



**DR. B.C. ROY  
SOCIETY**

**ENGINEERING**

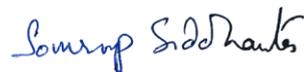
**An Autonomous Institute Approved by AICTE and affiliated to MAKAUT, West Bengal**

Third Semester Detailed Syllabus

**MASTERS OF BUSINESS ADMINISTRATION  
(2024-2026)**

**FACULTY OF MANAGEMENT STUDIES**

The second year (First Semester) syllabus is unanimously accepted and approved in the second BoS meeting held in 26<sup>th</sup> March, 2025  
Department of Faculty of Management Studies.



HoD, FMS  
Dr. B. C. Roy Engineering College, Durgapur

**Course Name: Corporate Strategy**  
**Course Code: MB301**  
**(Semester III)**  
**Category: Core**  
**[4 Credits: 40 Hrs]**

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**1. Course Prerequisite:**

- Basic understanding of **management principles** (e.g., organizational behaviour, business environment).
- Familiarity with **functional areas** (marketing, finance, operations).
- Prior exposure to **case analysis** or business decision-making frameworks is recommended

**2. Course Learning Objectives:**

By the end of the course, students will:

- Understand the **fundamentals of corporate strategy** and its role in organizational success.
- Analyze **internal and external business environments** using strategic tools (e.g., SWOT, Porter’s Five Forces).
- Formulate and evaluate **competitive strategies** for sustainable advantage.
- Examine **implementation challenges** and ethical dilemmas in dynamic markets (e.g., VUCA, globalization).
- Apply **strategic frameworks** (e.g., BCG Matrix, Ansoff) to real-world business scenarios.

**3. Teaching methodology and evaluation system for the course:**

**Teaching methodology** – The course uses lectures and case discussions, student presentations, and a comprehensive final examination to achieve these objectives.

**Evaluation System – Continuous Internal Assessment (Twice in a semester)**  
**CIA1 and CIA2 (Total: 40 Marks each)**

- Class Test (Objective + Subjective): 25 Marks (Duration: 1 hour)
- Assignment: 10 Marks
- Attendance: 5 Marks

**End-Semester Exam (60 Marks)**- Summative Assessment.

**4. Course Content:**

**Course Name: Corporate Strategy**  
**Course Code: MB [301]**  
**Hours per Week: 4L**  
**Credits: 4**

Sl. No.	Topic	40L
1	Strategic Management: Definition of Strategy, Creation of Value, Strategic Management Process, Strategy vs Policy, Concept of Mission, Vision, Objective and Goal	3L

2	Environmental Scanning: External Environment Analysis (Economic, Legal, Political, Social, Geographic, Technical); Internal Environment Analysis–Strategic Advantage Profile (Finance, Marketing, Production, HR, R & D, etc.), SWOT Analysis, RBV Framework, McKinsey 7S, Industry Analysis: Porter’s Five Force Model	6L
3	Competitive positioning – concept, Competitive scope, Concept of competitive advantage, value- chain analysis, competitive strategies- Core competency, Value Innovation, Bottom of the Pyramid, VRIO, Corporate Philanthropy	4L
4	Strategic Planning: Concept of Strategic Planning, Steps of Strategic Plan, Objective Formulation: Balanced Score Card, Mintzberg’s Power Configuration, SPACE analysis	3L
5	Formulation of Strategy: Corporate or Grand Strategies, Business or Generic Strategies, Functional level strategies, Choice of Strategies, BCG matrix, GE Matrix and Ansoff Matrix, Environmental Turbulence	4L
6	Implementation of Strategy: Structural Implementation, Leadership Implementation and Functional Implementation.	4L
7	Strategic Actions: Integration, Mergers, Acquisitions, Diversification, Joint Ventures, Takeovers, Joint Ventures, Turnaround, Liquidation, Strategic Alliance etc.	6L
8	Strategic dilemma in dealing with dynamic global business environment in terms of rapidly changing market trends and technological advancement: Sustainable Enterprise and Stakeholder Perspectives, strategic leadership in VUCA world	4L
9	Challenges faced by managers in implementing and evaluating strategies based on the nature of business, industry, and cultural differences	2L
10	Evaluation of Strategy: Overview of Evaluation and Control Process, Evaluation and Control Process, Techniques of Strategic Evaluation and Control: Strategic Momentum Control and Strategic Leap Control, Evaluation Techniques for Operational Control (Qualitative/Quantitative), Process of Evaluation	4L

### 5. Suggested Readings:

#### **Text Book (TB)**

1. Business Policy and Strategic Management: Kazmi, A., Tata McGraw Hill
2. Strategic Management – a Conceptual Framework: Bhandari, A., Verma, RP; McGraw Hill Education

#### **Reference Book (RB):**

1. Crafting the Strategy: Das, Ranjan :, Tata McGraw Hill
2. Global Strategic Management: Mellahi, K.,Frynas, J.G.and Finlay, P., OUP
3. Competitive Strategy: Porter, Michael E., The Free Press
4. Discourses on Strategic Management: Roy, Dilip; Asian Books

### 6. COURSE OUTCOMES

CO	Details/Statement	Action Verb	Knowledge Level
CO 1	Analyze the interplay between internal/external environments to identify strategic opportunities and threats.	Examine, Compare, Contrast	Analyze

<b>CO 2</b>	Formulate business-level and corporate-level strategies using frameworks like BCG Matrix, VRIO, and Ansoff.	Design, Develop, Propose	Create
<b>CO 3</b>	Evaluate strategic implementation challenges in global contexts, including cultural and technological disruptions	Assess, Critique, Recommended	Evaluate

### 7. Mapping of course outcomes to module / course content

Module	CO1	CO2	CO3
1	3	-	-
2	3	-	-
3	1	3	-
4	-	3	-
5	-	3	-
6	-	-	3
7	1	1	3
8	-	-	3
9	-	-	3
10	1	-	3

