माँ शाकुम्भरी विश्वविद्यालय, सहारनपुर
Maa Shakumbhari University, Saharanpur

Proposed Syllabus
Master in Business Administration
AI & ML
Program Code-604

School of Business Management

MaaShakumbhari University, Saharanpur

Programme Structure:(Total Credits: 92)

1. Business Core Courses

Course Code	Course Title	L	T	P	C
0160405	Principles and Practices of Management	3	0	0	3
0160406	Financial Accounting and Services	3	0	0	3
0260407	Managerial Economics	3	0	0	3
0360405	Strategic Management *(Elective)*	3	0	0	3
0360406	Organizational Change and Development *(Elective)*	3	0	0	3
0360407	Marketing of Services *(Elective)*	3	0	0	3
0360408	Working Capital Management *(Elective)*	3	0	0	3
0460401	Data Visualization for Managers	3	0	0	3
0460402	Financial Reporting and Analysis *(Elective)*	3	0	0	3
0460403	Management of Banks *(Elective)*	3	0	0	3
0460404	New Enterprises Managements *(Elective)*	3	0	0	3
0460405	International Marketing Management *(Elective)*	3	0	0	3
	Total Learning Credits				**36**

2. Discipline Specific Core Courses

4. Analytical Skills Enhancement Courses(ASEC)

Course Code	Course Title	L	T	P	C
0160401	Applied Mathematics	3	0	0	3
0260405	Quantitative and Optimization Techniques	3	0	0	3
0360401	Business Intelligence and Analytics	3	0	0	3
	Total Learning Credits				**9**

5. Soft Skills Enhancement Course(SSEC)

Course Code	Course Title	L	T	P	C
0160404	Business Communication	3	0	0	3
	Total Learning Credits				**3**

6. Computer Skills Enhancement Core Course(ESECC)

Course Code	Course Title	L	T	P	C
0160402	Data Base Management System	3	0	0	3
0160403	An Introduction to Python Programming	3	0	0	3
0360403	R-Programming	3	0	0	3

Course Code	Course Title	L	T	P	C
0260401	An Introduction to Artificial Intelligence and its Application	3	0	0	3
0260402	An Introduction to Machine Learning	3	0	0	3
0260403	Python for AI & ML	3	0	0	3
0360402	Neural Network and Deep Learning	3	0	0	3
0360409	Big Data Analysis *(Elective)*	3	0	0	3
0360410	Natural Language Processing *(Elective)*	3	0	0	3
0360411	Data Warehouse and Data Mining *(Elective)*	3	0	0	3
0360412	Internet of Things *(Elective)*	3	0	0	3
Total Learning Credits					**24**

3. Industry Collaborative Courses

Course Code	Course Title	L	T	P	C
0160465	Summer Training	0	0	0	4
0460465	Project	0	0	0	6
Total Learning Credits					**10**

0160480	**Practical Lab:** DBMS	0	0	3	3
0160481	**Practical Lab:** Python Programming	0	0	3	3
0260480	**Practical Lab:** Python for AI & ML	0	0	3	3
0360480	**Practical Lab:** R-Programming	0	0	3	3
0360481	**Practical Lab:** Python for Deep Learning	0	0	3	3
0460480	**Practical Lab:** Data Visualization	0	0	4	4
	Total Learning Credits				**28**

7. Social Responsibility and Professional Course (Qualify)

Course Code	Course Title	L	T	P	C
0160407	Professional Ethics and Human Values	3	0	0	Q
	Total Learning Credits				Q

8. Ability Enhancement Courses (AEC)

Course Code	Course Title	L	T	P	C
0260406	Research Methods in Business	3	0	0	3
0260404	Business Law	3	0	0	3
0360404	Organization Behavior	3	0	0	3
Total Learning Credits					**9**

Maa Shakumbhari University, Punwarka, Saharanpur

Syllabus MBA-Artificial Intelligence & Machine Learning Structure

Se-mester	Paper	Course Code	Course Title	Theory/ Project	Credits	(MM-100)		Min Marks	Min Marks	Teaching Hours
						IE	UE	UE	Total	
	Year -I, Semester-I									
SEM-I	1	0160401	Applied Mathematics	TH	3	25	75	25	40	40
	2	0160402	Data Base Management System	TH	3	25	75	25	40	40
	3	0160403	An Introduction to Python Programming	TH	3	25	75	25	40	40
	4	0160404	Business Communication	TH	3	25	75	25	40	40
	5	0160405	Principles and Practices of Management	TH	3	25	75	25	40	40
	6	0160406	Financial Accounting and Services	TH	3	25	75	25	40	40
	7	0160480	**Practical DBMS**	PR	3	25	100	25	40	80
	8	0160481	**Practical Python Programming**	PR	3	25	100	25	40	80
	9	0160407	Professional Ethics and Human Values	Qualify	-	25	75	25	40	
			Total	**6TH+ 2PR+1Q**	**24**		800			
	Year -I, Semester-II									
	1	0260401	Introduction to Artificial Intelligence and its Application	TH	3	25	75	25	40	40
	2	0260402	Introduction to Machine Learning	TH	3	25	75	25	40	40
	3	0260403	Python for Artificial Intelligence and Machine Learning	TH	3	25	75	25	40	40

SEM-II	4	0260404	Business Laws	TH	3	25	75	25	40	40
	5	0260405	Quantitative and Optimisation Techniques	TH	3	25	75	25	40	40
	6	0260406	Research Methods in Business	TH	3	25	75	25	40	40
	7	0260407	Managerial Economics	TH	3	25	75	25	40	40
	8	0260480	**Practical Python for Artificial Intelligence and Machine Learning**	PR	3	25	100	25	40	80
	9	0260465	**Summer Training**	ST	4	25	75		40	
			Total	**7TH+ 1PR+ 1ST**	**28**		900			
	Year -II, Semester-III									
Sem-III	1	0360401	Business Intelligence & Analytics	TH	3	25	75	25	40	40
	2	0360402	Neural Network and Deep Learning	TH	3	25	75	25	40	40
	3	0360403	R-Programming	TH	3	25	75	25	40	40
	4	0360404	Organisation Behaviour	TH	3	25	75	25	40	40
	5		**Group-I Elective-One**	TH	3	25	75	25	40	40
	6		**Group-II Elective-One**	TH	3	25	75	25	40	40
	7	0360480	**Practical for R-programming**	PR	3	25	100	25	40	80
	8	0360481	**Practical-Python for Deep Learning**	PR	3	25	100	25	40	80
			Total	**6TH+2PR**	**24**		800			

	Year -II, Semester-IV									
Sem-IV	1	0460401	Data Visualisation for Managers	TH	3	25	75	25	40	40
	2		Group-I Elective-One	TH	3	25	75	25	40	40
	3	0460480	Lab for Data Visualisation	PR	4	25	100	25	40	120
	4	0460465	Project/Dissertation	Internship Project	6	50	200		80	
			Total	2TH+ 1PRJ	28		500			
			Grand Total	21TH+6PR +1ST+1DT	92		3000			

PR-Practical TH- Theory PRJ- Project ST- Summer Training IE-Internal Examination UE- University Examination DT-Dissertation Q-Qualify

Pre-Requisite: The applicant must have a Bachelor's or Master's Degree in Engineering, Computer Science, Statistics, Mathematics, Management or Commerce(with Maths at 12th Level) or equivalent qualification with exposure to mathematics and programming.

(Prof. Praveen Kumar)	(Dr. Sandeep Mittal)	(Dr. Sanjeev Tayal)	(Prof. Pankaj Madan)	(Prof. Heman Pathak)
Convener	Member	Member	External Expert	External Expert

Semes-ter	Paper	Course Code	Course Title	Theory /Project	Credits	(MM-100)		Min Marks	Min Marks	Teaching Hours
						IE	UE	UE	Total	
		Sem-III. Group-I Elective(Choose any One)								
Sem-III	5	0360405	Strategic Management	TH	3	25	75	25	40	40
		0360406	Organisational change and development	TH	3	25	75	25	40	40
		0360407	Marketing of Services	TH	3	25	75	25	40	40
		0360408	Working Capital Management	TH	3	25	75	25	40	40
		Sem-III Group-II Elective (Choose any One)								
	6	0360409	Big Data Analytics	TH	3	25	75	25	40	40
		0360410	Natural Language Processing	TH	3	25	75	25	40	40
		0360411	Data Warehousing & Data Mining	TH	3	25	75	25	40	40
		0360412	Internet of Things	TH	3	25	75	25	40	40
		Sem-IV Group-I Elective (Choose any One)								
Sem-IV	2	0460402	Financial reporting and analysis	TH	3	25	75	25	40	40
		0460403	Management of Banks	TH	3	25	75	25	40	40
		0460404	New Enterprise Management	TH	3	25	75	25	40	40
		0460405	International Marketing Management	TH	3	25	75	25	40	40

Program Objective:

The Management Programme in AI & ML is designed for aspiring business professionals from Mathematics as well as computer background provides essential skills in business analytics and data science through Artificial Intelligence. The programme schedule is designed to maximize learning, with minimum disruption to professional responsibilities. This is a career-enriching programme that provides rigorous theoretical and practical training on data management, programming, statistics, machine learning, and artificial intelligence and business applications. This is a hands-on and rigorous programme aims to strike a perfect balance between classroom and technology-aided learning.

After successful completion of the course candidate-

1.will be business leaders and managers with leadership and problem-solving Skills for global business.

2.will drive entrepreneurship initiatives either on their own or within other organizations where they are employed.

3.will have innovation skills and drive the businesses through multifaceted skills.

4.will provide advancement of conceptual and practical knowledge in the field of business management to contribute to nation building while upholding ethical practices.

5. will adopt and implement technological advancement to compete and lead the modern business society & mastering the language of data science.

6. can interpret data to inform better decision-making

7. may become drive strategy and innovation with core data analysis skills

8. may understand emerging technologies like Block-chain, Neural Networks and AI

9. may learn by applying taught concepts in real-time

Program Specific Objectives (PSO)

- Development of skills to manage the complexity by using Artificial Intelligence in the Data driven Business world.
- Usage of different tools and technologies in Artificial Intelligence and Data Science to build, train and deploy business oriented applications.
- Explore the application of Artificial Intelligence and Data Science to create business opportunities and generate revenue.

Program Outcomes (PO)

PO1: Effective communication skills

PO2: Initiate critical thinking

PO3: Resources analysis for organizations

PO4: Familiarize organizations and its stakeholders

PO5: Integrate functional knowledge with strategic skills

PO6: Comprehend effectively in globalized environment

PO7: Practice business ethics with integrity

PO8: Enhance careers and commitment

PO9: Instigate entrepreneurial drive

Program Specific Outcomes (PSO)

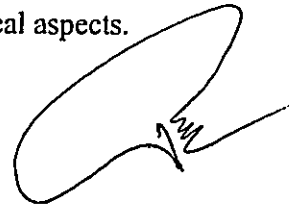
PSO1: Expertise in data driven decisions

PSO2: Creating decision making applications

PSO3: Generate revenue by opportunity identification

Foundational project: Runs through the programme, and cuts across its various modules. This helps participants build capabilities to solve different business problems by integrating classroom learning from various courses.

Capstone Project: A live project-based approach through Capstone Project with organisations to encourage a practical application of a variety of analytical tools and techniques taught in the programme to provide actionable solutions and to develop data science leadership skills. Each participant group is mentored by a faculty member and an industry mentor, to integrate theoretical and practical aspects.



SEM-I	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-I	0160401	Applied Mathematics	TH	3	25	75	40	40

Course Objectives

- Understand the concept of differentiation
- Interpret in the area of infinite series and their convergence
- Evaluate the functions of several variables which needed in branches of engineering
- Understand the concept of double integrals
- Understand the concept of triple integrals

Course Outcomes

- Apply the concept of differentiation in any curve
- Evaluation of infinite series approximations for problems arising in mathematical modeling
- Identify the maximum and minimum values of surfaces
- Apply double integrals to compute the area of plane curves
- Evaluation of triple integrals to compute the volume of solids

UNIT I – Differential Calculus: Limit, Continuity of function, differentiability of function, Rolle's Theorem – Lagrange's Mean Value Theorem- Maxima and Minima – Taylor's and Maclaurin's Theorem. Multivariate Calculus: Total derivatives, Jacobians, Maxima, Minima, and Saddle point.

UNIT II – Sequence and Series: Definition and examples, Convergence of sequence, Series, Test for Convergence, Comparison Test, D' Alembert's Ratio Test, Alternative Series, Alembert's Leibnitz test (All test application only).

UNIT III – Double Integration: Double integrals in Cartesian coordinates, Area enclosed by the plane curves (excluding surface area), Triple Integration: Triple integrals in Cartesian co-ordinates, Volume of solids (Sphere, Ellipsoid, Tetrahedron) using Cartesian co-ordinates.

UNIT IV – Matrices: Eigenvalues and Eigenvectors of a real matrix, Properties of Eigenvalues and Eigenvectors (without proof) Cayley-Hamilton Theorem (excluding proof), Orthogonal matrices: Definition, Reduction of a quadratic form to canonical form by orthogonal transformation. Complex matrices, Conjugate of the matrix, Hermitian and Skew Hermitian matrices, Properties (without proof), Unitary matrix, Properties (without proof), Inner product spaces, Gram Schmidt ortho-normalization.

UNIT V – First Order Ordinary Differential Equations: Equations of the first order and of the first degree, Homogeneous equations, Exact differential equations, Linear equations, Second order linear differential equations with constant and variable coefficients

Introduction to Probability Conditional Probability, random variables, Data & Sampling, Mean, Median, Mode, Normal Approximation and Binomial Distribution, Sampling Distribution and central limit theorem, regression, confidence interval, test of significance.

Text Books:

1. Erwin Kreyszig, "Advanced Engineering Mathematics", 10th Edition, Wiley India Private Ltd., New Delhi, 2020.

2. Vccrarajan T, "Engineering Mathematics", McGraw Hill Education (India) Pvt Ltd, New Delhi, 2016.
3. Grewal B.S, "Higher Engineering Mathematics", 43rdEdition, Khanna Publications, New Delhi, 2018.
4. E. A. Coddington, "An Introduction to Ordinary Differential Equations", Prentice Hall India, 1995.
5. G.F.Simmons and S. G. Krantz, "Differential Equations", Tata McGraw Hill, 2007.
6. Veerarajan T, "Engineering Mathematics", McGraw Hill Education (India) Pvt Ltd, New Delhi, 2016.

SEM-I	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-I	0160402	Data Base Management System	TH	3	25	75	40	40

Course Objectives :

The objective of the course is to present an introduction to database management systems, with an emphasis on how to organize, maintain and retrieve efficiently, and effectively - information from a DBMS.

Course Outcomes:

- Describe the fundamental elements of relational database management systems
- Explain the basic concepts of relational data model, entity-relationship model relational database design, relational algebra and SQL.
- Design ER-models to represent simple database application scenarios
- Convert the ER-model to relational tables, populate relational database and formulate SQL

UNIT 1

File Structure and Organization: Data and information, Concept of field , key field ; Records and its types, fixed length records and variable length records, Files, operation on files, Primary file organization

UNIT 2

Data base Management System: Definition of DBMS, file processing system Vs DBMS, Advantages and Disadvantages of DBMS, Users of DBMS : Database Designers, Application programmer, Sophisticated Users, End Users, Capabilities of good DBMS, Overall System structure

UNIT 3

Data Models Data Models: Object Based Logical Model, Record Base Logical Model, Relational Model, Network Model, Hierarchical Model, Entity Relationship Model : Entity Set, Attribute, Relationship Set, Entity Relationship Diagram (ERD), Extended features of ERD

UNIT 4

Relational Data bases: Relational data model concept, Terms : Relation, Tuple , Attribute, Cardinality , Degree, Domain ; Keys: Super Key, Candidate Key, Primary Key, Foreign Key; Relational Algebra – Operations: Select, Project, Union, Difference, Intersection, Cartesian Product, Natural join

UNIT 5

SQL: Introduction of SQL, characteristics of SQL, Basic Structure, DDL Commands, DML, DQL, SELECT Statement, WHERE Clause, Useful Relational Operators, Aggregate Functions, SUM Function , AVG Function Intersection , Minus Compound Conditions and Logical Operators, AND Operator, OR Operator, Combining AND and OR Operators, IN Operator, BETWEEN Operator, NOT Operator, Order of Precedence for Logical Operators LIKE Operator, Concatenation Operator, Alias Column Names, ORDER BY Clause, Handling NULL Values, DISTINCT Clause, Relational Database Design Functional Dependencies, normal forms, first, second, third Normal forms, BCNF, lossless join decompositions, normalization using FD, MVD and JD.

