understand the principles of insurance and its functions.

CO-PO Mapping Table

Course Outcomes	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	-	-	-	-	-	-	2	-	-	-	1
CO2	3	-	-	-	-	-	-	2	-	-	-	1
CO3	3	-	-	-	-	-	-	2	-	-	-	1
CO4	3	-	-	-	-	-	-	2	-	-	1	1
CO5	3	-	-	-	-	-	-	2	-	-	1	1
Course Correlation Mapping	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	-	**-**	**1**	**1**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION TO BANKING ***(09 Periods)***

Meaning - Importance of banking- Functions of banking - Reserve Bank of India: Functions – Role of RBI in sustainable development.

Module 2: BANK-CUSTOMER RELATIONSHIP (09 Periods)

Debtor-creditor relationship, deposit products or services, payment, and collection of cheques. Accounts – Types of accounts, the procedure for opening and closing an account - Loans and Advances- principles of lending.

Module 3 ELECTRONIC PAYMENT SYSTEM&BUSINESS MODELS (09 Periods)

Introduction to Online Banking - types of e-payment system, e-cash, NEFT, RTGS, Credit cards, Electronic Wallet and Debit cards. **Business models**- B2B, B2C, C2C, and B2G.

Module 4 INTRODUCTION TO RISK AND INSURANCE (09 Periods)

Insurance: Definition, Insurance as risk mitigation mechanism, elements of insurance. Concept of risk, risk *Vs* uncertainty.

Module 5 INSURANCE OVERVIEW ***(09 Periods)***

Principles of insurance - insurance types - LIC & GIC – insurance functions, IRDA - Insurance Players in India.

Total Periods: 45

EXPERIENTIAL LEARNING

1. Make a PowerPoint presentation on the banking system in India.
2. Submit a report on the working of insurance companies.
3. Prepare a report on the functions of RBI & IRDA in India.
4. Submit a report on electronic banking facilities provided by Indian banks.

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in course handout.)

RESOURCES

TEXT BOOKS:

1. RanganadhaChary, A.V. and Paul, R.R., *Banking and Financial system*, Kalyani Publisher, New Delhi, 3rdedition, 2016.
2. Sharma, R.K., Shashi K. Gupta and Jagwant Singh, *Banking and Insurance*, Kalyani Publishers, New Delhi, 17th edition, 2014

REFERENCES BOOKS:

1. *Indian Institute of Banking & Finance, Digital Banking*, Taxman Publications Pvt. Ltd., 2016 edition, 2016.
2. Jyotsna Sethi and Nishwan Bhatia, *Elements of Banking and Insurance*, PHI Learning Pvt. Ltd., 2nd edition, 2012.

VIDEO LECTURES:

1. https://www.youtube.com/watch?v=a1_p8zhbAfE
2. https://www.youtube.com/watch?v=bxNw9VB5Y_0

WEB RESOURCES:

1. https://unacademy.com/content/railway-exam/study material/economics/importance-of-banking-sector-in-the-country/
2. https://www.geeksforgeeks.org/ life-insurance-meaning-elements-and-types-of-life-insurance-policies/

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22AI101701	**BIOINFORMATICS**	3	-	-	-	3

Pre-Requisite -
Anti-Requisite -
Co-Requisite -

COURSE DESCRIPTION: This course focus on Biological Data Acquisition, Databases, Data Processing, Methods of Analysis, Applications of Bio-informatics.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1 Understand basic biological data acquisition in bioinformatics.
CO2 Identify the proper databases for the information search by choosing the biological databases and also submission and retrieval of data from databases.
CO3 Analyze the results of bioinformatics data using text and sequence-based searching techniques.
CO4 Analyze the secondary and tertiary structures of proteins by applying different alignment programs
CO5 Design biological databases by using contextual knowledge on bioinformatics.

CO-PO Mapping Table

Course Outcomes	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	-	-	-	-	-	-	-	-	-	-	-
CO2	2	3	-	-	-	-	-	-	-	-	-	-
CO3	2	3	-	-	-	-	-	-	-	-	-	-
CO4	2	3	-	-	-	-	-	-	-	-	-	-
CO5	3	2	3	3	3	-	-	-	-	-	-	-
Course Correlation Mapping	**3**	**3**	**3**	**3**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: BIOLOGICAL DATA ACQUISITION *(09 Periods)*

Biological information, Retrieval methods for DNA sequence, protein sequence and protein structure information

Module 2: DATABASES *(09 Periods)*

Format and Annotation: Conventions for database indexing and specification of search terms, Common sequence file formats. Annotated sequence databases - primary and secondary sequence databases, protein sequence and structure databases.

Module 3: DATA PROCESSING ***(09 Periods)***

Data – Access, Retrieval and Submission: Standard search engines; Data retrieval tools – Entrez, DBGET and SRS; Submission of (new and revised) data; Sequence Similarity Searches: Local and global. Distance metrics. Similarity and homology. Scoring matrices, PAM andBLOSUM

Module 4: METHODS OF ANALYSIS ***(09 Periods)***

Dynamic programming algorithms, Needleman-Wunsch and Smith-waterman.Heuristic Methods of sequence alignment, FASTA and BLAST; Multiple Sequence Alignment and software tools for pair wise and multiple sequence alignment, CLUSTAL program, Prediction of Tertiary structure of proteins.

Module 5: APPLICATIONS ***(09 Periods)***

Genome Annotation and Gene Prediction; ORF finding; Phylogenetic Analysis, Genomics, Proteomics, Genome analysis – Genome annotation, DNA Microarray, computer aided drug design (CADD).

Total Periods: 45

EXPERIENTIAL LEARNING

1. Calculate the dynamic programming matrix and one or more optimal alignment(s) for the sequences GAATTC and GATTA, scoring +2 for a match, −1 for a mismatch and with a linear gap penalty of d = 2.
2. Determine whether the RNA string GGACCACCAGG should be folded into two substructures.
3. Discuss how to carry out the multiple sequence alignment of the following three sequences: TTTTAAAA, AAAACCCC, CCCCTTTT.

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in course handout.)

RESOURCES

TEXT BOOKS:

1. Lesk, A. K., *Introduction to Bioinformatics*, Oxford University Press, 4th Edition, 2013
2. Dan Gusfield, *Algorithms on Strings, Trees and Sequences: Computer Science and Computational Biology*, Cambridge University Press, 1997.

REFERENCE BOOKS:

1. Baldi, P. and Brunak, S., *Bioinformatics: The Machine Learning Approach*, MIT Press, 2nd Edition, 2001.
2. Mount, D.W., *Bioinformatics Sequence and Genome Analysis*, Cold Spring Harbor Laboratory Press, 2nd Edition, 2004.
3. Tindall, J., *Beginning Perl for Bioinformatics: An introduction to Perl for Biologists*, O'Reilly Media, 1st Edition, 2001.

VIDEO LECTURES:

1. https://www.youtube.com/watch?v=liNblw4x50E
2. https://www.youtube.com/watch?v=eZfyWdHnzR0

WEB RESOURCES:

1. https://www.britannica.com/science/bioinformatics
2. https://www.ebi.ac.uk/training/online/courses/bioinformatics-terrified/what-bioinformatics/

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22LG101701	**BUSINESS COMMUNICATION AND CAREER SKILLS**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: Nature and Scope of Communication, Corporate Communication, Writing Business Messages & Documents, Careers & Résumés, and Interviews.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Demonstrate knowledge of professional communication by analyzing and applying the styles and strategies of business communication in Communication Networks, Interpersonal, and Informal communication.

CO2. Analyze the limitations of communication by applying and demonstrating corporate and cross-cultural communication strategies effectively in a business context and Crisis Management situations.

CO3. Apply appropriate strategies and techniques in writing business messages, business letters, and résumé for effective professional communication and career building.

CO4. Demonstrate appropriate communication techniques and answering strategies by analyzing the expectations during presentations and interviews.

CO-PO Mapping Table

Course Outcomes	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	1	-	-	2	-	-	-	-	3	-	-
CO2	1	2	-	-	2	-	-	-	-	3	1	-
CO3	1	-	-	-	2	-	-	-	-	3	-	-
CO4	1	2	-	-	2	-	-	-	-	3	-	-
Course Correlation Mapping	**2**	**2**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**3**	**1**	**-**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: NATURE AND SCOPE OF COMMUNICATION ***(9 Periods)***

Introduction – Communication Basics – Functions of Communication – Communication Networks – Interpersonal Communication – Informal Communication – Communication Barriers – Roles of a Manager.

Module 2: CORPORATE COMMUNICATION ***(9 Periods)***

Introduction – Corporate Communication – Cross-Cultural Communication; Concept & Styles – Corporate Communication Strategy – Corporate Citizenship – Crisis Communication: Case Study.

Module 3: WRITING BUSINESS MESSAGES & DOCUMENTS ***(9 Periods)***

Introduction – Importance of Written Business Communication – Types of Business Messages – Five Main Stages of Writing Business Messages – Business Letter Writing – Kinds of Business Letters – Common Components of Business Letters – Strategies for Writing the Body of a Letter.

Module 4: CAREERS AND RÉSUMÉS ***(9 Periods)***

Introduction – Career Building – Résumé Formats: Traditional, Electronic and Video Résumé – Sending Résumés – Follow-up Letters – Business Presentations and Speeches: Planning –Structuring – Organizing – Delivery.

Module 5: INTERVIEWS ***(9 Periods)***

Introduction – General Preparation for an Interview – Success in an Interview – Important Non-verbal Aspects – Types of Interviews – Styles of Interviewing – Types of Interviewing –Online Recruitment Process.

Total Periods: 45

EXPERIENTIAL LEARNING

1. People often get confused in identifying or using English vocabulary on most occasions. Prepare a list of confusing words and find methods to overcome the difficulties in using those words to uplift the career of professionals.
2. Organizations and institutions use modern technology in communicating with their colleagues, clients, and stakeholders. Make a PowerPoint presentation on the modern communication system of any organization and its role in the successof the organization and its career.
3. As a student in the modern technological world, organizing or attending webinars is inevitable. Analyze the pros and cons of video conferencing by organizing webinars and preparing a report.
4. Form a team and act as a team leader. Prepare a performance appraisal report of the team using visual aids to support the presentation.
5. Make a detailed study on social networking and its impact on modern business and Career.

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in course handout.)

RESOURCES

TEXT BOOKS:

1. Meenakshi Raman, Prakash Singh, *Business Communication*, Oxford University Press, New Delhi, 2nd edition, 2012.
2. Neera Jain, Sharma Mukherji, *Effective Business Communication*, Tata Mc Graw–Hill

REFERENCE BOOKS:

1. Courtland L. Bovee et al., *Business Communication Today*, Pearson, New Delhi, 2011.
2. Krizan, *Effective Business Communication*, Cengage Learning, New Delhi, 2010.

VIDEO LECTURES:

1. https://nptel.ac.in/courses/110105052
2. https://edurev.in/courses/14522_Business-Communication-The-Ultimate-Guide

WEB RESOURCES:

1. http://www.career.vt.edu/interviewing/TelephoneInterviews.html
2. http://job-search-search.com/interviewing/behavioral_interviews
3. https://goo.gl/laEHOY (dealing with complaints)
4. http://www.adm.uwaterloo.ca/infocecs/CRC/manual/resumes.html
5. https://goo.gl/FEMGXS
6. http://www.resumania.com/arcindex.html

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22SS101701	**CONSTITUTION OF INDIA**	3	-	-	-	3

Pre-Requisite -
Anti-Requisite -
Co-Requisite -

COURSE DESCRIPTION: This course provides and in-depth knowledge about Constitution of India's Preamble and its Philosophy; Union Legislature; Federalism in India; Judiciary and Public Services; Nation Building. The students can gain first-hand information and knowledge about these dynamics and accordingly act based on these sources in their professional and routine activities.

COURSE OUTCOMES: After successful completion of this course, the students will be able to:

CO1: Demonstrate knowledge in the Parliamentary proceedings, Election Commission, Public Services and Foreign Policy of India.

CO2: Apply the reasoning informed by the various aspects of the Constitution and its provisions to assess societal issues and the consequent responsibilities relevant to the professional engineering practice.

CO-PO Mapping Table

Course Outcomes	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	1	-	-	-	-	3	2	-	-	-	-	-
CO2	2	-	-	-	-	3	-	3	-	-	-	-
Course Correlation Mapping	**2**	**-**	**-**	**-**	**-**	**3**	**2**	**3**	**-**	**-**	**-**	**-**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: PREAMBLE AND ITS PHILOSOPHY ***(9 Periods)***

Introduction to Indian Constitution; Evolution of Indian Constitution; preamble and its philosophy

Module 2: UNION LEGISLATURE ***(9 Periods)***

The Parliament, Parliamentary Structure, Process of Legislation; President of India – Powers and Functions; Prime Minister and Council of Ministers; Constitution Amendment Procedure.

Module 3: FEDERALISM IN INDIA ***(9 Periods)***

Centre-State Administrative Relationship; Governors – Powers and Functions; State Legislature - Composition and powers; Chief Ministers - Powers and Functions; The Election Commission – Powers and Functions.

Module 4: JUDICIARY AND PUBLIC SERVICES ***(9 Periods)***

The Union Judiciary - Supreme Court and High Court; Fundamental Rights and Duties All India Services - Central Civil Services -State Services - Local Services.

Module 5: INTERNATIONAL PARTICIPATION ***(9 Periods)***

Foreign Policy of India; International Institutions Influence: UNO, WTO, WHO, SAARC, International Summits: BRICS, NSS, UNEP – India's Role in International Negotiations; Environmentalism in India.

Total Periods: 45

EXPERIENTIAL LEARNING

1. Review newspapers and submit a report on critical analysis of Indian Civil Servants exercise of powers, in the awake of constitutionally assigned authority.
2. Visit your village Panchayat office or Municipality office and generate a report on your observations about maintained Constitutional symbolism.
3. Watch few videos on recent Indian Independence Day and Republic Day celebrations as marked in New Delhi and present a detailed report, by considering the following aspects:
    a) Comparatively analyze the speeches of the President of India and Prime Minister of India as delivered on these two occasions.
    b) Compare these two events relevance in terms of Indian Armed Forces presence.
    c) Observe, compare and analyse 'flag code' relevance as marked in these two events.
4. Watch a few videos on recent 'proceedings' of any state Legislative Assembly session and submit a detailed report.

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in course handout.)

RESOURCES

TEXT BOOKS:

1. Briji Kishore Sharma, *Introduction to the Constitution of India*, Prentice Hall of India, 2005

REFERENCE BOOKS:

1. Mahendra Pal Singh,V. N. Shukla's, *Constitution of India*, Eastern Book Company, 2011.
2. Pandey J. N., *Constitutional Law of India*, Central Law Agency, 1998

VIDEO LECTURES:

1. Doctrine of Basic Structure: https://www.youtube.com/watch?v=cvUf9ZeEe8Y
2. Significance of the Constitution: https://www.youtube.com/watch?v=vr1Dc_-ZKbQ

WEB RESOURCES:

1. The Constitution of India: https://www.youtube.com/watch?v=of2SoO8i8mM
2. Protection of Constitutional Democracy: https://www.youtube.com/watch?v=smJ99cdPrns

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22CM101702	**COST ACCOUNTING AND FINANCIAL MANAGEMENT**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: Cost accounting; cost sheet & preparation of cost sheet; standard costing & variance analysis; financial management & ratio analysis; introduction to investment**.**

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1 Demonstrate the concepts of Cost Accounting and Management Accounting and the elements of costing.

CO2 Determine the Cost of Production for pricing decisions.

CO3 Apply the Standard Costing and Variance techniques for the control of the cost of production

CO4 Analyze the Profitability and financial condition of an organization using Ratios.

CO5 Apply Capital Budgeting techniques for making investment decisions in an organization.

CO-PO Mapping Table

Course Outcomes	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	-	-	-	2	-	-	1	-	-	-	-
CO2	3	-	-	-	2	-	-	1	-	-	1	-
CO3	3	-	-	-	2	-	-	1	-	-	1	-
CO4	3	-	-	-	2	-	-	1	-	-	1	-
CO5	3	-	-	-	2	-	-	1	-	-	-	-
Course Correlation Mapping	**3**	**-**	**-**	**-**	**2**	**-**	**-**	**1**	**-**	**-**	**1**	**-**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: COST ACCOUNTING ***(09 Periods)***

Meaning of Cost and Cost Accounting, Objectives, Scope, Advantages, and Disadvantages – Cost Accounting *Vs* Management Accounting – Elements of Costing – Installation of costing system – Material Control, Labor Control, Overhead Control.

Module 2: COST SHEET & PREPARATION OF COST SHEET (09 Periods)

Analysis of Cost – Preparation of cost sheet, estimate, tender, and quotation (Simple problems) – Importance of Costing while pricing the products

Module 3 STANDARD COSTING & VARIANCE ANALYSIS (09 Periods)

Introduction to Standard Costing & Variances – Variance Analysis: Material variances, Labor variances (Simple Problems).

Module 4 FINANCIAL MANAGEMENT & RATIO ANALYSIS (09 Periods)

Meaning, Objectives - Nature and Scope, Importance of FM – Ratio Analysis**:** Types of Ratios: Solvency Ratios, Liquidity Ratios, Turnover Ratios, and Profitability Ratios - Financial Statement Analysis through Ratios (Simple Problems).

Module 5 INTRODUCTION TO INVESTMENT ***(09 Periods)***

Investment - Meaning and Definition- concept of risk and returns - Capital budgeting techniques – Security Analysis and Portfolio Management (Basic concepts).

Total Periods: 45

EXPERIENTIAL LEARNING

1. Prepare a report on the role of cost accountants in the growth of a company.
2. To visit the manufacturing unit to observe how they used various techniques for analyzing the financial health of a company.
3. Prepare a report on factors influencing the form of business organization.
4. Prepare the cost sheet with practical examples of any two manufacturing companies.

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in course handout.)

RESOURCES

TEXT BOOKS:

1. S.P. Jain and K.L. Narang: *Cost Accounting*, Kalyani Publishers, Ludhiana, 10th edition, 2016.
2. I.M. Pandey, *Financial Management*, Vikas Publishing House Pvt. Ltd., 14th edition, 2016.

REFERENCE BOOKS:

1. The Institute of Company Secretaries of India, *Cost and Management Study Material*, New Delhi.
2. CA Saravana Prasath, *Cost Accounting and Financial management*, Wolters Kluwer India Pvt. Ltd., New Delhi, 2018.

VIDEO LECTURES:

1 https://www.youtube.com/watch?v=ESqO8sFgQa0&list=PLLhSIFfDZcUVE2kzOhEubO9rkvUOAgZbz

2 https://www.youtube.com/watch?v=tzasFmP1CpAhttps://www.youtube.com/watch?v=tzasFmP1CpA

WEB RESOURCES:

1 https://www.tutorialspoint.com/accounting_basics/management_versus_cost_accounting.htm

2 https://www.netsuite.com/portal/resource/articles/financial-management/financial-management.shtml

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22CB101701	CYBER LAWS AND SECURITY	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course provides a detailed discussion on Cyber Crimes and Indian IT Act; Cyber Offenses; Tools and Methods used in Cyber Crime; Phishing ad Identity Theft; Indian and Global Perspective on Cyber Crimes and Cyber Security; Organizational Implications on Cyber Security; IPR Issues; Cyber
Crime and Terrorism; Cyber Crime Illustrations

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Demonstrate knowledge in Cyber security, Cybercrimes and its related laws in Indian and Global Act.

CO2. Analyze the legal perspectives and laws related to cybercrimes in Indian context.

CO3. Apply security and privacy methods in development of modern applications and in organizations to protect people and to prevent cybercrimes.

CO4. Solve Cyber security issues using privacy policies and Use antivirus tools to minimize the impact of cyber threats.

CO5. Apply security standards for the implementation of Cyber Security and laws.

CO-PO Mapping Table

Course Outcomes	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	-	-	-	-	-	-	-	-	-	-
CO2	3	2	-	-	-	-	-	-	-	-	-	-
CO3	3	2	3	-	-	-	-	-	-	-	-	-
CO4	3	2	3	-	-	-	-	-	-	-	-	-
CO5	3	2	2	-	-	-	-	-	-	-	-	-
Course Correlation Mapping	**3**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: INTRODUCTION TO CYBER CRIMES AND OFFENSES ***(09 Periods)***

Cyber Crimes: Introduction, Definition, Origin, Cybercrime and information security,Cyber criminals, Classifications of cybercrimes, The legal perspectives and Indian perspective, Cybercrime and Indian ITA 2000, Global perspective on cybercrimes.

Cyber Offenses: Introduction, Criminals planning on attacks, Social engineering, Cyber stalking, Cyber cafe and crimes, Botnets.

Module 2: TOOLS AND METHODS USED IN CYBER CRIME AND PHISHING AND IDENTITY THEFT ***(09 Periods)***

Introduction, Proxy servers and Anonymizers, Phishing, Password cracking, Key loggers and Spywares, Virus, Worms and Ransomware, Trojan horses and Backdoors, Steganography, DoS and DDoS attacks.

Phishing and Identity Theft: Introduction, Phishing, Identity Theft (ID Theft).

Module 3 CYBER CRIMES AND CYBER SECURITY-LEGAL PERSPECTIVES ***(08 Periods)***

Introduction, Cyber laws in Indian context, The Indian IT act, Challenges to Indian law and Cybercrime scenario in India, Consequences of not addressing the weakness in IT act, Digital signatures and the Indian IT Act, Cyber Crime and Punishment, Cyber law, Technology and Students in India scenario.

Module 4 CYBER SECURITY-ORGANIZATIONAL IMPLICATIONS ***(10 Periods)***

Introduction, Web threats for organizations – evils and perils, Security and privacy implications from cloud computing, Social Media Marketing-Security risks and Perils for organizations, Social computing and associated challenges for organizations, Protecting people's privacy in organization, Organizational guidelines for internet usage, Safe computing and Usage policy, Incident handling and Best practices.

Module 5 CYBER CRIME AND TERRORISMAND ILLUSTRATIONS ***(09 Periods)***

Cyber Crime & Terrorism: Introduction, Intellectual property in the cyber space, The ethical dimension of cybercrimes, The psychology, Mindset and skills of hackers and cyber criminals, Sociology of cyber criminals, Information warfare.

Cyber Crime Illustrations: Indian banks lose millions of rupees, Justice vs. Justice, Parliament attack, The Indian case of online gambling, Bank and credit card related frauds, Purchasing goods and services scam, Nigerian 419 scam.

Total Periods: 45

EXPERIENTIAL LEARNING

1. The Cyber Security Risks on Social Media – Learn from Case Studies: https://www.rswebsols.com/tutorials/internet/cyber-security-risks-social-media
2. SIX automates key cybersecurity tasks to actively protect itself against social media threats: https://www.hootsuite.com/resources/six-group-case-study
3. Important Cyber Law Case Studies : https://www.cyberralegalservices.com/detail-casestudies.php

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in course handout.)

RESOURCES

TEXT BOOKS:

1. Nina Gobole, SunitBelapure, *Cyber Security: Understanding Cyber Crimes, Computer Forensics and Legal Perspectives*, Wiley India, 2011.