### 8. Mapping of the Course outcomes to Program Outcomes

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
CO1	3	3	3	1	3	3	3
CO2	3	3	3	2	2	2	3
CO3	3	3	3	3	1	2	3

**Course Name: DATA ANALYTICS FOR MANAGERS**

**Course Code: MB-302**

**(Semester III)**

**Category: Core**

**[4 Credits: 40 Hrs]**

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**1. Course Prerequisite:**

- Basic understanding of **management principles** (e.g., organizational behaviour, business environment).
- Familiarity with **functional areas** (marketing, finance, operations).
- Prior exposure to **statistical methods for** business decision-making frameworks is recommended

**2. Course Learning Objectives:**

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

- **Evaluate** the role and application of data analytics in each functional area of business .
- **Evaluate** the four types of data analytics i.e. descriptive, diagnostic, predictive and prescriptive along with its nature and application.
- **Understand** the basic concepts of Machine Learning and other analytical techniques **apply** them in Business Model Building

**3. Teaching methodology and evaluation system for the course:**

**Teaching methodology** – The course uses lectures, hands on practical sessions in software and case discussions, student presentations, and a comprehensive final examination to achieve these objectives.

**Evaluation System – Continuous Internal Assessment (Twice in a semester)**

CIA1 and CIA2 (Total: 40 Marks each)

- Class Test (Objective + Subjective): 25 Marks (Duration: 1 hour)
- Assignment: 10 Marks
- Attendance: 5 Marks

**End-Semester Exam (60 Marks)-** Summative Assessment.

**4. Course Content:**

**Course Name: Data Analytics for Managers**

**Course Code: MB [302]**

**Hours per Week: 2L + 4P**

**Credits: 4**

<b>Module I</b>		
1.	<b>Introduction to Data Analytics:</b> Definition, Role of data analytics in business, tools used in data analytics, Application of analytics in business.	2 L
2.	<b>Data Collection and Data Pre-Processing:</b> Data Collection Strategies – Data Pre- Processing Overview – Data Cleaning – Data Integration and Transformation – Data Reduction – Data Discretization.	2L+ 2P
3.	<b>Introduction to Machine Learning</b> - Supervised and Unsupervised learning- Regression, Clustering and Classification - Metrics for ML algorithms –Recall, Precision, Accuracy, F-Score and Kappa Demo of ML algorithms using Orange.	2 L +2P
4.	<b>Exploratory Descriptive Data Analytics</b> - Data visualization using	2L +

	Power BI - Dashboard Analytics	2P
5.	<b>Diagnostic Analytics:</b> Correlation - Scatter Diagram – Karl Pearson’s Correlation Coefficient – Rank Correlation - Correlation Coefficient for Bivariate Frequency Distribution, Sequential pattern mining , Process Mining.	3 L
6.	<b>Predictive Analytics :</b> Modelling – Feature Selection -Simple and Multiple Regression: Introduction, Overview, Importance, Application of Least Square Method, Model Evaluation through Visualization: Residual Plot – Distribution Plot, Logistic Regression: Discrete choice models, Logistic Regression, Decision Trees (Using Software)	2L + 4P
<b>Module II</b>		
7.	<b>Strategic Business Analytics Tools:</b> Cluster Analysis, Hierarchical and Non- Hierarchical - K Means Clustering, Prediction of segment membership: Discriminant Analysis (DA) using SPSS/ R,	2L + 3P
8.	<b>Prescriptive Analytics:</b> Quantitative Techniques used in Advanced Decision Making: Multi-Criteria Decision Making [MCDM], Analytic Hierarchic Processing [AHP], Using Excel Solver for Optimization Techniques.	3L + 5P
9	<b>Social Media Analytics</b> - Text analytics - Words, Token, Stem and lemma - Minimum edit distance - Develop algorithm to automatically analyze customer reviews	2L +2P

#### 5. Suggested Readings:

##### Text Book (TB)

1. Roy K, Mookherjee A., Bhattacharjee N : Data Analytics Skills for Managers, Aryan Publishers
2. Stephen G. Powell, Kenneth R. Baker: Management Science, The Art of Modeling with Spreadsheets, Wiley.

##### Reference Book (RB):

1. Nagraj Balakrishnan, Barry Render: Managerial Decision Modeling with Spreadsheets, Jr. Ralph M. Stair Prentice Hall.
2. N. D. Vohra: Quantitative Techniques in Management, Tata McGraw-Hill Education.
3. Eugene Lodewick Grant: Statistical Quality Control, McGraw-Hill Richard S. Leavenworth.
4. Dr. Anasse Bari, Mohamed Chaouchi: Predictive Analytics for Dummies, John Wiley & Sons.
5. Namakum R N Prasad, Seema Acharya: Fundamentals of Business Analytics, Wiley.

#### 6. COURSE OUTCOMES

CO	Details/Statement	Action Verb	Knowledge Level
CO 1	<b>Apply</b> appropriate data collection, pre-processing, and visualization techniques using tools like Power BI and Excel to analyze business data and communicate insights effectively.	Demonstrate, Use, Implement	Apply
CO 2	<b>Analyze</b> datasets using machine learning techniques such as regression, classification, and clustering to identify patterns and support predictive decision-making.	Examine, Compare, Contrast	Analyze
CO 3	<b>Evaluate and implement</b> strategic and prescriptive analytics tools such as AHP, MCDM, social media text analysis, and	Assess, Critique, Recommended	Evaluate

	Solver to optimize business decisions.		
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**7. Mapping of course outcomes to module / course content**

Module	CO1	CO2	CO3
<b>1</b>	<b>3</b>	-	-
<b>2</b>	<b>3</b>	-	-
<b>3</b>		<b>3</b>	-
<b>4</b>	<b>3</b>		-
<b>5</b>	-	<b>3</b>	-
<b>6</b>	-	<b>3</b>	-
<b>7</b>	-	-	<b>3</b>
<b>8</b>	-	-	<b>3</b>
<b>9</b>	-	-	<b>3</b>