Reference Books:

1. Henry F. Korth , Database Concepts, McGraw Hill.
2. Elmasri&Navathe, Fundamentals of Database systems, Pearson Education.
3. Bipin C. Desai, Introduction to Database Systems, Galgotia.

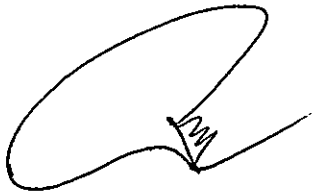
SEM-I	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-I	0160403	An Introduction to Python pro-gramming	TH	3	25	75	40	40

Course Objectives :

- To understand why Python is a useful scripting language for developers.
- To learn how to design and program Python applications.
- To learn how to use lists, tuples, and dictionaries in Python programs.
- To learn how to identify Python object types.
- To define the structure and components of a Python program.
- Learning Objectives : Python
- The learning objectives of this course are:

Course Outcome:

- Create your first program in Python IDLE.
- Implement OOPs concepts in your programming.



- Use Arrays, and Data structures.
- Create an application with the support of graphics in Python.
- Implement error handling.

UNIT-1

Introduction: Introduction to Programming: The basic Model of computation, algorithms, flowcharts, Programing Languages, The Python Programming Language, History, features, Installing Python, Running Python program, Testing & Debugging and Documentation.

UNIT –2

Variables and Expressions: Values and Types, Variables, Variable Names and Keywords, Type conversion, Operators and Operands, Expressions, Interactive Mode and Script Mode, Order of Operations. **Conditional Statements:** if, if-else, nested if –else **Looping:** for, while, nested loops **Control statements:** Terminating loops, skipping specific conditions

UNIT-3

Functions: Function Calls, Type Conversion Functions, Math Functions, Composition, Adding New Functions, Definitions and Uses, Flow of Execution, Parameters and Arguments, Variables and Parameters Are Local, Stack Diagrams, Fruitful Functions and Void Functions, Why Functions? Importing with from, Return Values, Incremental Development, Composition, Boolean Functions, More Recursion, Leap of Faith, Checking Types

UNIT -4

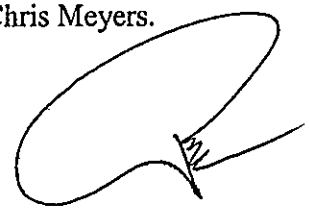
Sequence data types: Lists, tuples and dictionary, (Slicing, Indexing, Concatenation, other operations on Sequence data type),concept of mutability, Examples to include finding the maximum, minimum, mean; linear search on list/tuple of numbers, and counting the frequency of elements in a list using a dictionary.

UNIT-5

File Processing: Concept of Files, File opening in various modes and closing of a file, Reading from a file, Writing onto a file, File functions-open(), close(), read(), readline(), readlines(),write(), write lines(),tell(),seek(), Command Line arguments. Creating the GUI Form and Adding Widgets: Widgets: Button, Canvas, Check button, Entry, Frame, Label, List box, Menu button, Menu, Message, Radio button, Scale, Scrollbar, text, Top level, Spin box, Paned Window, Label Frame, Message box. Handling Standard attributes and Properties of Widgets. Layout Management: Designing GUI applications with proper Layout Management features. Look and Feel Customization: Enhancing Look and Feel of GUI using different appearances of widgets.

Reference Books:

1. T. Budd, Exploring Python, TMH, 1st Ed, 2011
2. How to think like a computer scientist: learning with Python / Allen Downey, Jeffrey Elkner, Chris Meyers.



SEM-I	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-I	0160404	Business Communication	TH	3	25	75	40	40

Course Objectives- By the end of this course, students will have-

- Acquired the knowledge and skills necessary to communicate effectively in various business settings, both within their home country and in a global context.
- Learn how to build and maintain professional relationships and resolve conflicts effectively, contributing to a harmonious work environment.
- Students will be proficient in using video conferencing, virtual meetings, collaborative tools, and be aware of data security and privacy considerations in digital communication.
- They will be able to create and interpret written and verbal messages, utilize digital tools for communication, and demonstrate cultural competence and ethical responsibility in their communication practices.

Course Outcomes:

- Proficiency in effective communication within diverse business environments, locally and globally.
- Skills in building and managing professional relationships, resolving conflicts, and fostering a positive workplace atmosphere.
- Mastery of video conferencing, virtual meetings, and collaborative tools, with awareness of data security and privacy protocols.
- Ability to create and interpret written and verbal messages, employ digital communication tools, and exhibit cultural competence and ethical responsibility in communication practices.

Unit-1 Introduction to Business Communication

Understanding the Importance of Effective Communication in Business: Definition and significance of business communication, Types of business communication, Communication process and models. Barriers to Effective Communication: Common barriers in business communication, Overcoming communication barriers, Cultural and global considerations in business communication. Discuss at least 2 case studies.

Unit-2 Written Communication

Business Writing Fundamentals: Principles of effective business writing, Email etiquette and best practices, Memos, minutes, notices, circulars, Different business letter writing with 2 samples of each, Report writing. Writing for Specific Business Purposes: Business proposals and business plans, Job applications, Professional resumes and cover letters, Legal and ethical aspects of business writing. Preparing project report on business proposal. Document Design and Visual Communication: Digital Communication, PowerPoint presentation preparation; Using Web as a source of knowledge Sharing, .Designing professional documents, Visual aids and data visualization, Incorporating technology in business writing Discuss atleast 2 case studies

Unit-3 Verbal and Nonverbal Communication

Effective Verbal Communication: The role of active listening in business communication, Presentation skills and public speaking, Handling meetings and negotiations, Types of managerial speeches: occasional speech; thematic speech.

Nonverbal Communication in Business: Understanding body language and facial expressions, Persona language,The impact of tone and voice in communication, Cross-cultural nonverbal communication.
Interpersonal Communication and Conflict Resolution: Building strong professional relationships, Conflict resolution strategies in the workplace, Role plays and case studies
Discuss atleast 2 case studies

Unit-4 Digital and Social Media Communication

Social Media and Online Presence: Leveraging social media for professional networking, Personal branding and online reputation management, The use of social media in marketing and customer service
Business Communication through Technology: Effective use of video conferencing and virtual meetings, Collaborative tools and project management software, Data security and privacy considerations
Crisis Communication and Online Reputation Management: Handling communication during a crisis, Strategies for managing online reputation issues, Social media crisis management
Discuss atleast 2 case studies

Unit-5 Cross-Cultural and Global Communication

Cultural Dimensions in Business Communication: Understanding cultural differences in communication, Cultural stereotypes and biases, Strategies for effective cross-cultural communication
Global Business Communication: International business communication practices, Global negotiations and partnerships, Cultural sensitivity in a global marketplace
Business Ethics and Sustainability: Ethical issues in business communication, Corporate social responsibility and sustainability reporting, Ethical decision-making and communication strategies Discuss atleast 2 case studies

Reference Books:

- Business Communication by K.K. Sinha
- Business Communication: Theory and Application" by Chaturvedi, Mukesh, and Mishra:
- Business Communication: Concepts, Cases, and Applications" by Bovee, Thill, and Chaturvedi
- Business Communication,by P. Subba Rao, B.Anita Kumar, C.Hima Bindu,
- Soft Skills for Everyone, by Jeff Butterfield.
- Essentials of Business Communication, by Rajendra Pal, J S Korlahahi,

SEM-I	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-I	0160405	Principles & Practice of Management	TH	3	25	75	40	40

Course Objectives- By the end of this course, students will be able-

- To understand theoretical aspects, processes and principles, the scope of Management and its application to modern management practice.
- To analyse how the field of Management has evolved and its significant contributions
- To analyse and apply the critical role of managers in modern organizational settings
- To illustrate and evaluate the importance of planning, organizing, directing and controlling in decision making
- To predict the dynamics of controlling and its emerging issues in management.

Course Outcomes:

- Comprehensive grasp of management theories, principles, and their application in modern management practices.
- Critical understanding of the evolution of management and its significant contributions to the field.
- Analytical skills to assess and apply the critical role of managers in planning, organizing, directing, and controlling within organizations.
- Ability to apply management functions in decision-making and problem-solving scenarios effectively.
- Insight into the dynamics of controlling, with predictions on emerging issues and innovative solutions for future management challenges.

Unit-1 Introduction to Management

Understanding the Nature and functions of management: Definition, Nature, Management is Science or Art? Features of Management, Management Functions, Management as a Process, Importance of Management, levels of management, Management and Administration, Role of managers.

Management Thoughts: Contributions of F.W. Taylor, Henry Fayol, Elton Mayo, Management thought-classical perspective, scientific management, administrative management, bureaucratic management, behavioural perspective

Discuss atleast 2 case studies

Unit-2 Planning and Decision Making

Concepts of Planning: Planning – Meaning and Definition, Features, Steps in Planning Process, Approaches, Principles of planning, Importance, Advantages and Disadvantages of Planning, Types of Plans, Types of Planning, Management by Objectives. Strategies, Policies and Planning Premises, Strategic Planning Process, Presuming and Forecasting,

Concepts of decision making: Meaning and definition of decision making, Characteristics, Decision- Making Process, Types of Decisions. Guidelines for Making Effective Decisions,

Discuss atleast 2 case studies

Unit-3 Organisation and staffing

Organisation and its structure: Meaning and Definition of organisation, Characteristics, Process, Need and Importance, Principles, Span of Management. Decentralization of Authority, Delegation of Authority, Organization Chart – Types, Contents, Uses, Limitations, Factors Affecting Organizational Chart, Organizational Structure – Line Organization, Line and Staff, Functional, Project, Matrix and Virtual. Informal Organization – Meaning, Characteristics, Importance, Limitations, Difference between Formal and Informal Organization

Basic concepts of staffing: Staffing – Meaning, Nature, Importance, The System Approach to Human Resource Management, Staffing Process Manpower Planning, Recruitment, Selection, Orientation and Placement, Training, Remuneration, Performance Appraisal, The Peter's Principle, Promotion and Transfer.**Discuss atleast 2 case studies**

Unit-4 Basic concepts of Direction

Direction and supervision: Direction – Definition, Nature, Need and Importance, Principles of Directing. Supervision –Role and Functions of a Supervisor, Effective Supervision, Direction and Supervision.

Motivation and Leadership: Meaning and definition of motivation, types of motivation , Maslow Hierarchy of Needs Theory, McGregor Theory of X and Y, Herzberg's Motivation- Hygiene Theory, Expectancy Theory, Equity Theory, Goal-Setting Theory. Leadership: Definition, Ingredients, Styles, Committees and Group Decision Making. Communication: Purpose, Process of Communication, Barriers and Break Downs, Making Communication Effective

Discuss atleast 2 case studies

Unit-5 Controlling and Coordination

Introduction of Controlling: Controlling – Meaning, Features, Importance, Control Process, Characteristics of an Effective: Control System, Types of Control, Major Controlling Techniques: Budgetary and Non-Budgetary Control Devices, Statistical Data, Time-Event Network Analysis.

Basic concepts of coordination: Meaning and definition of coordination, Characteristics, Essentials, Types and Techniques, Principles, Obstacles and Needs of coordination.

Discuss at least 2 case studies

Reference books:

- Durai, P. (2015). Principles of Management, Text and Cases. New Delhi: Pearson Education.
- Koontz, H. (2010). Essentials of Management. New Delhi: Tata McGraw-Hill Education.
- Stoner, Freeman & Gilbert Jr. (2009). Management. New Delhi: Prentice Hall.
- Weihrich, H. & Koontz, H. (2010). Management- A Global Perspective: New Delhi: Tata
- McGraw-Hill Education.
- Robbins & Coulter (2013). Management. New Delhi: Prentice Hall.
- Robbins, S.P. & Decenzo, D. A. (2014). Fundamentals of Management: Essential Concepts
- and Applications. New Delhi: Pearson Education.
- Luthans, F. (2010). Organizational Behaviour. New York: McGraw-Hill.
- Principles and Practice of Management by L M Prasad

SEM-I	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-I	0160406	Financial Accounting and Services	TH	3	25	75	40	40

Course Objectives- By the end of this course, students will be able-

- Understand the fundamental principles and concepts of financial accounting.
- Prepare and analyses financial statements, including income statements, balance sheets, and cash flow statements.
- Analyze the services offered by financial institutions and their impact on the economy.
- Apply critical thinking and problem-solving skills to real-world financial scenarios.
- Communicate financial information effectively to stakeholders.

Course Outcomes:

- Mastery of the fundamental principles and concepts of financial accounting.
- Proficiency in preparing and analyzing financial statements such as income statements, balance sheets, and cash flow statements.
- Understanding of financial institutions' services and their economic impact.
- Ability to apply critical thinking and problem-solving skills to financial scenarios.
- Effective communication of financial information to stakeholders.

Unit-1 Introduction to Accounting

Understanding the Basic concepts of Accounting

Introduction to Accounting: Importance - Objectives – Principles. GAAP: Accounting Concepts and Conventions. Accounting System: Double Entry System, Recording Business Transactions - Classification of Accounts - Accounting Cycle - Users of Accounting Information, role of accounting in economic development.

Accounting system and process

The book-keeping and accounting process, Type of Accounts, Rules for Debit (Dr.) and Credit (Cr.) Accounting Equation, Transactions and their effects on Accounting and Equation, Classification of Accounts: Owner's Equity, Revenues, and Expenses. **Discuss at least 2 case studies**

Unit-2 The Accounting Process

Preparation of accounting statements: Introduction of accounting process, Books of original record- The Journal, Advantages of using a Journal, Types of Entries, Ruling of a Journal, The Ledger, Sub-division of Ledger, Ledger Format, Ledger Posting, Balancing Ledger Accounts, Difference between Journal and Ledger, Trial Balance (Problems), Rectification of Errors, Cash Book and other Subsidiary books.

Preparation of Financial statements : Preparation of Final Accounts –Trading, Profit and Loss Account and Balance Sheet with all adjustment entries- Various illustrations – Capital and Revenue Expenditure and Receipts, Preparation of Cash flow statement and it's analysis. **Discuss at least 2 case studies**

Unit-3 Depreciation, Shares and debentures

Computation of depreciation: Introduction, Meaning of Depreciation, Characteristics of Depreciation, Causes of Depreciation, Objectives of providing Depreciation, Computation of Depreciation, Methods of charging Depreciation, Change of Method of Charging Depreciation, Salient Features of AS6: Depreciation Accounting, illustrations.