REFERENCE BOOKS:

1. Prashant Mali, *Cyber Law and Cyber Crimes*, Snow White Publications Pvt. Ltd., 2013.
2. Alfred Basta and et al, *Cyber Security and Cyber Laws*, Cengage Learning India 2018

VIDEO LECTURES:

1. Learn Cyber Security | Cyber Security Training: https://www.youtube.com/watch?v=PlHnamdwGmw
2. Cyber Security For Beginners: https://www.youtube.com/watch?v=4RE4d23tDFw

WEB RESOURCES:

1. https://study.com/academy/course/computer-science-110-introduction-to-cybersecurity.html
2. https://www.pandasecurity.com/en/mediacenter/panda-security/types-of-cybercrime/
3. https://mediasmarts.ca/digital-media-literacy/digital-issues/cyber-security/cyber-security-spam-scams-frauds-identity-theft

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22MG101701	ENTREPRENEURSHIP FOR MICRO, SMALL AND MEDIUM ENTERPRISES	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: To understand the setting up and management of MSMEs and initiatives of Government and other institutions support for growth and development of MSMEs

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Understand the basic of SME and challenges of MSMEs

CO2. Explain the opportunities to Set-Up SSI/SME Units and role of rural & women entrepreneurship.

CO3. Illustrate roles of various institutions supporting MSMEs.

CO4. Understand Management of MSME, NPA & sickness units

CO5. Evaluate role of Government in Promoting Entrepreneurship

CO-PO Mapping Table:

Course Outcomes	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	2	1	-	-	-	-	-	-	-	-
CO2	1	1	2	-	-		2		1			-
CO3	2	2	1	-	-	-	-	1	-	-	2	
CO4	3	1	2	-	-	-	-	-	-	-	-	2
CO5	2	2	1	-	-	1	-	-	-	-	-	1
Course Correlation Mapping	**2**	**2**	**2**	**2**	**1**	**1**	**2**	**1**	1	**-**	**2**	**2**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: INTRODUCTION2 ***(07 Periods)***

Concept & Definition, Role of Business in the modern Indian Economy SMEs in India, Employment and export opportunities in MSMEs. Issues and challenges of MSMEs

Module 2: MSME SETTING ***(09 Periods)***

Identifying the Business opportunity, Business opportunities in various sectors, formalities for setting up an enterprise - Location of Enterprise – steps in setting up an enterprise – Environmental aspects in setting up, Incentives and subsidies.

Module 3: MSMES SUPPORTING INSTITUTIONS ***(09 Periods)***

Forms of Financial support, Long term and Short term financial support, Sources of Financial support, Development Financial Institutions, Investment Institutions, Central level institutions, State level institutions, Other agencies, Commercial Bank – Appraisal of Bank for loans

Module 4: MANAGEMENT OF MSME ***(10 Periods)***

Management of Product Line; Communication with clients – Credit Monitoring System - Management of NPAs - Restructuring, Revival and Rehabilitation of MSME, Problems of entrepreneurs – sickness in SMI – Reasons and remedies –– Evaluating entrepreneurial performance

Module 5: ENTREPRENEURSHIP PROMOTION ***(10 Periods)***

MSME policy in India, Agencies for Policy Formulation and Implementation: District Industries Centers (DIC), Small Industries Service Institute (SISI), Entrepreneurship Development Institute of India (EDII), National Institute of Entrepreneurship & Small Business Development (NIESBUD), National Entrepreneurship Development Board (NEDB)

Total Periods: 45

EXPERIENTIAL LEARNING

1. Present a case study on MSMEs Business Strategies.
2. Collect the data about nearby MSMEs and Present their structures in a PPT
3. Discuss in the group MSMEs opportunities in terms of Orientation and Develop mentation.

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in course handout.)

RESOURCES

TEXT BOOKS:

1. Vasant Desai, *Small Scale Industries and Entrepreneurship*, Himalaya Publishing House, 2003..
2. Poornima M Charanthimath, *Entrepreneurship Development Small Business Enterprises*, Pearson, 2006.

REFERENCE BOOKS:

1. Suman Kalyan Chaudhury, *Micro Small and Medium Enterprises in India Hardcover*, Raj Publications, 2013.
2. Aneet Monika Agarwal, *Small and medium enterprises in transitional economies, challenges and opportunities*, DEEP and DEEP Publications
3. Paul Burns & Jim Dew Hunt, *Small Business Entrepreneurship*, Palgrave Macmillan publishers, 2010.

VIDEO LECTURES:

1. https://sdgs.un.org/topics/capacity-development/msmes
2. https://blog.tatanexarc.com/msme/msme-schemes-in-india-for-new-entrepreneurs-and-start-ups/

WEB RESOURCES:

1. ncert.nic.in/textbook/pdf/kebs109.pdf
2. https://www.jetir.org/papers/JETIR1805251.pdf

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22CE101702	**ENVIRONMENTAL POLLUTION AND CONTROL**	3	-	-	-	3

Pre-Requisite -
Anti-Requisite -
Co-Requisite -

COURSE DESCRIPTION: This course provides a detailed discussion on fundamentals of air pollution, dispersion of pollutants, effects and control of air pollution, water pollution, soil pollution and control, and municipal solid waste management.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1 Analyze air and noise pollution using appropriate tools and techniques to solve complex environmental issues following relevant standards considering society, environment and sustainability besides communicating effectively in graphical form.

CO2 Analyze air and noise pollution control measures using appropriate tools and techniques to solve complex environmental issues following relevant standards and latest developments considering society, environment and sustainability besides communicating effectively in graphical form.

CO3 Analyze water pollution and its control measures using appropriate tools and techniques to solve complex environmental issues following relevant standards and latest developments considering society, environment and sustainability besides communicating effectively in graphical form.

CO4 Analyze soil pollution and its control measures using appropriate tools and techniques to solve complex environmental issues following relevant standards and latest developments considering society, environment and sustainability besides communicating effectively in graphical form.

CO5 Analyze solid waste and its management measures using appropriate tools and techniques to solve solid waste disposal issues following relevant standards and latest developments considering society, environment and sustainability besides communicating effectively in graphical form.

CO-PO Mapping Table

Course Outcomes	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	2	3	-	2	2	3	3	2	-	1	-	-
CO2	2	3	-	2	2	3	3	2	-	1	-	1
CO3	2	3	-	2	2	3	3	2	-	1	-	1
CO4	2	3	-	2	2	3	3	2	-	1	-	1
CO5	2	3	-	2	2	3	3	2	-	1	1	1
Course Correlation Mapping	**2**	**3**	**2**	**2**	**2**	**3**	**3**	**2**	**-**	**1**	**1**	**1**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: AIR AND NOISE POLLUTION ***(08 Periods)***

Air Pollution: Scope, Significance, Classification, Sources – Line, Area, Stationary, Mobile; Effects of air pollutants on man, material and vegetation; Global effects of air pollution; Air pollution meteorology - Lapse rate, Inversion, Plume pattern; Dispersion of air pollutants - Dispersion models and applications; Ambient air quality standards.

Noise Pollution: Sound pressure, Power and intensity, Impacts of noise, permissible limits of noise pollution, measurement of noise, Noise standards.

Module 2: AIR AND NOISE POLLUTION CONTROL ***(10 Periods)***

Self-cleansing properties of the environment, Dilution method, Control at source, Process changes and equipment modifications, Control of particulates – Types of equipment, Design and operation - Settling chambers, Centrifugal separators, Bag house filters, Wet scrubbers, Electrostatic precipitators; Control of gaseous pollutants – Adsorption, Absorption, Condensation, Combustion; Control of air pollution from automobiles, Control of noise pollution, Case studies, Latest developments in the air and noise pollution control.

Module 3: WATER POLLUTION AND CONTROL ***(10 Periods)***

Water pollution – Sources, Causes, Effects; Surface and groundwater quality – Physical,Chemical, Biological; Drinking water quality standards, Water purification – Processes, Engineered systems – Aeration, Solids separation, Settling operations, Coagulation, Softening, Filtration, Disinfection; Wastewater – Sources, Causes, Effects, Treatment process and disposal
– Primary, Secondary, Tertiary; Case studies, Latest developments in the water pollution control.

Module 4: SOIL POLLUTION AND CONTROL ***(08 Periods)***

Soil pollutants, Sources of soil pollution, Causes, Effects and control of soil pollution, Diseases caused by soil pollution, Methods to minimize soil pollution, Effective measures to control soil pollution, Soil quality standards, Case studies, Latest developments in the soil pollution control.

Module 5: MUNICIPAL SOLID WASTE MANAGEMENT ***(09 Periods)***

Municipal solid waste – Types, Composition and characteristics; Methods of collection and transportation; Methods of disposal – Open dumping, Sanitary landfill, Composting and Incineration; Utilization - 6R Concept, Recovery and recycling and Energy Recovery; Latest developments in solid waste management.

Total Periods: 45

EXPERIENTIAL LEARNING

1. Explain plume patterns due to air pollution and meteorology effects and draw a neat sketch of plume pattern from any chimney that you have observed in recent times.
2. Compare the different air pollution control equipment used in India and draw a neat sketch line diagram of equipment you have seen in any of your industrial visit.
3. Submit a study report on Coagulation, Flocculation, Sedimentation, Filtration and Disinfection in your own words after watching a YouTube video on water treatment.
4. Enumerate the effective measures to control soil pollution with any two case studies.
5. Submit a report on case studies on the use of 6Rs concept of Municipal Solid Waste Management.

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in course handout.)

RESOURCES

TEXT BOOKS:

1. Peavy, H. S, Rowe, D. R., and Tchobanoglous, G., *Environmental Engineering*, McGraw Hill Inc., 1985.
2. C. S. Rao, *Environmental Pollution Control Engineering*, New Age International Pvt. Ltd., 2nd Edition, 2007.
3. Ibrahim A. Mirsa, *Soil Pollution: Origin, Monitoring & Remediation*, Springer, UK, 2nd Edition, 2008.

REFERENCE BOOKS:

1. M. N. Rao and H. V. N. Rao, *Air Pollution,* Tata McGraw–Hill Education Pvt. Ltd., 19th Edition, 2010.
2. Daniel Vallero, *Fundamentals of Air Pollution,* Academic Press (Elsevier), 5th Edition, 2014.
3. S. M. Khopkar, *Environmental Pollution Monitoring and Control,* New Age International Pvt. Ltd., 2nd Edition, 2007.
4. V. M. Domkundwar, *Environmental Engineering*, DhanpatRai & Co. Pvt. Ltd., New Delhi, 2014.

VIDEO LECTURES:

1. https://archive.nptel.ac.in/courses/123/105/123105001/
2. https://archive.nptel.ac.in/courses/105/107/105107213/
3. https://archive.nptel.ac.in/courses/103/107/103107084/

WEB RESOURCES:

1. https://www.lkouniv.ac.in/site/writereaddata/siteContent/20200501211601643 5Ranvijay-Pratap-Singh-Environmental-Pollution.pdf
2. https://www.deshbandhucollege.ac.in/pdf/resources/1585622878_HIST_(HONS.)_II_Env-Pollution.pdf
3. https://www.jica.go.jp/jica-ri/IFIC_and_JBICI-Studies/english/publications/reports/study/topical/health/pdf/health_08.pdf
4. https://www.iitr.ac.in/wfw/web_ua_water_for_welfare/education/proceeding_of_short-term_training/diploma/Environmental_Sciences_May_24-28_2007/Lecture_notes/Env_Pollution-rb.pdf
5. https://anits.edu.in/online_tutorials/es/Unit%203.pdf

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22CB101702	**INTRODUCTION TO ETHICAL HACKING**	3	-	-	-	3

Pre-Requisite -
Anti-Requisite -
Co-Requisite -

COURSE DESCRIPTION: This course provides a detailed discussion on ethical hacking overview, role of security and penetration testers, foot printing, reconnaissance and scanning networks, enumeration and vulnerability analysis, system hacking, network protection systems.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Understand and recognize role of security and penetration testers to protect the system from malware attacks.
CO2. Apply the foot printing tools to find the vulnerabilities in the system.
CO3. Analyze vulnerabilities to find the system security loopholes or flaws in networked systems within a given range of IP
CO4. Apply the web attackers tools to assess the website's security
CO5. Identify the possible incidents and threats, alert administrators, and prevent potential attacks using IDS

CO-PO Mapping Table

Course Outcomes	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	2	-	-	-	-	-	-	-	-	-	-
CO2	3	2	-	-	-	-	-	-	-	-	-	-
CO3	3	3	3	-	-	-	-	-	-	-	-	-
CO4	3	3	3	2	-	-	-	-	-	-	-	-
CO5	3	2	3	2	-	-	-	-	-	-	-	-
Average	3	3	3	2	-	-	-	-	-	-	-	-
Course Correlation mapping	**3**	**3**	**3**	**2**	-	-	-	-	-	-	-	-

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: INTRODUCTION ***(10 Periods)***

Ethical Hacking Overview, Role of Security and Penetration Testers .Penetration, Testing Methodologies, Laws of the Land, Overview of TCP/IP, The Application Layer, The Transport Layer, The Internet Layer, IP Addressing, Network and Computer Attacks, Malware, Protecting Against Malware Attacks, Intruder Attacks, Addressing Physical Security.

Module 2: FOOT PRINTING, RECONNAISSANCE AND SCANNING NETWORKS ***(09 Periods)***

Foot printing Concepts, Foot printing through Search Engines, Web Services, Social Networking Sites, Website, Email, Competitive Intelligence, Foot printing through Social Engineering, Foot printing Tools, Network Scanning Concepts, Port-Scanning Tools, Scanning Techniques, Scanning Beyond IDS and Firewall

Module 3: ENUMERATION AND VULNERABILITY ANALYSIS ***(09 Periods)***

Enumeration Concepts, NetBIOS Enumeration, SNMP, LDAP, NTP, SMTP and DNS Enumeration, Vulnerability Assessment Concepts, Desktop and Server OS Vulnerabilities, Windows OS Vulnerabilities, Tools for Identifying Vulnerabilities in Windows, Linux OS Vulnerabilities, Vulnerabilities of Embedded Oss.

Module 4: SYSTEM HACKING ***(10 Periods)***

Hacking Web Servers, Web Application Components, Vulnerabilities, Tools for Web Attackers and Security Testers Hacking Wireless Networks, Components of a Wireless Network, Wardriving, Wireless Hacking, Tools of the Trade.

Module 5: NETWORK PROTECTION SYSTEMS ***(07 Periods)***

Access Control Lists, Cisco Adaptive Security Appliance Firewall, Configuration and Risk Analysis Tools for Firewalls and Routers, Intrusion Detection and Prevention Systems, Network, Based and Host-Based IDSs and IPSs, Web Filtering, Security Incident Response Teams, Honeypots.

Total Periods: 45

EXPERIENTIAL LEARNING

1. List out various ways used to Protect Yourself from Hackers.
2. Demonstrate how do White Hackers work?
3. Demonstrate The bug bounty program.

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in course handout.)

RESOURCES

TEXT BOOKS:

1. Michael T. Simpson, Kent Backman, and James E. Corley, *Hands-On Ethical Hacking and Network Defense, Course Technology*, Delmar Cengage Learning, 2010.
2. Patrick Engebretson, *The Basics of Hacking and Penetration Testing*, SYNGRESS, Elsevier, 2013.

REFERENCE BOOKS:

1. Dafydd Stuttard and Marcus Pinto, *The Web Application Hacker's Handbook: Finding and Exploiting Security Flaws*, Wiley, 2nd Edition, 2011.
2. Justin Seitz, *Black Hat Python: Python Programming for Hackers and Pentesters*, 2nd Edition, 2014.

VIDEO LECTURES:

1. https://www.coursera.org/learn/ethical-hacking-essentials-ehe
2. https://www.udacity.com/course/ethical-hacker-nanodegree--nd350

WEB RESOURCES:

1. https://github.com/PacktPublishing/Python-Ethical-Hacking
2. https://www.youtube.com/watch?v=x3IwvPvDpKE

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22CB101703	**FORENSIC SCIENCE**	3	-		-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course provides a detailed discussion on Concepts of Forensic Science, Tools and Techniques in Forensic Science, Forensic Photography, Crime Scene Management, Crime Scene Management Laws and Forensic Science.

COURSE OUTCOMES: *After successful completion of the course, students will be able to*:

CO1 Understand the basic concepts of Forensic science.
CO2 Apply various tools and techniques in forensic science for crime investigation.
CO3 Understand Forensic Photography fundamentals.
CO4 Perform Crime scene investigation, scene reconstruction and prepare reports.
CO5 Understand Legal aspects of Forensic Science.

CO-PO Mapping Table:

Course Outcomes	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	-	-	-	-	-	-	-	-	-	-	-
CO2	3	3	2	2	2	-	-	-	-	-	-	-
CO3	3	3	-	-	-	-	-	-	-	-	-	-
CO4	3	3	2	2	2	-	-	-	-	-	-	-
CO5	3	3	2	2	2	-	-	-	-	-	-	-
Course Correlation Mapping	**3**	**3**	**2**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: INTRODUCTION ***(09 Periods)***

Introduction, Need, Scope, Concepts and Significance of Forensic Science, History and Development of Forensic Science, Laws and Basic principles of Forensic Science, Branches of forensic science, Organizational set-up of a Forensic Science Laboratory. Investigative strategies. Expert testimony and eye-witness report.

Module 2: TOOLS AND TECHNIQUES IN FORENSIC SCIENCE ***(09 Periods)***

Basic principles of microscopy, spectroscopy, chromatography, Electrophoresis, Enzyme_Linked Immunosorbent Assay (ELISA), Radio Immuno Assay (RIA). Measuring and optical instruments. Research methodologies; Formation of research design on a specific problem. Central tendency and Dispersion. Test of significance. Analysis of variance, Correlation and Regression.

Module 3: FORENSIC PHOTOGRAPHY ***(8 Periods)***

Basic principles of Photography, Techniques of black & white and color photography, cameras, lenses, shutters, depth of field, film; exposing, development and printing techniques; Different kinds of developers and fixers; UV, IR, fluorescence illumination guided photography; Modern development in photography- digital photography, working and basic principles of digital photography; Surveillance photography. Videography and Crime Scene & laboratory photography.

Module 4: CRIME SCENE MANAGEMENT ***(11 Periods)***

Crime scene investigations, protecting and isolating the crime scene; Documentation, sketching, field notes and photography. Searching, handling and collection, preservation and transportation of physical evidences, Chain of custody and Reconstruction of scene of crime. Report writing.

Module 5: LAW AND FORENSIC SCIENCE ***(8 Periods)***

Legal aspects of Forensic Science: Forensic Science in the Criminal Justice System, The Criminal Investigation Process, Production of Evidence: The Subpoena, The Rules of Evidence, Authentication of Evidence: The Chain of Custody, The Admissibility of Evidence, Laboratory Reports, Examples of Analysis and Reports, Expert Testimony, Getting into Court,Testifying, Being a Witness and an Expert, Considerations for Testimony.

Total Periods: 45

EXPERIENCIAL LEARNING

1. Study of Computer Forensics and different tools used for forensic investigation
2. Identify and list the steps for hiding and extract any text file behind an image file/ Audio file using Command Prompt

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in course handout.)

RESOURCES

TEXT BOOKS:

1. Houck M.M and Siegel J.A, *Fundamentals of Forensic Science*, Elsevier, 2nd edition, 2010.
2. Sharma B.R, *Forensic Science in Criminal Investigation and Trials*, Universal Publishing Co., New Delhi, 2003.

REFERENCE BOOKS:

1. Nanda B.B and Tewari, R.K, *Forensic Science in India- A vision for the Twenty First Century*, Select Publisher, New Delhi, 2001.
2. James, S.H and Nordby, J.J, *Forensic Science- An Introduction to Scientific and Investigative Techniques*, CRC Press, USA, 2003.
3. Saferstein, Criminalistics, *An Introduction of Forensic Science*, Prentice Hall Inc, USA,2007.
4. Barry, A.J. Fisher, *Techniques of Crime Scene Investigation*, CRC Press, NewYork, 7th edition, 2003.

VIDEO LECTURES:

1. https://nptel.ac.in/courses/106106178
2. https://www.youtube.com/watch?v=X5fo1H7bc0g

WEB RESOURCES:

1. https://www.nist.gov/forensic-science
2. https://www.coursera.org/learn/forensic-science

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22SS101702	**GENDER AND ENVIRONMENT**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: Gender and the environment relationship, Gendered Roles in the Family & Community, Gender and sustainable development, Gender in environmental justice, Gender & Environmental Security.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1 Apply the knowledge of gender & environmental connections by analyzing key issues and topics within global environmental politics in environmental decision-making.

CO2 Demonstrate knowledge of the concepts of gender and sustainable development through debates and policy documents.

CO3 Analyze the concept of environmental security and justice by identifying the sources of insecurity.

CO-PO Mapping Table

Course Outcomes	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	1	-	-	-	3	3	-	-	-	-	-
CO2	3	-	-	-	-	2	3	1	-	2	-	-
CO3	3	1	-	-	-	3	3	-	-	-	-	2
Course Correlation Mapping	**3**	**1**	**-**	**-**	**-**	**3**	**3**	**1**	**-**	**2**	**-**	**2**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: GENDER AND ENVIRONMENT RELATIONSHIP ***(09 Periods)***

Introduction – Gender and Environment – Development of gender roles – Society, gender & environment – Understanding environmental politics – Gender-environment connections– Eco-feminism – Cultural eco-feminism – Social eco-feminism – Feminist political ecology

Module 2: GENDERED ROLES IN THE FAMILY & COMMUNITY ***(09 Periods)***

Organization of the household – Domestic division of labour – Food: growing, harvesting, shopping, preparing, and cooking

Gender & Power – Planning – Politics – NGO – Gendering of environmental protest – Environmental decision-making

Module 3: GENDER AND SUSTAINABLE DEVELOPMENT ***(09 Periods)***

Concept of sustainability & its achievement – Concept of sustainable development – Ecological Modernization – Gender & sustainability debates – Gender & sustainable development debates - Gender in policy documents – Gender, poverty & equity in sustainable development

Module 4: GENDER IN ENVIRONMENTAL JUSTICE ***(09 Periods)***

Normative Concerns (Fairness, Inequality & Justice) –Making sense of Environmental justice – Ecological debt, Transnational harm, & human rights – Ecological justice – Gender &Environmental Justice – Gender, Vulnerability & risk – Women in environmental justice movements – Knowledge & participation – Gender, sustainability & justice as guiding concepts.

Module 5: GENDER AND ENVIRONMENTAL SECURITY ***(09 Periods)***

Connections between security & the environment – **Gender, environment & security:** Sustainability as security – poverty & insecurity – Insecurity as injustice – Competing ways of thinking security – Reflecting on sources of insecurity – **Case Study** – Food Security - **Case Study** – The impacts of natural disasters

Total Periods: 45

EXPERIENTIAL LEARNING

1. Prepare a poster presentation on the impact of globalization on family structure and society.
2. Prepare a presentation on the family setup of different countries and their peculiar customs.
3. Prepare poster presentation on "Ancient hominin walked like a human but climbed like an ape."
4. Find out the problems of present society and being part of future generations how you may help to strengthen environmental security.

(Note: It's an indicative one. Course Instructor may change activities and shall be reflected in course Handout)

RESOURCES

TEXT BOOKS:

1. Nicole Detraz, *Gender and the Environment,* Polity Press, Cambridge, UK. 2017
2. Susan Buckingham- Hatfield, *Gender and Environment*, Routledge, London. 2000

REFERENCE BOOKS:

1. Promillakapur ed., *Empowering Indian Women*, Publication Division, Government of India, New Delhi. 2000.
2. Ronnie Vernooy, Ed., *Social and Gender Analysis Natural Resource Management: Learning Studies and Lessons from Asia,* Sage, New Delhi. 2006
3. Swarup Hemlata and Rajput, Pam, *Gender Dimensions of Environmental and Development Debate: The Indian Experience,* In Sturat S. Nagel, (ed). *India's Development and Public Policy*. Ashgate, Burlington. 2000

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22ME101701	**GLOBAL STRATEGY AND TECHNOLOGY**	3	-	-	-	3

Pre-Requisite -
Anti-Requisite -
Co-Requisite -

COURSE DESCRIPTION:
Introduction to strategic management; Strategic management process; Principles of good strategy; Globalization strategies; Research and Development strategies; Technology Management and Transfer; Elements of Transfer Process; Corporate Governance in the Indian scenario.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1 Demonstrate the knowledge on strategic management, its approaches, and tools through ethical decision making.
CO2 Analyse the globalization challenges for scrupulous selection of globalization strategies.
CO3 Apply the R&D strategies and trends to enhance the technological breakthroughs for new products and applications.
CO4 Demonstrate the knowledge on technology management and transfer that strengthen the economy and accelerate the application of technology and resources.
CO5 Analyze the challenges of corporate governance in Indian scenario for the effective development of value-oriented organizations.