**8. Mapping of the Course outcomes to Program Outcomes**

	PO <b>1</b>	PO <b>2</b>	PO <b>3</b>	PO <b>4</b>	PO <b>5</b>	PO <b>6</b>	PO <b>7</b>
CO1	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	3	3	<b>3</b>
CO2	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	2	2	<b>3</b>
CO3	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	3	2	<b>3</b>

**Course Name: Sales & Distribution Management**  
**Course Code: MM-301**  
**(Semester III)**  
**Category: Elective**  
**[4 Credits: 40 Hrs]**

**1. Course Prerequisite:**

- Basic knowledge of Marketing Management principles
- Familiarity with concepts of Consumer Behaviour and Market Research
- Understanding of Business Communication skills

**2. Course Learning Objectives:**

By the end of the course, students will:

- Understand the structure, roles, and functions of sales management and distribution systems
- Apply personal selling techniques and manage the sales force effectively
- Analyze and plan sales and distribution strategies including forecasting, budgeting, and territory management
- Evaluate different types of marketing channels and manage channel conflicts
- Understand the fundamentals of logistics, retail, and merchandise management in distribution systems

**3. Teaching methodology and evaluation system for the course:**

**Teaching methodology** – The course uses lectures and case discussions, student presentations, and a comprehensive final examination to achieve these objectives.

**Evaluation System – Continuous Internal Assessment (Twice in a semester)**  
 CIA1 and CIA2 (Total: 40 Marks each)

- Class Test (Objective + Subjective): 25 Marks (Duration: 1 hour)
- Assignment: 10 Marks
- Attendance: 5 Marks

**End-Semester Exam (60 Marks)-** Summative Assessment.

**4. Course Content:**

**Course Name : Sales and Distribution Management**

**Course Code : MM 301**

**Hours per Week: 4L**

**Credits: 4**

Sl. No.	Topic	Hours
1	<b>Introduction to Sales Management:</b> Evolution of sales department, Nature & scope of personal selling & sales management, Roles and functions of a sales manager	2L
2	<b>Personal Selling:</b> Types of selling situations, Buyer-seller dyad, FAB approach, Questioning in Sales, Active Listening, Personal selling process (pre-approach, approach, presentation, handling objections, closing a sale, follow-up)	6L
3	<b>Planning and Organizing Sales Force Efforts:</b> Strategic planning and sales organization, Sales force planning, Sales department relations, Distribution network relations, Sales forecasting, Sales budget, Sales objectives, Sales territories and quotas	6L
4	<b>Sales Force Development:</b> Sources of recruitment, Selection process, Methods of selection, Need and purpose of training, Types of training, Designing a training programme- ACMEE model	4L
5	<b>Directing and Controlling the Sales Force:</b> Supervision, Territory management, Determination of quota/target, Determination of compensation of sales force, Leading and Motivating, Analysis of sales,	6L

	Costs and Profitability, Evaluation of sales force performance	
6	<b>Marketing Channels:</b> Structure, Functions and advantages, Types of channel intermediaries – wholesalers, distributors, sales agents, brokers, franchisers, C&F agents, and retailers, Channel objectives & constraints, Identification, evaluation and selection of channel alternatives	5L
7	<b>Channel management and control</b> – recruiting and selecting channel members, motivating, evaluating channel members, Channel Conflicts and remedies	3L
8	<b>Physical Distribution &amp; Logistics:</b> Goals, function, processing, warehousing, inventory & transportation	2L
9	<b>Retail and Merchandise Management:</b> Retail strategies, Location, Types of retail formats, Stores layout, Visual merchandising techniques, Planning of assortment, Servicing and buying of merchandise, Supply chain management in retailing	6L

### 5. Suggested Readings:

#### **Text Book (TB)**

1. Cundiff, Still & Govoni : Sales Management – Decision, Strategies & Cases; PHI./Pearson Education
2. Panda, Sahadev: Sales & Distribution Management; OUP

#### **Reference Book (RB):**

1. Levy, M. & Weitz, B.A.- Retailing Management – McGrawHill
2. Shapiro, R.L., Stanton, W.J. & Rich, G.A.: Management of Sales Force; TMH
3. Gupta, S.L. Sales and Distribution Management, Excel Books India, 2009
4. Krishna K Havaladar Vasant M Cavale Sales and Distribution Management: Text and Cases, Tata McGraw- Hill Education

### 6. COURSE OUTCOMES

CO	Details/Statement	Action Verb	Knowledge Level
CO 1	Explain the roles, functions, and processes in personal selling, sales management, and distribution systems	Explain Classify	Understand
CO 2	Apply selling techniques, sales force management principles, and channel management strategies to real-life business situations	Apply Construct Develop	Apply
CO 3	Analyze sales and distribution plans, sales force performance, and retail strategies for effective decision-making	Analyze Classify Compare	Analyze

### 7. Mapping of course outcomes to module / course content

Module	CO1	CO2	CO3
1	3	-	-
2	3	2	-
3	-	3	2
4	-	3	-

5	-	3	-
6	1	3	-
7	1	3	-
8	-	-	3
9	-	-	3

**8. Mapping of the Course outcomes to Program Outcomes**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	3	3	1	3	3	3
CO2	3	3	3	2	2	2	2
CO3	3	3	2	2	1	2	3

**Course Name: DIGITAL AND SOCIAL MEDIA MARKETING**

**Course Code: MM-302**

**(Semester III)**

**Category: Elective**

**[4 Credits: 40 Hrs]**

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**1. Course Prerequisite:**

- Basic understanding of **management principles** (e.g., business environment, Business Laws).
- Familiarity with **marketing management**.
- Prior exposure to **E-business** frameworks is recommended

**2. Course Learning Objectives:**

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

- Apply fundamental concepts of Digital Marketing and Search Engine Optimization (SEO) in the context of Integrated Marketing Communication (IMC).
- Critically evaluate the effectiveness of Social Media Marketing and Social Media Optimization (SMO) strategies as tools within an Integrated Marketing Communication (IMC) framework.
- Conceptualize, design, and implement effective social media campaigns across platforms such as Facebook, Twitter, Google+, and LinkedIn.