Shares and debentures : Shares and Debentures: Entries for Issue of shares (Problems) - Forfeiture (Problems) - Issue of shares at Discount and premium (Problems) - Issue and Redemption of Debentures. (Problems) **Discuss at least 2 case studies**

Unit-4 Analysis of Financial statements

Ratio Analysis : Analysis of financial statement: Ratio Analysis- Solvency ratios, Profitability ratios, activity ratios, liquidity ratios, Market capitalization ratios; leverage Ratio, Detailed Analysis using excel application. Analysis and interpretation of Financial statements from Investors and Company point of view - Horizontal and vertical Analysis of Company financial statements, Du Pont Chart- Window Dressing - Limitations of financial statements, Accounting standards (AS) issued by ICAI-IFRS, Case study on Financial Reporting and analysis (FRAs). **Discuss at least 2 case studies**

Unit-5 Recent types of Financial statements analysis

Financial statements analysis : Financial Statement Analysis and Recent Types of Accounting: Common Size Statement; Comparative Balance Sheet and Trend Analysis of manufacturing, Service & banking organizations, Case Study and Workshops in analysing Balance sheet. Human Resource Accounting, Forensic Accounting, Accounting for corporate social resposibility.

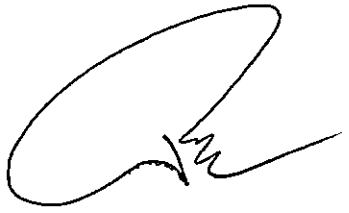
Preparation of Fund flow Statement

Meaning, Concept of Gross and Net Working Capital, Preparation of Schedule of Changes in Working Capital, Preparation of Funds Flow Statement and its analysis; Cash Flow Statement: Various cash and non-cash transactions, flow of cash, difference between cash flow and fund flow,

Discuss at least 2 case studies

Reference books:

- Maheshwari S.N &Maheshwari S K – A text book of Accounting for Management (Vikas, 10th Edition)
- Essentials of Financial Accountng (based on IFRS), Bhattacharya (PHI,3rd Ed)
- Ramachandran Kakani- Financial Accounting for Management (TMH, 3rd Edition).
- PC Tulsian- Financial Accounting (Pearson, 2016)
- Dhamija - Financial Accounting for managers: (Prentice Hall, 2nd Edition).



SEM-I	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-I	0160480	Practical DBMS	PR	3	25	75	40	80

DATABASE MANAGEMENT SYSTEMS LAB

Course Objectives:

- Introduce ER data model, database design and normalization
- Learn SQL basics for data definition and data manipulation

Course Outcomes:

- Design database schema for a given application and apply normalization
- Acquire skills in using SQL commands for data definition and data manipulation.
- Develop solutions for database applications using procedures, cursors and triggers

List of Programs:

1. Used of CREATE, ALTER, RENAME and DROP statement in the database tables (relations)
2. Used of INSERT INTO, DELETE and UPDATE statement in the database tables (relations)
3. Use of simple select statement.
4. Use of select query on two relations
5. Use of nesting of queries.
6. Use of aggregate functions.
7. Use of substring comparison.
8. Use of order by statement.
9. Consider the following schema for a Library Database:

   BOOK (Book_id, Title, Publisher_Name, Pub_Year)
   BOOK_AUTHORS (Book_id, Author_Name)
   PUBLISHER (Name, Address, Phone)
   BOOK_COPIES (Book_id, Branch_id, No-of_Copies)
   BOOK_LENDING (Book_id, Branch_id, Card_No, Date_Out, Due_Date)
   LIBRARY_BRANCH (Branch_id, Branch_Name, Address)

Write SQL queries to

- Retrieve details of all books in the library_id, title, name of publisher, authors, number of copies in each branch, etc.
- Get the particulars of borrowers who have borrowed more than 3 books between Jan2018 to Jun 2018
- Delete a book in BOOK table. Update the contents of other tables to reflect this data manipulation operation.

- Partition the BOOK table based on year of publication. Demonstrate its working with a simple query.
- Create a view of all books and its number of copies that are currently available in the Library.

10. Consider the following schema for Order Database:
    SALESMAN (Salesman_id, Name, City, Commission)
    CUSTOMER (Customer_id, Cust_Name, City, Grade, Salesman_id)
    ORDERS (Ord_No, Purchase_Amt, Ord_Date, Customer_id, Salesman_id)
Write SQL queries to
    - Count the customers with grades above Amritsar's average.
    - Find the name and numbers of all salesmen who had more than one customer.
    - List all salesmen and indicate those who have and don't have customers in their cities (Use UNION operation.)
    - Create a view that finds the salesman who has the customer with the highest order of a day.
    - Demonstrate the DELETE operation by removing salesman with id 1000. All his orders must also be deleted.

11. Write a PL/SQL code to add two numbers and display the result. Read the numbers during run time. 12. Write a PL/SQL code to find sum of first 10 natural numbers using while and for loop.
13. Write a program to create a trigger which will convert the name of a student to upper case before inserting or updating the name column of student table.
14. Write a PL/SQL block to count the number of rows affected by an update statement using SQL%ROWCOUNT
15. Write a PL/SQL block to increase the salary of all doctors by 1000.

Reference Books:

1. "SQL, PL/SQL The Programming Language of Oracle", 4th Revised Edition, Ivan Bayross (2009).
2. "Oracle PL/SQL Programming", 5th Edition, Steven Feuerstein and Bill Pribyl (2009).

SEM-I	Paper Code	Course Title	TH/PR	Credit	Internal Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-I	0160481	Practical Python Programming	PR	3	25	75	40	80

Course Objectives:

- To install and run the Python interpreter
- To learn control structures.
- To Understand Lists, Dictionaries in python
- To Handle Strings and Files in Python

Course Outcomes:

- Develop the application specific codes using python.
- Understand Strings, Lists, Tuples and Dictionaries in Python
- Verify programs using modular approach, file I/O, Python standard library

List of Programs:

1. Compute sum, subtraction, multiplication, division and exponent of given variables input by the user.
2. Compute area of following shapes: circle, rectangle, triangle, square, trapezoid and parallelogram. 3. Compute volume of following 3D shapes: cube, cylinder, cone and sphere.
4. Compute and print roots of quadratic equation ax2+bx+c=0, where the values of a, b, and c are input by the user.
5. Print numbers up to N which are not divisible by 3, 6, 9,, e.g., 1, 2, 4, 5, 7,....
6. Write a program to determine whether a triangle is isosceles or not?
7. Print multiplication table of a number input by the user.
8. Compute sum of natural numbers from one to n number.
9. Print Fibonacci series up to n numbers e.g. 0 1 1 2 3 5 8 13.....n
10. Compute factorial of a given number.
11. Count occurrence of a digit 5 in a given integer number input by the user.
12. Print Geometric and Harmonic means of a series input by the user.
13. Evaluate the following expressions: a. x-x2/2!+x3/3!- x4/4!+... xn/n! b. x-x3/3!+x5/5!- x7/7!+... xn/n!
14. Print all possible combinations of 4, 5, and 6.
15. Determine prime numbers within a specific range.
16. Count number of persons of age above 60 and below 90.
17. Compute transpose of a matrix.
18. Perform following operations on two matrices. 1) Addition 2) Subtraction 3) Multiplication

19. Count occurrence of vowels.
20. Count total number of vowels in a word.
21. Determine whether a string is palindrome or not.
22. Perform following operations on a list of numbers:
    1) Insert an element 2) delete an element 3) sort the list 4) delete entire list
23. Display word after Sorting in alphabetical order.
24. Perform sequential search on a list of given numbers.
25. Perform sequential search on ordered list of given numbers.
26. Maintain practical note book as per their serial numbers in library using Python dictionary.
27. Perform following operations on dictionary
    1) Insert 2) delete 3) change
28. Check whether a number is in a given range using functions.
29. Write a Python function that accepts a string and calculates number of upper case letters and lower case letters available in that string.
30. To find the Max of three numbers using functions.
31. Multiply all the numbers in a list using functions.
32. Solve the Fibonacci sequence using recursion.
33. Get the factorial of a non-negative integer using recursion.
34. Write a program to create a module of factorial in Python.
35. Design a Python class named Rectangle, constructed by a length & width, also design a method which will compute the area of a rectangle.
36. Design a Python class named Circle constructed by a radius and two methods which will compute the area and the perimeter of a circle.
37. Design a Python class to reverse a string 'word by word'.
38. Write a Python program to read an entire text file.
39. Design a Python program to read first n lines of a text file.
40. Construct a Python program to write and append text to a file and display the text.

Reference Books:

1. Python Programming: A Modern Approach, Vamsi Kurama, Pearson
2. Python Programming A Modular Approach with Graphics, Database, Mobile, and Web Applications, Sheetal Taneja, Naveen Kumar, Pearson
3. Programming with Python, A User's Book, Michael Dawson, Cengage Learning, India Edition
4. Think Python, Allen Downey, Green Tea Press
5. Core Python Programming, W. Chun, Pearson
6. Introduction to Python, Kenneth A. Lambert, Cengage

SEM-I	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-I	0160407	Professional Ethics and Human Values	Qualify	3	25	75	40	--

Course Pre-requisite: Social responsibility and human ethics

Course Objectives :

- To help students distinguish between values and skills, and understand the need, basic guidelines, content and process of value education.
- To help students initiate a process of dialog within themselves to know what they 'really want to be in their life and profession
- To help students understand the meaning of happiness and prosperity for a human being.
- To facilitate the students to understand harmony at all the levels of human living, and live accordingly.
- To facilitate the students in applying the understanding of harmony, in existence in their profession and lead an ethical life

Course Outcome:

- On completion of this course, the students will be able to understand the significance of value Inputs in a classroom, distinguish between values and skills, understand the need, basic guidelines, content and process of value education, explore the meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society.
- Distinguish between the Self and the Body, understand the meaning of : Harmony in the Self the Co-existence of Self and Body.
- Understand the value of harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships and explore their role in ensuring a
- harmonious society
- Understand the harmony in nature and existence, and work out their mutually fulfilling participation in the nature.
- Distinguish between ethical and unethical practices, and start working out the strategy actualize a harmonious environment wherever they work.

Catalogue Description

Every human being has to sets of questions to answer for his life: a) what to do" and. b) how to do.
The first set pertains to the value domain and the other to the skill domain. Both are complimentary, but value domain has a higher priority. Today, education has become more and more skill based, and hence, the basic aspiration of a human being that is to live with happiness and prosperity, gets defeated, in spite of abundant technological progress. This course is aimed at giving inputs that will help to ensure the night understanding and right feelings in the students in their life and profession, enabling them to lead an ethical life. In this course, the students learn the self- exploration, the difference between the Self and the Body, the naturally acceptable feelings in relationships in a family, the comprehensive human goal in the society.

UNIT-1 Course Introduction – Need, Basic Guidelines, Content and Process for Value Education Understanding the need, basic guidelines, content and process for Value Education, Self-Exploration what is it? - its content and process: "Natural Acceptance and Experiential Validation- as the mechanism for sell exploration. Continuous Happiness and Prosperity-A look at basic Human Aspirations, Right understanding,
Relationship and Physical Fertilities- the basic requirements for fulfillment of aspirations of every human being with their correct priority.
Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario, Method to fulfill the above human stations: understanding and living in harmony at various levels.

UNIT-2 Understanding Harmony in the Human Being : Harmony in Myself Under MLLABUS being as a co-existence of the sentient T' and the material 'Body', Understanding the needs of Self (T) and 'Body' - Sukh and Suvidha, Understanding the Body as an instrument of 'T"(f being the doer, seer and enjoyer. Understanding the characteristics and activities of 'T and harmony in Understanding the harmony of I with the Body: Sanyum and Swasthya, correct appraisal of Physical needs, meaning of Prosperity in detail, Programs to ensure Sanyam and Swasthya.

UNIT-3 Understanding Harmony in the Family and Society- Harmony in Human-Human Relationship Understanding harmony in the Family- the basic unit of human interaction, Understanding values human-human relationship meaning of Nyaya and program for its fulfillment to ensure Ubhay-tript: Trust (Vishwas) and Respect (Samman) as the foundational values of relationship. Understanding the meaning of Vishwas. Difference between intention and competence, Understanding the meaning of Samman.Difference between respect and differentiation. the other salient values in relationship. Understanding the harmony in the society (society being an extension ut family: Samadhan. Samridhi, Abhay, Sah-astitva as comprehensive Human Goals, Visualizing a universal harmonious order in society- Undivided Society (AkhandSamaj). Universal Order (SarvabhaumVyawastha - from family to world family.

UNIT-4 Understanding Harmony in the Nature and Existence - Whole existence as Co-existence Understanding the harmony in the Nature. Interconnectedness and mutual fulfillment among the four orders of nature- recyclability and self-regulation in nature. Understanding Existence as Co-existence (Sahastina) of mutually interacting units in all-pervasive space, Holistic preparation of harmony at all levels of existence.

UNIT-5 Implications of the above Holstein Understanding of Harmony on Professional Ethics Natural acceptance of human values, Defectiveness of ethical Human Conduct. Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order, Competence in Professional Ethics: a) Ability to utilize the professional competence for augmenting universal human order, b) Ability to identify the scope and characteristics of people-friendly and ceo friendly production systems, technologies and management models. Case studies of typical holistic technologies, management models and production systems, Strategy for transition from the present state to Universal Hum Order: a) At the level of individual: as socially and ecologically responsible engineers, technology and managers, b) At the level of society, as mutually enriching institutions and organizations.

Books Recommended:

1. J. Suresh, B.S.Raghvan, Human Values and Professional Ethics, 3rd Edition, S.Chand.
2. M.A. Palukurty, Professional Ethics and Human Values Paperback, Lambert Academic Publication.
3. R.R. Gaur, R. Sangal, G.P. Bagaria, A Foundation Course in Human Values and Professional Ethics Paperback – 30 April 2010, Excel Books.
4. M. GOVINDARAJAN, S. NATARAJAN, V. S. SENTHILKUMAR, Professional Ethics and Human Values, PHI.

SEM-II	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-I	0260401	An Introduction to Artificial Intelligence and its Application	TH	3	25	75	40	40

Course Objectives:

- To familiarize students with the fundamental concepts, theories, and applications of artificial intelligence. Understand, analyze and apply AI searching algorithms in different problem domains. Students will gain insight into the various subfields of AI, Study and analyze various models for knowledge representation

Course Outcomes:

- Students will have a clear understanding of the fundamental concepts and terminology of Artificial Intelligence, enabling them to discuss and comprehend AI-related topics.

Unit 1

Artificial Intelligence: Introduction to artificial intelligence, Historical development and foundation areas of artificial intelligence, Tasks and application areas of artificial intelligence.

Unit 2

Searching Techniques: Introduction, Problem solving by searching, Searching for solutions, Uniformed searching techniques, Informed searching techniques, Local search algorithms, Adversarial search methods, Search techniques used in games, Alpha-Beta pruning.

Unit 3

Knowledge Representation and Reasoning: Propositional logic, Predicate logic, First order logic, Inference in first order logic, Clause form conversion, Resolution. Chaining- concept, forward chaining and backward chaining, Utility theory and Probabilistic reasoning, Hidden Markov model, Bayesian networks.

Unit 4

First order logic. Inference in first order logic, propositional vs. first order inference, unification & lifts forward chaining, Backward chaining, Resolution, Learning from observation Inductive learning, Decision trees , Explanation based learning ,Statistical Learning methods ,Reinforcement Learning.

Unit 5

Applications in Finance: Basics of Corporate Finance, Stock direction prediction, Calculating Beta of a stock, Fama-French model.
Applications in Marketing: Churn Prediction, Customer Lifetime Value, Customer Segmentation
Applications in Cybersecurity: Fraud detection, Intrusion detection. Applications in Supply Chain: Demand Forecasting

Reference Books:

1. Russell S. and Norvig P., "Artificial Intelligence – A Modern Approach", Pearson Education.
2. Rich E. and Knight K., "Artificial Intelligence", McGraw Hill Publications.
3. Charnik E. and McDermott D., "Introduction to Artificial Intelligence", Pearson Education.
4. Patterson D. W., "Artificial Intelligence and Expert Systems", Prentice Hall of India Publications.
5. Khemani D., "A First Course in Artificial Intelligence", McGraw Hill.
6. Winston P. H., "Artificial Intelligence", Pearson Education.
7. Thornton C. and Boulay B.," Artificial Intelligence- Strategies, Applications and Models through Search", New Age International Publishers.