CO-PO Mapping Table

Course Outcomes	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	2	1	-	1	1	-	1	-	-	1	-
CO2	3	2	1	-	1	1	-	-	-	-	1	-
CO3	3	2	1	-	1	1	-	-	-	-	1	-
CO4	3	2	1	-	1	1	-	-	-	-	1	-
CO5	3	2	1	-	1	1	-	1	-	-	1	-
Course Correlation Mapping	**3**	**2**	**1**	**-**	**1**	**1**	**-**	**1**	**-**	**-**	**1**	**-**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: STRATEGIC MANAGEMENT (09 Periods)
Introduction, Classes of decisions, Levels of strategy, Core competence, Strategic intent and stretch, Approaches to strategy making, Roles of different strategists, StrategicManagement-Process, Benefits, Limitations; Ethics in strategic decision making, Principles of good strategy, Strategic Management in India; Common managerial strategy formulationtools.

Module 2: GLOBALIZATION (09 Periods)
Definition, Stages, Essential conditions for globalization, Globalization strategies, Competitive advantage of Nations and regions, Factors affecting Globalization, Globalization of Indian business.

Module 3: RESEARCH & DEVELOPMENT STRATEGIES (09 Periods)

Concept, Evolution of R and D Management, R and D as a business, R and D as competitive advantage, Elements of R and D strategies, Integration of R and D, Selection and implementation of R and D strategies, R and D trends and challenges.

Module 4: TECHNOLOGY MANAGEMENT AND TRANSFER (09 Periods)

Technology Management: Introduction, Technology-Definition, Components, Classification Features; Technology Management-Concept, Nature; Drivers of Management of Technology-Significance, Scope, Responding to technology challenges.

Technology Transfer: Introduction, Definition, Classification, Significance, Elements of process, Types of Technology Transfer, Package, Modes of Transfer, Routes, Channels and Effectiveness of Technology Transfer.

Module 5: CORPORATE GOVERNANCE: THE INDIAN SCENARIO (09 Periods)

Emergence of corporate governance in India-Landmarks, Models, Codes and status in India, Role and Responsibilities of Regulators, The Board of Directors; Corporate Governance-Specific issues in India, Family-owned Business, Corporate Governance and the Indian ethos.

Total Periods: 45

EXPERIENTIAL LEARNING

1. Case studies: Using real-world examples of global businesses and their technological strategies, students can examine the challenges and opportunities presented by different markets and technologies. This can involve analyzing data, conductingmarket research, and making decisions based on their findings.

2. Simulation games: Students can participate in simulation games that allow them to make decisions about global strategy and technology in a virtual environment. This can help them understand the complexities of international business, such as navigating different cultures, regulations, and economic systems.

3. Industry partnerships: Partnerships with technology companies and global businesses can provide students with hands-on experience in global strategy and technology. This can include internships, shadowing, or working on real projects with industry professionals.

4. Project-based learning: Students can work on real-world projects that require them to apply their knowledge of global strategy and technology. This can include developing a business plan for a new product or service, designing a marketing campaign for a global audience, or analyzing the impact of a new technology on a specific industry.

5. Field trips: Visiting international businesses or attending technology conferences can provide students with a first-hand look at global strategy and technology in action. This can help them understand the challenges and opportunities of different markets and technologies, as well as connect with industry professionals.

(Note: It's an indicative one. Course instructor may change the activities and the same shall be reflected in course handout)

CASE STUDIES:

1. Tesla: Can Elon Musk's electric car company succeed globally?
2. Uber: How the ride-sharing giant is expanding its global footprint.
3. Alibaba: How China's e-commerce giant is competing on the global stage.
4. Airbnb: How the home-sharing platform is disrupting the global hotel industry.
5. Netflix: How the streaming service is expanding globally and adapting to local markets.

ARTICLES:

1. "Digital Transformation: Why it Matters for Global Business" by Forbes
2. "How AI is Changing Global Business Strategy" by Harvard Business Review
3. "The Future of Globalization: Exploring the Role of Technology" by World Economic Forum
4. "Globalization 4.0: What it Means for Technology and Strategy" by McKinsey & Company
5. "How Technology is Transforming Global Supply Chains" by MIT Sloan Management Review

RESOURCES

TEXT BOOKS:

1. Francis Cherunilam, *Strategic Management*, Himalaya Publishing House, 3rdEdition, 2002.

2. C. S. G. Krishnamacharyulu and Lalitha Ramakrishnan, *Management of Technology*, Himalaya Publishing House, Second Edition, 2012.

REFERENCE BOOKS:

1. White and Bruton, *The Management of Technology and Innovation: A Strategic Approach*, Cengage Learning, 1stEdition, 2007.
2. S.K.Mandak, *Ethics in Business and Corporate Governance*, TMH, 2ndEdition, 2012.

VIDEO LECTURES:

1. https://www.digimat.in/nptel/courses/video/110106157/L01.html
2. https://www.digimat.in/nptel/courses/video/110106157/L43.html

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22SS101703	**INDIAN ECONOMY**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: Introduction; Elementary Economic Analysis; Economic Planning; Time Value of Money; Value Analysis/Value Engineering.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1 Understand the basic concepts of economics, economic analysis, economic planning and strata.

CO2 Demonstrate knowledge in capital budgeting, evaluation of engineering projects, depreciation policy and familiarize with the concepts of value analysis vs value engineering.

CO3 Analyze and apply financial information for the evaluation of finance.

CO-PO Mapping Table

Course Outcomes	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	-	-	-	-	2	-	-	-	-	-	-
CO2	3	-	-	-	-	2	-	-	-	-	-	2
CO3	3	-	-	-	-	2	-	-	-	-	-	2
Course Correlation Mapping	3	-	-	-	-	2	-	-	-	-	-	2

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION *(09 Periods)*

Economics-Flow in an Economy, Law of Supply and Demand; Micro and Macro Economics; Relationship between Science, Engineering, Technology and Economic Development; Concept of Engineering Economics-Types of Efficiency, Definition and Scope of Engineering Economics.

Module 2: ELEMENTARY ECONOMIC ANALYSIS *(09 Periods)*

Economic Analysis – Meaning, Significance, Simple Economic Analysis; Material Selection for a Product, Substitution of Raw Material; Design Selection for a Product; Material Selection-Process Planning, Process Modification.

Module 3: ECONOMIC PLANNING ***(09 Periods)***

Introduction - Need For Planning in India, Five-year plans(1951-2012), NITI Aayog (from 2014 onwards); Inclusive Growth-Meaning, Significance, Need for inclusive growth in India, Strategy for more inclusive growth, Challenges and Prospects; Employment and Inclusive Growth in India, Role of engineers in sustaining inclusive growth.

Module 4: TIME VALUE OF MONEY ***(12 Periods)***

Concepts and Application; Capital Budgeting-Traditional and Modern Methods; Simple and Compound Interest, Cash Flow Diagram, Principle of Economic Equivalence; Evaluation of Engineering Projects - Present Worth Method, Future Worth Method, Annual Worth Method, Internal Rate of Return Method, Cost-benefit Analysis in Public Projects; Depreciation Policy-Depreciation of Capital Assets, Causes of Depreciation, Straight Line Method and Declining Balance Method.

Module 5: VALUE ANALYSIS/VALUE ENGINEERING ***(06 Periods)***

Introduction-Value Analysis, Value Engineering, Functions, Aims; Value Analysis vs Value Engineering; Value Engineering Procedure- Advantages, Application Areas.

Total Periods: 45

EXPERIENTIAL LEARNING

1. Prepare a poster presentation on the impact of globalization on family structure and society.
2. Prepare a presentation on family setups of different countries and their peculiar customs if any.
3. Prepare a poster presentation on "Ancient hominin walked like a human but climbed like an ape."
4. Find out the problems of present society and being part of future generations and how you may help to strengthen environmental security.

(Note: It's an indicative one. Course Instructor may change activities and shall be reflected in course Handout)

RESOURCES

TEXT BOOKS:

1. Panneerselvam. R., *Engineering Economics*, PHI Learning Private Limited, New Delhi, 2nd edition, 2013.
2. Jain. T. R., V. K. Ohri, O. P. Khanna., *Economics for Engineers*, VK Publication, 1st edition, 2015.

REFERENCE BOOKS:

1. DuttRudar & Sundhram K. P. M., *Indian Economy*, S. Chand, New Delhi, 62nd revised edition, 2010.
2. Misra, S. K. & V. K. Puri., *Indian Economy*: *Its Development Experience*, Himalaya Publishing House, Mumbai, 32nd edition, 2010.

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22SS101704	**INDIAN HISTORY**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: Introduction; Ancient India; Classical and Medieval era; Modern India; India after independence.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1 Demonstrate contextual knowledge in the evolution of ancient and medieval Indian History and acquire an awareness of societal and cultural transformation.

CO2 Analyze the situations before and after Independence and assess the societal reforms implemented in India after Independence.

CO3 Practice culture transformations and appreciate its influence to adapt themselves in global scenarios.

CO-PO Mapping Table

Course Outcomes	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	-	-	-	-	1	-	-	-	-	-	-
CO2	1	2	-	-	-	1	-	-	-	-	-	-
CO3	1	1	-	-	-	2	-	-	-	-	-	-
Course Correlation Mapping	2	1	-	-	-	2	-	-	-	-	-	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION TO INDIAN HISTORY ***(08 Periods)***

Elements of Indian History; History Sources: Archaeology, Numismatics, Epigraphy & Archival research; Methods used in History; History & historiography; Sociological concepts-structure, system, organization, social institutions, Culture and social stratification (caste, class, gender, power), State& Civil Society.

Module 2: ANCIENT INDIA ***(09 Periods)***

Mohenjo-Daro civilization; Harappa civilization; Mauryan Empire.

Module 3: CLASSICAL & MEDIEVAL ERA ***(12 Periods)***

Classic Era (200 BC - 1200 AD); Hindu - Islamic Era (1200 - 1800 AD).

Module 4: MODERN INDIA ***(06 Periods)***

Age of Colonialism (17th - 19th centuries); First war of Indian Independence; Freedom Struggle (1857-1947)

Module 5: INDIA AFTER INDEPENDENCE (1947 -) ***(10 Periods)***

The Evolution of the Constitution and Main Provisions; Consolidation of India as a Nation; Politics in the States; Indian economy; Modernization and globalization, Secularism and communalism, Nature of development, Processes of social exclusion and Inclusion, Changing Nature of Work and Organization.

Total Periods: 45

EXPERIENTIAL LEARNING

1. Prepare a write-up on how to safeguard ancient monuments.
2. Analyze the most famous historically important place you visited.
3. Prepare a presentation on the ancient Seven Wonders of the World with their significance and how they are destroyed.
4. Prepare a presentation on "Wars of the past not only destroyed people and their livelihood but also the people's tradition and culture."
5. Prepare a poster on " Continents that No Longer Exist" with causes

(Note: It's an indicative one. Course Instructor may change activities and shall be reflected in course Handout)

RESOURCES

TEXT BOOKS:

1. K. Krishna Reddy, *Indian History,* Tata McGraw-Hill, 21st reprint, 2017.

REFERENCE BOOKS:

1. Guha, Ramachandra, *India after Gandhi*, Pan Macmillan, 2007.
2. Romila Thapar, *Early India***,** Penguin India, New Delhi 2002.

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22SS101705	**INDIAN TRADITION AND CULTURE**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: Basic traits of Indian Culture; Humanistic Reforms under Jainism and Buddhism; Culture in the medieval period; Socio Religious reforms in Indian Culture; Reform movements for harmonious relations.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1 Demonstrate knowledge of Vedic and Upanishadic culture and society to consider human aspirations, values and theories.

CO2 Understand the contributions of Buddhism and Jainism to Indian culture.

CO3 Examine the cultural conditions and achievements of India under Mouryas and Guptas.

CO4 Analyze social religious reforms and reform movements.

CO-PO Mapping Table

Course Outcomes	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	-	-	-	-	1	-	-	-	-	-	-
CO2	3	-	-	-	-	1	-	-	-	-	-	2
CO3	2	-	-	-	-	3	-	-	-	-	-	-
CO4	2	-	-	-	-	3	-	-	-	-	-	2
Course Correlation Mapping	**3**	**-**	**-**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**2**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: BASIC TRAITS OF INDIAN CULTURE ***(08 Periods)***

Meaning and definition and various interpretations of culture - Culture and its features - The Vedic and Upanishad culture and society - Human aspirations and values in these societies - Chaturvidha purushardhas, Chaturashrma and Chaturvarna theory.

Module 2: HUMANISTIC REFORMS UNDER JAINISM AND BUDDHISM ***(09 Periods)***

Salient features of Jainism - contributions of Jainism to Indian culture - Contributions of Aachaarya and Mahaapragya - Buddhism as a humanistic culture - The four noble truths of Buddhism - Contributions of Buddhism to Indian culture.

Module 3: CULTURE IN THE MEDIEVAL PERIOD ***(09 Periods)***

Unifications of India under Mouryas and Guptas and their cultural achievements - Cultural conditions under satavahanas - Contributions to Pallavas and cholas to art and cultural achievements of Vijayanagara rulers

Module 4: SOCIO RELIGIOUS REFORMS IN INDIAN CULTURE ***(09 Periods)***

Western impact on India - Introduction of Western education - social and cultural awakening and social reform movements of Rajaramohan Roy - Dayanandha Saraswathi - Anne Besant (theosophical society).

Module 5: REFORM MOVEMENTS FOR HARMONIOUS RELATIONS ***(09 Periods)***

Vivekananda, Eswarchandravidyasagar and Veeresalingam - emancipation of women and struggle against caste - Rise of Indian nationalism - Mahatma Gandhi – Non-violence and satyagraha and eradication of untouchability.

Total Periods: 45

EXPERIENTIAL LEARNING

1. Identify different cultural festivals of Indian States and prepare a write-up on their uniqueness.
2. India has a rich history with numerous architectural wonders. Prepare a report on any three famous architectural wonders in India.
3. Explore the diverse flavors of Indian cuisine and prepare a poster on the different dishes and their distinctiveness.
4. India is a country of Unity in Diversity. Make a PowerPoint presentation on different traditional dresses of various cultural people.

(Note: It's an indicative one. Course Instructor may change activities and shall be reflected in course Handout)

RESOURCES

TEXT BOOKS:

1. Valluru Prabhakaraiah, *Indian Heritage and Culture*, Neelkamal Publications Pvt. Ltd. Delhi, 1/e, reprint 2015.

REFERENCE BOOKS:

1. L. P. Sharma, *History of Ancient India*, Konark Publishers, Pvt. Ltd. New Delhi, 2010.
2. L. P. Sharma, *History of Medieval India*, Konark Publishers, Pvt. Ltd. New Delhi, 2010.
3. The Cultural Heritage of India Vol-I, II, III, IV, V, The Ramakrishna Mission Institute of Culture, Calcutta

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22AI101702	**INTRODUCTION TO ARTIFICIAL INTELLIGENCE**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course provides a detailed discussion and hands-on experience on Introduction to Artificial Intelligence, Designing intelligent agents, Solving general purpose problems, Search in complex environments, Represent knowledge, Robotics, Ethics.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1 Analyze and Architect intelligent agents using Artificial Intelligence Techniques and principles

CO2 Analyze the usage of Knowledge representation techniques in Artificial Intelligence

CO3 Analyze and interpret the problem, identify suitable solutions using heuristic functions and search algorithms

CO4 Investigate robot hardware and frameworks for intelligent robotic perception.

CO5 Demonstrate knowledge on ethical implications of intelligent machines for providing privacy, trust, security and safety.

CO-PO Mapping Table

Course Outcomes	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	1	-	-	-	-	-	-	-	-	-	-
CO2	3	-	-	-	-	-	-	-	-	-	-	-
CO3	3	3	2	-	-	-	-	-	-	-	-	-
CO4	3	-	-	-	-	1	-	-	-	-	-	-
CO5	-	-	-	-	-	1	-	2	-	-	-	-
Course Correlation Mapping	3	3	2	-	-	1	-	2	-	-	**-**	**-**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1 INTRODUCTION TO ARTIFICIAL INTELLIGENCE ***(09 Periods)***

Foundations of artificial intelligence, History of artificial intelligence, State of the art, Risks and benefits of AI, Intelligent agents – Agents and environments, The concept of rationality, Structure of agents.

Module 2 KNOWLEDGE & REASONING ***(09 Periods)***

Logic, Propositional Logic, Propositional Theorem Proving: Inference and proofs, Proof by resolution, Horn clauses and definite clauses.

First-Order Logic - Syntax and Semantics of First-Order Logic, Using First Order Logic, Knowledge Engineering in First-Order Logic. Inference in First-Order Logic: Propositional vs. First-Order Inference, Unification, Forward Chaining, Backward Chaining, Resolution.

Module 3 PROBLEM SOLVING BY SEARCHING ***(09 Periods)***

Problem solving agents, Search algorithms, Uninformed search strategies, Informed search strategies – Greedy best-first search, A* search; Heuristic functions.

Module 4 SEARCH IN COMPLEX ENVIRONMENTS ***(09 Periods)***

Local search algorithms and optimization problems – Hill-climbing search, Simulated annealing, Local beam search, Evolutionary algorithms; Optimal decisions in games – The minimax search algorithm, Optimal decisions in multiplayer games, Alpha-Beta pruning, Move ordering; Monte Carlo tree search.

Module 5: ROBOTICS ***(09 Periods)***

Robots, Robot hardware, Robotic perception, Alternative robotic frameworks, Application domains.

Limits of AI, Ethics of AI – Surveillance, security and privacy, Fairness and bias, Trust and transparency, AI safety

Total Periods: 45

EXPERIENTIAL LEARNING

LIST OF EXERCISES:

1. Design and implement agent programs for Table-driven agents using the agent function of vacuum-cleaner world. The agent cleans the current square if it is dirty, otherwise it moves to the other square.
2. Implement agent programs for Simple reflex agents and Model-based reflex agents using the agent function of vacuum-cleaner world.
3. Solve the travelling sales man problem using Hill Climbing search algorithm

(Note: It's an indicative one. The Course Instructor may change the activities and the same shall be reflected in Course Handout)

RESOURCES

TEXT BOOKS:

1. Stuart Russell, Peter Norvig, *Artificial Intelligence: A Modern Approach*, Prentice Hall, 4th Edition, 2020.

REFERENCE BOOKS:

1. Stephen Lucci, Danny Kopec, *Artificial Intelligence in the 21st Century*, Mercury Learning and Information, 3rd Edition,2018
2. Rich, Knight, Nair*, Artificial intelligence*, Tata McGraw Hill, Third Edition, 2009.

3. Deepak Khemani, *A First Course in Artificial Intelligence*, McGraw Hill Education, 2017.
4. Saroj Kaushik, *Artificial Intelligence*, Cengage Learning, 2011.

SOFTWARE/TOOLS:

1. Python
2. pandas, matplotlib

VIDEO LECTURES:

1. https://searchenterpriseai.techtarget.com/definition/AI-Artificial-Intelligence
2. http://aima.cs.berkeley.edu/
3. https://ai.google/education/
4. https://www.coursera.org/courses?query=artificial%20intelligence
5. https://www.edureka.co/blog/artificial-intelligence-with-python/

WEB RESOURCES:

1. http://www.airesources.org/
2. https://allthingsai.com/
3. https://designmodo.com/ai-tools-designers/
4. https://www.ulethbridge.ca/teachingcentre/chatgpt-ai-resources

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22AI101703	**INTRODUCTION TO DATA SCIENCE**	3	-	-	-	3

Pre-Requisite -
Anti-Requisite -
Co-Requisite -

COURSE DESCRIPTION: This course provides a detailed discussion on Introduction to Data Science; Data Collection and Data Pre-Processing, Exploratory Data Analytics, Model Development, and Model Evaluation**.**

COURSE OUTCOMES: *After successful completion of the course, students will be able to*:

CO1. Demonstrate knowledge on Data science concepts.
CO2. Perform data collection and pre-processing.
CO3. Perform exploratory data analytics.
CO4. Design and develop data visualization models.
CO5. Evaluate performance of data models.

CO-PO Mapping Table

Course Outcomes	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	-	-	-	-	-	-	-	-	-	-	-
CO2	2	2	3	2	2	-	-	-	-	-	-	-
CO3	2	2	2	3	2	-	-	-	-	-	-	-
CO4	2	3	2	2	2	-	-	-	-	-	-	-
CO5	3	2	2	2	2	-	-	-	-	-	-	-
Level of correlation of the course	**3**	**2**	**2**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Correlation Levels: ***3: High*** ***2: Medium*** ***1: Low***

COURSE CONTENT

Module-1: INTRODUCTION ***(09 periods)***
Introduction to Data Science, Evolution of Data Science, Data Science Roles, Stages in a Data Science Project, Applications of Data Science in various fields, Data Security Issues.

Module-2: DATA COLLECTION AND DATA PRE-PROCESSING ***(09 periods)***
Data Collection Strategies, Data Pre-Processing- Overview, Data Cleaning, Data Integration and Transformation, Data Reduction, Data Discretization.

Module-3: EXPLORATORY DATA ANALYTICS ***(09 periods)***
Descriptive Statistics, Mean, Standard Deviation, Skewness and Kurtosis, Box Plots, Pivot Table, Heat Map, Correlation Statistics, ANOVA.

Module-4: MODEL DEVELOPMENT ***(09 periods)***

Simple and Multiple Regression, Model Evaluation using Visualization, Residual Plot, Distribution Plot, Polynomial Regression and Pipelines, Measures for In-sample Evaluation, Prediction and Decision Making.

Module-5: MODEL EVALUATION ***(09 periods)***

Generalization Error, Out-of-Sample Evaluation Metrics, Cross Validation, Overfitting, Under Fitting and Model Selection, Prediction by using Ridge Regression, Testing Multiple Parameters by using Grid Search.

Total periods: 45

EXPERIENTIAL LEARNING

1. ***Use Case:*** A human can express his emotions in any form, such as the face, gestures, speech and text. The detection of text emotions is a content-based classification problem. Detecting a person's emotions is a difficult task, but detecting the emotions using text written by a person is even more difficult as a human can express his emotions in any form.

   Recognizing this type of emotion from a text written by a person plays an important role in applications such as chatbots, customer support forum, customer reviews etc. So you have to train a machine learning model that can identify the emotion of a text by presenting the most relevant emoji according to the input text.

2. ***Use Case:*** Customer Personality Analysis is a detailed analysis of a company's ideal customers. It helps a business to better understand its customers and makes it easier for them to modify products according to the specific needs, behaviours and concerns of different types of customers.

   You have to do an analysis that should help a business to modify its product based on its target customers from different types of customer segments. For example, instead of spending money to market a new product to every customer in the company's database, a company can analyze which customer segment is most likely to buy the product and then market the product only on that particular segment.