**3. Teaching methodology and evaluation system for the course:**

**Teaching methodology** – The course uses lectures, hands on practical sessions in software and case discussions, student presentations, and a comprehensive final examination to achieve these objectives.

**Evaluation System – Continuous Internal Assessment (Twice in a semester)**

CIA1 and CIA2 (Total: 40 Marks each)

- Class Test (Objective + Subjective): 25 Marks (Duration: 1 hour)
- Assignment: 10 Marks
- Attendance: 5 Marks

**End-Semester Exam (60 Marks)**- Summative Assessment.

**4. Course Content:**

**Course Name: Digital and Social Media Marketing**

**Course Code: MM [302]**

**Hours per Week: 4L**

**Credits: 4**

<b>MODULE I</b>		
<b>1</b>	<b>Introduction to Integrated Marketing Communication and Digital Marketing:</b> Fundamentals of Digital Marketing , history, types, implementation and benefits of Digital marketing in the IMC program, Evolution of IMC, Reasons for Growth and Features of digital Marketing in the IMC Process, Communication Process, Consumer Funnel and Response Hierarchy Models.	<b>8L</b>
<b>2</b>	<b>Search Engine optimization:</b> concept of Search Engines Optimization, How SEO operates, website domain, file name, design layouts, optimized keywords, keyword frequency weightage, prominence, placement of keywords, finding keyword, word stemming, metatag-optimization, title optimization, anchor optimization, mobile SEO techniques.	<b>8L</b>
<b>3</b>	<b>Social Media Marketing:</b> concept, as a marketing tool, importance of social media marketing, Social marketing strategy for business, Social	<b>4L</b>

	Media Optimization (SMO) key concepts, Business profile creation, Brand awareness, Social engagement; Viral marketing, tools of measurement of popularity, traffic , analytics and statistics.	
<b>MODULE II</b>		
4	<b>Facebook Marketing:</b> overview types of Facebook pages, growth of business through Facebook; profile page setup, page navigation, influencer, ad options, page promotion, identity target ,likes philosophy, create and engaging fans, call to action, video promotion, marketing tricks, FB analytics.	<b>8L</b>
5	<b>Twitter Marketing:</b> Concept, advantages, implementation of twitter; create of twitter account, follower growth, hash tags, sponsor of twitter/hash tags, twitter analytics.	<b>3L</b>
6	<b>Google+:</b> Concepts, advantages, creating page on Google+, customization, integration with website/blog, increase in followers, promotion and tools.	<b>2L</b>
7	<b>YouTube Promotions :</b> Concepts, advantages, creating a channel on Youtube, customization Ads for YouTube, integration with website/blog, increase in followers, promotion and Analytics tools.	<b>3L</b>
8	<b>Instagram:</b> Benefits, Popularity, promotion and growth of business using Instagram.	<b>2L</b>
9	<b>LinkedIn:</b> concept, benefits, promotion and growth of business using LinkedIn	<b>2L</b>

#### 5. Suggested Readings:

##### Text Book (TB)

**TB 1 : Digital Marketing by Seema Gupta**

**TB 2:** Fundamentals of Digital Marketing by Puneet Singh Bhatia

**TB 3:** Social Media Marketing by Puneet Singh Bhatia

##### Reference Book (RB):

**RB 1: Understanding Digital Marketing by Damian Ryan , Pearson**

**RB 2:** Marketing 4.0: Moving from Traditional to Digital by Kotler, Kartajaya, Setiawan

**RB 3:** Social Media Marketing by Tracy L Tuten and Michel R Solomon by SAGE

**RB 4:** Social Media: 2018 Marketing Tools for Facebook, Twitter, LinkedIn, Youtube, Instagram and Beyond by McDonald Jason.

**Online resources :** <https://www.youtube.com/watch?v=hiEb1m7CXH4>

#### 6. COURSE OUTCOMES

CO	Details/Statement	Action Verb	Knowledge Level
<b>CO 1 :</b>	<b>Apply</b> fundamental concepts of Digital Marketing and Search Engine Optimization (SEO) in the context of Integrated Marketing Communication (IMC).	Integrate, Use, Implement	Apply
<b>CO 2 :</b>	Critically <b>evaluate</b> the effectiveness of Social Media Marketing and Social Media Optimization (SMO) strategies as tools within an Integrated Marketing Communication (IMC) framework.	Assess, Critique, Recommended	Evaluate
<b>CO 3 :</b>	<b>Conceptualize, design, and implement</b> effective social media campaigns across	Create,	Create

	platforms such as Facebook, Twitter, Google+, and LinkedIn.	Design, Conceptualize	
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**7. Mapping of course outcomes to module / course content**

Module	CO1	CO2	CO3
1	3	-	-
2	3	-	-
3		3	-
4	-	-	3
5	-	-	3
6	-	-	3
7	-	-	3
8	-	-	3
9	-	-	3

**8. Mapping of the Course outcomes to Program Outcomes**

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
CO1	3	3	3	2	3	2	3
CO2	3	3	3	2	2	2	3
CO3	3	3	3	1	2	1	3

**Course Name: MARKETING RESEARCH AND ANALYTICS**

**Course Code: MM-303**

**(Semester III)**

**Category: Elective**

**[4 Credits: 40 Hrs]**

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**1. Course Prerequisite:**

- Basic understanding of **management principles** (e.g., business environment, Business Laws).
- Familiarity with **marketing management**.
- Prior exposure to **statistical methods for** business decision-making frameworks is recommended

**2. Course Learning Objectives:**

Course Outcome: After completion of this course, the learners will be able to

- **Comprehend** and **Articulate** the marketing research process, including problem identification, research design, data collection, and various research types with a view to write research proposals.
- **Apply** suitable data collection methods and scales for accurate marketing research, ensuring result validity and effectively addressing potential data collection errors.
- **Analyze** and **Integrate** data analysis techniques, including hypothesis tests, predictive analytics, and machine learning methods to **draw insights** and make informed marketing decisions.