SEM-II	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-I	0260402	Introduction to Machine Learning	TH	3	25	75	40	40

Course Objectives:

- The objectives of an Introduction to Machine Learning course typically include: Understanding Core Concepts: Introduce students to the fundamental concepts, principles, and algorithms of machine learning, such as supervised learning, unsupervised learning, and reinforcement learning .Practical Application: Provide students with practical experience in implementing machine learning algorithms and techniques to solve real-world problems.

Course Outcomes:-

- Students will have a clear understanding of the fundamental concepts and terminology of Machine Learning enabling them to discuss and comprehend ML-related topics.

Unit 1: Introduction to Machine Learning

Overview of Machine Learning, Types of Machine Learning (Supervised, Unsupervised, Reinforcement Learning), Applications of Machine Learning, History and Evolution of Machine Learning, Fundamentals of Probability and Statistics , Basic Probability Concepts, Random Variables and Probability Distributions Descriptive Statistics, Inferential Statistics, Probability Distributions relevant to Machine Learning (e.g.)

Unit 2: Data Preprocessing

Data Cleaning and Data Wrangling, Feature Scaling and Normalization, Handling Missing Data ,Feature Engineering, Exploratory Data Analysis (EDA)

Unit 3: Supervised Learning & unsupervised learning

Regression: Linear Regression, Polynomial Regression, Classification: Logistic Regression, k-Nearest Neighbors (k-NN), Decision Trees, Naive Bayes, Support Vector Machines (SVMs), Clustering: K-means, Hierarchical Clustering.

Unit 4: Evaluation Metrics and Model Selection
Performance Metrics for Classification (e.g., Accuracy, Precision, Recall, F1 Score), Performance Metrics for Regression (e.g., Mean Absolute Error, Mean Squared Error, R-squared),Cross-Validation Techniques, Bias-Variance Tradeoff, Model Selection Techniques.

Unit 5: Ethical Considerations and Bias in Machine Learning
Ethical Issues in Machine Learning, Bias and Fairness in Machine Learning Algorithms Responsible AI Practices, Case Studies and Examples of Ethical Dilemmas in Machine Learning Future Directions and Advanced Topics, Recent Advances in Machine Learning Research, Emerging Trends (e.g., Explainable AI, Auto ML, Federated Learning

Reference Books:
1 Trevor Hastie, Robert Tibshirani, and Jerome Friedman, The Elements of Statistical Learning, Second Edition, 2009.
2 Christopher M. Bishop, Pattern Recognition and Machine Learning, 2006
3 Richard S. Sutton and Andrew G. Barto, Reinforcement Learning: An Introduction, Second Edition, 2018.
4 Ian Goodfellow, Yoshua Bengio and Aaron Courville, Deep Learning, 2016
5 Kevin Murphy, Machine Learning: A Probabilistic Perspective, 2012.
6 Gareth James, Daniela Witten, Trevor Hastie, and Robert Tibshirani, An Introduction to Statistical Learning, 2017.
7 Shai Shalev-Shwartz and Shai Ben-David, Understanding Machine Learning: From Theory to Algorithms, 2014.
8 David MacKay, Information Theory, Inference, and Learning Algorithms, 2003.

SEM-II	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-I	0260403	Python for Artificial Intelligence & Machine Learning	TH	3	25	75	40	40

Course Objectives:

- NumPy, a numerical library and probably one of the most popular libraries for writing Python for AI.
- SciPy, for scientific and technical AI computing.
- Theano, based on NumPy and used to construct deep learning models.
- Pandas, for data analysis.
- PyBrain, for ML tasks.

Course Outcomes:

- Extensive Libraries and Frameworks: Python offers a vast ecosystem of libraries and frameworks specifically designed for AI and machine learning.
- Popular libraries like Tensor Flow, PyTorch, and scikit-learn provide ready-to-use tools and functions for tasks such as data processing, model training

Unit 1: NumPy and Pandas for Data Manipulation

Introduction to NumPy: Arrays, indexing, slicing, and operations Introduction to Pandas: Series, Data Frames, indexing, and operations,Data manipulation and cleaning techniques using Pandas. ,Handling missing data and outliers.

Unit 2: Data Visualization with Matplotlib and Seaborn

Introduction to data visualization,Basic plots with Matplotlib: line plots, scatter plots, bar plots, etc, Advanced plotting techniques and customization, Introduction to Seaborn for statistical data visualization ,Plotting data distributions, relationships, and trends .

Unit 3: Introduction to Machine Learning

Overview of Machine Learning: types, supervised vs. unsupervised learning Understanding the Machine Learning work flow,Model evaluation metrics: accuracy, precision, recall, F1-score, etc, Introduction to scikit-learn library.

Unit 4: Advanced Machine Learning Topics

Introduction to Deep Learning ,Basics of Neural Networks: perceptron activation functions, Building neural networks with Tensor Flow/Keras Convolutional Neural Networks (CNNs) for image recognition .Recurrent Neural Networks (RNNs) for sequence data, Cross-validation techniques, Hyper parameter tuning, Bias-variance tradeoff ,Overfitting and underfitting.

Unit 5: Introduction to Frameworks used with Python – Tensor Flow

Concept of Computational Graph and Nodes, Virtual Environment and Anaconda, Installing TensorFlow with GPU support on a Linux System, TF Data types, Placeholders, TF Variables, TF Session, Softmax, One Hot Encoding, Dropout, building hidden layers, Batching, Stochastic Gradient Descent, Building an Optimizer, Training and displaying outcome, Overview of various python frameworks

Reference Books:

1. Rao N.R., "Core Python Programming", Dreamtech Publication India
2. Sarker M.O.F., "Python Network Programming Cookbook", Packt Publication
3. Sebastian Raschka, "Python Machine Learning", Packt Publication
4. Willi Richert, "Building Machine Learning Systems with Python", Packt publication
5. Fredrik Lundh, "Python Standard Library", O'Reilly Publications
6. Halterman R.,"Fundamentals of Python Programming", Southern Adventist University
7. Guttag J.V., "Introduction to Computation and Programming Using Python", Prentice Hall India 8. Chun W., "Core Python Programming", Prentice Hall India

SEM-II	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-I	0260404	Business Laws	TH	3	25	75	40	40

Course Objectives:

- It is essential for future business leaders and entrepreneurs to have an understanding of the role of the law and legal risk in shaping business decisions, achieving competitive advantage, and avoiding legal pitfalls.
- It teaches the basic principles of the legal framework in which business takes place.
- Practical application of these laws will be demonstrated by considering various real life cases.
- Students will be given ample opportunity to apply legal principles to fictitious case studies, thereby furthering their skills in legal reasoning.
- Students will get familiar with various legal topics affecting the legal environment of business."

Course Outcomes:

- Understand the legal framework which the business operates.
- Remember how to think clearly and logically about how business and legal matters intertwine.
- Evaluate how the law actually works.
- Apply basic principles of law to various problems which business faces.
- Analyze the legal environment.

Unit-1 What Is Law? Society & Law, , Different sources of law in India, Commercial Law, Sources of Indian Commercial Law, Jurisprudence meaning and definition, Structure of the Indian Legal Systems, Components of legal system, Manager and Legal System, Importance of legal systems in international business, Legal factors affects international business

Discuss at least 2 important Law Cases

Unit-2 Contract law meaning and definition, Fundamentals of Contract Laws, Principles of Contract Laws, Legality of object Consideration, Adequacy of consideration, Legal rules for Valid consideration Essential elements, Performance of Contract", Voidable Contract and void agreement, Difference between voidable and void contract, Discharge of Contract, Types of Discharge of Contract, Quasi contracts - Types of quasi contract, Special Contracts: Laws of Agency, Principal agent problems, Bailment & Pledge Guarantee & Indemnity, Sales of Goods 1930 -Principles of Sales of Goods, Principles of Sales of Goods; Transfer of Ownership& Property, What is the Doctrine of Caveat Emptor? Exceptions to the Doctrine of Caveat Emptor. Auction Sale. **Discuss at least 2 important Law Cases**

Unit-3 The Companies Act, 2013, meaning and definition, characteristics of a company Company form of organization, Types of companies, Difference between public and private company, Incorporation of a company, Rights, Duties and Liabilities of Directors, Formation of company, Commencement of Business, MOA meaning, Contents, and purpose, Doctrine of ultra vires AOA nature, content and scope, Share Capital, procedure for issue and alteration, Company shares nature, kinds and transfer, Accounts and audits, Accounting and auditing Standards, Rotation of Auditors, Company Annual Filing, Company Meeting Conduct and Kinds, Company Meeting Law and practice, Company Meeting- Minutes of meeting Principles of Majority Rule Winding Up methods and procedures, Winding Up of a company- Powers and Duties of Liquidator". **Discuss at least 2 important Law Cases**

Unit-4 The Consumer Protection Act, 1986), Definitions of Consumer, Definition of Person, Goods, Service, Trader, Manufacturer, Meaning of Consumer Dispute, Meaning of Complaint - Unfair Trade Practices", Restrictive Trade Practices, Different between unfair trade practice and Restrictive trade practices Consumer Protection Councils, Importance of Consumer Protection Councils in India, Consumer Disputes Redressal Agencies, Consumer Disputes Redressal Agencies to state level and National level Power of Consumer Disputes Redressal Agencies, Three Consumer Disputes Redressal Agencies, Three Consumer Disputes Redressal Agencies", Role of Three Consumer Disputes Redressal Agencies, Section Define Consumer Dispute, National Consumer Disputes redressal Commission, Latest law for consumer Disputes, Reason for Consumer Dispute , Case study discussion-Three Consumer Disputes Redressal Agencies **Discuss at least 2 important Law Cases**

Unit-5 The Information Technology Act, 2000, Authentication of electronic records.", electronic governance, attribution, acknowledgement and dispatch of electronic, records, Section 43A and Section 72A, which give a right to compensation for improper disclosure of personal information, Data protection and privacy law in India, Cyber law in India, Intellectual Property Rights(IPRs)-Types of IPRS, Types of patent, Trade mark definition and interpretation, the register and conditions for registration procedure for and duration of registration effect of registration, Copy rights, Industrial Designs, Industrial design strategic problem solving, Innovation in ID, Types of Industrial Design, Agency responsible for intellectual property rights, Important provisions with respect to registration, renewal and revocation, Remedies in case of infringement, etc. **Discuss at least 2 important Law Cases**

Suggested Books:

1. "Business Environment: New Edition, Dr. V. C. Sinha, Dr. RitikaSinha, SPBD Publishing House, 2021
2. Ravindra Kumar- Legal Aspects of Business- Cengage-2016
3. N.D.Kapoor, Mercantile Law – Sultan & Sons,2012
4. AkhileshwarPathak, Legal aspects of business- Tata McGraw-Hill,2016" "
5. Daniel Albuquerque, ISBN: 9780199463169, Oxford University Press (2nd Edition)."

SEM-II	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-I	0260405	Quantitative and Optimization Techniques	TH	3	25	75	40	40

Course Objective:

- Analyze and/or compare different sets of data using graphs, charts, tables, and numerical measures and its interpretation.
- Analyze the structure of real-world problems and plan solution strategies. Solve the problems using appropriate tools.
- Formulation of linear programming problems and identifying the characteristics of LPP and finding its Solutions using Graphical/Simplex methods.
- Discuss Transportation and Assignment Models and its formulation and solutions.
- Understand different Networking Techniques and queuing situations and find the optimal solutions using specific models for different situations.

Course Outcome:

- Apply statistical techniques and their applications in Business.
- Apply inferential statistics in managerial decision making
- Evaluate various optimization techniques to operations problem, explain how it works and perform the necessary calculations.
- Analyze and determine whether a process is appropriate to the needs of the organization and recommend steps or policies for implementation and improvement.
- Evaluate the needs of an organization and utilize all the quantitative techniques mentioned.

Unit-1 Introduction to Descriptive Statistics, Data Arrangement in Tabular form, Graphical Representation of Data, Measures of Central Tendency, Measure of Dispersion; Introduction to probability theory, Random variable & Distribution Functions (Discrete & Continuous); Binomial Distribution Function, Poisson Distribution Function, Normal Distribution, Correlation (Karl pearson, Spearman), Linear & Multiple Regression.

Unit-2 Sampling (Introduction) & its type, Sampling Distributions, Introduction to testing of hypothesis, Introduction to testing of hypothesis (Cont.),, Parametric Tests, One sample (Large) test for Mean & Proportion, Two sample (Large) test for Mean & Proportion, Introduction to small sample test, one sample t test for mean, Two sample t test for mean (Paired & Independent), F Test, ANOVA" Non-Parametric Tests (U test, H Test) Chi Square Test

Unit-3 Introduction to Operations Research, Introduction to Linear Programming problem (Structure & Assumptions), Formulation of Linear Programming problem, Graphical Method for maximization Problems, Graphical Method for minimization Problems, Assignment, Simplex Method, Assignment, Duality Concept in Linear Programming.

Unit-4 Introduction & Classification of Models, Transportation models, Finding feasible solutions (NWCR, LCM, VAM)", Optimality test (MODI method), Introduction to Assignment Problem, Hungarian Method, Introduction to Game theory, Solution of Two-person zero-sum Games with pure strategy, mini-max-maximin principle" "Mixed strategy games: Algebraic Method, Dominance Rule, Problem solving using Dominance rules.

Unit-5 Introduction to Project Management, Network Techniques (CPM & PERT), their significance and differences, PER/CPM Network Components & Rules of Network Construction, Critical Path Analysis, Problem in PERT Analysis, Introduction to Queuing Theory, Classification of queuing models, Essential features of queuing system., Problem solving on Model (M/M/1)(∞/FCFS).

Suggested Books:

1. David R. Anderson , Statistics for Business & Economics, 14th Edition , Cengage ,2020.
2. David R. Anderson , Dennis J. Sweeney, Thomas A. Williams, Jeffrey D. Camm, James J. Cochran, Statistics for Business & Economics, Revised13th Edition, 2018
3. T N Srivastava, ShailajaRego, Statistics for Management Paperback, 2017
4. J.K.Sharma, Operations research Theory and applications, 2017
5. Hamdey A. Taha, Introduction to operations research Prentice Hall India, Tenth edition, 2017
6. Fredericks, Hiller, Gerald J.LiebermanBodhibrata Nag Prectambasu, Operations research 9e, Mcgrew hill education, 9th edition, 2017.

SEM-II	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-I	0260406	Research Methods In Business	TH	3	25	75	40	40

Research Methods In Business

- Explore basic knowledge about Research methods
- Gain knowledge on qualitative research methods
- Examine about Quantitative methods
- Understand the method of performing data analysis
- Design the research proposal and report writing

Course Outcomes:

- Remember basics of Research methods
- Understand the management concepts derived from qualitative research methods"

- Analyze the various phases of Quantitative methods
- Evaluate the logic and methods involved in data analysis
- Create the research proposal and report writing

Unit-1 Background to Research, Research paradigms, Contributions of re-search, Basic concepts of Research, Theory and practice, Theory Vs Model, Research Ethics, Literature Review, Identifying and assessing Literatures, Process involved in collecting Literature Reviews, Scholarly literature, Academic writing, Referencing, Steps in literature re-view, Literature review development, Finding Research Gap, Meta analytics, Need and Importance. **Discuss at least 2 case studies**

Unit-2 Qualitative Methods: The nature of Quantitative methods, Types of qualitative research, Data collection, Types of Data, Primary Data and its types, Secondary Data, Sources of Secondary Data, Syndicated Data, Data analysis, Data analysis methods, Assignment, Writing up qualitative research, Steps involved in qualitative research, Research instruments used for Qualitative methods, Research procedures involved, Case Study, Class participation **Discuss at least 2 case studies**

Unit-3 Quantitative Methods Data and Variables, The Nature of Quantitative Research, Descriptive Statistics, Inferential Statistics Discussion Sampling Seminar, Designing, Coding, Survey method and its types, Questionnaires: Types of Questionnaire, Pattern involved in designing Questionnaire, Scheduler method, Observation method, Data Entry, Screening.