(Note: It's an indicative one. The Course Instructor may change the activities and the same shall be reflected in Course Handout)

RESOURCES

TEXT BOOK:

1. Cathy O'Neil and Rachel Schutt, *Doing Data Science*, O'Reilly, 2015

REFERENCE BOOKS:

1. David Dietrich, Barry Heller, Beibei Yang, *Data Science and Big Data Analytics*, EMC 2013.
2. Davy cielen, *Introducing Data Science*, Manning Publications, 2022.
3. Chirag Shah, *A Hands-on Introduction to Data Science*, Cambridge University Press, 2020

VIDEO LECTURES:

1. https://www.youtube.com/watch?v=JL_grPUnXzY&list=PLeo1K3hjS3us_ELKYSj_Fth2tIEkdKXvV
2. https://www.youtube.com/watch?v=-ETQ97mXXF0

WEB RESOURCES:

1. https://swayam.gov.in/nd1_noc19_cs60/preview
2. https://towardsdatascience.com/
3. https://www.w3schools.com/datascience/
4. https://github.com/jakevdp/PythonDataScienceHandbook
5. https://www.kaggle.com

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22AI101704	**INTRODUCTION TO MACHINE LEARNING**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course provides a detailed discussion on Introduction tomachine learning, Bayesian concept learning, Supervised learning, Unsupervised learning, Artificial neural networks.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1	Analyze the process of machine learning modeling and evaluation to automatically infer a general description for a given learning problem.
CO2	Analyze the underlying mathematical models within machine learning algorithms and learning tasks.
CO3	Design and implement machine learning solutions for classification, regression, and clustering problems.
CO4	Design and implement efficient neural architectures to model patterns for a given learning problem.
CO5	Develop intelligent solutions to solve societal problems related to computer vision, information security, healthcare and other areas.

CO-PO Mapping Table

Course Outcomes	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	2	-	-	-	-	-	-	-	-	-	-
CO2	2	3	-	-	-	-	-	-	-	-	-	-
CO3	2	3	3	3	3	-	-	-	-	-	-	-
CO4	3	3	3	1	-	-	-	-	-	-	-	-
CO5	1	3	3	3	3	3	-	-	-	-	-	-
Course Correlation Mapping	**3**	**3**	**3**	**3**	**3**	**3**	**-**	**-**	**-**	**-**	**-**	**-**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: INTRODUCTION TO MACHINE LEARNING ***(10 Periods)***

Machine Learning: Human learning, Types of human learning, Machine learning, Types of machine learning, Applications of machine learning, Issues in machine learning, Machine learning activities, Types of data, Selecting a model, Training a model, Model representation and interpretability, Evaluating performance of a model, Improving performance of a model.

Module 2: BAYESIAN CONCEPT LEARNING ***(07 Periods)***

Introduction, Importance, Bayes' theorem, Bayes optimal classifier, Naïve Bayes classifier, Applications of Bayes classifier.

Module 3: SUPERVISED LEARNING ***(10 Periods)***

Classification: Classification model, Classification learning steps, K-Nearest Neighbor, Decision Tree, Support vector machines.

Regression: Introduction, Simple linear regression, Improving accuracy of the linear regression model, Multiple linear regression, Assumptions and problems in regression analysis.

Module 4: UNSUPERVISED LEARNING ***(09 Periods)***

Introduction, Unsupervised vs supervised learning, Applications of unsupervised learning, Clustering as a machine learning task, Types of clustering techniques, Partitioning methods, K-Medoids, Hierarchical clustering, DBSCAN.

Module 5: ARTIFICIAL NEURAL NETWORKS ***(09 Periods)***

Artificial neuron, Types of activation functions, Early implementations of ANN, Architectures of neural network, Learning process in ANN, Backpropagation.

Total Periods: 45

EXPERIENTIAL LEARNING

1. Use Naïve Bayes classifier to solve the credit card fraud detection problem.
2. Build a neural network that will read the image of a digit and correctly identify the number.

(Note: It's an indicative one. The Course Instructor may change the activities and the same shall be reflected in Course Handout)

RESOURCES

TEXT BOOKS:

1. Tom M. Mitchell, *Machine Learning*, McGraw Hill, 1997.
2. Saikat Dutt, Subramanian Chandramouli, Amit kumar das, *Machine Learning*, Pearson, 2019.

REFERENCE BOOKS:

1. Manaranjan Pradhan, U Dinesh Kumar, *Machine Learning Using Python*, Packt Publishing, 2019.
2. Aurelien Geron, *Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow: Concepts, Tools, and Techniques to Build Intelligent Systems*, O'Reilly, 2nd Edition, 2019.
3. Ethem Alpaydin, *Introduction to Machine Learning*, MIT Press, 4th Edition, 2020.
4. Shai Shalev Shwartz, Shai Ben David, *Understanding Machine Learning: From Theory to Algorithms*, Cambridge University Press, 2014.

VIDEO LECTURES:

1. https://nptel.ac.in/courses/106106202/
2. https://www.coursera.org/learn/machine-learning
3. https://onlinecourses.nptel.ac.in/noc23_cs18/preview
4. https://onlinecourses.nptel.ac.in/noc23_cs87/preview
5. https://onlinecourses.nptel.ac.in/noc23_ee87/preview
6. https://www.coursera.org/learn/ntumlone-algorithmicfoundations
7. https://www.coursera.org/specializations/machine-learning-introduction
8. http://ndl.iitkgp.ac.in/document/YkxlRXFvZXJrTDBkVzVVZi9ESjl6eXpRZkxRc2lhOWhlVXBhUVVWaXZlNDNyZUVldU9LdlYvd20wbkQ4MC92UQ
9. https://www.coursera.org/learn/unsupervised-learning-recommenders-reinforcement-learning

WEB RESOURCES:

1. https://www.ibm.com/topics/machine-learning
2. https://www.simplilearn.com/tutorials/machine-learning-tutorial/what-is-machine-learning
3. https://www.w3schools.com/python/python_ml_getting_started.asp
4. https://developers.google.com/machine-learning/crash-course
5. https://www.greenteapress.com/thinkstats/
6. https://info.deeplearning.ai/machine-learning-yearning-book
7. https://www.kaggle.com/code/kanncaa1/machine-learning-tutorial-for-beginners
8. https://machinelearningmastery.com/machine-learning-in-python-step-by-step/

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22ME101704	MANAGING INNOVATION AND ENTERPRENEURSHIP	3	-	-	-	3

Pre-Requisite -
Anti-Requisite -
Co-Requisite -

COURSE DESCRIPTION: Evolution of entrepreneurship from economic theory Managerial and entrepreneurial competencies; Concepts of Shifting Composition of the Economy Purposeful Innovation & Sources of Innovative Opportunity; The Innovation Process; Innovative Strategies; Entrepreneurial Motivation; Entrepreneurs versus inventors; Ethics and International Entrepreneurship; Strategic Issues in International Entrepreneurship; Problem solving Innovation and Diversification

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Demonstrate the principles of innovation process for establishing Industrial ventures.
CO2. Identify and analyze the gaps in an organization for innovation in the context of developed economies
CO3. Develop a comprehensive and well-planned business structure for a new venture.
CO4. Demonstrate knowledge on intellectual property rights, patents, trademarks, copyrights, trade secrets and commercialization of intellectual property.
CO5. Apply ethics in constructive innovation framework and problem solving.

CO-PO Mapping Table

Course Outcomes	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	1	1	-	1	1	1	1	-	-	1	-
CO2	3	2	1	-	1	-	-	-	-	-	1	-
CO3	3	3	1	1	1	-	-	-	-	-	1	-
CO4	3	2	1	1	1	1	-	-	-	-	1	-
CO5	3	3	3	1	1	1	-	-	-	-	2	-
Course Correlation Mapping	**3**	**2**	**1**	**1**	**1**	**1**	**1**	**1**	-	-	**1**	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: CREATIVITY AND INNOVATION ***(09 Periods)***

Introduction, Levels of innovation, Purposeful innovation and the sources of innovative opportunity, The innovation process, Innovative strategies, Strategies that aim at introducing and innovation, Dynamics of ideation and creativity – Inbound, Outbound; Context and process of new product development, Theories of outsourcing.

Module 2: PARADIGMS OF INNOVATION ***(09 Periods)***

Systems approach to innovation, Innovation in the context of developed economies and Emerging economies, Examining reverse innovation and itsapplication,Performancegap,Infrastructuregap,Sustainabilitygap,Regulatory gap, Preference gap, organizational factors effecting innovation at firm level.

Module 3: SOUCES OF FINANCE AND VENTURE CAPITAL ***(09 Periods)***

Importance of finance, Comparison of venture capital with conventional development capital, Strategies of venture funding, Investment phases, Investment process, Advantages and disadvantages of venture capital, Venture capital developments in India.

Module 4: INTELLECTUAL PROPERTY INNOVATION AND ENTREPRENEURSHIP ***(09 Periods)***

Introduction to Entrepreneurship, Evolution of entrepreneurship from economic theory, Managerial and entrepreneurial competencies, Entrepreneurial growth and development, Concepts, Ethics and Nature of International Entrepreneurship, Intellectual property – forms of IP, Patents, Trademarks, Design registration, Copy rights, Geographical indications, Patent process in India.

Module 5: OPEN INNOVATION FRAME WORK & PROBLEM SOLVING ***(09 Periods)***

Concept of open innovation approach, Difference between open innovations and Cloud innovation approaches, Limitations and Opportunities of open innovation frame work, Global context of strategic alliance, Role of strategic alliance, Problem Identification and Problem Solving, Innovation and Diversification

Total Periods:45

EXPERIENTIAL LEARNING

1. Identify the Innovative Marketing Strategies for Startups
2. Identify the Coca-cola Company Intellectual Property Rights

(Note: It's an indicative one. Course instructor may change the activities and the same shall be reflected in course handout)

CASE STUDIES/ARTICELS:

Contemporary relevant case studies/ Articles will be provided by the course instructor at the beginning.

1. Tesla Inc.: Disrupting the Automobile Industry
   This case study examines how Tesla Inc. disrupted the traditional automobile industry through its innovative electric vehicles and sustainable energy solutions. It discusses the sources of innovative opportunity that Tesla leverages, the ideation and creativity dynamics involved in new product development, and the strategies that the company uses to introduce and market its innovations.
2. Google Inc.: Innovation in Developed Economies
   This case study explores how Google Inc. became a global leader in the technology industry through its innovative search engine, advertising, and cloud computing solutions. It highlights the performance gap that Google addressed, the regulatory and sustainability gaps that it leveraged, and the impact of its innovation strategies on the company's growth and profitability.

3. Flipkart: From Startup to Unicorn
   This case study examines how Flipkart, an Indian e-commerce company, securedventure capital funding to become one of the largest online marketplaces in India. It discusses the importance of finance in entrepreneurship, the advantages and disadvantages of venture capital, and the strategies that Flipkart used to attract venture funding.

4. Patanjali Ayurved: Building a Brand through Intellectual Property
   This case study explores how Patanjali Ayurved, an Indian consumer goods company, built a strong brand through its intellectual property strategies. It discusses the forms of IP that Patanjali leverages, the patent process in India, and the impact of IP on the company's growth and profitability.

5. Procter & Gamble: Innovation through Open Innovation
   This case study analyzes how Procter & Gamble, a global consumer goods company, leveraged open innovation to achieve unprecedented success in product development and marketing. It discusses the difference between open and cloud innovation approaches, the limitations and opportunities of open innovation, and the role of strategic alliances in global innovation.

RESOURCES

TEXT BOOKS:

1. Vinnie Jauhari, Sudhanshu Bhushan, *Innovation Management*, Oxford University Press, 1st Edition, 2014.
2. Drucker, P.F., *Innovation and Entrepreneurship*, Taylor & Francis, 2nd Edition, 2007.

REFERENCE BOOKS:

1. Robert D Hisrich, Claudine Kearney, *Managing Innovation and Entrepreneurship,* Sage Publications, 1st Edition, 2014.
2. V.K. Narayanan, *Managing Technology and Innovation for Competitive Advantage,* Pearson India, 1st Edition, 2002.

VIDEO LECTURES:

1. https://www.youtube.com/watch?v=wWsl48VLfVY
2. https://www.youtube.com/watch?v=dDpQ9ALKX0U
3. https://www.youtube.com/watch?v=Eu_hkxkJGTg

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22LG101702	**PERSONALITY DEVELOPMENT**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course gives awareness to students about the various dynamics of personality development.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Demonstrate knowledge in Self-Management and Planning Career

CO2. Analyze the functional knowledge in attitudes and thinking strategies

CO3. Learn and apply soft skills for professional success.

CO4. Function effectively as an individual and as a member in diverse teams

CO5. Communicate effectively in public speaking in formal and informal situations.

CO-PO Mapping Table

Course Outcomes	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	2	1	-	-	-	-	-	-	-	-	-	-
CO2	2	3	-	-	-	-	-	-	-	-	-	-
CO3	2	2	-	-	3	-	-	-	-	2	-	-
CO4	1	1	-	-	-	-	-	-	3	3	-	-
CO5	-	-	-	-	-	-	-	-	-	3	-	-
Course Correlation Mapping	**2**	**2**	**3**	**-**	**3**	**-**	**-**	**-**	**3**	**3**	**-**	**-**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: SELF-ESTEEM & SELF-IMPROVEMENT ***(09 Periods)***

Know Yourself – Accept Yourself; Self-Improvement: Plan to Improve - Actively Working to Improve Yourself- Exercises- case studies

Module 2: DEVELOPING POSITIVE ATTITUDES ***(09 Periods)***

How Attitudes Develop – Attitudes are Catching – Improve Your Attitudes – Exercises- case studies

Module 3 SELF-MOTIVATION & SELF-MANAGEMENT ***(09 Periods)***

Show Initiative – Be Responsible Self-Management; Efficient Work Habits – Stress Management – Employers Want People Who can Think – Thinking Strategies- Exercises- case studies

Module 4 GETTING ALONG WITH THE SUPERVISOR ***(09 Periods)***

Know your Supervisor – Communicating with your Supervisor – Special Communication with your Supervisor – What Should you Expect of Your Supervisor? – What your Supervisor expe of you - Moving Ahead Getting Along with your Supervisor- Exercises- case studies

Module 5 WORKPLACE SUCCESS ***(09 Periods)***

First Day on the Job – Keeping Your Job – Planning Your Career – Moving Ahead- Exercises- case studies

Total Periods: 45

EXPERIENTIAL LEARNING

1. List out the self-improvements in you on the charts and explain in detail.
2. Discuss different famous personalities and their attitudes.
3. Describe different personalities with respect to self-motivation and self-management.
4. Imagine you are a supervisor and illustrate different special communications.
5. Assume and Interpret different experiences on the first day of your job.

(Note: It's an indicative one. Course instructor may change the activities and the same shall be reflected in course handout)

RESOURCES

TEXTBOOK:

1. Harold R. Wallace and L. Ann Masters, *Personal Development for Life and Work*, Cengage Learning, Delhi, 10th edition Indian Reprint, 2011. (6th Indian Reprint 2015)
2. Barun K. Mitra, *Personality Development and Soft Skills,* Oxford University Press, 2011.

REFERENCE BOOKS:

1. K. Alex, *Soft Skills*, S. Chand & Company Ltd, New Delhi, 2nd Revised Edition, 2011.
2. Stephen P. Robbins and Timothy A. Judge*, Organizational Behaviour*, Prentice Hall, Delhi, 16th edition, 2014

VIDEO LECTURES:

1. https://www.youtube.com/watch?v=6Y5VWBLi1es
2. https://www.youtube.com/watch?v=H9qA3inVMrA

WEB RESOURCES:

1. https://www.universalclass.com/.../the-process-of-perso...
2. https://www.ncbi.nlm.nih.gov/pubmed/25545842
3. https://www.youtube.com/watch?v=Tuw8hxrFBH8

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22CE101703	**PLANNING FOR SUSTAINABLE DEVELOPMENT**	3	-	-	-	3

Pre-Requisite

Anti-Requisite

Co-Requisite

COURSE DESCRIPTION: The objective of the course is to explore the students to understand the key challenges and pathways to sustainable development - that is, economic development that is also socially inclusive and environmentally sustainable.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. To explain concept of Sustainable development and its progress
CO2. To interpret the role of Higher Education in Sustainable development
CO3. To Understand the smart infrastructure and the Urban Resilience-
CO4. To Apply biodiversity concept to save environment
CO5. To Design the principles of good governance for sustainable development goals

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	2	1	-	-	-	-	-	-	-	-	1	-	-
CO2	1	1	2	2	-	-	2	-	1	-	-	-	-	2	-
CO3	2	2	1	2	1	-	-	1	-	-	2	-	-	1	1
CO4	3	1	2	2	1	-	-	-	-	-	-	2	1	-	-
CO5	2	2	1	2	1	1	-	-	-	-	-	2	-	1	1
Course Correlation Mapping	**2**	**2**	**2**	**2**	**1**	**1**	**2**	**1**	**1**	**-**	**2**	**2**	**1**	**1**	**1**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION TO SUSTAINABLE DEVELOPMENT ***(09 Periods)***

Introduction to Sustainable Development –Economic Growth and Progress -Continuing Poverty Environmental Threats

Module 2: SUSTAINABLE DEVELOPMENT IN EDUCATION ***(09 Periods)***

Life-cycle Approach to Human Development-Early Childhood Development-The Rising Returns to Education and the Supply Response -Social Mobility -The Role of Higher Education in Sustainable Development

Module 3: SUSTAINABLE CITIES ***(09 Periods)***

The patterns of urbanization around the world-sustainable city-Smart Infrastructure-Urban Resilience-Planning for Sustainable Development

Module 4: SAVING BIODIVERSITY ***(09 Periods)***

Bio-Diversity Meaning - Biodiversity under Threat-Oceans and Fisheries –Deforestation-International Dynamics

Module 5: SUSTAINABLE DEVELOPMENT GOALS ***(09 Periods)***

The proposal for SDGs at Rio+20-Goal Based Development -Financing for Sustainable Development -Principles of Good Governance -Feasibility of Sustainable Development

Total Periods:45

EXPERIENTIAL LEARNING

1 Prepare Sustainable Development Strategies

2 Prepare Posters for Smart cities

3 Planting a sapling to protect Environment

4 Create a Sustainable development Goal theme

RESOURCES

TEXT BOOKS:

1 Manoj Kumar Karnena, "Environmental Planning and Sustainable Development", Orange Books Publication, First edition, 2021

2 Amitabh Shukla, "Regional planning and Sustainable Development", Kanishka Publishers,2000

REFERENCE BOOKS:

1 Environment and Sustainable Development ,M. H. Fulekar, Bhawana Pathak &R. K.Kale ,Springer Publishers, First Edition, Springer 2013

2 Handbook of Sustainable Development Planning: Studies in Modelling and Decision Support , by M. A. Quaddus & M. A.B. Siddique ,Second Edition 2013

3 Dimensions of Sustainable Development , Kamalajit S.Bawa&Reinmar Seidler,EOLSS Publishers,Volume II,2009

VIDEO LECTURES:

1 https://onlinecourses.nptel.ac.in/noc22_hs61/preview

2. https://www.coursera.org/lecture/sustainable-development/intro-to-sustainable-development-3KCfl

WEB RESOURCES:

1 https://www.yourarticlelibrary.com/

2 https://licchavilyceum.com/

3 https://www.lincolninst.edu/

Module 3: BUSINESS ETHICS AND VALUES ***(09 Periods)***

Meaning, Nature of business ethics, Importance of business ethics, Factors influencing business ethics, Ethical theories, Types of ethical dilemmas. Values: Meaning, Types of values.Role of various agencies in ensuring ethics in corporation

Module 4: ETHICS IN MANAGEMENT ***(09 Periods)***

Ethics in HRM- Importance, Managing ethical issues in HRM; Marketing ethics- Importance, Ethical issues in marketing, Ethical behaviour in relation to suppliers, competitors; Ethics in Finance and Accounts. Business Ethics in Different Organizational Contexts.

Module 5: ETHICS IN DECISION MAKING ***(09 Periods)***

Nature of ethical decision making, Process- Problem identification, Factors influencing ethical decision making- Individual influences (Age & Gender, National and cultural characteristics, Education & employment, psychological factors, Personal values, Personal integrity and moral imagination); Situational influences- (Issue related factors and Context related factors).

Total Periods:45

EXPERIENTIAL LEARNING

1. Learn how to Develop Ethical Practices within Organizations and how to Apply Ethical Principles to Decision-Making.
2. Learn About Values and Ethics, Ethical Behavior, and the Role of Leadership in Promoting Ethical Behavior
3. Understand Various theories and Models for solving Ethical issues that arise in Organizations.
4. Learn About Various Ethical Issues that arise in Business, Including those in Marketing, Finance, Human Resources, and Information Technology.
5. Analyze the CSR activities of various Indian corporations

RESOURCES

TEXT BOOKS:

1 Business Ethics: K Aswathappa, J Usha Rani, Sunanda GundaVajhala; Himalaya Publishing house; First edition 2017

2 Business Ethics and Corporate Governance: Dr. S S Khanka; S Chand and Company Pvt Ltd; First edition 2014.

REFERENCE BOOKS:

1 M.G. Velasquez, Business Ethics, Prentice Hall India Limited, New Delhi, 2010

2 C.S.V. Murthy, Business Ethics, Himalaya Publishing House, 2007

VIDEO LECTURES:

1 https://www.youtube.com/watch?v=t80QDkdz3DI- You Tube

2. https://www.youtube.com/watch?v=HmPijVi1S_8

3 https://www.youtube.com/watch?v=n0uwTBrgqxI - YouTube

WEB RESOURCES:

1 https://archive.nptel.ac.in/courses/110/105/110105079/

2 https://archive.nptel.ac.in/courses/110/105/110105079/

3 http://www.nitttrc.edu.in/nptel/courses/video/110105138/L16.html

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22CS101702	**WEB DESIGN FUNDAMENTALS**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course is designed to introduce the student to the technologies and facilities of web design: CSS, javascript, and jquery. Students will understand the web design process and use these software technologies together to produce web design projects.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Understand the fundamentals of HTML 5 and the principles of web design.

CO2. Construct basic websites using HTML and Cascading Style Sheets.

CO3. Build dynamic web pages with validation using Java Script objects and by applying different event handling mechanisms.

CO4. Learn how to use HTML5 and other Web technologies to develop interactive and responsive web pages.

CO-PO Mapping Table

Course Outcomes	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	-	-	-	-	-	-	-	-	-
CO2	3	3	-	-	-	-	2	-	-	-	-	-
CO3	3	3	3	-	-	-	-	-	-	-	2	-
CO4	2	3	3	-	-	-	-	2	-	-	-	-
Course Correlation Mapping	**3**	**3**	**3**	**-**	**-**	**-**	**2**	**2**	-	**-**	**2**	**-**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: INTRODUCTION *(09 Periods)*

Elements – Data types - Working with Text - Arranging Text - Displaying Lists - VAR Element - BDO Element - SPAN Element – DIV Element.

Module 2: LINKS AND URLS *(09 Periods)*

Hyperlinks – URLs - Linking to a Mail System - Creating Tables - Inserting Images in a Web Page – Colors – Form Elements - Multiple-Choice Elements – Multimedia

Module 3: DYNAMIC HTML ***(09 Periods)***

Features of JavaScript - Programming Fundamentals - JavaScript Functions, Events,Image Maps, and Animations – JS Objects - Document Object - Validation, Errors,Debugging, Exception Handling, and Security

Module 4: CASCADING STYLE SHEET ***(09 Periods)***

CSS Syntax - CSS Selectors - Backgrounds and Color Gradients - Fonts and Text Styles - Creating Boxes and Columns - Displaying, Positioning, and Floating an Element - Table Layouts - : Effects, Frames, and Controls in CSS

Module 5: ADVANCED FEATURES OF HTML5 ***(09 Periods)***

Creating Editable Content - Checking Spelling Mistakes - Custom Data Attributes - Client-Side Storage - Drag and Drop Feature - Web Communication –**jQuery -** Fundamentals of jQuery - Callback Functions - jQuery Selectors - jQuery Methods to Access HTML Attributes.