**3. Teaching methodology and evaluation system for the course:**

**Teaching methodology** – The course uses lectures, hands on practical sessions in software and case discussions, student presentations, and a comprehensive final examination to achieve these objectives.

**Evaluation System – Continuous Internal Assessment (Twice in a semester)**

CIA1 and CIA2 (Total: 40 Marks each)

- Class Test (Objective + Subjective): 25 Marks (Duration: 1 hour)
- Assignment: 10 Marks
- Attendance: 5 Marks

**End-Semester Exam (60 Marks)-** Summative Assessment.

**4. Course Content:**

**Course Name: Marketing Research and Analytics**

**Course Code: MM [303]**

**Hours per Week: 4L**

**Credits: 4**

<b>MODULE I</b>		
<b>1</b>	<b>Introduction to Marketing Research:</b> Introduction, Application of research in managerial decision making, Aims, roles, functions and sources of research, Client-user interface – role conflict and resolution, Research Process: Steps in planning –problem formulation, research design, Data collection, analysis, report presentation, Preparation of the research proposal. Research Design: Types of research - exploratory studies, descriptive studies, causal studies.	<b>2 L</b>
<b>2</b>	<b>Data Collection and Scaling in Marketing Research:</b> Primary and secondary sources of data. Measurement and Scaling: nominal, ordinal, interval, ratio scales, Comparative and Non- Comparative Scales (paired comparison, rank order, continuous rating scale, Itemized rating scale, Likert Scale, Semantic	<b>4 L</b>

	differential scale)	
3	<b>Analysis of Data :</b> Classification of data, Hypothesis Testing – Parametric Tests (t-test, z-test, ANOVA and MANOVA) and Non-Parametric Tests (Chi-square test, Mann-Whitney U test, Wilcoxon Signed Rank test).	<b>10 L</b>
<b>MODULE II</b>		
4	<b>Predictive Analytics :</b> Forecasting using Multiple Linear Regression: Assumptions & mathematical model, Evaluation metrics for regression model.	<b>2 L</b>
5	<b>Segmentation Analytics :</b> Factors of Customer Segmentation; Clustering – Hierarchical: Agglomerative & Divisive, Partitioning based clustering: K-Means, Finding Optimal number of clusters, Metrics for evaluating clusters, Discriminant Analysis	<b>6 L</b>
6	<b>Positioning Analytics :</b> Perceptual Mapping: Multi-Dimensional Scaling (MDS), Difference between MDS and Principal Component Analysis (PCA)	<b>2 L</b>
7	<b>Consumer Analytics :</b> Customer Lifetime Value (CLV) – Concept of CLV and its need, Computation of CLV, Comparative methods to CLV: Recency Frequency Monetization (RFM), Share of Wallet(SoW), Past Customer Value (PCV)	<b>4 L</b>
8	<b>Digital Analytics :</b> Key metrics in digital marketing: Overall Website traffic, Conversion Rate, Customer Rate Optimization, Exit Rate, Bounce Rate, Click-Through Rate, Pay Per Click, Page Views, Unique Page Views, Sessions	<b>3 L</b>
9	<b>Product Analytics :</b> Concept of Product Designing, Conjoint Model as a decomposition preference model, Steps in Conjoint Analysis, Uses of Conjoint Analysis	<b>3 L</b>
10	<b>Retail Analytics :</b> Market Basket Analysis (MBA) and its types, Generating Association Rules using Support, Confidence and Lift (examples), Uses of Market Basket Analysis	<b>4 L</b>

## 5. Suggested Readings:

### Text Book (TB)

**TB 1:** Marketing Analytics by Seema Gupta & Avdhoot Jahar, Wiley

**TB 2:** Marketing Research by G C Beri et al. 6/e, Mc Graw Hill.

**TB 3:** Marketing Research by Naresh Malhotra et al. 7/e, Pearson

### Reference Book (RB):

**RB 1:** Marketing Research: text and Cases by Rajendra Nargundkar 4/e, Mc Graw Hill

**RB 2:** Essentials of Marketing Analytics by Joseph Hair et. al, 1/e, Mc Graw Hill

**RB 3:** Marketing Analytics: A Practitioner's Guide To Marketing Analytics And Research Methods by Ashok Charan, World Scientific

**RB 4:** Marketing Metrics: First Step Towards Marketing Analytics by Anurag Dugar & Mani Shreshtha, KBI

## 6. COURSE OUTCOMES

CO	Details/Statement	Action Verb	Knowledge Level
<b>CO 1 :</b>	<b>Comprehend and Articulate</b> the marketing research process, including problem identification, research design, data collection, and various research types with a view to write research proposals.	Comprehend Articulate, Interpret	Understand

<b>CO 2 :</b>	<b>Apply</b> suitable data collection methods and scales for accurate marketing research, ensuring result validity and effectively addressing potential data collection errors	Integrate, Use, Implement	Apply
<b>CO 3 :</b>	<b>Analyze</b> and <b>Integrate</b> data analysis techniques, including hypothesis tests, predictive analytics, and machine learning methods to <b>draw insights</b> and make informed marketing decisions.	Examine, Compare, Contrast	Analyze

### 7. Mapping of course outcomes to module / course content

Module	CO1	CO2	CO3
1	3	-	-
2	-	3	-
3		1	3
4	-	1	3
5	-	-	3
6	-	-	3
7	-	-	3
8	-	-	3
9	-	-	3
10	-	-	3

### 8. Mapping of the Course outcomes to Program Outcomes

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
CO1	3	3	3	1	3	2	3
CO2	3	3	3	2	2	2	3
CO3	3	3	3	1	2	1	3

**Course Name: Marketing Communications**

**Course Code: MM-304**

**(Semester III)**

**Category: Elective**

**[4 Credits: 40 Hrs]**

**1. Course Prerequisite:**

Basic understanding of Marketing Management concepts such as STP (Segmentation, Targeting, Positioning), Consumer Behaviour, and Marketing Mix (4Ps).  
Knowledge of fundamental communication theories and principles.