Discuss at least 2 case studies

Unit-4 Hypothesis Testing, Introduction to Univariate and Bivariate analysis, Introduction to Multivariate, analysis, Association Test, Correlation coefficient. Regression, Chi–square Tests, Parametric and Non-Parametric tests, t–tests, ANOVA, Z-test, Reliability, Validity, Rigor–Reporting, Quantitative Study, Tabulation, Results Presentation, Class presentation.

Discuss at least 2 case studies

Unit-5 Research purpose, Framing Research Objectives; Nature of the study, Need of the study, Evaluation, Content and format, Practical considerations, Timelines, Budgets, Class Discussion, Supervision management, Structure of report writing, Bibliography, Referencing Pattern of Presenting, Differences between Bibliography and Referencing, Defense of proposals Research Reports **Discuss at least 2 case studies**

Suggested Readings:

1. Research Methods in Business Studies, Pervez Ghauri, Kjell Grønhaug, Roger Strange, Cambridge University Press, 2020
2. Malhotra, Dash "Marketing Research: An applied orientation" 7th d. Pearson Ltd, 2015.
3. Brown Suter Churchill, Marketing Research, 8th edition, Cengage Learning India Pvt ltd,2015
4. G.C. Beri, 'Marketing Research', 4th edition, Tata McGraw–Hill Education.2007"
5. Churchill, Lacobucci& Israel, Marketing Research–A South Asian Per- spective' Cengage Learning, India edition, 2010.
6. Harper, W. Boyd Jr, Ralph Westfall, Stanley F. Stasch, Richard D. Irwin Inc.,'Marketing Research – text and cases', All India Traveler Book Seller 12th edition ,2014
7. Raymond Kent, Marketing Research – Measurement, Method and applica- tion', International Thomson Business Press edition 2, 2011
8. William G. Zikmund, Barry J. Babin, 'Essentials of Marketing Research, International Edition, 5e, Cengage Learning ,2015
9. William G. Zikmund, Barry J. Babin, Jon C. Carr, Mitch Griffin, 'Business Research Methods, International Edition, 9e, Cengage Learning, 2014."

SEM-II	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-I	0260407	Managerial Economics	TH	3	25	75	40	40

Course Objectives- By the end of this course, students will be able to-

- Understand the fundamental principles of micro and macroeconomics, including scarcity, choice, demand and supply, production, costs and various market structures.
- Analyse and evaluate economic issues specific to the Indian economy, such as fiscal and monetary policies, agriculture, industrial growth, and challenges associated with economic development.
- Apply microeconomic and macroeconomic theories to real-world scenarios, fostering decision-making and problem-solving skills in the dynamic business environment of India.
- Examine the impact of globalisation on India's economy, analyse international trade policies, and understand India's role in the global economic landscape.
- Undertake a research project focusing on a current economic issue in India, enhancing research and analytical skills while staying informed about the latest developments in the Indian economy.

Course Outcomes:

- Comprehensive understanding of both micro and macroeconomic principles, including key concepts such as scarcity, demand and supply, and market structures.
- Ability to critically analyze and evaluate economic challenges and policies in the Indian context, including fiscal and monetary policies, agriculture, and industrial growth.
- Proficiency in applying economic theories to practical business scenarios in India, enhancing decision-making and problem-solving skills.
- In-depth knowledge of globalization's effects on India, with insights into international trade policies and India's position in the global economy.
- Advanced research and analytical skills demonstrated through a project on a current economic issue in India, with an updated understanding of the country's economic developments.

Unit-1 Introduction to Economics

Definitions, nature and scope of Microeconomics and Macroeconomics, Basic economic concepts: scarcity, choice, marginal & opportunity cost, Economic systems and their relevance to the Indian context, Overview of the Indian economy: key sectors and historical perspective. **Discuss at least 2 case studies**

Unit-2 Microeconomic Principles

Consumer Behaviour: Utility and Indifference Curve Analysis, and budget constraints, Demand and supply analysis, laws & Elasticity of demand and supply, Production functions, laws of production and cost Analysis, Market structures: perfect competition, monopoly, oligopoly, and monopolistic competition, Pricing and Output Decisions in Different Market Structures
Discuss at least 2 case studies

Unit-3 Macroeconomic Principles
National income accounting in India, Money and banking system, Inflation and its impact on the Indian economy, Unemployment and poverty in the Indian context, Fiscal and monetary policy in India. **Discuss at least 2 case studies**

Unit-4 Economic Development in India
Economic planning in India: Five-Year Plans, Agriculture sector: issues and policies, Industrial policy and growth, Infrastructure development and its role in economic progress, Social indicators and human development in India, Digital Public Infrastructure & multi-model connectivity, Niti Aayog. **Discuss at least 2 case studies**

Unit-5 Global Economic Issues and India's Position
Globalization and its impact on the Indian economy, Balance of payments and foreign exchange markets, Trade policies and agreements affecting India, Economic challenges in a global context, India's role in international economic organizations, Trade Routes, **Discuss at least 2 case studies**

Suggested Readings
1. "Microeconomics: Theory and Applications" by Dominick Salvatore
2. "Macroeconomics: Indian Edition" by Paul Krugman and Raghuram Rajan.
3. "Indian Economy" by Ramesh Singh
4. "Economic Development in India" by Uma Kapila
5. "Managerial Economics" by Christopher Thomas and S. Charles Maurice

SEM-II	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-I	0260480	Practical Python for Artificial Intelligence & Machine Learning	PR	3	25	75	40	80

Course Outcomes:

- Write programs to implement basic database functions using python.
- Implement various machine learning algorithms using python

Assignments:
Assignment 1.
Create a numpy array with following columns: hindi, english, science, math and commerce with data type int 32.
i. Insert at least 10 rows in the above array.
ii. Display size and shape of the array.
iii. Print sum of each column.
iv. Print maximum element from each column.
v. Print sum of 1,4,5 row.
Assignment 2.
1. Create two array of size (3, 3) and print their sum and multiplication.
2. Create an array of size 10 and calculate square root and standard deviation.
3. Print size and dimension of above arrays.
Assignment 3.
1. Write a Python program to create and display a series of data using Pandas module.
2. Create a pandas series of 10 elements and specify their index as 101 to 110.
3. Print bottom 5 elements of the series created in question 2.
4. Insert 3 new elements in above series on index 111, 112 and 113.
5. Delete the elements at index- 103, 104,107,111 in above list.
Assignment 4.
Write a Pandas program to create and display a DataFrame from a specified dictionary data which has the index labels. Sample Python dictionary data and list labels:
1. exam_data = {'name': ['Ankita', 'Dia', 'Kapil', 'Jayesh', 'Esha', 'Mayank', Ravi, 'Lata', 'Kamal', 'Jatin'],
2. 'score': [12.5, 9, 16.5, 15, 9, 20, 14.5, 17.5, 8, 19],

3. 'attempts': [1, 3, 2, 3, 2, 3, 1, 1, 2, 1],
4. 'qualify': ['yes', 'no', 'yes', 'no', 'no', 'yes', 'yes', 'no', 'no', 'yes']}

Assignment 5.

Create a data frame using dictionary.

1. Dictionary ('id':[P101,P102,P103,P104,P105], 'Price':[256, 340, 540, 260, 470])
2. Print the price of product id – p102.
3. Print values of Price column.
4. Rename the column id to Product_Id and Price to Base_Price.

Assignment 6.

Create a new data frame with three columns – Product_Name, Cost, Sales.

1. Add 10 values in data frame.
2. Add a new column named quantity with 10 values.
3. Add a new column named: Profit and total_profit and fill values.
4. Insert a new column named location after Product_Name column with 10 cities. (New Delhi, Lucknow, Kolkata, Lucknow, New Delhi, Bengaluru, Chennai, Chennai, Kolkata, Bengaluru)

Assignment 7.

Solve sample Machine Learning Regression problem.

Assignment 8.

Solve sample Machine Learning classification problem.

SEM-II	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-I	0260465	Summer Training	ST	4	25	75	40	--

SEM-III	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-II	0360401	Business Intelligence and Analytics	TH	3	25	75	40	40

Course Learning objectives:

- Explain the Business Intelligence, Analytics and Decision Support system
- List the technologies for Decision making, Automated decision systems
- Explain sentiment analysis techniques
- Illustrate Multi-criteria Decision making systems, predictive modelling techniques

Course Outcome:

- Able to analyze Business Intelligence, Analytics and Decision Support
- Explain the technologies for Decision making
- Apply predictive modelling techniques(can be attained through assignment or CIE)
- Apply sentiment analysis techniques(can be attained through assignment or CIE)

Unit-I

Information Systems Support for Decision Making, An Early Framework for Computerized Decision Support, The Concept of Decision Support Systems, A Framework for Business Intelligence, Business Analytics Overview, Brief Introduction to Big Data Analytics,

Unit-II

Introduction and Definitions, Phases of the Decision, Making Process, The Intelligence Phase, Design Phase, Choice Phase, Implementation Phase, Decision Support Systems Capabilities, Decision Support Systems Classification, Decision Support Systems Components.

Unit-III

Basic Concepts of Neural Networks, Developing Neural Network-Based Systems, Illuminating the Black Box of ANN with Sensitivity, Support Vector Machines, A Process Based Approach to the Use of SVM, Nearest Neighbor Method for Prediction, Sentiment Analysis Overview, Sentiment Analysis Applications, Sentiment Analysis Process,, Sentiment Analysis, Speech Analytics.

Unit-IV

Decision Support Systems modeling, Structure of mathematical models for decision support, Certainty, Uncertainty, and Risk, Decision modeling with spreadsheets,Mathematical programming optimization, Decision Analysis with Decision Tables and Decision Trees, Multi-Criteria Decision Making With Pairwise Comparisons

Unit-V

Automated Decision Systems, The Artificial Intelligence field, Basic concepts of Expert Systems, Applications of Expert Systems, Structure of Expert Systems, Knowledge Engineering, Development of Expert Systems.

Suggestive Readings:

1. Anil Maheswari - "Data Analytics"- McGraw Hill Education (India) Private Ltd, Sixth reprint 2020
2. Ramesh Sharda, Dursun Delen, EfraimTurban, J.E.Aronson,Ting-Peng Liang, David King, "Business Intelligence and Analytics: System for Decision Support", 10th Edition, Pearson Global Edition, 2013
3. Edward Mize.Jeffrey D. Camm,James J. Cochran,Michael J. Fry,Jeffrey W. Ohlmann,David R. Anderson,Dennis J. Sweeney,Thomas A. Williams, "Data Analytics: The Ultimate Beginner's Guide to Data Analytics" Paperback – 12 November 2017

SEM-III	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Ext Marks	Total Lectures
Year-II	0360402	Neural Network and Deep Learning	TH	3	25	75	40	40

Course Objectives

- The main objective of this course is to make students comfortable with tools and techniques required in handling large amounts of datasets.
- They will also uncover various deep learning methods in NLP, Neural Networks etc.
- Several libraries and datasets publicly available will be used to illustrate the application of these algorithms.
- This will help students in developing skills required to gain experience of doing independent research and study.

Course Outcomes

- Implement, train, and evaluate deep neural networks using existing software libraries.
- Explore multiple deep learning architectures and understand how to fine-tune and continuously improve models. Apply deep learning to various AI tasks.

Unit1: Introduction to Neural Networks

Overview of neural networks, Neuron structure and function, Activation functions ,Forward propagation, Deep Learning Basics .Basics of deep learning ,Multilayer perceptron's (MLPs), Back propagation algorithm, Gradient descent optimization, Convolutional Neural Networks (CNNs)

Unit2: Introduction to CNNs & RNNs

Convolutional layers, Pooling layers CNN architectures (e.g., LeNetAlexNet, ResNet, Recurrent Neural Networks (RNNs),Introduction to RNNs, Vanishing

gradient problem ,Long Short-Term Memory (LSTM) networks Gated Recurrent Units (GRUs)

Unit3: Advanced Deep Learning Techniques
Transfer learning, Regularization techniques (e.g., dropout, L1/L2 regularization),Batch normalization Hyper parameter tuning, Generative Adversarial Networks (GANs).Introduction to GANs Generator and discriminator networks ,Training GANs, Applications of GANs

Unit4: Natural Language Processing (NLP) with Deep Learning
Introduction to NLP, Word embeddings (e.g., Word2Vec, GloVe), Recurrent neural networks for NLP tasks, Transformer architecture (e.g., BERT, GPT).Deep Reinforcement Learning, Introduction to reinforcement learning ,Q-learning, Deep Q Network (DQN),Policy gradients and actor-critic methods

Unit5: Applications of Deep Learning
Computer vision applications, Natural language processing applications, Robotics and control applications, Healthcare applications, Ethical and Societal Implications, Bias and fairness in deep learning, Privacy concerns ,Responsible AI practices, Future directions and challenge

Reference Books:
1. Deep Learning: An MIT Press Book By Ian Goodfellow and Yoshua Bengio and Aaron Courville
2. Neural Networks and Learning Machines, Simon Haykin, 3rd Edition, Pearson Prentice Hall.

Unit 4: Statistical Analysis with R

Descriptive statistics: mean, median, mode, variance, standard deviation, Inferential statistics: hypothesis testing, p-values, confidence intervals ,Correlation and regression analysis ,Basic time series analysis ,Advanced topics-Advanced data visualization techniques, Machine learning with R: Introduction to caret or tidymodels, Text mining and natural language processing (NLP),Spatial data analysis with packages like sp and sf,R Markdown for reproducible research and report generation

Unit 5: Project Work and Applications

Working on real-world datasets and projects, Implementing learned concepts in various domains, Presenting and sharing findings Review &final Assessment, Recap of key concepts and techniques learned throughout the course. Final assessment or project presentation Feedback and discussion for further improvement.

Reference Book:

1. The Book of R: A First Course in Programming and Statistics Tilman M. Davies
2. Hands-On Programming with R: Write Your Functions and Simulations Garettgroelemund

SEM-III	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-II	0360404	Organisation Behaviour	TH	3	25	75	40	40

Course Objectives-By the end of this course, students will be able to-

- Understand the foundational concepts and historical evolution of Organisational Behaviour, and recognize its significance in contemporary business environments.
- Analyse individual behaviour in organisations, including personality traits, perceptions, attitudes, and motivation, to enhance employee engagement and productivity.
- Evaluate group dynamics and team effectiveness, and develop leadership, communication, and conflict resolution skills to foster cohesive and high-performing teams.
- Examine the influence of organisational structure, culture, and communication patterns on employee behaviour and organisational effectiveness, and implement strategies for managing diversity, promoting inclusion, and driving innovation.
- Explore contemporary issues and emerging trends in Organisational Behaviour, including globalisation, virtual work environments, sustainable business practices, and technology integration, to adapt and thrive in dynamic organisational contexts.

Course Outcomes:

- Solid understanding of the key concepts and historical development of Organisational Behaviour, appreciating its importance in modern business settings.
- Ability to analyze individual behaviors within organizations, focusing on traits, perceptions, attitudes, and motivation, to improve engagement and productivity.
- Skills in evaluating group dynamics and enhancing team effectiveness, including leadership, communication, and conflict resolution capabilities.
- Insight into the effects of organizational structure, culture, and communication on behavior and effectiveness, with strategies for managing diversity, inclusion, and innovation.
- Knowledge of current issues and trends in Organisational Behaviour, such as globalization, virtual workplaces, sustainability, and technology, preparing for successful adaptation in changing environments.