Total Periods: 45

EXPERIENTIAL LEARNING

1. Design a blog layout that includes header, navigation menu, content area, sidebar. Apply appropriate styling to each section.
2. Develop a java script based quiz that presents MCQs to the user and provides immediate feedback on their answers. Keep track of the score and display the final results at the end.
3. Build a web page that displays and image gallery. Each image should be a clickable link that opens the image in a larger view when clicked.

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in course handout.)

RESOURCES

TEXTBOOKS

1. DT Editorial Services, *HTML 5 Black Book*, Dreamtech Press, 2nd Edition, 2016.

REFERENCE BOOKS

1. Jennifer Niederst Robbins, *HTML5 Pocket Reference,* O'Reilly, 5th Edition, 2018.
2. Ben Frain, *Responsive Web Design with HTML5 and CSS3*, Packt, 2nd Edition, 2020.

VIDEO RESOURCES

1. https://www.youtube.com/watch?v=h_RftxdJTzs
2. https://www.youtube.com/watch?v=dlkWNdnO8ek

WEB RESOURCES

1. https://www.w3schools.com/html/
2. https://www.w3schools.com/css/
3. https://www.geeksforgeeks.org/web-technology/
4. https://www.smashingmagazine.com/2021/03/complete-guide-accessible-front-end-components/
5. https://css-tricks.com/
6. https://davidwalsh.name/css-optional

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22SS101706	**WOMEN EMPOWERMENT**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: Concept & Framework, Status of Women, Women's Right to Work, International Women's Decade, and Women Entrepreneurship.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1 Demonstrate the knowledge of the characteristics and achievements of empowered women and women's empowerment techniques by analyzing women's legal and political status.

CO2 Apply the knowledge of women's rights by analyzing various societal issues and obstacles in different fields, including science and technology.

CO3 Demonstrate the knowledge of the significance of women's participation in policy debates, National conferences, and common forums for equality and development by identifying and analyzing issues.

CO4 Analyze the concept of women's entrepreneurship, government schemes, and entrepreneurial challenges and opportunities.

CO-PO Mapping Table

Course Outcomes	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	1	-	-	1	3	-	1	–	–	-	-
CO2	3	1	-	-	-	2	-	-	-	–	-	-
CO3	3	1	-	-	-	2	-	-	-	3	-	-
CO4	3	1	-	-	-	-	-	-	-	-	2	-
Course Correlation Mapping	**3**	**1**	**-**	**-**	**1**	**3**	**-**	**1**	**–**	**3**	**2**	**-**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: CONCEPT & FRAMEWORK ***(09 Periods)***

Introduction– Empowered Women's Characteristics – Achievements of Women's Empowerment **Concept of Empowerment:** Meaning & Concept – Generalizations about Empowerment – Empowerment Propositions – Choices women can make for empowerment – Women's participation in decision making, development process & in Governance. **Framework for Empowerment** – Five levels of equality – Tenets of Empowerment– Elements – Phases and aspects – Techniques – Categories and Models – Approaches.

Module 2: STATUS OF WOMEN ***(09 Periods)***

Legal Status: Present Scenario – Call for Social Change – Significant Trends – Legal & Schemes – Personal Law – Joint Family – Criminal Law – Shift towards Dowry – Deterrent Punishment – Criminal Law (II Amendment) – Discrimination in Employment.

Political Status: Present Scenario – Political Participation & its NatureSocio–economic Characteristics – Political Mobilization: Mass Media – Campaign Exposure – Group Orientation – Awareness of issues and participation – Progress & Future Thrust.

Module 3: WOMEN'S RIGHT TO WORK ***(09 Periods)***

Introduction – Present Scenario – Changes in Policy & Programme – National Plan of Action– Women's Cells and Bureau – Increase in the work participation rate – Discrimination in the labour market – Women in unorganized sector – Issues and Obstacles– Women in Education – Women in Science & Technology – Case Study: Linking Education to Women's Access to resources.

Module 4: WOMEN'S PARTICIPATORY DEVELOPMENT ***(09 Periods)***

Dynamics of social change – conscious participation – Information Explosion – Organized Articulation – National Conference – Common Forums – Participatory Development – New Issues Identified – Role of other Institutions.

Module 5: WOMEN ENTREPRENEURSHIP ***(09 Periods)***

Introduction – Definition – Concept – Traits of women Entrepreneurs – Role of Women Entrepreneurs in India – Reasons for Women Entrepreneurship – Government schemes & Financial Institutions to develop Women Entrepreneurs – Key policy recommendations – Project Planning – Suggestions and measures to strengthen women entrepreneurship – Growth & Future challenges – Training and Opportunities – Case Study: Training Womenas Hand–pump Mechanics– Case Study: Literacy for Empowering Craftswomen

Total Periods: 45

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22BS101036	**BIOLOGY FOR ENGINEERS**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course provides a detailed discussion on Introduction to living organisms, Proteins, Nucleic acids and enzymes, Genetics and Molecular biology, Recombinant DNA technology, Human physiology and applied biology.

COURSE OUTCOMES: After successful completion of the course, students will be able to

CO1 Identify difference between cells, Cellular components and their functions.

CO2 Understand Proteins, Nucleic acids structure and function and also Mechanism of enzyme action.

CO3 Identify Central dogma of Molecular biology and processes of Molecular Biology.

CO4 Understand Recombinant DNA technology and its importance in creating new Animals and Plants.

CO5 Understand basics and Mechanism of different Physiological process including nerve function and applications of biological sciences.

CO-PO Mapping Table

Course Outcomes	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	2	-	-	-	-	-	-	-	-	-	-
CO2	3	2	-	-	-	-	-	-	-	-	-	-
CO3	3	3	-	-	-	-	-	-	-	-	-	-
CO4	3	2	-	-	-	-	-	-	-	-	-	-
CO5	3	2	-	-	-	-	-	-	-	-	-	-
Course Correlation Mapping	**3**	**2**	-	-	-	-	-	-	-	-	-	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: LIVING ORGANISMS ***(09 Periods)***

Comparison of biological organisms with manmade systems, Classification of living organisms, Cellular basis of life, differences between prokaryotes and eukaryotes, classification on the basis of carbon and energy sources, molecular taxonomy

Module 2: PROTEINS, NUCLEIC ACIDS AND ENZYMES ***(10 periods)***

Biomolecules, structure, function and Classification of proteins, structure, function and Classification of and Nucleic acids, Enzymes, Enzyme nomenclature, Classification of Enzymes and Mechanism of Enzyme action, Industrial applications of enzymes, Fermentation and its industrial applications

Module 3 GENETICS AND MOLECULAR BIOLOGY ***(11 Periods)***

Mendel's laws, single gene disorders in humans, Genetic code, DNA replication, Transcription, Translation.

Module 4 RECOMBINANT DNA TECHNOLOGY ***(08 Periods)***

Recombinant DNA Technology: recombinant vaccines, transgenic microbes, plants and animals, animal cloning, biosensors, biochips.

Module 5 HUMAN PHYSIOLOGY AND APPLIED BIOLOGY ***(07 Periods)***

Fundamentals of Human physiology, neurons, synaptic and neuromuscular junctions, Introduction to EEG, DNA fingerprinting, DNA Micro array and Genomics.

Total Periods: 45

EXPERIENTIAL LEARNING

1. Identify the Cell and Cellular organelle spotters and write the functions of spotters identified
2. Prepare a table of Enzymes and their importance.
3. Assignments on Central dogma of Molecular biology
4. Identify different organs in the organ system diagrams.
5. Assignments on photosynthesis.
6. Quiz related to organ system and functions.

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in course handout.)

RESOURCES

TEXT BOOKS:

1. Rajiv Singal, Gaurav Agarwal, *Biology for Engineers*, CBS, 2019.
2. S. Sing and T. Allen, *Biology for Engineers*, Vayu Education of India, 2014.

REFERENCE BOOKS:

1. B. Alberts, A. Johnson et al., *The molecular biology of the cell*, Garland Science, 6th edition, 2014.
2. A. T. Johnson, *Biology for Engineers*, CRC press, 2011.

VIDEO LECTURES:

1. https://www.youtube.com/watch?v=N0Y386SVGN8
2. https://www.youtube.com/watch?v=1Pzk-UqilW4
3. https://www.youtube.com/watch?v=208pMhKoQeo

WEB RESOURCES:

1. Structure and function of Proteins: https://nptel.ac.in/courses/104102016/16
2. Enzyme catalysis: https://nptel.ac.in/courses/103103026/module3/lec35/4.html
3. Biochips: https://nptel.ac.in/courses/112104029/3

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22CE101701	**CIVIL ENGINEERING AND THE SOCIETY**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course provides a detailed discussion on introduction to civil engineering, aesthetics of historic and modern civil engineering structures, unpredictable nature and the civil engineering; civil engineering solutions for the problems of traffic,pollution, water and waste management; building sustainable smart cities.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Analyze principles of civil engineering to basic civil engineering problems following ethics and latest developments considering society, environment and sustainability besides communicating effectively in graphical form.

CO2. Analyze aesthetics of historic and modern civil engineering structures to solve complex civil engineering problems using tools and techniques by following ethics and latest trends considering society, environment and sustainability besides communicating effectively in graphical form.

CO3. Analyze unpredictable nature and the role of civil engineering to solve complex civil engineering problems using tools and techniques by following ethics and considering society, environment and sustainability besides communicating effectively in graphical form.

CO4. Analyze civil engineering solutions for the problems of traffic, pollution, water and waste management to solve complex problems using appropriate tools and techniques following relevant standards considering society, health, safety, environment,economics and management besides communicating effectively in graphical form.

CO5. Analyze the building principles of sustainable smart cities to solve complex problems using appropriate tools and techniques following relevant standards considering society, health, safety, environment, economics and management besides communicating effectively in graphical form.

CO-PO Mapping Table:

Course Outcomes	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	3	-	-	-	2	3	2	-	1	-	1
CO2	3	3	-	1	2	2	2	2	-	1	-	1
CO3	3	3	-	1	2	2	2	2	-	1	-	-
CO4	3	3	-	1	2	2	2	2	-	1	2	-
CO5	3	3	-	1	2	2	2	2	-	1	2	-
Course Correlation Mapping	**3**	**3**	**-**	**1**	**2**	**2**	**2**	**2**	-	**1**	**2**	**1**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION TO CIVIL ENGINEERING ***(07 Periods)***

Philosophy of civil engineering, Disciplines of civil engineering, Evolution of construction and civil engineering in the world; Civil engineer - Duties and responsibilities, Role of Civil engineer in the society; Civil engineering materials and their applications, Latest advancements in civil engineering.

Module 2: AESTHETICS OF HISTORIC AND MODERN CIVIL ENGINEERING STRUCTURES ***(09 Periods)***

Aesthetics in civil engineering structures; Aesthetic principles and techniques - Analysis of materials, textures and colors in aesthetic design, Integration of aesthetics with structural engineering principles; Historic civil engineering structures - Case studies of iconic historic structures (e.g. Colosseum, Taj Mahal, Eiffel Tower); Modern civil engineering structures - Exploration of contemporary iconic structures (e.g. Burj Khalifa, Sydney Opera House, Golden Gate Bridge); Integration of aesthetics and functionality - Ethical considerations in balancing aesthetics, functionality and sustainability; Future trends in aesthetic engineering.

Module 3 UNPREDICTABLE NATURE AND THE CIVIL ENGINEERING ***(09 Periods)***

Unpredictable nature, Examples of unpredictable natural disasters - Earthquakes, Floods, Landslides, Hurricanes, Tsunamis, Impacts of unpredictable natural events on infrastructure; Role of civil engineering; Resilience in civil engineering - Strategies for building resilient structures, Risk assessment and analysis, Incorporating safety factors, Using robust construction materials, Implementing redundancy and backup systems, Sustainable design practices; Case studies of successful resilient designs.

Module 4 CIVIL ENGINEERING SOLUTIONS FOR THE PROBLEMS OF TRAFFIC, POLLUTION, WATER AND WASTE MANAGEMENT ***(11 Periods)***

Introduction to urban challenges and sustainable development; Traffic management solutions - Causes and impacts of traffic congestion, Intelligent transportation systems; Pollution control and environmental engineering, Sources and types of urban pollution, Air quality monitoring and control strategies, Water pollution control, Noise pollution management, Sustainable construction practices to reduce pollution; Water resource management, Water demand and supply management in urban areas, Rainwater harvesting techniques, Water conservation and wastewater treatment technologies; Waste management strategies, Solid waste generation and disposal challenges, Waste-to-energy conversion technologies, Case studies of successful waste management initiatives; Integration and synergies among Solutions, Multi-disciplinary approach for holistic solutions.

Module 5 BUILDING SUSTAINABLE SMART CITIES ***(09 Periods)***

Smart city; Elements of smart city infrastructure – Buildings, Mobility, Energy, Water, Waste management, Health and digital layers; Need for an integrated approach; Role of science, technology and innovation in the implementation of smart infrastructure; Smart infrastructure design principles and policies; Case studies: Gujarat International Finance Tech-City in India.

Total Periods: 45

EXPERIENTIAL LEARNING

1. Group discussion on compatibility of modern construction materials compared to that of traditional civil engineering materials
2. Poster presentation on historic and modern civil engineering structures.
3. Submit a case study report on Life Cycle Analysis (LCA) of any one of the historic civil engineering structure.
4. Submit a case study report on the theme of severity of the natural disasters on the Civil engineering structures.
5. Debate on challenges, limitations and solutions for design and implementation of smart city.

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in course handout.)

RESOURCES

TEXT BOOKS:

1. David Muir Wood., *Civil Engineering: A Very Short Introduction*, Oxford University Press, 1st Edition, 2012.
2. Roger Scruton, *The Aesthetics of Architecture*, Princeton University Press, 2nd Edition, 2013.

REFERENCE BOOKS:

1. Anubha Kaushik and C. P. Kaushik, *Perspectives in Environmental Studies*, New Age International (P) Ltd Publications, 6th Edition, 2018.
2. Sang Lee (Editor), *Aesthetics of Sustainable Architecture*, 010 publishers, 1st Edition, 2013.
3. Marc Kushner, *The Future of Architecture in 100 Buildings*, Simon and Schuster, 1st Edition, 2015.
4. Nicholas J. Garber and Lester A. Hoel, *Traffic and Highway Engineering*, Nelson Engineering, 1st Edition, 2008.
5. Stephen M. Wheeler and Timothy Beatley, *Sustainable Urban Development*, Reader Routledge Urban Reader Series, 3rd Edition, 2014.
6. Larry W. Mays, *Water Resources Engineering*, Wiley India Private Limited, 3rd Edition, 2011.
7. Hans Straub, *A History of Civil Engineering: An Outline from Ancient to Modern Times*, The MIT Press, 4th Edition, 1964.
8. Brian Vanden Brink, *Iconic: Perspectives on the Man-Made World*, Down East Books, Illustrated Edition, 2012.

VIDEO LECTURES:

1. https://archive.nptel.ac.in/courses/123/105/123105001/
2. https://onlinecourses.nptel.ac.in/noc22_ce42/preview
3. https://onlinecourses.nptel.ac.in/noc19_ce31/preview
4. https://onlinecourses.nptel.ac.in/noc20_ce07/preview

WEB RESOURCES:

1. https://bregroup.com/insights/aesthetics-in-architecture-how-beauty-and-design-are-inspiring-each-other/
2. https://keckwood.com/news-updates/how-civil-engineers-help-during-disaster-recovery/#:~:text=Civil%20engineers%20provide%20humanitarian%20and,shortages%20to%20hard%2Dhit%20communities
3. https://smartcities.gov.in/
4. https://www.twi-global.com/technical-knowledge/faqs/what-is-civil-engineering
5. https://www.ice.org.uk/engineering-resources/knowledge-resources/water-and-waste-water-management

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22EE101701	**ELECTRICAL SAFETY AND SAFETY MANAGEMENT**	3	-	-	-	3

Pre-Requisite -
Anti-Requisite -
Co-Requisite -

COURSE DESCRIPTION:

The course deals with the various aspects of potential risk due to electrical shock; safety precautions to be followed while working in hazardous zones; safe practices while handling various electrical equipment and during maintenance; and relevant electrical safety standards and Indian rules and acts.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Understand the Indian electricity rules, regulations and various standards to be maintained for the safety of life and equipment.

CO2. Understand the potential effects of electrical shock and safety measures to protect against such risk.

CO3. Understand the safety aspects and safe practices to be followed while installing residential, commercial, and agricultural appliances.

CO4. Identify various hazardous working zones and take necessary precautionary measures while working in such areas.

CO5. Follow safety measures during installation, testing and commissioning, and maintenance of electrical equipment/plant.

CO-PO Mapping Table

Course Outcome	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	-	-	-	1	3	1	3	-	-	-	1
CO2	3	-	-	-	1	2	2	-	-	-	-	1
CO3	3	-	-	-	1	2	2	-	-	-	-	1
CO4	3	-	-	-	2	3	2	2	-	-	-	1
CO5	3	-	-	-	-	3	2	2	-	-	-	1
Course Correlation Mapping	**3**	**-**	**-**	**-**	**1**	**3**	**2**	**3**	**-**	**-**	**-**	**1**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: INDIAN ELECTRICITY RULES AND ACTS, AND THEIR SIGNIFICANCE ***(10 Periods)***

OSHA standards of electrical safety, Basic electrical safety rules as per OSHA; Objectives and scope of IE acts and IE rules, Ground clearance and Section Clearances, Clearance in transmission and distribution lines, Significance of Equipment Earthing, Earthing of equipment bodies, structures and non-current carrying metallic parts, Earthing of system neutral; Rules regarding first aid and firefighting facility, Electrical safety general requirements as per IE rules.

Module 2: INTRODUCTION TO ELECTRICAL SAFETY AND SAFETY MANAGEMENT ***(10 Periods)***

Electric Safety: Terms and definitions, objectives of safety and security measures, Hazards associated with electric current and voltage, Protection against electrical hazards and types, Effect of current on the human body, Principles of electrical safety and approach to prevent accidents.

Electric shocks and its prevention: Primary and secondary electrical shocks, possibilities of getting an electrical shock and its severity, medical analysis of electric shocks and its effects, shocks due to flash/ Spark over's, prevention of shocks, safety precautions against contact shocks, flash shocks, burns, Safety precautions in LV installations and electric plant.

Module 3: ELECTRICAL SAFETY IN RESIDENTIAL, COMMERCIAL, AND AGRICULTURAL INSTALLATIONS ***(08 Periods)***

Introduction—Wiring and fitting; Domestic appliances—water tap giving a shock, shock from wet wall, fan firing shock; Multi-storied building, Temporary installations, Agricultural pump installation; Do's and Don'ts for safety in the use of domestic electrical appliances; Principles of safety management in electrical plants, safety auditing, and economic aspects.

Module 4: ELECTRICAL SAFETY IN HAZARDOUS AREAS ***(07 Periods)***

Hazardous zones—class 0, 1 and 2; Sparks, flashovers and corona discharge in electrical plants; equipment for hazardous locations; scope for live line work, principles of live line maintenance, special tools for live line maintenance, safety instructions for working on HV lines/apparatus.

Module 5: SAFETY DURING INSTALLATION TESTING AND MAINTENANCE ***(10 Periods)***

Safety during installations: Preliminary preparations, preconditions for the start of installation work and safe sequence, safety aspects during installations of Transformers and Rotating machines.

Safety during testing: Purpose of commissioning checks and tests, equipment tests, high voltage energization tests, performance and acceptance tests, and safety aspects during commissioning.

Safety during maintenance: Operators' safety, Types of safety maintenance, Safety procedures, safety precautions during maintenance, and planning of maintenance.

Total Periods: *45*

EXPERIENTIAL LEARNING

1. Study and submit a report on various electrical safety standards followed in abroad countries.
2. Visit a nearby industry and submit a report on various safety measures followed in the industry.
3. Study and submit a report on standard practices followed during the maintenance/commissioning of the electrical apparatus in any industry.
4. Collect information about various safety/alert sign boards and the relative measures for a particular situation.
5. Should practice preliminary first aid assistance such as Cardiopulmonary resuscitation (CPR) and shall demonstrate.

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in course handout.)

RESOURCES

TEXT BOOKS:

1. Rao, Prof. H.L. Saluja, *Electrical Safety, Fire Safety Engineering and Safety Management*, Khanna Publishers. New Delhi, 2nd Edition, 2018 Reprint.

REFERENCE BOOKS:

1. Cadick, John, Mary Capelli-Schellpfeffer, and Dennis K. Neitzel, *Electrical safety Handbook,* McGraw-Hill Education, 2012.

VIDEO LECTURES:

1. https://www.youtube.com/watch?v=g-ofq7i_u48

WEB RESOURCES:

1. https://cercind.gov.in/Act-with-amendment.pdf
2. https://www.edapp.com/blog/electrical-safety-training-topics/

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22EC101702	**ESSENTIALS OF VLSI**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course contains the topics that make student realize the need for Testing. The various types of testing along with Fault Modeling. Test methods forevaluation and test generation algorithms, Delay Tests, IDDQ Tests for testing the circuits , Ad-Hoc DFT Methods, Scan Based Designs, Built-In Self Test.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Understand the importance of Testing, fault models and related theorems.

CO2. Analyze various test methods as applicable to digital circuits.

CO3. Appraise the various combinational and sequential circuit test generation algorithms for functional verification of digital circuits

CO4. Assess delay test algorithms and IDDQ test algorithms for at-speed testing of CMOS Integrated Circuits.

CO5. Recognize the concepts and architectures for Built-In Self Test to satisfy industry specifications.

CO-PO Mapping Table

Course Outcomes	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	-	-	-	-	-	-	-	-	-	-	-
CO2	3	3	2	2	2	-	-	-	-	-	-	
CO3	3	3	2	2	2	-	-	-	-	-	-	-
CO4	3	3	2	2	2	-	2	3	-	-	-	-
CO5	3	-	-	-	-	-	-	3	-	-	-	-
Course Correlation Mapping	**3**	**3**	**2**	**2**	**2**	**-**	**2**	**3**	**-**	**-**	**-**	**-**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: INTRODUCTION TO VLSI ***(09 Periods)***

Levels of Abstraction, VLSI Design Flow, MOS Transistor - Characteristics, I_{DS} – V_{DS} Relation, NMOS and CMOS Logic – Logic Gates Design, NMOS and CMOS Fabrication Process.

Module 2: CMOS CIRCUIT DESIGN PROCESS ***(10 Periods)***

MOS Layers, Stick Diagrams, NMOS and CMOS Design Styles, Lambda based Design Rules, NMOS and CMOS Layouts for Inverter and Universal Gates, Sheet Resistance, Capacitance and Delay Calculations, Effects of Scaling.

Module 3: SUBSYSTEM DESIGN ***(11 Periods)***

Adders – Manchester Carry Chain Adder, Carry Look Ahead Adder, Carry Select Adder, Carry Skip adder, Barrel Shifter, Multiplier – Array Multiplier, Booth Multiplier.

Module 4: PROGRAMMABLE HARDWARE ***(06 Periods)***

Design Styles, Programmable Interconnects, Field Programmable Gate Arrays, Complex Programmable Logic Devices, Cell based Design Methodology.

Module 5: DESIGN FOR TESTABILITY ***(09 Periods)***

Ad-Hoc DFT Methods, Full Scan Design, Partial Scan Design, Random Logic BIST – Test-per-Clock and Test-per-Scan BIST Systems; Boundary Scan Standard – TAP Controller and Port.