**2. Course Learning Objectives:**

By the end of the course, students will:

- Understand the concepts, role, and processes of Integrated Marketing Communication (IMC) within the overall marketing strategy.
- Analyse different elements of IMC and their strategic application in contemporary marketing scenarios.
- Design and evaluate advertising and promotional strategies considering creativity, budgeting, media planning, and social responsibility.

**3. Teaching methodology and evaluation system for the course:**

**Teaching methodology** – The course uses lectures and case discussions, student presentations, and a comprehensive final examination to achieve these objectives.

**Evaluation System – Continuous Internal Assessment (Twice in a semester)**

CIA1 and CIA2 (Total: 40 Marks each)

- Class Test (Objective + Subjective): 25 Marks (Duration: 1 hour)
- Assignment: 10 Marks
- Attendance: 5 Marks

**End-Semester Exam (60 Marks)**- Summative Assessment.

**4. Course Content:**

**Course Name : Marketing Communications**

**Course Code : MM [304]**

**Hours per Week: 4L**

**Credits: 4**

Sl. No.	Topic	Lectures
1	<b>Introduction to Integrated Marketing Communication:</b> Definition, features and role of IMC and its relation with marketing program. I M C Concept, Evolution of IMC, Reasons for Growth and Features. IMC Planning Process, Communication Process, AIDA and Hierarchy of Effect Model, Establishing Objectives and Budgeting: Determining Promotional Objectives, Sales vs. Communication Objectives, DAGMAR, Problems in Setting Objectives for the IMC Program.	6L
2	<b>Elements of IMC:</b> Advertising and Sales Promotion – Features, Advantages and Disadvantages. Public Relation and Publicity – Types of PR, Process, Advantages and Disadvantages, Types of Publicity, Direct Marketing – Features, Advantages and Disadvantages, Personal Selling – Features, Advantages and Disadvantages, Digital and Social Media marketing- Concept, role and features of SMO, SEO, Facebook, Twitter, LinkedIn, YouTube as means of marketing communication, New Trends in IMC	6L
3	<b>Sales Promotion:</b> Definition, Different Types of Sales Promotion,	

	Reasons for rapid growth of sales promotion, Objectives of sales promotion, Types of sales promotion, Tools and techniques of consumer and trade promotion with merits and demerits, Role of sales promotion in IMC programme	3L
4	<b>Public Relations and Corporate Advertising:</b> Definition, New role of PR, Objectives, tools and techniques of public relations with merits and demerits, Corporate advertising- scope and types, role of PR in IMC programme	2L
5	<b>Evaluation of Promotional Effectiveness:</b> Reasons to measure effectiveness, What, when, where, how to test, Testing methods - pre-testing and post testing techniques, Problems with current methods, Measuring effectiveness of other promotion	3L
6	<b>Advertising Industry:</b> Introduction to Advertising: History of advertising, Definition, features and role of advertising, Relationship of advertising with other promotional mixes and marketing mix elements, Various forms of Advertising: (national, retail, cooperative, trade, industrial financial, corporate, public services, political); Advertisers, Advertising agencies and support organizations, Types of agencies, Structure, role and functions of ad agencies, Agency compensation and evaluation.	7L
7	<b>Advertising Planning and Budgeting:</b> Planning process, steps, situation analysis, objective setting, budgeting, developing promotional strategies, implementation and control, Budgeting approaches – different methods, allocation of budget	3L
8	<b>Designing an Advertisement:</b> Different dimensions, Importance of creativity to advertising, Creative process, developing a creative brief, Message Strategies: Message structure, Message appeals- rational, emotional, Message source-credibility, attractiveness, power. Rossiter-Percy Grid, copywriting, body copy, headlines, layout, visuals, slogans, logos, signatures, storyboards	5L
9	<b>Media Strategies:</b> Media planning process, Media mix, Coverage, Reach, Frequency, Impact, Scheduling, Different types of media – television, radio, print, outdoor, digital. Characteristic features, advantages and limitations, Factors influencing choice of media flows and functions.	3L
10	<b>Advertising and Society:</b> Social – social and cultural, Ethical – deceptive, offensive, economical- effect on consumer choice, competition, cost and prices, and Regulatory aspects of advertising – ASCI	2L

### 5. Suggested Readings:

#### Text Book (TB)

1. Advertising & Sales Promotion: Kazmi, SHH and Batra SK; Excel Books
2. Advertising and Promotions-an IMC perspective: Shah, K and D'souza, A; TMH Education

#### Reference Book (RB):

1. Advertising and Promotion: Belch G.E. and Belch M.A; TMH
2. Ogilvy on Advertising: Ogilvy David; Pan Books

### 6. COURSE OUTCOMES

CO	Details/Statement	Action Verb	Knowledge Level
CO 1	<b>Explain</b> the concepts, role, elements, and planning process of Integrated Marketing Communication (IMC).	Summarize, Compare, Describe	Understand
CO 2	<b>Analyze</b> the tools and techniques of IMC components and their application in real-life marketing situations.	Organize, Compare, Contrast	Analyze

		t	
<b>CO 3</b>	<b>Develop</b> effective advertising and promotional strategies, considering creative design, budgeting, media mix, and ethical concerns.	Design, Develop, Build	Create