Unit-1 Introduction to Organisational Behaviour

Definition and Evolution of Organisational Behaviour, Importance and Relevance of OBin Contemporary Business Environments, Theoretical Foundations: Classical, Human Relations, and Modern Approaches, Cross-disciplinary Perspectives: Psychology, Sociology, and Anthropology in Organisational Behaviour, Ethical Considerations in Organisational Behaviour Research and Practice. **Discuss at least 2 case studies**

Unit-2 Individual Behaviour in Organizations

Personality Traits and Individual Differences, Perception, Attitudes, and Workplace Behaviour, Motivation Theories and Application in Organisations, Learning Theories and Behavioural ModificationTechniques, Emotional Intelligence and its Impact on Individual Performance. **Discuss at least 2 case stud-**

ies

Unit-3 Group Dynamics and Team Effectiveness
Group Formation, Development, and Structure, Group Decision Making and Problem Solving Techniques, Leadership Styles, Influence, and Power Dynamics, Conflict Resolution Strategies and Negotiation Techniques, Team Building, Cohesion, and Performance Evaluation. Upskilling & Reskilling. **Discuss at least 2 case studies**

Unit-4 Organisational Structure and Culture
Organisational Design: Forms, Models, and Approaches, Organisational Culture: Types, Formation, and Change Management, Organisational Communication Patterns and Networks
Managing Diversity and Inclusion in Organisations, Organisational Learning, Knowledge Management, and Innovation. **Discuss at least 2 case studies**

Unit-5 Contemporary Issues in Organisational Behaviour
Globalisation and its Impact on Organisations and Employees, Virtual Work Environments and Remote Team Dynamics, Work-Life Balance and Employee Well-being Initiatives
Technology and its Influence on Organisational Behaviour, Sustainable Business Practices and Corporate Social Responsibility, Change Management and Organisational Development Interventions, Organisational Politics, Power and Influence Tactics. **Discuss at least 2 case studies**

Suggested Books:
1. "Organisational Behavior "by Stephen P. Robbins and TimothyA. Judge
2. "Leadership and Organisational Behavior " by Robert Kreitner and Angelo Kinicki
3. "Organisational Behavior: Concepts, Controversies, Applications" byDebraL.Nelson and James CampbellQuick
4. Dimension of Organizational Behavior by T. Herbert
5. Organization & Management by R. D. Agrawal

SEM- III GROUP-I ELECTIVE (ANY ONE)

SEM-III	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-II	0360405	Strategic Management (Elective)	TH	3	25	75	40	40

Course Objectives-By the end of this course, students will have to-

1. Understand the fundamental concepts and theories of strategic management, including its evolution and significance in contemporary business environments.
2. Analyse the internal and external factors that influence strategic decision-making processes, utilizing tools such as SWOT analysis, PESTEL analysis, and Porter's Five Forces model.
3. Develop the ability to formulate effective corporate, business, and functional-level strategies, integrating concepts such as business portfolio analysis, competitive advantage and value chain analysis.
4. Acquire the knowledge and skills necessary for implementing strategic initiatives within organizations, including organizational structure and design, strategic leadership, and resource allocation.
5. Evaluate and control strategic performance through the application of key performance indicators, strategic audits, and feedback mechanisms, while al sounder standing the complexities of managing strategies in an international and global context.

Course Outcomes:

- Deep understanding of strategic management concepts and theories, acknowledging its evolution and critical role in modern businesses.
- Competence in analyzing internal and external business environments using SWOT, PESTEL, and Porter's Five Forces, to inform strategic decision-making.
- Ability to craft corporate, business, and functional strategies through the application of business portfolio analysis, understanding competitive advantage, and conducting value chain analysis.
- Skills in executing strategic plans, including knowledge of organizational structures, strategic leadership practices, and effective resource allocation.
- Proficiency in evaluating strategic performance using key performance indicators (KPIs) and strategic audits, with insights into the challenges of strategic management in a global context.

Unit-1 Introduction to Strategic Management- Definition and importance of strategic management, Evolution of strategic management concepts, Strategic management process, Vision, Mission, Objectives, Goals, Tactics and values, Strategic Business Units(SBUs), Environmental analysis: PESTEL analysis, Industry analysis (Porter's Five Forces), SWOT analysis, Stakeholder analysis. **Discuss at least 2 case studies**

Unit-2 **Corporate-level strategy** - Stability strategy, Growth Strategy and Liquidation strategy, Diversification strategies (related and unrelated), Vertical integration strategies.

Business level strategy- Generic strategies (Cost leadership, Differentiation, Focus), Competitive advantage, Value chain analysis

Functional-level strategy-Strategic Choice, BCG Matrix, GE9 cell matrix, Marketing, Operations, Finance, Human Resources strategies, Competitive dynamics and competitive strategies, **Discuss at least 2 case studies**

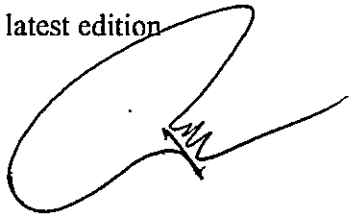
Unit-3 Strategy Implementation- Organizational structure and design, Strategic leadership, Strategy-culture relationship, Resource allocation and budgeting, Strategic control and performance measurement, Balanced Scorecard approach, Strategic change management, Managing innovation and entrepreneurship. **Discuss at least 2 case studies**

Unit-4 Strategy Evaluation and Control-Strategic performance measurement, Key performance indicators (KPIs), Benchmarking, Strategic audit, Feedback and control systems, Revising and adapting strategies, Crisis management and contingency planning. **Discuss at least 2 case studies**

Unit-5 International and Global Strategy- Globalization and its implications, Entry modes into international markets, Managing global competition, Global strategic alliances and partnerships, Cultural and ethical considerations in global strategy, Emerging trends in global business environment, Case studies and real-world applications. **Discuss at least 2 case studies**

Reference Books:

1. Crafting and Executing Strategy, Thompson ,Peteraf, Gamble, Strickland and Jain, 18th edition.
2. Exploring Corporate Strategy, Gerry Jonhson, Kevan Scholes, Richard Whittington, Pearson Education, 7th Edition.
3.Management of Strategy: Concepts and Cases, Michael Hitt, Robert Hoskisson and Duane Ireland, Cengage Learning, latest edition
4. Competitive Advantage: Creating and Sustaining Superior Performance. Michael Porter, latest edition
5. Business Policy and Strategic Management by William F. Glueck, Mcgraw Hill, International Book Company.



SEM-III	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-II	0360406	Organisational Change and Development (Elective)	TH	3	25	75	40	40

OBJECTIVE: The objective of this course is to appraise the student with competency mapping and development of organization.

Course Outcomes:

- To understand how to apply some of the key concepts and tools organizational development and change leadership andmanagement.
- To discover some of the ethical issues associated with change andorganizational development.
- To develop a basic understanding and appreciation for the issuesand conditions creating the need for change in modern organizations.
- To formulate a change management process in an organization.

UNIT 1

Organizational Development: Concept; Foundations of Organizational Development; Planned OrganizationalChange.

Unit 2

Organizational Diagnosis; Feedback and Organizational Development, Achieving organizational improvement withorganizational development; Case Study1: ABC Development Organization.

UNIT 3

OD Interventions: Team. Building Interventions; Personal, Interpersonal and Group Process Interventions;Conditions for successful OD interventions.

UNIT 4

Organizational Transformation; OD Consultant: Role and Skills, Value and Belief Systems of Change Agent; CaseStudy2: Anglo Gold Ashanti: the dawning of a new age.

UNIT 5

Operational Component of OD: Diagnostic Component, Action, Taking Component and Process MaintenanceComponent. The Future of OD and New Perspectives.

SUGGESTED READINGS:

1. Burton, R.M. (2004). Strategic Organizational Diagnosis and Design: The Dynamics of Fit, Kluwer, Boston.
2. Clayton, A.P. (2011). The Practice of Organizational Diagnosis: Theory & Methods, New York: Oxford UniversityPress, USA.
3. Lippit, G. (2006). Organization Renewal: Achieving Viability in a Changing World, Appleton. Century, Crofts. 4
4. Rao, M.G., & Rao, V.S.P. (1999). Organization Design, Change & Development, Discovery Publishing House, NewDelhi.
5. Singh, K. (2009). Change Management, Excel Books India, New Delhi.
6. Wendell, L.F., Cecil, H., & Bell, J. (2006). Organizational Development: Behavioral Science Interventions forOrganization Improvement, Mishawaka: Better World Books, New Delhi.
7. Case Study1: https://www.emeraldinsight.com/doi/full/10.1108/EEMCS-07-2013-0132.
8. Case Study2: https://www.emeraldinsight.com/doi/full/10.1108/20450621211289476

SEM-III	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Ext Min Marks	Passing Marks
Year-II	0360407	Marketing of Services (Elective)	TH	3	25	75	25	40

OBJECTIVE:
The main objective of the course is to help students to learn the various concepts, motivational techniques and polices of marketing of services.

Course Outcomes:

- Understanding of diverse marketing concepts, motivational techniques, and policies specific to service industries.
- Proficiency in applying learned concepts to develop effective marketing strategies for service-based businesses.
- Ability to analyze market trends and consumer behavior within the service sector, informing strategic decision-making.
- Competence in implementing innovative marketing approaches to enhance the promotion and delivery of services.

Unit-1
Marketing of services: Concept & Issues, Conceptual Framework, Reasons, Characteristics, Type & Marketing Implication, Significance of Service Marketing, MIS in Service Marketing, Service. Classification, Services, Encounters and Consumer Satisfaction, Trends in Services Marketing.

Unit-2
Designing Services Strategy: Service Mission and Market Segmentation, Elements of Service, Marketing Mix, Designing, Service Market Plan, Service Design, Branding of Services; Distributing Services – Context and Options; Physical Evidence of a Service, Competitive differentiation; competitive advantage and value chain analysis. Case
Study 1: Customer retention at Hyundai Motor India Ltd.

Unit-3
Marketing of Financial Services: Marketing of Banking Services, Classification of Customers, Insurance Marketing, Event Management.

Unit-4
Marketing of Health Services: Health Services in India, Hospital Marketing, ITES, Implementing Service Marketing, Service Quality Measurement and Improvement of Service Quality; Consumer Complaint Behavior; Consumer Response to Effective Service Recovery; Principles of Service Recovery; CRM in Services. Case Study 2: Taj: I will prevail. Exemplifying customer service in times of crisis.

Unit-5
Marketing of Selected Services: Professional Service Marketing, Marketing of Public Utilities. Marketing of Educational Service, Formulation of Marketing Mix in Hotel Industry. Hotel Level Services & Tourism Services, Pricing Decisions Production, Consultancy Marketing. Marketing Segmentation in Consultancy Marketing, Contemporary Issues in Services Marketing.

Reference Book:
1. Balaji, B. (2010). Services Marketing And Management. New Delhi: S. Chand Publishing.

2. Kapoor, Paul & Halder (2010). Services Marketing: Concepts and Practices. New Delhi: Mcgraw Hill.
3. Rao, K.R. (2013). Service Marketing. New Delhi: Pearson India.
4. Srinivasan, R (2014). Services Marketing: The Indian Context. New Delhi: PHI.
5. Verma, H. (2012). Marketing of Services. New Delhi: PHI.
6. Zeithaml, V., Gremler, D., Bitner, M. J., & Pandit, A. (2009). Services marketing: integrating customer focus across the firm. New Delhi: McGraw Hill.
7. Fisk, R. P., Grove, S. J., & John, J. (2008). Interactive services marketing, New York: Houghton Mifflin.
8. Gronroos, C. (2004). Service management and marketing: A customer relationship management approach. New York: John Wiley.
9. Case Studies1: https://www.emeraldinsight.com/doi/full/10.1108/EEMCS-06-2013-0078
10. Case Studies2: https://www.emeraldinsight.com/doi/full/10.1108/20450621211304289

SEM-III	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-II	0360408	Working Capital Management (Elective)	TH	3	25	75	40	40

Course Objective:

- The objective of this course is to appraise the student with working capital.

Course Outcomes:

- Evaluate comparative working capital management policies and their impact on the firm's profitability, liquidity, risk and operating flexibility.
- Evaluate the importance of effective working capital management and its role in meeting the firm's strategic objectives and its impact in value creation.
- Investigate funds flow cycles and their impact on working capital management objectives.
- Formulate appropriate working capital management policies to achieve corporate objectives.

UNIT 1

Introduction to Working Capital: Nature, Scope and Definition of Working Capital, Working Capital Cycle, Assessment and Computation of Working CapitalRequirement, Overview of Working Capital Management.

UNIT 2

Management of Cash and Marketable Securities, Cash Budget, Flexible budget, Marketable Securities: Concept, types, reasons for holding marketable securities, Cash Management Practices in India

UNIT 3

Management of Receivables: Receivables: Nature & cost of maintaining receivables, objectives of receivablesmanagement, factors affecting size of receivables, policies for managing accounts receivables.

UNIT 4

Inventory: Need for monitoring & control of inventories, objectives of inventory management, Benefits of holdinginventory, risks and costs associated with inventories, Inventory Management: Minimizing cost in inventory, Techniques of Inventory Management. Classification, order quantity, order point etc. Case Study1: Antilock Hardware.

UNIT 5

Working Capital Financing: Need and objectives of financing of working capital, short term credit, mechanism and cost. benefit analysis of alternative strategies for financing working capital : Pattern and sources of Working CapitalFinancing in India. Case Study2: case study on working capital management of Bajaj Auto Ltd.

Ref. Book:

1. Prere, L. (2010). Working Capital Management. USA: Oxford University Press.
2. Bhattacharya, H. (2006). Working Capital Management: Strategies & Techniques. New Delhi: Prentice Hall of India.
3. Vijaykumar, A. (2006). Working Capital Management. New Delhi: Northern Book Centre.
4. Jain, N. K. (2004). Working Capital Management. New Delhi: Prentice Hall of India
5. CaseStudy1: https://nebula.wsimg.com/31e7fe0eb2af33d8ae962b1d8edaa6d5?AccessKeyId=A8363472B839ECDD54B&disposition=0&alloworigin=1
6. CaseStudy2: http://cbsmohali.org/img/Working%20Capital%20Management%20of%20Bajaj%2 0Auto%20Ltd..pdf.

SEM- III GROUP-II ELECTIVE (ANY ONE)

SEM-III	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-II	0360409	Big Data Analytics (Elective)	TH	3	25	75	40	40

Course Objectives:

- To optimize business decisions and create competitive advantage with Big Data analytics
- To explore the fundamental concepts of big data analytics.
- To learn to analyze the big data using intelligent techniques.
- To understand the various search methods and visualization techniques.
- To learn to use various techniques for mining data stream.
- To understand the applications using Map Reduce Concepts.
- To introduce programming tools PIG & HIVE in Hadoop echo system

Course Outcomes: Students will be able to:

- Work with big data platform and explore the big data analytics techniques business applications.
- Design efficient algorithms for mining the data from large volumes.
- Analyze the HADOOP and Map Reduce technologies associated with big data analytics.
- Explore on Big Data applications Using Pig and Hive.
- Understand the fundamentals of various big data analytics techniques.
- Build a complete business data analytics solution

UNIT 1

Introduction to big data : Introduction to Big Data Platform – Challenges of Conventional Systems - Intelligent data analysis – Nature of Data - Analytic Processes and Tools - Analysis vs Reporting.