Total Periods: 45

EXPERIENTIAL LEARNING

1. Develop and Illustrate D – algorithm for Sequential Circuits.
2. Illustrate the applicability of existing testing algorithms for circuits with multiple stuck-at-faults.

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in course handout.)

RESOURCES

TEXT BOOKS:

1. Michael L. Bushnell, Vishwani D. Agrawal*, Essentials of Electronic Testing for Digital, Memory and Mixed-Signal VLSI Circuits,* Kluwer Academic Pulishers, Springer US, New York, 2006*.*

REFERENCE BOOKS:

1. Miron Abramovici, Melvin A. Breur, Arthur D.Friedman, *Digital Systems Testing and Testable Design*, Wiley, Jaico Publishing House, 1st Edition, 2001.
2. Alfred L. Crouch, *Design for Test for Digital ICs & Embedded Core Systems*, Pearson Education, 1st Reprint Edition, 2007.
3. Robert J.Feugate, Jr., Steven M.Mclntyre, *Introduction to VLSI Testing*, Prentice Hall, 1st Illustrated Edition, 1998.

VIDEO LECTURES:

1. https://nptel.ac.in/courses/117105137
2. https://nptel.ac.in/courses/117103125
3. https://nptel.ac.in/courses/106103016
4. https://archive.nptel.ac.in/courses/106/103/106103116/

WEB RESOURCES:

1. https://www.electronics-tutorial.net/vlsi-design-for-testability/IC-Testing.html
2. https://alexromanov.github.io/2022/08/14/what-is-testability/

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22EE101704	**GREEN TECHNOLOGIES**	3	-	-	-	3

Pre-Requisite -
Anti-Requisite -
Co-Requisite -

COURSE DESCRIPTION: This course provides a detailed discussion on green technology concepts, the role of industry and government in establishing green energy footprints and cleaner development mechanisms. It also presents energy-efficient and sustainable green production systems, concepts of energy ecosystems, and concepts of green buildings.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Understand the green technology concepts and the consequences of greenhouse gas emissions.
CO2. Acquire basic knowledge on cleaner development mechanism, the importance of re-use of materials, and the oxidation technology for wastewater.
CO3. Go beyond energy-efficient machinery, biofuels, and environmentally friendly materials.
CO4. Acquire basic knowledge on man-made ecosystems, sources, and control of pollution.
CO5. Understand the concepts and requirements for green buildings.

CO-PO Mapping Table

Course Outcome	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	-	-	-	-	-	3	-	-	-	-	1
CO2	3	-	-	-	-	-	3	-	-	-	-	1
CO3	3	-	-	-	-	-	3	-	-	-	-	1
CO4	3	-	-	-	-	-	3	-	-	-	-	1
CO5	3	-	-	-	-	-	3	-	-	-	-	1
Course Correlation Mapping	**3**	**-**	**-**	**-**	**-**	**-**	**3**	-	-	-	-	**1**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: INTRODUCTION TO GREEN TECHNOLOGY ***(09 Periods)***

Green technology-definition, importance, factors affecting green technology. Global atmosphere- green house gases, global warming, acid rain, ozone depletion and photochemical smog. Role of industry, government and institutions; industrial ecology, role of industrial ecology in green technology.

Module 2: CLEANER DEVELOPMENT TECHNOLOGIES ***(08 Periods)***

Cleaner development mechanisms, role of industry; reuse, reduce and recycle, raw material substitution; wealth from waste; carbon credits, carbon trading, carbon sequestration, eco labeling. Oxidation technology for wastewater treatment - cavitation, fenton chemistry, photocatalysis and hybrid processes.

Module 3: ENERGY EFFICIENT SYSTEMS AND PROCESSES ***(09 Periods)***

Energy efficient motors, energy efficient lighting, control and selection of luminaries; bio-fuels, fuel cells- working, selection of fuels, Green manufacturing systems, selection of recyclable and environment friendly materials in manufacturing, design and implementation of sustainable green production systems.

Module 4: ENERGY ECOLOGY AND ENVIRONMENT ***(08 Periods)***

Concept and theories of ecosystems - energy flow in major manmade ecosystems- agricultural, industrial and urban ecosystems - sources of pollution from energy technologies and its impact on atmosphere - air, water, soil, and environment - environmental laws on pollution control – innovation and sustainability: - eco-restoration / phyto-remediation, renewable energy technologies, industrial ecology and agro ecology.

Module 5: GREEN BUILDINGS ***(10 Periods)***

Definition- Features and benefits, Fundamental planning decisions for energy efficient building- site selection, buildings forms and orientations, building fabrics and insulation, ventilation, passive solar features. Eco-friendly and cost effective materials, energy management. Rooftop solar photovoltaic system and solar tracking system, alternating roofing systems.

Total Periods: 45

EXPERIENTIAL LEARNING

1. The student shall prepare a report on the causes of global warming and should suggest possible remedies for reducing the global warming
2. The student shall prepare a report on the wastewater management system.
3. The student shall prepare a report on controlling pollution in the environment.
4. The student shall observe the various considerations in a greenhouse building and should prepare the report on the observations made and should suggest possible avenues for improvement.

(Note: It's an indicative one. Course instructor may change the activities and the same shall be reflected in course handout)

RESOURCES

TEXT BOOKS:

1. Khan B.H, *Non conventional energy resources*, Tata McGraw-Hill, New Delhi 2006.
2. Paul L. Bishop, *Pollution prevention –Fundamentals and Practices*, McGraw-Hill-international 2000.

REFERENCE BOOKS:

1. P. Aarne Veslind, *Introduction to environmental engineering*, Cenage Learning 2010.
2. Joseph A. Salvato, *Environmental engineering,* Wiley
3. Tom D Reynolds, *Unit operations and processes in environmental engineering*, PWS Publishing.
4. D. Y. Goswami, F. Kreith and J. F. Kreider, *Principles of Solar Engineering*, Taylor and Francis.
5. C. S. Solanki, *Solar Photovoltaics: Fundamental Applications and Technologies*, Prentice Hall.

WEB RESOURCES:

1. N. Vinutha bai, R. Ravindra, Energy efficient and green technology concepts, International Journal of Research in Engineering and Technology p 253-258, Volume: 03 Special Issue: 06, 2014, eISSN: 2319-1163 pISSN: 2321-7308.

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22ME101702	**HUMAN RESOURCE MANAGEMENT**	3	-	-	-	3

Pre-Requisite -
Anti-Requisite -
Co-Requisite -

COURSE DESCRIPTION:
Concepts of HRM; Environmental Scanning; Human Resource Planning; Job analysis; Job design; Job evaluation; Recruitment; Selection; Placement; Orientation; Training and Development; Performance appraisal; Merit rating; Compensation; Industrial relations; Trade unions; Industrial disputes; Ethical issues; Employee safety.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Demonstrate the knowledge on the principles, processes and practices of human resource management.
CO2. Analyze the key issues related to administering the human elements such as motivation, recruitment, training and development, compensation, appraisal, and career development.
CO3. Provide solutions to plan and manage human resource functions effectively within organization.
CO4. Apply HRM concepts and techniques in strategic planning to improve organizational effectiveness.
CO5. Evaluate HRM related social, cultural and safe responsibilities and issues in a global context.

CO-PO Mapping Table

Course Outcomes	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	2	1	1	-	1	-	-	-	-	-	-
CO2	3	3	1	1	-	1	-	-	-	-	-	-
CO3	3	2	3	1	-	-	-	-	-	-	-	-
CO4	2	1	1	1	3	1	-	-	-	-	-	-
CO5	3	1	1	1	1	1	2	3	-	-	-	-
Course Correlation Mapping	**3**	**2**	**1**	**1**	**2**	**2**	**2**	**3**	**-**	**-**	-	-

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: INTRODUCTION TO HRM & HRP ***(09 Periods)***

Introduction to Human Resource Management (HRM): Objectives, Scope and significance of HRM, Functions of HRM, Prospects in HRM, Environmental scanning.

Human Resource Planning (HRP): Introduction, Nature and importance of HRP, Factors affecting HRP, The planning process, Human resource planning and the Government, Requisites for successful HRP, Barriers to HRP.

Module 2: RECRUITMENT AND PLACEMENT ***(09 Periods)***

Job Analysis – Nature and process of job analysis, Methods of collecting job data,Potential problems with job analysis, Requisites for job analysis; Job Design - Factors, Jobdesign approaches, Contemporary issues; Job evaluation - Process, Methods; Recruitment - Nature, Purposes and importance, Factors governing recruitment, Recruitment process, Evaluation and control; Selection – Nature, Process, Barriers to effective selection, Evaluation of selection process, Placement; Separation.

Module 3: HUMAN RESOURCE DEVELOPMENT AND COMPENSATION ***(09 Periods)***

Orientation - Orientation programme, Requisites of an effective programme, Evaluation of orientation programme, Problems of orientation; Training and development – Nature, Inputs, Training process, Methods, Impediments to effective training, Management development, Career development, Talent management; Performance Appraisal - Nature, Appraisal process, Challenges of performance appraisal; Merit rating; Compensation - Philosophy, Components, Theories, Factors influencing employee compensation, Challenges, Wage and salary administration.

Module 4: INDUSTRIAL RELATIONS AND TRADE UNIONS ***(09 Periods)***

Industrial Relations (IR): Nature of IR, Importance of Peaceful IR; Approaches to IR - Unitary Approach, Pluralistic approach, Marxist approach; Parties to IR; IR strategy; Industrial Disputes - Nature, Causes, and Settlement.

Trade unions: Nature of trade unions, Strategic choices before unions, Union tactics, Trade union movement in India, Trends in trade union movement, Managing unions; Indian Factories Act; Employee's compensation Act; Industrial disputes Act.

Module 5: ETHICAL ISSUES AND SAFETY ADMINISTRATION ***(09 Periods)***

Managing Ethical Issues in HRM: Nature of ethics, Sources of business ethics, Myths about ethics, Ethical dilemmas, HR ethical issues, Managing ethics, Improving ethical decision making.

Employee Safety: Safety, Need for safety, Types of accidents, Safety programme, ISO safety standards.

Total Periods: 45

EXPERIENTIAL LEARNING

1. What are the challenges that are faced by HR in effective performance management including performance appraisal in MNCs? Discuss in detail in the contemporary of HRM.
2. Evaluate employee relations in a comparative perspective across few countries of your choice. Describe in brief by taking a case study.
3. Visit an organization or industry and Evaluate HRM related social, cultural, ethical and environmental responsibilities and issues in a global context.

(Note: It's an indicative one. Course instructor may change the activities and the same shall be reflected in course handout)

RESOURCES

TEXT BOOKS:

1. Aswathappa K, *Human Resource Management,* Tata McGraw Hill Private Limited, 8th edition, 2017.
2. Garry Dessler and Biju Varkkey, *Human Resource Management,* Pearson India, 16th Edition, 2020.

REFERENCE BOOKS:

1. Raymond A. Noe, John R. Hollenbeck, *HRM: Gaining a Competitive Advantage*, TMH, 7th edition, 2010.
2. Bohlander George W, Snell Scott, *Principles of Human Resource Management,* Cengage Learning, 16th edition, 2016.
3. Edwin B. Flippo, *Personnel Management,* McGraw-Hill International editions, 6th edition, 1984.

VIDEO LECTURES:

1. https://nptel.ac.in/courses/122105020
2. https://onlinecourses.nptel.ac.in/noc20_mg15/preview
3. https://www.digimat.in/nptel/courses/video/122105020/L01.html

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22EC101703	**INSTRUMENTATION IN INDUSTRIES**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course provides a detailed discussion on measurement of various parameters like displacement, force, torque, acceleration, velocity, density, viscometer, hygrometers, temperature, pressure, level and flow.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1 Select appropriate displacement, force and torque measuring devices for specific measurement application.

CO2 Identify suitable acceleration, velocity and density measuring devices for specific measurement application.

CO3 Apply suitable viscometer and hygrometer for measurement of viscosity, humidity and moisture for a specific application.

CO4 Select appropriate temperature and pressure transducer for an industrial requirement.

CO5 Identify appropriate level and flow transducer for measurement of level and flow for a specific application.

CO-PO Mapping Table

Course Outcomes	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	2	-	3	-	-	-	-	-	-	-	-
CO2	3	2	-	3	-	-	-	-	-	-	-	-
CO3	3	2	-	3	-	-	-	-	-	-	-	-
CO4	3	2	-	3	-	-	-	-	-	-	-	-
CO5	3	2	-	3	-	-	-	-	-	-	-	-
Course Correlation Mapping	**3**	**2**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: DISPLACEMENT, FORCE & TORQUE MEASUREMENT ***(08 Periods)***

Displacement Measurement: Introduction, Strain gauge, LVDT, Capacitive Gauges and applications.
Force Measurement: Introduction, Analytical Balance, Spring Balance, Load cells.
Torque Measurement: Introduction, Strain gauge, Relative angular twist and applications.

Module 2: ACCELERATION, VELOCITY & DENSITY MEASUREMENT ***(08 Periods)***

Acceleration Measurement: Introduction, LVDT, Piezoelectric, Strain gauge and Variable reluctance type accelerometers and applications.
Velocity Measurement: Introduction, Revolution Counter, Capacitive Tacho, Drag-cup Type, Tacho and Stroboscope and applications.
Density Measurement: Introduction, Pressure type densitometers, Float type densitometers, Ultrasonic densitometer and gas densitometer.

Module 3: VISOCITY, HUMIDITY & MOISTURE MEASUREMENT ***(09 Periods)***

Viscosity Measurement: Introduction, friction tube viscometer, say bolt's viscometer, rotameter viscometer, Searle's rotating cylinder, cone and plate viscometer.
Humidity Measurement: Introduction, Dry and wet bulb psychrometers, Resistive and capacitive type hygrometers
Moisture Measurement: Introduction, Thermal Conductivity and Capacitive sensors, Applications of moisture measurement, Moisture measurement in solids.

Module 4: TEMPERATURE & PRESSURE MEASUREMENT ***(10 Periods)***

Temperature Measurement: Definitions and standards, RTD, Thermistor, Thermocouples: Laws of thermocouple, Reference junctions compensation, Radiation fundamentals, Radiation methods of temperature measurement, Total radiation pyrometers, Optical pyrometers, Applications.
Pressure Measurement: Introduction, manometer and its types, elastic transducers Bourdon tube, diaphragm, bellows, electrical types, resistive, inductive and capacitive, Thermal conductivity gage, Ionization gage, Sound level meter, Microphone, Applications.

Module 5: LEVEL & FLOW MEASUREMENT ***(10 Periods)***

Level Measurement: Introduction, Gauge Glass technique, Float Types – Float–and– tape method, Float–and–shaft method, Magnetic float types. Electrical types – Resistanceswitch type, Inductive and Capacitance type. Ultrasonic methods. Applications
Flow Measurement: Introduction, Head types – Orifice, Venturi, Flow Nozzle. Rotameter & types. Coriolis flow meter, Gyroscopic flow meter, Liquid bridge mass flow meter, Calorimetric flow meter. Electromagnetic flow meter, Ultrasonic flow meter, Hotwire anemometer type. Applications.

Total Periods: 45

EXPERIENTIAL LEARNING

1. Record temperature from RTD and convert temperature in to voltage.
2. Measure the speed of rotating shaft using stroboscope.
3. Record level of the tank using suitable device.
4. Measure the flow rate of water in boiler plant.
5. Measure the displacement using LVDT.

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in course handout.)

RESOURCES

TEXT BOOKS:

1. K. Sawhney, *A Course in Electrical and Electronics Measurements and Instrumentation*, Dhanpat Rai and Sons, New Delhi, 19th Revised Edition, 2013
2. D. Patranabis, *Principles of Industrial Instrumentation*, TMH, 3rd Edition, 2010.

REFERENCE BOOKS:

1. Ernest Doebelin & Dhanesh Manik, *Measurement Systems*, McGraw Hill International, 6th Edition, 2011.

VIDEO LECTURES:

1. https://www.vlab.co.in/
2. https://archive.nptel.ac.in/courses/103/103/103103135/
3. https://nptel.ac.in/courses/103103135

WEB RESOURCES:

1. https://www.tutorialspoint.com/electronic_measuring_instruments/index.htm
2. https://nptel.ac.in/content/storage2/nptel_data3/html/mhrd/ict/text/108105064/lec1.pdf
3. https://www.ibiblio.org/kuphaldt/socratic/sinst/book/liii.pdf.

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22EC101704	**INTRODUCTION TO NANOTECHNOLOGY**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: The fundamental principles of nanoelectronics and the utilization of nanostructures as nano electronic devices.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Demonstrate the basic knowledge in nanoelectronics, crystal structure of semiconducting material various techniques for fabrication and measurement of nanostructure, semiconducting nano electronic devices.

CO2. Analyze Crystal structure of nanomaterials Nanostructure based device

CO3. Design and develop new nano devices for advanced technological applications.

CO4. Capable of solving problems in the field of nanoelectronics.

CO5. Involve and resolve the future research challenges in the fields related to nanoelectronics.

CO6. Apply the environmental context with ethical principle in developing new nano devices.

CO-PO Mapping Table

Course Outcomes	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	-	-	-	-	-	-	-	-	-	-	-
CO2	2	3	-	-	-	-	-	-	-	-	-	-
CO3	2	2	3	-	-	-	-	-	-	-	-	-
CO4	2	2	2	3	-	-	-	-	-	-	-	-
CO5	3	3	-	-	3	-	-	-	-	-	-	-
CO6	3	-	-	-	-	3	3	2	-	-	-	-
Course Correlation Mapping	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**2**	**-**	**-**	**-**	**-**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

MODULE-I: INTRODUCTION TO NANOELECTRONICS ***(08 Periods)***

The "Top-Down" Approach, Lithography, The "Bottom-Up" Approach; Why Nanoelectronics? Nanotechnology Potential. The Schr¨odinger wave equation, Wave mechanics of particles, Atoms and atomic orbitals

MODULE II: MATERIALS FOR NANOELECTRONICS ***(09 Periods)***

Semiconductors, Crystal lattices: bonding in crystals, Electron energy bands, Semiconductor heterostructures, Lattice-matched and pseudomorphic heterostructures; Organic semiconductors, Carbon nanomaterials: nanotubes and fullerenes.

MODULE III: FABRICATION AND MEASUREMENT TECHNIQUES FOR NANOSTRUCTURES ***(10 Periods)***

Bulk crystal and heterostructure growth: Nanolithography, etching, and other means for fabrication of nanostructures and nanodevices; Techniques for characterization of nanostructures, Spontaneous formation and ordering of nanostructures; Clusters and nanocrystals, Methods of nanotube growth, Chemical and biological methods for nanoscale fabrication, Fabrication of nanoelectromechanical systems.

MODULE IV : SEMICONDUCTING NANO STRUCTURES ***(09 Periods)***

Time and length scales of the electrons in solids, Statistics of the electrons in solids and nanostructures; The density of states of electrons in nanostructures, Electron transport in nanostructures, Electrons in Quantum well, Quantum wire and Quantum dots.

MODULE V : NANOELECTRONIC DEVICES ***(09 Periods)***

Resonant tunneling diodes, Field effect transistors, Single electron transfer devices, Potential effect transistors, Light emitting diodes and lasers; Nanoelectromechanicalsystem devices, Quantum dot cellular automata.

Total No. of Periods: 45

EXPERIENTIAL LEARNING

1. Submission of report on specifications of Clean room.
2. Submission of report on specifications of Clean bench.

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in course handout.)

RESOURCES

TEXT BOOKS:

1. Vladimir V. Mitin, Viatcheslav A. Kochelap, Michael A. Stroscio, *Introduction to Nanoelectronics: Science, Nanotechnology, Engineering, and Applications,* Cambridge University Press, 2012.
2. George W. Hanson, *Fundamentals of Nanoelectronics*, Prentice Hall, 2007

REFERENCE BOOKS:

1. Mitin.V, Kochelap.V and Stroscio.M, *Introduction to Nanoelectronics*, Cambridge University Press, 2008
2. Karl Goser et.al, *Nanoelectronics and Nanosystems: From Transistors to Molecular and Quantum devices*, Springer, 2005.

VIDEO LECTURES:

1. Introduction to Nanotechnology, nanohub.org
2. https://nptel.ac.in/courses/103103033

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22CS101701	**INTRODUCTION TO PYTHON PROGRAMMING**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course is aimed at offering the fundamental concepts of Python scripting language to the students. It starts with the basics of Python programming and deals with lists, dictionaries, functions, exceptions and files. The objective of this courseis to enable the students to develop the applications using the concepts of Python.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Understand the basic terminology used in computer programming to write, compile and debug programs in Python programming language.

CO2. Use appropriate data type for handling user data and write optimized programs using the functions, and statements.

CO3. Manage the exceptions raised during the program execution and avoid abrupt termination of the program execution.

CO4. Process files and solve real world problems using classes and objects in the Python programming environment.

CO-PO Mapping Table

Course Outcomes	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	-	-	-	-	-	-	-	-	-
CO2	3	3	-	-	-	-	2	-	-	-	-	-
CO3	3	3	3	-	-	-	-	-	-	-	2	-
CO4	2	3	3	-	-	-	-	2	-	-	-	-
Course Correlation Mapping	**3**	**3**	**3**	**-**	**-**	**-**	**2**	**2**	-	**-**	**2**	**-**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: DATA TYPES AND INPUT/OUTPUT ***(09 Periods)***

Internal working of Python, Python character set, Tokens, Python Core Data Types (list, set, tuple, and dctionary), The print () function, Assignment of values to variables, The input() function, The eval() function.

Module 2: OPERATORS AND CONTROL STATEMENTS ***(09 Periods)***

Operators- Arithmetic Operators, Operator precedence and Associativity, Bitwise operator, The compound assignment operator; Decision statements- Boolean operators, Boolean Expressions and Relational operators, Decision making statements; Loop Control Statements-while loop, range() function, for loop; break statement, continue statement.

Module 3: FUNCTIONS AND LISTS ***(09 Periods)***

Functions- Syntax and basics of a function, Use of a function, Parameters and arguments in a function, The local and global scope of a variable, The return statement, Recursive functions, The lambda function; Lists-Creating Lists, Accessing the elements of a List, List slicing, Python in-built functions for lists, List Comprehension, List Methods, Passing list to a function, Returning a list to function.

Module 4: TUPLES, SETS AND DICTIONARIES ***(09 Periods)***

Tuples - Creating tuples, tuple() function, Inbuilt functions for tuples, Indexing and Slicing, Operations on tuples, Passing variable length arguments to tuples, Sort tuples, Traverse tuplesfrom a list, The zip()function, The Inverse zip(*) function; Sets - Creating sets, The set in and not in operator, The Python Set Class, Set operations; Dictionaries -Basics of Dictionaries, Creating a Dictionary, Adding and replacing values, Retrieving values, Formatting dictionaries, Deleting items, Comparing two dictionaries, Methods of dictionary class, Traversing dictionaries, Nested dictionaries, Traversing nested dictionaries.

Module 5: V FILES ***(09 Periods)***

File Handling-Opening a file, Writing Text, Closing files, Writing numbers to a file, Reading Text, Reading numbers from a file, Appending data, seek() function.

Total Periods: 45

EXPERIENTIAL LEARNING

1. Develop a programming calculator that performs basic arithmetic operations.
2. Develop recursive functions to solve problems that involve self-referential definitions.
3. Develop program to create dictionaries, add, retrieve and delete items from dictionaries.

(Note: It's an indicative one. The Course Instructor may change the activities and the same shall be reflected in Course Handout)

RESOURCES

TEXTBOOKS:

1. Ashok Namdev kamthane and Amit Ashok Kamthane, *Programming and Problem solving with PYTHON*, McGraw Hill Education, 1st Edition, 2016.