**7. Mapping of course outcomes to module / course content**

Module	CO1	CO2	CO3
1	3	-	-
2	3	2	-
3	-	3	-
4	-	3	-
5	-	3	-
6	1	3	-
7	-	-	3
8	-	-	3
9	-	-	3
10	-	-	3

**8. Mapping of the Course outcomes to Program Outcomes**

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
CO1	3	3	3	1	2	3	3
CO2	3	2	3	2	2	2	2
CO3	3	3	2	3	1	2	3

**Course Name: Global Marketing Management**

**Course Code: MM-305**

**(Semester III)**

**Category: Elective**

**[4 Credits: 40 Hrs]**

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**1. Course Prerequisite:**

- Basic knowledge of marketing management concepts
- Understanding of domestic marketing strategies and market analysis
- Familiarity with economic and business environments

**2. Course Learning Objectives:**

By the end of the course, students will:

- Understand the concepts, processes, and environment of global marketing.
- Analyze global trade theories and the role of international institutions in trade facilitation.
- Develop strategies for product, pricing, distribution, and promotion in international markets.
- Interpret the impact of cultural, economic, political, and legal environments on international marketing decisions.
- Apply knowledge of foreign exchange concepts and international trade documentation in business operations.

**3. Teaching methodology and evaluation system for the course:**

**Teaching methodology** – The course uses lectures and case discussions, student presentations, and a comprehensive final examination to achieve these objectives.

**Evaluation System – Continuous Internal Assessment (Twice in a semester)**

CIA1 and CIA2 (Total: 40 Marks each)

- Class Test (Objective + Subjective): 25 Marks (Duration: 1 hour)
- Assignment: 10 Marks
- Attendance: 5 Marks

**End-Semester Exam (60 Marks)-** Summative Assessment.

**4. Course Content:**

**Course Name: Global Marketing Management**

**Course Code : MM [305]**

**Hours per Week: 4L**

**Credits: 4**

Sl. No	Topic	Lectures
1	<b>Introduction:</b> Definition of International marketing, Domestic vs. international marketing, Benefits of international marketing, Process of internationalization, marketing orientation of a firm.	4L
2	<b>Trade Theories:</b> Basis of international trade, Principles of absolute and relative advantage, Factor endowment theory <b>International Institutions:</b> (only the objectives) – WTO, World Bank, IMF, ADB, UNCTAD, EEC, SAPTA, NAFTA etc.	4L
3	<b>Dynamics of World Market:</b> Identifying and satisfying global needs, Coordinating activities and recognizing constraints	4L

4	<b>Environment of International Marketing:</b> Economic-cultural – culture and its characteristics, influence of culture on consumption decisions, cultural universals, Politico- Legal – concept of multiplicity of political and legal environment, different political and legal systems.	4L
5	<b>International Product Policy:</b> New product policy, International product life cycle, Product line policies, Branding, packaging and labelling	4L
6	<b>International Pricing Strategies:</b> Factors in pricing, Alternative strategies, Forfeiting, Transfer pricing, Dumping, Counter trade	4L
7	<b>Distribution:</b> Methods of entry into foreign markets, Foreign market channels, Global logistics	4L
8	<b>Promotion:</b> Global promotion mix, Standardized global communication	4L
9	<b>Foreign Exchange:</b> Concepts of spot rate, forward rate, arbitrage, translation; FEMA	4L
10	<b>Procedure of Foreign Trade and Documentation:</b> Process of importing and exporting, Documentation (only the purpose) – certificate of origin, bill of lading, mates receipt, letter of credit, line of credit.	4L

#### 5. Suggested Readings:

##### Text Book (TB)

1. Paul, J, & Kapoor, R, International Marketing, TMH
2. Joshi: International Marketing: OUP

##### Reference Book (RB):

1. C Philip R. Cateora, International Marketing; McGraw Hill India
2. Keegan: Global Marketing Management: Pearson

#### 6. COURSE OUTCOMES

CO	Details/Statement	Action Verb	Knowledge Level
CO 1	<b>Explain</b> the concepts, theories, and institutional framework related to international marketing and trade.	Describe, Compare, Discuss	Understand
CO 2	<b>Analyze</b> the influence of global environments and market dynamics on international marketing strategies.	Organize, Compare, Contrast	Analyze
CO 3	<b>Apply</b> marketing mix strategies and operational procedures in foreign trade and global business contexts.	Examine, Interpret,	Apply

#### 7. Mapping of course outcomes to module / course content

Module	CO1	CO2	CO3
1	3	2	-
2	3	-	-
3	-	3	-
4	-	3	-

5	-	3	-
6	-	-	3
7	-	-	3
8	-	-	3
9	-	-	3
10	-	-	3

**8. Mapping of the Course outcomes to Program Outcomes**

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
CO1	3	3	3	2	3	3	2
CO2	3	3	3	2	2	2	3
CO3	2	3	3	1	2	2	3

**Course Name: Talent Acquisition & Management**

**Course Code: HR-301**

**(Semester III)**

**Category: Elective**

**[4 Credits: 40 Hrs]**

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**1. Course Prerequisite:**

Students should have a foundational understanding of Human Resource Management (HRM) principles and organizational behavior. Familiarity with basic management concepts and strategic business planning will help in grasping the integrated approach to talent management.

**2. Course Learning Objectives:**

By the end of the course, students will be able to:

- Understand the fundamental concepts, purpose, and strategic importance of talent management in modern organizations.
- Develop ability to critically assess and apply key talent management processes such as acquisition, development, engagement, and retention.
- Explore the role of technology, analytics, and ethical practices in building an effective and sustainable talent management system.
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**3. Teaching methodology and evaluation system for the course:**

**Teaching methodology** – The course uses lectures and case discussions, student presentations, and a comprehensive final examination to achieve these objectives.