UNIT 2

Mining data streams : Introduction To Streams Concepts – Stream Data Model and Architecture - Stream Computing - Sampling Data in a Stream – Filtering Streams – Counting Distinct Elements in a Stream – Estimating Moments – Counting Oneness in a Window – Decaying Window - Real time Analytics Platform(RTAP) Applications - Case Studies - Real Time Sentiment Analysis- Stock Market Predictions.

UNIT 3

Hadoop: History of Hadoop- the Hadoop Distributed File System – Components of Hadoop Analysing the Data with Hadoop- Scaling Out- Hadoop Streaming- Design of HDFS-Java interfaces to HDFS Basics- Developing a Map Reduce Application-How Map Reduce Works-Anatomy of a Map Reduce Job run-Failures-Job Scheduling-Shuffle and Sort – Task execution - Map Reduce Types and Formats- Map Reduce FeaturesHadoop environment.

UNIT 4

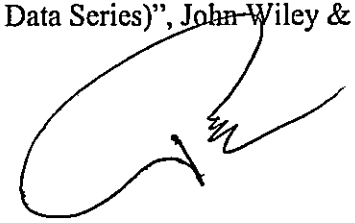
Frameworks: Applications on Big Data Using Pig and Hive – Data processing operators in Pig – Hive services – HiveQL – Querying Data in Hive - fundamentals of HBase and ZooKeeper - IBM InfoSphere BigInsights and Streams.

UNIT 5

Predictive Analytics- Simple linear regression- Multiple linear regression- Interpretation of regression coefficients. Visualizations - Visual data analysis techniques- interaction techniques - Systems and applications.

Reference Book:

1. Michael Berthold, David J. Hand, "Intelligent Data Analysis", Springer, 2007.
2. Tom White "Hadoop: The Definitive Guide" Third Edition, O'reilly Media, 2012.
3. Chris Eaton, Dirk DeRoos, Tom Deutsch, George Lapis, Paul Zikopoulos, "Understanding Big Data: Analytics for Enterprise Class Hadoop and Streaming Data", McGrawHill Publishing, 2012.
4. Anand Rajaraman and Jeffrey David Ullman, "Mining of Massive Datasets", CUP, 2012.
5. Bill Franks, "Taming the Big Data Tidal Wave: Finding Opportunities in Huge Data Streams with Advanced Analytics", John Wiley& sons, 2012.
6. Glenn J. Myatt, "Making Sense of Data", John Wiley & Sons, 2007.
7. Pete Warden, "Big Data Glossary", O'Reilly, 2011.
8. Jiawei Han, Michcline Kamber "Data Mining Concepts and Techniques", 2 nd Edition, Elsevier, Reprinted 2008.
9. Da Ruan, Guoquing Chen, Etienne E.Kerre, Geert Wets, "Intelligent Data Mining", Springer, 2007.
10.Paul Zikopoulos, Dirkde Roos, Krishnan Parasuraman, Thomas Deutsch, James Giles , David Corrigan, "Harness the Power of Big Data The IBM Big Data Platform", Tata McGraw Hill Publications, 2012.
11. Arshdeep Bahga, Vijay Madisetti, "Big Data Science & Analytics: A HandsOn Approach ",VPT, 2016
12. Bart Baesens "Analytics in a Big Data World: The Essential Guide to Data Science and its Applications (WILEY Big Data Series)", John Wiley & Sons,2014



SEM-III	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-II	0360410	Natural Language Processing (Elective)	TH	3	25	75	40	40

Course Objectives:

- Introduce to some of the problems and solutions of NLP and their relation to linguistics and statistics.

Course Outcomes:

- Show sensitivity to linguistic phenomena and an ability to model them with formal grammars.
- Understand and carry out proper experimental methodology for training and evaluating empirical NLP systems
- Able to manipulate probabilities, construct statistical models over strings and trees, and estimate
- parameters using supervised and unsupervised training methods.
- Able to design, implement, and analyze NLP algorithms
- Able to design different language modeling Techniques.

UNIT 1

Finding the Structure of Words: Words and Their Components, Issues and Challenges, Morphological Models Finding the Structure of Documents: Introduction, Methods, Complexity of the Approaches, Performances of the Approaches

UNIT 2

Syntax Analysis: Parsing Natural Language, Treebanks: A Data-Driven Approach to Syntax, Representation of Syntactic Structure, Parsing Algorithms, Models for Ambiguity Resolution in Parsing, Multilingual Issues

UNIT 3

Semantic Parsing: Introduction, Semantic Interpretation, System Paradigms, Word Sense Systems, Software.

UNIT 4

Predicate-Argument Structure, Meaning Representation Systems, Software.

UNIT 5

Discourse Processing: Cohension, Reference Resolution, Discourse Cohension and Structure

Language Modeling: Introduction, N-Gram Models, Language Model Evaluation, Parameter Estimation, Language Model Adaptation, Types of Language Models, Language-Specific Modeling Problems, Multilingual and Crosslingual Language Modeling

TEXT BOOKS:

1. Multilingual natural Language Processing Applications: From Theory to Practice – Daniel M. Bikel and Imed Zitouni, Pearson Publication
2. Natural Language Processing and Information Retrieval: Tanvier Siddiqui, U.S. Tiwary

REFERENCE BOOK:

1. Speech and Natural Language Processing - Daniel Jurafsky & James H Martin, Pearson Publications

SEM-III	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-II	0360411	Data Warehousing & Data Mining (Elective)	TH	3	25	75	40	40

Course objective:

- This course covers the concept of Data Warehouse and data Mining Planning and implementation model.

Course outcome:

- Demonstrate knowledge of Data Warehouse and its components.
- Discuss the process of Warehouse Planning and Implementation.
- Discuss and implement various supervised and Non supervised learning algorithms on data.
- Explain the various process of Data Mining and decide best according to type of data.
- Explain process of knowledge discovery in database (KDD).
- Design Data Mining model.

Unit 1

Data Warehousing: Overview, Definition, Data Warehousing Components, Building a Data Warehouse, Warehouse Database, Mapping the Data Warehouse to a Multiprocessor Architecture, Difference between Database System and Data Warehouse, Multi-Dimensional Data Model, Data Cubes, Stars, Snow Flakes, Fact Constellations, Concept

Unit 2

Data Warehouse Process and Technology: Warehousing Strategy, Warehouse /management and Support Processes, Warehouse Planning and Implementation, Hardware and Operating Systems for Data Warehousing, Client/Server Computing Model & Data Warehousing. Parallel Processors & Cluster Systems, Distributed DBMS implementations, Warehousing Software, Warehouse Schema Design

Unit 3

Data Mining: Overview, Motivation, Definition & Functionalities, Data Processing, Form of Data Pre-processing, Data Cleaning: Missing Values, Noisy Data, (Binning, Clustering, Regression, Computer and Human inspection), Inconsistent Data, Data Integration and Transformation. Data Reduction:-Data Cube Aggregation, Dimensionality reduction, Data Compression, Numerosity Reduction, Discretization and Concept hierarchy generation, Decision Tree

Unit 4

Classification: Definition, Data Generalization, Analytical Characterization, Analysis of attribute relevance, Mining Class comparisons, Statistical measures in large Databases, Statistical-Based Algorithms, Distance-Based Algorithms, Decision Tree-Based Algorithms.
Clustering: Introduction, Similarity and Distance Measures, Hierarchical and Partitional Algorithms. Hierarchical Clustering- CURE and Chameleon. Density Based Methods DBSCAN, OPTICS. Grid Based Methods- STING, CLIQUE. Model Based Method – Statistical Approach, Association rules: Introduction, Large Item sets, Basic Algorithms, Parallel and Distributed Algorithms, Neural Network approach.
Unit 5
Data Visualization and Overall Perspective: Aggregation, Historical information, Query Facility
OLAP function and Tools, OLAP Servers, ROLAP, MOLAP, HOLAP, Data Mining interface , backup and Recovery, Tuning Data Warehouse, Testing Data Warehouse. Warehousing applications and Recent Trends: Types of Warehousing Applications, Web Mining, Spatial Mining and Temporal Mining.

Suggested books:

1. Alex Berson, Stephen J. Smith "Data Warehousing, Data-Mining & OLAP", TMH.
2. Mark Humphries, Michael W. Hawkins, Michelle C. Dy, "Data Warehousing: Architecture and Implementation", Pearson.
3. I.Singh, "Data Mining and Warehousing", Khanna Publishing House.
4. Pieter Adriaans, Dolf Zantinge, "Data-Mining", Pearson Education

SEM-III	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-II	0360412	Internet of Things (Elective)	TH	3	25	75	40	40

Course Objectives:

- To introduce the terminology, technology and its applications.
- To introduce the concept of M2M (machine to machine) with necessary protocols.
- To introduce the Python Scripting Language which is used in many IoT devices.
- To introduce the Raspberry PI platform, that is widely used in IoT applications.
- To introduce the implementation of web-based services on IoT devices.

Course Outcomes:

- Interpret the impact and challenges posed by IoT networks leading to new architectural models.
- Compare and contrast the deployment of smart objects and the technologies to connect them to network.
- Appraise the role of IoT protocols for efficient network communication.
- Elaborate the need for Data Analytics and Security in IoT.
- Illustrate different sensor technologies for sensing real world entities and identify the applications of IoT in Industry.

Unit 1

Internet of Things (IoT): Vision, Definition, Conceptual Framework, Architectural view, technology behind IoT, Sources of the IoT, M2M Communication, IoT Examples.

Design Principles for Connected Devices: IoT/M2M systems layers and design standardization, communication technologies, data enrichment and consolidation, ease of designing and affordability

Unit 2

Hardware for IoT: Sensors, Digital sensors, actuators, radio frequency identification (RFID) technology, wireless sensor networks, participatory sensing technology.

Embedded Platforms for IoT: Embedded computing basics, Overview of IOT supported Hardware platforms such as Arduino, NetArduino, Raspberry pi, Beagle Bone, Intel Galileo boards and ARM cortex.

Unit 3

Network & Communication aspects in IoT: Wireless Medium access issues, MAC protocol survey, Survey routing protocols, Sensor deployment & Node discovery, Data aggregation & dissemination

Unit 4

Programming the Ardunio: Ardunio Platform Boards Anatomy, Ardunio IDE, coding, using emulator, using libraries, additions in ardunio, programming the ardunio for IoT.

Unit 5

Challenges in IoT Design challenges: Development Challenges, Security Challenges, Other challenges IoT Applications: Smart Metering, E-health, City Automation, Automotive Applications, home automation, smart cards, communicating data with H/W units, mobiles, tablets, Designing of smart street lights in smart city.

Text books:

1. Olivier Hersent,DavidBoswarthick, Omar Elloumi"The Internet of Things key applications and protocols", willey
2. Jeeva Jose, Internet of Things, Khanna Publishing House
3. Michael Miller "The Internet of Things" by Pearson
4. Raj Kamal "INTERNET OF THINGS", McGraw-Hill, 1ST Edition, 2016
5. ArshdeepBahga, Vijay Madisetti "Internet of Things (A hands on approach)" 1ST edition, VPI publications,2014
6. Adrian McEwen,Hakin Cassimally "Designing the Internet of Things" Wiley India

SEM-III	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-II	0360480	Practical For R-Programming	PR	3	25	75	40	80

Course Outcomes:-

- Write programs for arrays and matrices.
- Execute data frames and lists.
- Differentiate between arrays from vectors.
- Implement factors in R
- Execute minor projects using R.

List of Programs:

1. Design a program to take input from the user (name and age) and display the values through R Programming.
2. Write a program to get the details of the objects in memory using R Programming.
3. Create a sequence of numbers from 20 to 50 and find the mean of numbers from 20 to 60 and sum of numbers from 51 to 91 using R Programming.
4. Create a vector which contains 10 random integer values between -50 and +50 using R Programming.
5. Demonstrate through a program to display the details of the objects in memory.
6. Write a R program to get the first 10 Fibonacci numbers.
7. Show all prime numbers up to a given number usingh R rogramming..
8. Design a R program to find the factors of a given number.
9. Write a R program to find the maximum and the minimum value of a given vector.
10. Write a program to get the unique elements of a given string and unique numbers of vector.
11. Convert a given matrix to a 1 dimensional array through R programming.
12. Write a R program to create an array of two 3x3 matrices each with 3 rows and 3 columns from the given two vectors.
13. Create a 3 dimensional array of 24 elements using dim() function.
14. Write a R program to create an array using four given columns, three given rows and two given tables, also display the contents of the array.
15. To convert a given matrix to 1 dimensional array design a R program.
16. Write a R program to concatenate two given factor in a single factor.
17. Write a R program to create an 3 dimensional array of 24 elements using the dim() function.
18. Construct a R program to create an array of two 3x3 matrices each with 3 rows and 3 columns from the given two vectors. Print the second row of the second matrix of the array and the element in the 3rd row and 3rd column of the 1st matrix.
19. Write a R program to create a data frame from four given vectors.
20. Write a program to get the structure of a given data frame.
21. Design a R program to get the statistical summary and nature of the data of a given data frame.

SEM-III	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-II	0360481	Practical – Python for Deep Learning	PR	3	25	75	40	40

Course Outcomes:-

- Create basic networks for deep learning.
- Implement applications like classification and object detection using CNN
- Implement mining problems using CNN.

1. Implement Simple Programs like vector addition.
2. Implement a simple problem like regression model.
3. Implement a perceptron model.
4. Implement a Feed-Forward Network.
5. Implement an Object Detection using CNN.
6. Implement an Image Classifier using CNN.
7 Implement Text Classification using CNN.

Build and train deep learning models for computer vision/ natural language processing/ tabular analysis/ collaborative filtering problems
Create random forests and regression models
Deploy models

Text Books:

1. Goodfellow L., Bengio Y. and Courville A., Deep Learning, MIT Press (2016).
2. Patterson J. and Gibson A., Deep Learning: A Practitioner's Approach, O'Reilly (2017), 1st ed.

Reference Books:

1. Haykin S., Neural Network and Machine Learning, Prentice Hall Pearson (2009), 3rd ed.
2. Geron A., Hands-on Machine Learning with Sci-kit and TensorFlow, O'Reilly Media (2017)

SEM-IV	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-II	0460401	Data Visualisation for Managers	TH	3	25	75	40	40

Course Objective:

1. To acquire knowledge on the concepts required for Data Visualization
2. To practice Visualization Design for different types of Data using "Microsoft Power Business Intelligence Tool"
3. To summarise on Story Telling using the Visualization Tool "Tableau"
4. To understand Decision Making using the Data Visualization tool "R"
5. To examine Big Data Visualization using the Data Visualization tool "GEPHI"

Course Outcomes (CO):

At the end of this course, learners will be able to:

1. Recall the concepts of Data Visualization
2. Demonstrate visualization Design using "MS Business Intelligence Tool"
3. Illustrate the design principles of Data Dashboards using "Tableau"
4. Gather practice on Data Mining Patterns using "R Visualization tool"
5. Experiment on Advanced Data Visualization tool "GEPHI"

Unit-I

Concepts of Data Visualization : Introduction to Data Visualization, The Visualization Imperative, Visual Perception 4 Grammar of Graphics, Message to Charts.

Unit-II

MS Power Business Intelligence Tool: Installing Power BI , Menus and Toolbar, Creating and Formatting Tables, Formatting Dashboard and preparing Reports, Designing Insights and Creating custom Reports, Creating Maps and Designing Images.

Unit-III

Data Visualization Tool "Tableau": Installing Tableau, Menus and Toolbar, Converting Excel Data into Tableau Desktop, Creating types of Charts, Scatter Plots Creation, Basic Functions.

Unit-IV

Decision Making using "R Programming Language": Installing R Studio, Descriptive Statistics in R, Data Mining Pattern, Scatter Plots, Histogram.