REFERENCE BOOKS:

1. Allen Downey, *Think Python*, Green Tea Press, 1st Edition, 2016.
2. W.J. Chun, *Core Python Programming*, Prentice Hall, 3rd Edition, 2013.
3. Kenneth A. Lambert, *Fundamentals of Python*, Cengage, 2nd Edition, 2015.

VIDEO LECTURES:

1. https://onlinecourses.nptel.ac.in/noc19_cs41/preview
2. https://www.coursera.org/specializations/python
3. https://www.coursera.org/learn/python-for-applied-data-science-ai
4. https://www.youtube.com/watch?v=WGJJIrtnfpk
5. https://www.youtube.com/watch?v= uQrJ0TkZlc
6. https://www.udemy.com/topic/python/
7. https://freevideolectures.com/course/2512/python-programming

WEB RESOURCES:

1. https://www.w3schools.com/python/
2. https://www.programiz.com/python-programming
3. https://www.geeksforgeeks.org/python-programming-language/
4. https://www.javatpoint.com/python-lists
5. https://www.learnpython.org/

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22CB101704	**INTRODUCTION TO INTERNET OF THINGS**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course is emphasize on the Architecture of IoT and Summarize the roles of various organizations for IoT, To Develop simple applications using Arduino and Rasberry, Test for errors in the application, Predict the market value, Experiment withembedded boards for creating IoT prototypes, To understand the domain specific IoTs and IoTsystem management.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1 Understand the fundamental concepts of IoT and physical computing.
CO2 Demonstrate knowledge on variety of embedded boards and IoT Platforms
CO3 Understand the communication protocols in IoT communications.
CO4 Demonstrate knowledge on Domain specific IoT applications.
CO5 Understand the IoT System management and network management protocols.

CO-PO Mapping Table

Course Outcomes	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	-	-	-	-	-	-	-	-	-	-	-
CO2	3	3	3	-	-	-	-	-	-	-	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-
CO4	3	3	3	-	-	-	-	-	-	-	-	-
CO5	3	2	2				-	-	-	-	-	-
Course Correlation Mapping	**3**	**3**	**3**	**-**	**-**	**-**	-	-	-	-	-	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: OVERVIEW OF IOT ***(09 Periods)***

The Internet of Things: An Overview, The Flavour of the Internet of Things, The "Internet" of "Things", The Technology of the Internet of Things, Enchanted Objects, Who is Making the Internet of Things?

Design Principles for Connected Devices: Calm and Ambient Technology, Privacy, Web Thinking for Connected Devices, Affordances.

Prototyping: Sketching, Familiarity, Costs Vs Ease of Prototyping, Prototypes and Production, Open source Vs Close source, Tapping into the community.

Module 2: EMBEDDED DEVICES: ***(09 Periods)***

Electronics, Embedded Computing Basics, Arduino, Raspberry Pi, Mobile phones and tablets, Plug Computing: Always-on Internet of Things

Module 3 COMMUNICATION IN THE IOT: ***(09 Periods)***

Internet Communications: An Overview, IP Addresses, MAC Addresses, TCP and UDP Ports, Application Layer Protocols

Prototyping Online Components: Getting Started with an API, Writing a New API, Real-Time Reactions, Other Protocols Protocol

Module 4 DOMAIN SPECIFIC IOTS ***(09 Periods)***

Introduction: Home automation, Cities, Environment, Energy, Retail, Logistics, Agriculture, Industry, Health and Lifestyle

Module 5 IOT AND M2M ***(09 Periods)***

Introduction- M2M, Difference between IoT and M2M, SDN and NFV for IoT

IoT System Management with NETCONF-YANG: Need for IoT Systems Management, Simple network management protocol(SNMP), Network operator requirements, NETCONF,YANG

Total Periods: 45

EXPERIENTIAL LEARNING

1. (a) Design and Simulate LED 7-Segment Display interfacing with Arduino.
   (b) Design and Simulate Servo motor interfacing with Arduino.
2. (a) Design and Simulate ultrasonic sensor and LCD interfacing with Arduino.
   (b) Design and Simulate Flame Sensor interfacing with Arduino.

(Note: It's an indicative one. The Course Instructor may change the activities and the same shall be reflected in Course Handout)

RESOURCES

TEXT BOOKS:

1. Adrian McEwen, Hakim Cassimally, *Designing the Internet of Things*, Wiley Publications, 2012
2. Arshdeep Bahga, Vijay Madisetti, *Internet of Things: A Hands-On Approach*, Universities Press, 2014.

REFERENCE BOOKS:

1. Pethuru Raj, Anupama C. Raman, *The Internet of Things, Enabling technologies and use cases*, CRC Press.

VIDEO LECTURES:

1. https://www.digimat.in/nptel/courses/video/106105166/L01.html
2. https://www.youtube.com/watch?v=oBZnySDgst8

WEB RESOURCES:

1. https://www.arduino
2. https://www.raspberrypi.org/

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22ME101703	**MANAGEMENT SCIENCE**	3	-	-	-	3

Pre-Requisite -
Anti-Requisite -
Co-Requisite -

COURSE DESCRIPTION:
Concepts of Management; Concepts Related to ethics and social responsibility; Human Resource Management; Operations Management; Statistical Process Control; Inventory Management; Marketing; Project Management; Project Crashing.

COURSE OUTCOMES:
After successful completion of the course, students will be able to:

CO1 Demonstrate the concepts of management, its functions and processes used in optimum resource utilization within the context of ethics and social responsibility.
CO2 Apply the concepts of HRM for selection and management of human resources.
CO3 Analyze different operations management problems using quality management tools to produce effective, efficient and adoptable products/services
CO4 Identify different marketing strategies to maximize enterprise profitability and customer satisfaction within the realistic constraints
CO5 Develop network models in time-cost trade-off for effective project management.

CO-PO Mapping Table

Course Outcomes	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	1	1	-	1	1	1	1	-	-	1	-
CO2	3	2	1	-	1	-	-	-	-	-	1	-
CO3	3	3	1	1	1	-	-	-	-	-	1	-
CO4	3	2	1	-	1	1	-	-	-	-	1	-
CO5	3	3	3	1	1	1	-	-	-	-	2	-
Course Correlation Mapping	**3**	**2**	**1**	**1**	**1**	**1**	**1**	**1**	**-**	**-**	**1**	**-**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: MANAGERIAL FUNCTION AND PROCESS ***(10 Periods)***
Concept and foundations of management, Evolution of management thought; Managerial functions – Planning, Organizing, Directing and Controlling; Decision-making; Role of manager, managerial skills; Managing in a global environment, Flexible systems management; Social responsibility and managerial ethics; Process and customer orientation; Managerial processes on direct and indirect value chain.

Module 2: HUMAN RESOURCE MANAGEMENT ***(08 Periods)***
Human Resource challenges; Human Resource Management functions; Human Resource Planning; Job analysis; Job evaluation, Recruitment and selection; Training and Development; Promotion and transfer; Performance management; Compensation management and benefits; Employee morale and productivity; Human Resource Information System.

Module 3: OPERATIONS MANAGEMENT ***(10 Periods)***

Fundamentals of Operations Management, Services as a part of operations management; Facilities location and layout; Line balancing; Quality management – Statistical ProcessControl, Total Quality Management, Six sigma; Role and importance of materials management, Value analysis, Make or Buy decision, Inventory control, Materials RequirementPlanning, Enterprise Resource Planning, Supply Chain Management.

Module 4: MARKETING MANAGEMENT ***(08 Periods)***

Concept, evolution and scope; Marketing strategy formulation and components of marketing plan; Segmenting and targeting the market; Positioning and differentiating the market offering, Analyzing competition; Product strategy; Pricing strategies; Designing and managingmarketing channels; Integrated marketing communications.

Module 5: PROJECT MANAGEMENT ***(09 Periods)***

Project management concepts; Project planning – Work Breakdown Structure, Gantt chart; Project scheduling – Critical Path Method, Program Evaluation and Review Technique, Crashing the project for time-cost trade off; Resource Levelling.

Total Periods: 45

EXPERIENTIAL LEARNING

1. Find the social responsibilities in the context of management theoretically and practically in an organization? Explain them by taking a real case study in any organization (preferably in your organization).
2. Gaining market share should be one of management's primary goals because of its effect on operations and profitability. Comment. What Strategies Do Companies Employ to Increase Market Share?
3. A Gantt chart is a visualization that helps in scheduling, managing, and monitoring specific tasks and resources in a project. Prepare a gantt chart for Online food ordering system.

(Note: It's an indicative one. Course instructor may change the activities and the same shall be reflected in course handout)

RESOURCES

TEXT BOOKS:

1. MartandT. Telsang, *Industrial Engineering and Production Management,* S. Chand, 3rd Edition, 2018.
2. Koontz and Weihrich, *Essentials of Management*, TMH, New Delhi, 11th Edition, 2020.

REFERENCE BOOKS:

1. O.P. Khanna, *Industrial Engineering and Management,* Dhanpat Rai and Sons, 2018.
2. N.D. Vohra, *Quantitative Techniques in Management,* TMH, New Delhi, 5th Edition, 2014.
3. L.M. Prasad, *Principles and practice of Management,* S. Chand and Sons, 2019.

VIDEO LECTURES:

1. https://archive.nptel.ac.in/courses/122/106/122106032/
2. https://www.digimat.in/nptel/courses/video/122102007/L01.html

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22ME101705	**MATERIAL SCIENCE**	**3**	**-**	**-**	**-**	**3**

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: Materials Structure and Constitution of Alloys; Heat treatment of steels; Properties of ferrous materials and its alloys; Properties of non-ferrous materials and its alloys; Properties and applications of Ceramics, Polymers and Composite materials.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Ability to understand and apply the principles of materials science to analyze and design materials for specific applications.

CO2. Analyze the properties of materials and enhance the same through heat-treatment processes.

CO3. Demonstrate the knowledge of ferrous and Non-ferrous materials and its alloys for engineering applications.

CO4. Understand the relationship between materials properties and structure at the atomic and molecular level.

CO5. Demonstrate the knowledge of Ceramics, Polymers, and Composite materials for suitable engineering applications.

CO-PO Mapping Table

Course Outcomes	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	3	1	-	-	-	-	-	-	1	-	-
CO2	3	3	1	-	-	-	-	-	-	1	-	-
CO3	3	1	-	-	-	-	-	-	-	-	-	-
CO4	3	1	-	-	-	-	-	-	-	-	-	-
CO5	3	1	-	-	-	-	-	-	-	-	-	-
Course Correlation Mapping	**3**	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**-**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: MATERIALS STRUCTURE AND CONSTITUTION OF ALLOYS ***(09 Periods)***

Materials Structure: Space lattice, Unit cells and Metallic crystal structures (SC, BCC, FCC
and HCP), Crystal defects: Point, Line, Interstitial and Volume, Primary and secondary bonding in materials.

Constitution of Alloys: Necessity of Alloying, Gibbs's phase and Hume Rothery rule, Iron Iron-carbide diagram and its microstructural aspects.

Module 2: HEAT TREATMENT OF STEELS ***(09 Periods)***

Annealing, Normalizing, Tempering, Carburization and Hardening- Austempering, Martempering, Carburizing, Nitriding, Cyaniding, Carbo-Nitriding, Flame and Induction Hardening, Vacuum and Plasma Hardening, Time-Temperature-Transformation Diagrams and Continuous Cooling Transformation Diagrams.

Module 3: FERROUS MATERIALS AND ALLOYS ***(09 Periods)***

Steels: Structure, properties, classifications and applications of plain steels, Specifications of steels, Structure, properties, classifications and applications of low alloy steels, Hadfield manganese steels, Stainless steel and Tool steels.

Cast iron: Structure, properties and applications of Gray cast iron, White cast iron, Malleable cast iron, Nodular cast iron and Alloy cast iron.

Module 4: NON-FERROUS MATERIALS AND ALLOYS ***(09 Periods)***

Structure, properties and applications of Copper and its alloys, Aluminium and its alloys, Titanium and its alloys, Nickel and its alloys, Magnesium and its alloys, Refractory and Precious metals.

Module 5: CERAMICS, POLYMERS AND COMPOSITES MATERIALS ***(09 Periods)***

Ceramics: Classifications, Properties and Applications, Glass-ceramics, Polymers: Classification, Properties and Applications, Polymerization Reaction,

Composites: Classifications, Properties and Applications of Polymer matrix composites, Ceramic matrix composites, Metal matrix composites and Nanocomposites.

Total Periods: 45

EXPERIENTIAL LEARNING

2. Laboratory experiments allow students to apply theoretical concepts and learn how to conduct experiments safely and effectively. Some examples of laboratory experiments include mechanical testing of materials, heat treatment of metals, and microscopy analysis of materials.
3. Materials characterization techniques such as X-ray diffraction, scanning electron microscopy, and transmission electron microscopy can provide valuable insights into the structure and properties of materials. Students can gain hands-on experience with these techniques by conducting experiments and analyzing the results.

(Note: It's an indicative one. Course instructor may change the activities and the same shall be reflected in course handout)

RESOURCES

TEXT BOOKS:

1. V. Raghavan, *Materials Science & Engineering*, Prentice Hall of India, 5th edition, 2004.
2. R. Balasubramaniam, Callister's, *Materials Science & Engineering*, John Wiley and sons, 2nd edition, 2014.

REFERENCE BOOKS:

1. Sidney H. Avner, *Introduction to Physical Metallurgy*, Tata McGraw Hill, 2nd edition,1997.
2. George E Dieter, *Mechanical Metallurgy*, Tata McGraw Hill, 3rd edition, 2013.
3. Kodigre V D, *Material Science and Metallurgy*, Everest Publishing House, 31st edition, 2011.

VIDEO LECTURES:

1. https://ocw.mit.edu/courses/materials-science-and-engineering/3-012-fundamentals- of-materials-science-fall-2005/lecture-notes/
2. https://nptel.ac.in/courses/116/104/116104045/
3. https://www.youtube.com/watch?v=tsX-VYvkiJ8&list=PLJV_OG0NLkV8VRNFk-0AyDZz1pZym6V8j
4. https://www.khanacademy.org/science/materials-science

WEB RESOURCES:

1. https://www.doitpoms.ac.uk/tlplib/teachers.php
2. https://www.springer.com/journal/10853
3. http://dmse.mit.edu/
4. http://dmse.mit.edu/

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22EC101705	**PRINCIPLES OF COMMUNICATION ENGINEERING**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: Fundamentals of Communications; Analog and digital - modulation and Demodulation Techniques; Information theory and coding.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Analyze different Analog and Digital Modulation Schemes to improve bandwidth and power efficiency.

CO2. Analyze Pulse Analog modulation Schemes.

CO3. Understand the concepts of Baseband & Passband Digital Transmission.

CO4. Analyze various error detection and correction codes for reliable transmission.

CO-PO Mapping Table

Course Outcomes	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	3	-	-	-	-	-	-	-	-	-	-
CO2	3	3	-	-	-	-	-	-	-	-	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-
CO4	3	3	2	1	-	-	-	-	-	-	-	-
Course Correlation Mapping	**3**	**3**	**2**	**1**	**-**	**-**	**-**	-	-	-	-	-

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: ANALOG MODULATION ***(13 Periods)***

Block diagram of Electrical Communication System, Types of Communications, Need for Modulation, Types of Amplitude Modulation- AM, DSBSC, SSBSC, Power and BW requirements, Generation of AM, DSBSC, SSBSC. Detection of AM - Diode detector,Product demodulation for DSBSC & SSBSC. Frequency & Phase Modulations.

Module 2: PULSE MODULATION ***(07 Periods)***

Elements & Advantages of Digital communication systems, PAM, Regeneration of Base band Signal, PWM and PPM, Time Division Multiplexing, Frequency Division Multiplexing.

Module 3: BASE BAND DIGITAL TRANSMISSION ***(07 Periods)***

Pulse Code Modulation- Advantages, Block diagram of PCM, Quantization, effect of Quantization, Quantization error. DM, ADM and Comparison of PCM,DM & ADM.

Module 4: PASS BAND DIGITAL TRANSMISSION ***(10 Periods)***

Digital Binary Schemes-ASK, FSK, PSK, DPSK, QPSK, Modulation and Demodulation - Coherent and Non-coherent techniques.

Module 5: INFORMATION THEORY AND CODING ***(08 Periods)***

Concept of Information, Entropy and Rate of Information, Coding efficiency, Shannon-Fano and Huffman Coding.

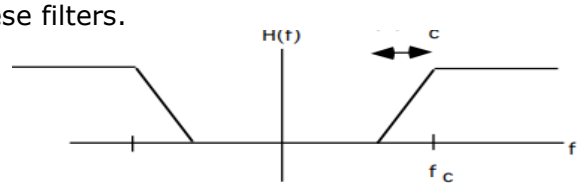
Error Correction and Detection Codes- Linear Block Codes, Cyclic Codes, Convolution Codes.

Total Periods: 45

EXPERIENTIAL LEARNING

1 Suppose that a non-linear device is available for which the output current i0 and the input voltage vi are related by: $i_0(t) = a_1 vi\ (t) + a_3 v_3\ i(t)$ where a_1 and a_3 are constants. Explain how this device may be used to provide(a) a product modulator (b) an amplitude modulator.

2 A voice signal occupying the frequency band 0.3 - 3.4 KHz is to be modulated onto a carrier wave of frequency 11.6 MHz. High pass filters such as the one shown below are available. Design a system to generate the USB wave using DSB modulators and these filters.



3 In a binary PCM system, the output signal to-quantizing noise ratio is to be held to a minimum of 40 dB. Determine the number of required levels, and find the corresponding output signal to quantizing-noise ratio.

4 A bipolar binary signal $S_I(t)$ is a +1V or -1V pulse during the interval (O, T). Additive white noise with power spectral density $\eta/2 = 10^{-5}$ W /kHz. W/Hz is addedto the signal. Determine the maximum bit rate that can be sent with a bit error probability of $Pe \leq 10^{-7}$

5 A compact disc (CD) recording system samples each of two stereo signals with a 16-bit analog-to digital converter (ADC) at 44.1 kb/s.

a) Determine the output signal-to-quantizing-noise ratio for a full-scale sinusoid.
b) The bit Stream of digitized data is augmented by the addition of error-correcting bits, clock extraction bits, and display and control bit fields. These additional bits represent 100 percent overhead. Determine the output bit rate of the CD recording system.
c) The CD can record an hour's worth of music. Determine the number of bits recorded on a CD. For a comparison, a high-grade collegiate dictionary may contain 1500 pages, 2 columns per page, 100 lines per column, 8 words per line, 6 letters per word, and 7 b per letter on average. Determine the number of bits required to describe the dictionary, and estimate the number of comparable books that can be stored on a CD.

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in course handout.)

RESOURCES

TEXT BOOKS:

1. R.P. Singh and S D Sapre, *Communication Systems - Analog and Digital*, TMH, 2nd edition 2007.
2. Simon Haykin, *Communication Systems*, John Wiley, 2nd edition 2007.

REFERENCE BOOKS:

1. Herbert Taub & Donald L Schilling, *Principles of Communication Systems*, Tata McGraw-Hill, 3rd Edition, 2009.
2. Sham Shanmugam, *Digital and Analog Communication Systems*, Wiley-India edition, 2006.

VIDEO LECTURES:

1. https://nptel.ac.in/courses/108/104/108104091/
2. https://onlinecourses.nptel.ac.in/noc19_ee47/preview

WEB RESOURCES:

1. https://studiousguy.com/basic-principles-of-communication/
2. https://www.tutorialspoint.com/principles_of_communication/principles_of_communication_modulation.htm

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22EE101702	RELIABILITY AND SAFETY ENGINEERING	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course provides a detailed discussion on the fundamentals of reliability and safety engineering. The course emphasizes on various reliability measures used in assessing the performance of the system, evaluating the critical parameters of the network, and the techniques to assess the reliability of the system. The course also deals with safety management and measures in industrial and other hazardous environments.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. apply the various probability and statistics fundamentals into engineering systems to evaluate performance.

CO2. develop mathematical models for engineering networks/systems to evaluate the critical parameters for the reliability of a network/system.

CO3. analyze the time-dependent/independent characteristics of a repairable system and frequency durations techniques to assess the reliability

CO4. understand various safety management, policy, and planning strategies for personal and industrial safety.

CO5. understand various safety and hazard identification techniques and follow appropriate safety measures in industry and society.

CO-PO Mapping Table

Course Outcome	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	-	-	2	1	1	1	-	-	-	-
CO2	3	3	-	-	2	1	1	-	-	-	-	-
CO3	3	2	-	2	1	1	1	-	-	-	-	3
CO4	3	2	-	-	2	1	1	1	-	-	-	-
CO5	3	2	-	-	2	1	1	1	-	-	-	-
Course Correlation Level	**3**	**2**	**-**	**2**	**2**	**1**	**1**	**1**	**-**	**-**	**-**	**3**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: FUNDAMENTALS OF RELIABILITY ENGINEERING ***(09 Periods)***

Random variables, probability concepts, rules for probabilities of events. Probability density and distribution functions. Binomial distribution - Expected value and standard deviation for binomial distribution. Reliability functions, f(t), F(t), h(t) - Relationship between these functions, Exponential density and distribution functions, expected valueand standard deviation of exponential distribution. Measures of reliability - MTTF, MTTR, MTBF. Bathtub curve.

Module 2: NETWORK MODELING AND RELIABILITY EVALUATION ***(09 Periods)***

Basic concepts - Evaluation of network reliability/unreliability, series systems, parallel systems, series - Parallel configuration systems. Redundant systems and its types. Evaluation of network reliability/unreliability using conditional probability method, tie-set and cut-set based approach, complete event tree and reduced event tree methods.

Module 3: MARKOV CHAIN AND MARKOV PROCESSES ***(09 Periods)***

Basic concepts, stochastic transitional Probability matrix, time dependent probability evaluation, Limiting State Probability, Absorbing states. Modelling concepts – State space diagrams, time dependent reliability evaluation of single component repairable model, two component repairable model. Frequency and duration techniques.

Module 4: BASICS OF SAFETY CONCEPTS ***(08 Periods)***

Introduction, goals, need for safety, history of safety movement – the evolution of modern safety concept, general concepts of safety management. Planning for safety- productivity, quality and safety, line and staff functions, budgeting for safety, safety policy.

Module 5: SAFETY TECHNIQUES AND APPLICATIONS ***(10 Periods)***

Introduction to safety techniques, Incident Recall Technique (IRT), disaster control, job safety analysis, safety survey, safety inspection, safety sampling, evaluation of the performance of supervisors on safety. Hazard identification techniques, components of safety audit, types of audit, audit methodology, and process of safety reporting.
Applications of industrial Safety, environmental safety, health safety, electrical safety, fire safety.

Total Periods: 45

EXPERIENTIAL LEARNING

1. The students shall understand various IEEE reliability standards to be followed in the engineering systems for the evaluation of reliability and asses performance.
2. Should collect various engineering components assembled and their network models for evaluations of network reliability indices.
3. The students to visit a nearby power or process industry to know about various types of failures and repair performance of various engineering components and cause of replacements.
4. Should collect information about various safety/alert sign boards and the relative measures for a particular situation.
5. Should understand the standard practices followed during the maintenance/commissioning of the electrical apparatus in any industry following the various safety precautions.

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in course handout.)

RESOURCES

TEXT BOOKS:

1. Roy Billinton and Ronald N Allen, *Reliability Evaluation of Engineering Systems*, 2nd Edition, Springer, New York, 2013.
2. Frank R. Spellman, Nancy E. Whiting, *Safety Engineering: Principles and Practices*, 3rd Edition, Rowman & Littlefield, 2018.