Unit-V

Advanced Data Visualization tool "GEPHI": Installing "GEPHI" LEARNING RESOURCES, Network Analysis, Graphing `, Graphing with node XL

Suggested Readings:

1. 1. J. Hilden J. Koponen, Data Visualization Handbook, 1st Edition, 2019, Aalto University
2. Andy Kirk, Data Visualizations: A Handbook for Data Driven Design, , 1st Edition, 2019, Sage Publication.
3. Kieran Healy, Data Visualization – A Practical Introduction, Ed. I, 2019, Princeton University Press.

4. Claus O. Wilke, Fundamentals of Data Visualization: A Primer on Making Informative and Compelling Figures, First edition, 2019, O'Reilly .
5. Brett Powell, Microsoft Power BI Cookbook: Creating Business Intelligence Solutions, 1st Edition,2017, Packt Publishing.
6. AbdulkaderAljandali, Multivariate Methods and Forecasting with IBM SPSS Statistics, 1st ed. 2017 Spring.
7. Brett Powell, Microsoft Power BI Cookbook: Creating Business Intelligence Solutions, Packt Publishing, 2017.
8. Arshad Khan, Jumpstart Tableau: A Step–By–Step Guide to Better Data Visualization A, Press publication, 2016.
9. AtmajitsinhGohil, R Data Visulaization Cookbook. Packt Publishing, 2015.

SEM- IV GROUP-I ELECTIVE (ANY ONE)

SEM-IV	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-II	0460402	Financial Reporting and Analysis	TH	3	25	75	40	40

Course Objectives- By the end of this course, students will be able to-

- Understand the fundamental concepts and principles of financial reporting, including the purpose, users, and regulatory frameworks governing financial statements such as GAAP and IFRS.
- Analyse financial statements comprehensively, including balance sheets, income statements, and cash flow statements, to interpret the financial health and performance of an organization.
- Apply various financial statement analysis techniques, including ratio analysis, trend analysis, and common-size analysis, to evaluate liquidity, solvency, efficiency, and profitability of businesses.
- Explore advanced topics in financial reporting such as revenue recognition, inventory valuation, depreciation methods, and the treatment of intangible assets, to understand their impact on financial statements and decision making.
- Develop the ability to use financial reporting and analysis tools to support decision making processes, including forecasting financial performance, assessing creditworthiness, evaluating investment opportunities, and identifying potential ethical concerns in financial reporting practices.

Course Outcomes:

- Solid grasp of financial reporting fundamentals, including understanding the purpose, stakeholders, and regulatory standards like GAAP and IFRS.
- Proficiency in analyzing financial statements to assess an organization's financial condition and performance.
- Ability to employ various financial analysis techniques (ratio, trend, and common-size analyses) for evaluating business liquidity, solvency, efficiency, and profitability.
- Understanding of advanced financial reporting topics, such as revenue recognition and the valuation of inventory and intangible assets, and their implications on financial decisions.
- Skills in utilizing financial reporting and analysis to support business decision-making, including financial forecasting, credit assessment, investment evaluation, and the recognition of ethical issues in financial practices.

Unit-1 Introduction to Financial Reporting and Analysis

Overview of Financial Reporting: Concept, Purpose and Users, Quality of Financial reporting, reporting regulations in India, Generally Accepted Accounting Principles (GAAP), International Financial Reporting Standards (IFRS), The Role of Financial Statements: Balance Sheet analysis, Comparative Analysis: Horizontal and Vertical Analysis Techniques
Income Statement, Understanding the Accounting Cycle. **Discuss at least 2 case studies**

Unit-2 Understanding Financial Statements

Nature and objectives of Financial statements, Uses, limitations and stakeholders of financial statements, Tools and techniques of financial statements analysis, Operating, Investing, and Financing Activities, Analysing Financial Statement Footnotes and Disclosures **Discuss at least 2 case studies**

Unit-3 Financial Statement Analysis Techniques

Ratio Analysis: Liquidity, Solvency, Efficiency, and Profitability Ratios, DuPont Analysis: Decomposing Return on Equity (ROE), Concepts on sickness, distress Trend Analysis: Assessing Changes Over Time, Comparative and common size statement, Common-Size Analysis: Expressing Financial Data as a Percentage of a Base, Cash Flow Analysis: Free Cash Flow, Cash Conversion Cycle, and Operating Cash Flow Ratios **Discuss at least 2 case studies**

Unit-4 Advanced Financial Reporting Topics

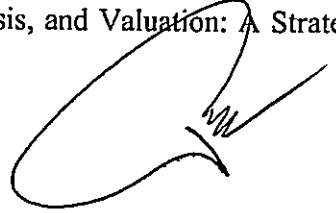
Report Preperation of financial statements analysis, Revenue Recognition: Principles and Methods, Inventory Valuation Methods: FIFO, LIFO, and Weighted Average, Depreciation Methods and Asset Valuation, Intangible Assets: Recognition, Measurement, and Impairment, Leases: Operating Leases vs. Capital Leases and their Impact on Financial Statements
Discuss at least 2 case studies

Unit-5 Financial Reporting and Analysis in Decision Making

Financial Statement Forecasting Techniques, Credit Analysis: Assessing Creditworthiness of Companies, Equity Analysis: Evaluating Stocks and Shares, Mergers and Acquisitions: Financial Reporting and Analysis Considerations, Ethical Considerations in Financial Reporting and Analysis, Window Dressing and Recent scandals in financial reporting
Discuss at least 2 case studies

References:

1. Financial Statement Analysis and Valuation by Peter Easton, Mary Lea McAnally, Gregory A. Sommers, and Xiao-Jun Zhang
2. Financial Reporting and Analysis by Lawrence Revsine, Daniel W. Collins, Bruce Johnson, and Fred Mittelstaedt
3. Analysis of Financial Statements by Pamela Peterson Drake and Frank J. Fabozzi
4. Financial Shenanigans: How to Detect Accounting Gimmicks and Fraud in Financial Reports by Howard M. Schilit and Jeremy Perler
5. Financial Reporting, Financial Statement Analysis, and Valuation: A Strategic Perspective by James M. Wahlen, Stephen P. Baginski, and Mark Bradshaw.



SEM-IV	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-II	0460403	Management of Banks	TH	3	25	75	40	40

OBJECTIVE: The objective of this course is to appraise the students with the banking law and practices and develop anunderstanding of various laws affecting banks

. Course Outcomes:

- Familiarity with concepts, functions, laws and its histories.
- Familiarity with banking management skills and practical implications in future.
- To help students learn about banking management tools and technique and its benefits in daily life.
- To make familiar with banking resource management, financial resource development its monitoring skills

UNIT 1

Evolution of banking law, Main provisions of The Banking Regulation Act 1949, The RBI Act 1934, Capital Adequacy in Banks. RBI and its Functions. Case Study1: The case of Taiwan's futures commission merchants.(8Hours)

UNIT 2

Cheques- Requisite of cheque, crossing and endorsement, Refusal of cheque payment by Bank, Protection to apaying Banker, The collecting Banker- Duties and legal Protection. (8Hours)

UNIT 3

Securities for Bank Advances: Forms of securities and precautions taken by Banks in accepting these Securities.(8Hours)

UNIT 4

Guarantees- Contract of Guarantee and contract of indemnity, Guarantee as Banker's Security, Legal decisions relating to Guarantees, Law relating to Letter of credit, Parties to a Letter of credit, Types of Letter of credit, writingreports on Bank visits and prevailing practices in Banking
Case studies. (8Hours)

UNIT 5

Banker Customer Relationship- Special customers including lunatics, Un-discharged Bankrupts Agents, Executors and Administrators, Partnerships, Joint Stock companies and Trusts, Contemporary issues in Bank Management -Anoverview. Case Study2: A case study of ICICI bank. (8Hours)

SUGGESTED READINGS:

1. Ghosh, A. (2012), Managing Risk in Commercial retail Banking. New Delhi: Wiley.

2. Indian Institute of Banking & Finance (IIBF). (2010). Bank Financial Management, New Delhi: Macmillan.
3. Indian Institute of Banking & Finance (IIBF). (2010). Principles & Practices of Banking. New Delhi: Macmillan. 4
4. Koch, T. W. & Scott S. (2009). Bank Management. USA: Cengage Learning.
5. Padamalatha, S. And Justin, P. (2017), Management of Banking And Financial Services. Pearson Edition
6. Ruozi, R.., & Ferrari, P. (2013), Liquidity Risk Management in Bank Economic & Regulatory Issues, London.Heidelberg New York: Springer.
7. Rose, P.S. & Hudgins, P.S. (2005). Banking Management & Financial Services. New Delhi: Tata McGraw Hill. 8
8. Suresh, P., & Paul, J. (2011). Management of Banking & Financial Services. New Delhi: Dorling Kindersley (India)Pvt. Ltd.
9. Varshney P.N. (2001). Banking Law & Practice. New Delhi: Sultan Chand &Sons.
10. Case Study1: https://nebula.wsimg.com/c02440ba64f00ca8b9d2608d1c29d33b?AccessKeyId=A83663472B83 9ECDD54B&disposition=0&alloworigin=1
11. Case Study2: https://www.mbaknol.com/management-case-studies/customer-relationship-management-crm-inbanking-a-case-study-of-icici-bank.

SEM-IV	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-II	0460404	New Enterprise Management	TH	3	25	75	40	40

COURSE OBJECTIVE:
The objective of this course is to expose the students to the managerial aspects of new enterprise and to help them to understand the working of these enterprises and measure, evaluate their performance and efficiency.

COURSE OUTCOMES:
- Comprehensive understanding of the managerial aspects critical to the initiation and operation of new enterprises.
- Insight into the practical workings and operational challenges faced by new businesses.
- Ability to measure and evaluate the performance and efficiency of new enterprises using appropriate metrics and benchmarks.

Unit-1 Entrepreneurship and its role in economic development, Problems of industrialization in Underdeveloped countries with special reference to India. Discuss At least 2 case studies

Unit-2 Industrial policy, Regulation and control of Industries in India, Mechanics of setting of new enterprises– size and location, optimum units–its meaning and determinants, size of industrial units of India Case Study1: Field Turf Tarkett India: challenges and opportunities in new markets
Discuss At least 2 case studies

Unit-3 Theory of industrial location factors determining the industrial location, regional distribution of industrial activity in India.
Discuss At least 2 case studies

Unit-4 Recent trends in the localization of industrial activity in India: Regional planning of industrial activity in India, Feasibility studies: Technical, Marketing and financial, Managerial problems of New Enterprise, Production Purchasing. Case Study2: "Eldorado" family: the survival and succession plan
Discuss At least 2 case studies

Unit-5 Financing labour and marketing problems, Facilities provided by different Institutions and Agencies in India, financing facilities for new enterprises, marketing and other facilities.
Discuss At least 2 case studies

SUGGESTED READINGS:

1. Drucker, Peter (2012). Innovation and Entrepreneurship. East – Elsevier, USA.
2. Gupta, C. B. and Srinivasan (1997). Entrepreneurial Development in India. Sultan Chand. New Delhi.
3. Hisrich, Robert, D., Petros, Micheal, P. (2010). Entrepreneurship. MH, New Delhi.
4. Holt, David. H., Englewood Cliffs (1992.). Entrepreneurship – New Venture Creation. Prentice Hall Inc. New Jersey.
5. McClelland, D. C. and Winter, D. G. (1969). Motivating Economic Achievement. Free Press, New York.
6. Case Studies1: https://www.emeraldinsight.com/doi/full/10.1108/20450621111195660
7. Case Studies2: https://www.emerald insight.com/doi/full/10.1108/EEMCS-11-2012-0197

SEM-IV	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-II	0460405	International Marketing Management	TH	3	25	75	40	40

OBJECTIVE: This paper deals with a broad conceptual focus on the marketing management problems, techniques and strategies necessary to incorporate the marketing concept into the framework of the world market place. The present courseexplores those aspects of marketing which are unique to international business

Course Outcomes:

- Understand major international marketing elements and their Impact on Marketing Decisions, concepts and methods with regard to enhance customer value.
- Apply contemporary marketing theories to the demands of business and management practice.
- Demonstrate how as an international marketer you can use your knowledgeof consumer behaviour concepts to develop better marketing programs and strategies to influence those behaviour.
- Organise information and data to reveal patterns and themes, and manage teams and implementing international marketing programs.
- Understand the process of consumer protection, accounting for ethical, social and cultural (ESC) issues.

UNIT 1

Importance and Challenge of International Marketing-Definition of International Marketing: Domestic Marketing Vs.International Marketing; Categories of International marketing Involvements; International Marketing Task; Nature of International Marketing Management; Characteristics of International Marketing Executives. Case Study1: Cilantro Café goes global: reflections on internationalization in Egypt 2.0.

UNIT 2

Analysis of International Marketing Environment and Identifying Foreign Markets Political Considerations and Governmental Influences; Cultural and Social Dynamics; Economic Development and Geographical Conditions;Competitive Conditions; Legal and Financial Influences, Trends in WTO, UNCTAD, IMF, WORLD BANK.

UNIT 3

International Marketing Intelligence and Research-Analysis of World Market; Market analysis; Purposes andMethods; Marketing Intelligence; International Marketing Research. Ê Planning Entry and Operations Strategies Export; Franchise, Joint Ventures; Direct Investment; Multinational Operations.

UNIT 4

International Product Policies and pricing decisions-Strategic Considerations in Making Multinational Product decisions; Alternative Strategies in Multinational Product Planning; Methodology in Making Multinational productDecisions. International Pricing Decisions-Price Escalation; International Transfer Pricing; Pricing Strategy; Factorsinfluencing the Establishment of International Prices; Export Pricing, Differential Pricing.

UNIT 5

International Distribution System and Logistics-International Marketing Channel Decisions; Importance and Scope of Channel Decisions; Channels between Nations; International Physical Distribution Decisions; Nature of Physical Distribution, Risk management in international marketing, Institutional set-up for promoters, export assistance. CaseStudy2: Piping hot dogs: a case of a Malaysian franchise.

SUGGESTED READINGS:

1. Brady, D.L. (2011). Essentials of International Marketing. New Delhi: Jaico.
2. Cateora, P.R., Graham, J.L., Gilly, M.C. (2014). International Marketing. New Delhi: Mcgraw Hill Education.
3. Cherunilam, F. (2012). International Marketing. New Delhi: HPH.
4. Ghauri, P. & Cateora, P. (2010). International Marketing. New Delhi: TMH.
5. Ilkka, A.R. & Czinkota, M.R. (2013). International Marketing. New Delhi: Cengage Learning.
6. Jain, S. & Moitra, R. (2013). International Marketing. New Delhi: HPH
7. Jain, S.C. (2014). International Marketing Management. New Delhi: CBS Publishers.
8. Case Studies1: Menatallah Darrag, Noha El Bassiouny, (2011) "Cilantro Café goes global: reflections oninternationalization in Egypt 2.0", Emerald Emerging Markets Case Studies, Vol. 1 Issue: 3, pp.1-5, https://doi.org/10.1108/20450621111172403 Permanent link to this document: https://doi.org/10.1108/20450621111172403
9. Case Studies2Sethela June, Asmat-Nizam Abdul-Talib, "Piping hot dogs: a case of a Malaysian franchise", EmeraldEmerging Markets Case Studies, (2011), https://doi.org/10.1108/20450621111127421

SEM-IV	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Total Min Marks	Teaching Hours
Year-II	0460480	Lab for Data Visualization	PR	4	25	75	40	120

- Lab. Exercise based on the theory course with reference to the text book

SEM-IV	Paper Code	Course Title	TH/PR	Credit	Int Marks	Ext Marks	Ext Min Marks	Passing Marks
Year-II	0460465	Project / Dissertation	IP	6	50	150		80

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