REFERENCE BOOKS:

1. Charles E. Ebeling, *An introduction to reliability and maintainability engineering*, 2nd Edition Tata McGraw-Hill Education, 2010.
2. Dan Petersen, *Techniques of Safety Management: A Systems Approach*, 4th Edition American society of safety engineers, 2003.

3. Ajit Kumar Verma , Srividya Ajit , Durga Rao Karanki*, Reliability and Safety Engineering,* Springer London, 2016.

VIDEO LECTURES:

1. https://nptel.ac.in/courses/105/108/105108128/
2. https://nptel.ac.in/courses/110/105/110105094/
3. https://www.youtube.com/watch?v=uutg8jKrL9w
4. https://www.youtube.com/watch?v=_c-iZ2BAXPw
5. https://www.youtube.com/watch?v=GeMCF3s5EDk
6. https://www.youtube.com/watch?v=xYWyype7cxE

WEB RESOURCES:

1 https://ieeexplore.ieee.org/document/9353567

2 https://www.ualberta.ca/engineering/mechanical-engineering/research/reliability-and-safety.html

3 https://ieeexplore.ieee.org/document/9353567

4 https://www.taylorfrancis.com/books/edit/10.1201/9781003140092/industrial-liability-safety-engineering-dilbagh-panchal-mangey-ram-prasenjit-chatterjee-anish-kumar-sachdeva

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22CE101704	**REMOTE SENSING, GIS AND GPS**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course provides a detailed discussion on photogrammetry, remote sensing, geographic information system, GIS spatial analysis. This course also examines remote sensing and GIS applications, global positioning system and its real- time applications.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1 Analyze photogrammetry and remote sensing to solve complex surveying problem using appropriate tools and techniques following the relevant guidelines and lates developments considering society and environment besides communicating effectively in graphical form.

CO2 Analyze GIS to solve complex surveying problems using appropriate tools and techniques following latest developments besides communicating effectively in graphical form.

CO3 Analyze GIS spatial analysis to solve complex surveying problems using appropriat tools and techniques following latest developments besides communicating effectively in graphical form.

CO4 Analyze remote sensing and GIS applications to solve complex civil engineering problems using appropriate tools and techniques following the relevant guidelines and latest developments considering society, environment, sustainability and management principles besides communicating effectively in graphical form.

CO5 Analyze global positioning system to solve complex surveying problems using appropriate tools and techniques considering society and environment besides communicating effectively in graphical form.

CO-PO Mapping Table

Course Outcomes	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	2	3	-	2	2	1	1	1	-	1	-	1
CO2	2	3	-	-	2	1	1	-	-	1	-	1
CO3	2	3	-	2	2	1	1	-	-	1	-	1
CO4	2	3	-	-	2	1	1	1	-	1	1	1
CO5	2	3	-	-	2	1	1	-	-	1	-	-
Course Correlation Mapping	**3**	**3**	**-**	**2**	**2**	**1**	**1**	**1**	-	**1**	**1**	**1**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: PHOTOGRAMMETRY AND REMOTE SENSING (10 Periods)

Photogrammetry: Principle of photogrammetry, Types of aerial photographs, Planning and execution of photographic flights, Geometry of aerial photographs, Scale of aerial photographs and its determination, Stereoscopy, Ground control, Mosaics, Parallax measurements for height determinations, Latest developments in photogrammetry.

Remote Sensing: Elements of remote sensing, Electromagnetic spectrum, Energy resources, Physics of radiant energy, Energy interactions with earth surface features and atmosphere, Data acquisition platforms Spectral reflectance curves, Resolution; Spectral properties of water bodies, soil and vegetation; Sensors and platforms, Visual interpretation techniques.

Module 2: GEOGRAPHIC INFORMATION SYSTEM (09 Periods)

GIS categories, Components of GIS, Fundamental operations of GIS, Spatial and non spatial data, Raster data and vector data, File management, Layer based GIS, Feature based GIS, Map projections, Latest developments.

Module 3: GIS SPATIAL ANALYSIS (08 Periods)

Database models, Data storage, Vector data storage, Attribute data storage, Data manipulation and analysis, Integrated analysis of the spatial and attribute data - DTM/DEM, Softwares – Arc GIS, QGIS and Global mapper, Latest developments in GIS software.

Module 4: REMOTE SENSING AND GIS APPLICATIONS (09 Periods)

Land use/Land cover classification, Rainfall-runoff studies, Flood and drought impact assessment and monitoring, Drainage morphometry, Watershed management for sustainable development, GIS based precision farming, GIS based natural resources management, Inland water quality survey and management, Regional and urban planning and management, GIS based highway alignment, GIS based traffic congestion analysis, GIS for public health – Case Studies.

Module 5: GLOBAL POSITIONING SYSTEM (09 Periods)

Global Positioning System (GPS) – Fundamental concepts, Components of GPS – Space segment, Control segment, User segment, Reference systems, Satellite orbits; Classification of GPS receivers, GPS observations, GPS measurements and accuracy of GPS, Applications.

Total Periods: 45

EXPERIENTIAL LEARNING

1. Sound composing project: In this assignment, Select area and collect the geometry of aerial photographs and analyze the views.
2. Visit any meteorological department and understand about rain gauges and collect, analyse the data
3. Visit Geographical Information Systems Laboratory and understand about GIS and GPS Systems

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in course handout.)

RESOURCES

TEXT BOOKS:

1. Shivam, P. and Shashikanth, T., *A Text Book of Basic Concept of Remote Sensing*, *GPS and GIS*, Sankalp Publication, 2020.
2. Anji Reddi, M., *A Text Book of Remote Sensing and Geographical Information Systems*, B. S. Publications, 2nd Edition, 2012.

REFERENCE BOOKS:

1. Bhatta, B., *Remote Sensing and GIS*, Oxford University Press, 2nd Edition, 2011.
2. Lillesand, T. M., Kiefer, R. W. and Chipman, J. W., *Remote Sensing and Image Interpretation*, John Willey and Sons (Asia) Pvt. Ltd., 7th Edition, 2014.
3. Chandra, A. M. and Ghosh, S. K., *Remote Sensing and Geographic Information System*, Narosa Publishing House, 2nd Edition, 2015.
4. Panigrahi, N., *Geographical Information Science*, University Press, 2nd Edition, 2013.
5. Peter A. Burragh and Rachael Mc Donnell, *Principles of Geographical Information Systems*, Oxford University Press, 2nd Edition, 2014.

VIDEO LECTURES:

1. http://nptel.ac.in/courses/105/107/105107206/
2. https://syslab.ceu.edu/videos/geospatial-technologies

WEB RESOURCES:

1. Digital Audio Signal Processing: https://www.udemy.com/course/introduction-to-geospatial-technologies-and-arcgis-interface/
2. Learn Audio Editing - for Beginners: https://www.youtube.com/ watch?v=xGgaV9r_kH8
3. https://storymaps.arcgis.com/stories/47e984aae614442cb80aa40d121b5fe

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22CE101705	**SMART CITIES**	3	-	-	-	3

Pre-Requisite -

COURSE DESCRIPTION: This course provides a discussion on smart city and infrastructure, smart governance, smart mobility, smart economy, smart environment, smart buildings, smart energy, smart water, smart living, smart people and case studies.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1 Understand the concept of smart cities and its infrastructure for ensuring safety and sustainability using appropriate techniques and management principles in India besides lifelong learning.

CO2 Analyse smart cities to solve problems associated with mobility and governance for the growing population by ensuring safety and sustainability, management using appropriate standards in India besides lifelong learning.

CO3 Analyse smart cities to solve problems associated with economy and environment for ensuring safety and sustainability, management using appropriate techniques and standards in India besides lifelong learning.

CO4 Analyse buildings, energy and water resource systems in smart cities to solve problems associated with the growing population for ensuring safety and sustainability, management using appropriate standards in India besides lifelong learning.

CO5 Analyse the smart cities to solve complex problems associated with people and living systems for ensuring safety and sustainability, management using appropriate techniques in India besides lifelong learning.

CO-PO Mapping Table

Course Outcomes	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	-	-	-	2	3	1	2	-	1	1	2
CO2	3	3	-	1	2	3	3	2	-	1	1	2
CO3	3	3	-	1	2	3	3	2	-	1	1	2
CO4	3	3	-	1	2	3	3	3	-	-	1	2
CO5	3	3	-	1	2	3	3	2	-	-	1	2
Course Correlation Mapping	**3**	**3**	**-**	**3**	**2**	**2**	**2**	**2**	**-**	**1**	**1**	**2**

Correlation Levels: ***3: High;*** ***2: Medium;*** ***1: Low***

COURSE CONTENT

Module 1: SMART CITY AND INFRASTRUCTURE ***(09 Periods)***

Smart city - Concept, Objectives, History, Need; Key trends in smart city development, Government of India – Policy for smart city.

Infrastructure: Smart city infrastructure – Components, Challenges; Managing - Principle stake holders, Infrastructure in India and World, Dimensions of smart cities, Globalstandards and performance benchmarks, Practice codes, Infrastructure development, Integrated infrastructure management systems for smart city, Infrastructure management system applications for existing smart city, Various types of infrastructure systems, Infrastructure assessment.

Module 2: SMART GOVERNANCE AND SMART MOBILITY ***(09 Periods)***

Smart Governance: Definition, smart governance to citizens, Industries and commerce, Smart governance within government, Emerging trends in smart governance, Future of smart governance, Guidelines and standards for smart governance; IOT and ICT Application – Broadband city, Use of sensors, Intelligent city governance.

Smart Mobility: Intelligent transportation systems, Accessibility, Smart vehicles and fuels, GIS, GPS, Navigation system, Public transport, Traffic safety management, Logistics flows in cities, Mobility services, E-ticketing.

Module 3: SMART ECONOMY AND SMART ENVIRONMENT ***(09 Periods)***

Smart Economy: City branding, Market places and crowd funding, Innovation, entrepreneurship – E-business, E-commerce, Online integrated business platforms and networks; Local and global interconnectedness, Productivity, Flexibility of labour market.

Smart Environment: Network and environmental monitoring, Energy efficiency, Urban planning and urban refurbishment, Smart buildings and building renovation, Resource management, Environmental protection.

Module 4: SMART BUILDINGS, SMART ENERGY AND SMART WATER ***(09 Periods)***

Smart Buildings: Definition, Sustainable city – A green approach, Housing, Sustainable green building - Solar energy for smart city, Waste water management, solid waste management, 3Rs Policy, Green ratings.

Smart Energy: Current energy demand, Alternate energy sources, Renewable energy, Production, Solar energy, Wind energy, Energy from solid waste, Applications, Challenges in smart energy

Smart Water: Storage and conveyance system of water, Sustainable water and sanitation, Sewage systems, Flood management, Conservation system.

Module 5: SMART LIVING, SMART PEOPLE AND CASE STUDIES ***(09 Periods)***

Smart Living: Definition, Cultural facilities, World-class education, Tourist attractions, World-class hospitals, Latest technologies, Quality housing, Community and urban life management, Social cohesion.

Smart People: Definition, Human development index, Level of qualification, Graduate enrolment ratio, Lifelong learning, ICT Skills, Quality of smart people – Flexibility, Creativity to contribute to education, Democratic nature; Personality dimensions – Extroversion, Agreeableness, Consciousness, Emotional Stability, Open to experience.

Case Studies: Helsinki – Finland; Zurich - Switzerland; Oslo - Norway; Amsterdam - The Netherlands; New York - United States; Seoul (World's first Smart City) - South Korea.

Total Periods: 45

EXPERIENTIAL LEARNING

LIST OF EXERCISES:

1. Prepare a report on smart city infrastructure for south Indian cities.
2. Prepare a review on need for changes in transportation and governing policies in India.
3. Write a report on energy conservation and economy stability in world's first smart city.
4. Write a report on need and technologies to be adopted for green buildings in a smart city.
5. Prepare a case study report on Hyderabad, Telangana.

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in course handout.)

RESOURCES

TEXT BOOKS:

1. Li Xian Yi, *Smart City on Future Life - Scientific Planning and Construction*, Posts and Telecom Press, 2012.
2. Arpan Kumar Kar, Manmohan Prasad Gupta, P. Vigneswara Ilavarasan and Yogesh K. Dwivedi, *Advances in Smart Cities*, CRC Press, Taylor & Francis Group, Boca Raton, 2017.

REFERENCE BOOKS:

1. Nicos Komninos, *The Age of Intelligent Cities: Smart Environments and Innovation-for-all Strategies (Regions and Cities)*, Routledge Taylor & Francis Group, London, 2015.
2. Eleonora Riva Sanseverino, *Smart Rules for Smart Cities – Managing Efficient Cities in Euro-Mediterranean Countries*, springer for innovation, Springer, Italy, 2014.
3. smart Cities Mission: A Step Towards Smart India, National Portal of India
4. Anthony M. Townsend, *Smart Cities – Big Data, Civic Hackers and The Quest for a New Uthopia*, W. W. Norton & Company, Inc., New York, 2013.
5. IoT Technician (Smart City) – MHRD, Govt. of India, 2nd Edition, 2022.

VIDEO LECTURES:

1. City of the Future: Singapore – Full Episode | National Geographic - YouTube
2. Integrated Waste Management for a Smart City - Course (nptel.ac.in)

WEB RESOURCES:

1. Smart Cities (nationalgeographic.org)
2. NPTEL :: Civil Engineering - NOC: Sustainable Materials and Green Buildings
3. Smart cities (europa.eu)
4. Top 7 Smart Cities in the World in 2023 (earth.org)

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22EC101706	**SMART SENSORS FOR ENGINEERING APPLICATIONS**	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course provides a detailed discussion on Basics of sensors, characteristics of sensors and their responses; Smart sensors for Engineering, Science and Health Monitoring Applications; Applications of smart sensors and advancements in sensing Techniques.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Analyse the characteristics of transducers and estimate the response of sensors.

CO2. Understanding the working of various sensors in the context of their specialised domains.

CO3. Apply smart sensors for real time applications.

CO4. Apply the advanced techniques to smart sensors to provide solution to real time applications.

CO-PO Mapping Table:

Course Outcomes	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	3	-	-	-	-	-	-	-	-	-	-
CO2	3	-	-	-	-	-	-	-	-	-	-	-
CO3	3	-	-	-	-	-	-	-	-	-	-	-
CO4	3	-	-	-	-	-	-	-	-	-	-	-
Course Correlation Mapping	**3**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	-	**-**	**-**	**-**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: CONCEPTS OF SENSORS ***(08 Periods)***

Introduction to sensors and transducers. Need for sensors in the modern world. Different fields of sensors based on the stimuli, various schematics for active and passive sensors. Static and dynamic characteristics of sensors. ***zero, I and II order sensors:*** Response to impulse, step, ramp and sinusoidal inputs. Environmental factors and reliability of sensors.

Module 2: SENSORS IN ENGINEERING ***(07 Periods)***

Physical principles of sensors, Electric Sensors: Resistive, Capacitive, Inductive. Piezoelectric sensor. Photo elastic sensors, Fluid Mechanic sensors.

Module 3: HUMAN AND BIOMIMETIC SENSORS ***(10 Periods)***

Human sensors: vision, Taste and smell, Hearing, Somatic, Biomimetic Sensors, Electrochemical, Thermoelectric sensors, Optic sensors.

Module 4: APPLICATIONS OF SMART SENSORS ***(11 Periods)***

WSN Based Physiological Parameters Monitoring System: Measurement of Human Body Temperature. Intelligent Sensing System for Emotion Recognition: Aim of the Emotion Recognition System, Development of Intelligent Sensing System for EmotionRecognition. WSN Based Smart Power Monitoring System.

Module 5: ADVANCEMENTS IN SENSING TECHNOLOGY ***(09 Periods)***

Ecological Monitoring Using Wireless Sensor Networks: Overview, Challenges, and Opportunities. Development of an Embedded System-Based Gateway for Environmental Monitoring in Wild Fields. Advancements in Structural Health Monitoring.

Total Periods: 45

EXPERIENTIAL LEARNING

1. Build a wireless sensor system for Environmental pollution monitoring.
2. Design a smart temperature measurement system using required accessories.

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in course handout.)

RESOURCES

TEXT BOOKS:

1. Patrick F Dunn, *Fundamentals of sensors For engineering and science*, CRC Press,2012.
2. Subhas C. Mukhopadhyay, Krishanthi P. Jayasundera, and Anton Fuchs, *Smart Sensors, Measurement and Instrumentation*, Springer,2013.

REFERENCE BOOKS:

1. Subhas Chandra Mukhopadhyay*, Intelligent Sensing, Instrumentation and Measurements*, Springer, Kluwer Academic Publishers,2013.
2. Henry Bolte, *Sensors – A Comprehensive Sensors,* John Wiley.

VIDEO LECTURES:

1. https://www.youtube.com/watch?v=oRydUfgMdgA
2. https://onlinecourses.nptel.ac.in/noc22_ee36/

WEB RESOURCES:

1. https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1199&context=nasapub#:~:text=The%20smart%20materials%20examined%20include,%2C%20magneto%2Doptical%20materials%2C%20and
2. https://www.youtube.com/watch?v=q8UuRkOQ9A0
3. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8433768/
4. https://www.mdpi.com/1424-8220/21/17/5890

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22EE101703	**SUSTAINABLE ENERGY SYSTEMS**	3	-	-	-	3

Pre-Requisite -
Anti-Requisite -
Co-Requisite -

COURSE DESCRIPTION: This course designed emphasizes the operating principle of a range of non-conventional energy resources, energy harvesting and conversion principles and key performance characteristics. The energy conversion technologies will include energy conversion from, Solar, Wind, Ocean, Biomass, Geothermal and Fuel cells. The course also emphasizes on various types of hybrid energy storage systems with their relative advantages and disadvantages.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1 Understand the fundamental concepts of renewable energy sources and their endurance for sustainability.

CO2 Understand the various methods of harvesting solar energy, energy conversion principles, and operational aspects and environmental impacts of solar technologies.

CO3 Understand the various methods of harvesting wind energy, conversion principles, operational aspects, and environmental impacts of wind energy systems.

CO4 Understand the various methods of harvesting ocean energy, Biomass energy and geothermal energy, energy conversion technologies, operational aspects, and their impacts on the environment.

CO5 Understand the principle of harvesting energy from fuel cells and the operational aspects of hybrid energy storage systems.

CO-PO Mapping Table:

Course Outcome	Program Outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	-	-	-	-	2	2	-	-	-	-	1
CO2	3	-	-	-	2	2	2	-	-	-	-	1
CO3	3	-	-	-	2	2	2	-	-	-	-	1
CO4	3	-	-	-	2	2	2	-	-	-	-	1
CO5	3	-	-	-	2	2	2	-	-	-	-	1
Course Correlation Mapping	**3**	**-**	-	-	**2**	**2**	**2**	**-**	-	-	-	**1**

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION TO SUSTAINABLE ENERGY SOURCES *(07 Periods)*

Impact of conventional sources on Environment—acid rain, ozone layer depletion, Global warming, greenhouse effect and nuclear waste; Limitation of fossil fuels; Renewable energy sources; Renewable sources and their sustainable development.

Module 2: ENERGY FROM SOLAR *(10 Periods)*

Introduction, solar radiation, Measurement of solar radiation—Pyranometer; Solar energy collectors; Flat plate collectors— Liquid and air (non-porous) types; Focusing type— Parabolic and Point types; Solar photovoltaic system— PV cell and its types, Configuration of solar panel, PV system; Applications: Solar pump, Solar water heater

Module 3: ENERGY FROM WIND *(08 Periods)*

Introduction, power extraction from the wind, Wind turbines— Horizontal axis wind turbine— Propeller type and Vertical axis wind turbine— Darrieus rotor type; Basic components of wind energy conversion systems, Applications: Energy storage, Water pumping; Environmental impacts.

Module 4: ENERGY FROM OCEAN, BIOMASS AND GEOTHERMAL RESOURCES *(12 Periods)*

Energy from ocean: Introduction, ocean thermal energy conversion (OTEC): Open and closed cycle power plants; Tidal energy: Schematic diagram of tidal power plant; Advantagesand disadvantages.

Energy from Biomass: Introduction, biomass conversion technologies-direct, Thermochemical and Biochemical conversions; Biogas generation—Anaerobic digestion process.

Geothermal energy: Introduction, Geothermal resources, Geothermal power plants— Vapour dominated and liquid dominated; Environmental issues.

Module 5: FUEL CELLS AND HYBRID ENERGY SYSTEMS *(08 Periods)*

Fuel Cells: Introduction, principle and operation of fuel cell, classification of fuel cells, advantages and disadvantages of fuel cells.

Hybrid energy systems: Need for hybrid systems, configuration and coordination, Block diagram approach of Stand-alone PV-wind system, PV-Diesel and Wind-diesel; energy storage systems — Ultra capacitors, SMES, Battery.

Total Periods: *45*

EXPERIENTIAL LEARNING

1. The students shall visit a solar power plant, understand the operational aspects and should prepare a technical report on the plant visited.
2. The students shall visit a wind farm, understand the operational aspects, and should prepare a technical report on the plant visited.
3. The students shall visit a bio-mass energy conversion plant, understand the operational aspects and should prepare a technical report on the plant visited.

4. The students shall prepare a technical report on the need of a hybrid plant and find new avenues for a new hybrid system.

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in course handout.)

RESOURCES

TEXT BOOKS:

1. Rai, G.D., *Non-conventional Energy Sources*, Khanna Publishers, New Delhi, 2017.
2. G.N. Tiwari and M.K. Ghosal, *Renewable energy resources: Basic principles and applications*, Alpha Science International Ltd., 2005.

REFERENCE BOOKS:

1. JhonTwidell and Tony Wier, *Renewable Energy Resources*, Taylor & Francis, 2nd edition, London and Newyork, 2006.
2. K.M. Mittal,*Non-conventional Energy Systems-Principles*, Progress and Prospects, Wheeler Publications, 1997.
3. S.Rao, Dr.B.B. Parulekar, *Energy Technology*, Third edition, Khanna Publications, 2013.
4. R. K. Rajput, *A textbook of power system engineering*, Laxmi publications (P) Ltd, 2016

VIDEO LECTURES:

1. https://nptel.ac.in/courses/103103206
2. https://nptel.ac.in/courses/121106014
3. https://youtu.be/mh51mAUexK4
4. https://youtu.be/UW4HYJ36q0Y

WEB RESOURCES:

1. www.mnre.gov.in
2. www.ireda.in

EXPERIENTIAL LEARNING

1. Prepare poster presentation on "impact of women's self-help groups on their empowerment and socio-economic development."
2. Prepare a comparative analysis chart on the status of women in various countries.
3. Prepare a presentation on women and cultural responsibilities in different societies.
4. Prepare a presentation on the women of the past, present and future in terms of responsibilities and duties.
5. Prepare a presentation on the great women entrepreneurs of India.

(Note: It's an indicative one. Course Instructor may change activities and shall be reflected in course Handout)

RESOURCES

TEXT BOOKS:

1. SahaySushama, *Women and Empowerment,* Discovery Publishing House, New Delhi, 2013.
2. NayakSarojini, Jeevan Nair, *Women's Empowerment in India*, Pointer Publishers, Jaipur, 2017.

REFERENCE BOOKS:

1. Baluchamy. S, *Women's Empowerment of Women*, Pointer Publishers, Jaipur, 2010.
2. Khobragade Grishma, *Women's Empowerment: Challenges and Strategies Empowering Indian Women*, Booksclinic Publishing, Chhattisgarh, 2020.

WEB RESOURCES:

1. https://www.economicsdiscussion.net/entrepreneurship/women–entrepreneurs–in–india
2. https://www.businessmanagementideas.com/entrepreneurship–2/women entrepreneurs