**Evaluation System – Continuous Internal Assessment (Twice in a semester)**

CIA1 and CIA2 (Total: 40 Marks each)

- Class Test (Objective + Subjective): 25 Marks (Duration: 1 hour)
- Assignment: 10 Marks
- Attendance: 5 Marks

**End-Semester Exam (60 Marks) - Summative Assessment.**

**4. Course Content:**

**Course Name:** Talent Acquisition & Management

**Course Code:** HR [301]

**Hours per Week:** 4L

**Credits:** 4

Sl. No.	Topic	40L
1	Introduction: Definition, Meaning of Talent Management, Objectives & Role of Talent Management in building sustainable competitive advantage to a firm, Key Processes of Talent Management, Consequences of Failure in Managing Talent.	4L
2	Factors in Talent Management: Critical success factors to create Talent Management System, Benefits of Talent Management - How Business Can Derive Benefit From it, Responsibilities of Talent Management Manager & Professionals.	4L
3	Approaches and Life Cycle: Approaches to Develop Talent Management	4L

	Strategy, Mapping Business Strategy and Talent Management Strategy, Different Stages of Talent Management Life Cycle.	
4	Talent Management and Environment: Overview of Talent Management and Organizational Environment, Shaping Talent, Planning and Developing Values, Ethical Behaviour.	2L
5	Talent Management Planning: Understanding the Needs and Mind set of Employee, Steps in Talent Management Process, Knowledge, Values, Beliefs and Skill Implications for Talent Management, Modelling Excellence.	4L
6	Talent Acquisition: Defining Talent Acquisition, Develop high potential employee - High performance workforce, Importance of Talent Development Process, Steps in Developing Talent, Succession Planning, Difference between Talent Acquisition and Recruitment, Current Trends in Talent Acquisition.	4L
7	Talent Engagement and Retention: "SMR Model" (Satisfy, Motivate and Reward) – The Formula to Win Your Employees & Retain Them, Employee Retention Programs, Career Planning & Development, Return on Investment (ROI) on Talent Management, Employee Engagement, Best Practices in Employee Retention.	4L
8	Role of Information Technology in Effective Talent Management System: Role of Information Technology in Talent Management System, Talent Management Information System, Five Steps to a Talent Management Information Strategy, HR Analytics for TM Processes, Managing Talent in Digital Era.	4L
9	Compensation and Reward System for Effective Talent Management: Principles of Compensation Plan in Talent Management, Concept of Integrated Reward Philosophy, Developing a Sustainable Talent Management Plan for Organization.	4L
10	Opportunities and Challenges in Talent Management: Talent Management Challenges, Strategies to Overcome the Challenges, Talent Management During Corporate Restructuring, Opportunities in Talent Management, Current trends in Talent Management, Talent Management in India.	6L

### 5. Suggested Readings:

#### **Text Book (TB)**

1. A Framework for Human Resource Management: Dessler Gary, Pearson, Edition: 7th
2. Talent management in India: Challenges and opportunities: Hasan, M., Singh, A. K., Dhamija, Atlantic Publication Understanding

#### **Reference Book (RB):**

1. Fundamentals of Human Resource Management: Varkkey Biju, Dessler Gary, Pearson, Edition: 14th
2. Talent Management Hand Book: Lance A Berger, Dorothy R Berger, McGraw-Hill, Edition: 13th

### 6. COURSE OUTCOMES

CO	Details/Statement	Action Verb	Knowledge Level
CO1	Understand the key concepts, processes, and importance of Talent Management in	Define, Outline,	Understand

	achieving organizational goals.	Illustrate	
<b>CO2</b>	Analyze and apply strategies for effective talent acquisition, development, engagement, and retention aligned with business objectives.	Examine, Differentiate, Explain	Apply
<b>CO3</b>	Evaluate and design integrated Talent Management systems using technology, analytics, and sustainable reward mechanisms to build competitive advantage.	Assess, Evaluate, Formulate	Create

### 7. Mapping of course outcomes to module/course content

Module	CO1	CO2	CO3
1	1	-	-
2	1	-	-
3	1		-
4	-	2	-
5	-	2	-
6	-	2	-
7	-	2	-
8	-	-	3
9	-	-	3
10	-	-	3

### 8. Mapping of the Course Outcomes to Program Outcomes

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
CO1	3	1	1	1	2	1	3
CO2	3	2	2	2	3	2	3
CO3	3	3	3	3	3	3	3

**Course Name: Compensation & Benefits Management**  
**Course Code: HR-302**  
**(Semester II)**  
**Category: Elective**  
**[4 Credits: 40 Hrs]**

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**1. Course Prerequisite:**

Students are expected to have a basic understanding of Human Resource Management (HRM), Industrial Relations, and Labour Laws. Familiarity with concepts related to employment policies, compensation structures, and organizational behavior will help in comprehending the legal, strategic, and practical aspects of employment and wage administration.

**2. Course Learning Objectives:**

By the end of the course, students will be able to:

- Understand the legal and policy frameworks governing employment, labour welfare, and wage compensation in India.
- Analyze contemporary employment practices such as outsourcing, contract labour, and employee leasing within the context of labour market dynamics.
- Evaluate wage structures, incentive schemes, and employee benefits to design effective reward and compensation strategies aligned with productivity and legal compliance.

**3. Teaching methodology and evaluation system for the course:**

**Teaching methodology** – The course uses lectures and case discussions, student presentations, and a comprehensive final examination to achieve these objectives.

**Evaluation System – Continuous Internal Assessment (Twice in a semester)**

CIA1 and CIA2 (Total: 40 Marks each)

- Class Test (Objective + Subjective): 25 Marks (Duration: 1 hour)
- Assignment: 10 Marks
- Attendance: 5 Marks

**End-Semester Exam (60 Marks)**-Summative Assessment.

**4. Course Content:**

**Course Name:** Compensation & Benefits Management

**Course Code:** HR [302]

**Hours per Week:** 4L

**Credits:** 4

Sl. No.	Topic	40L
1	Employment: Policy and Programmes, Reservation Rules, Employment of Women and Dependents, Employment of Land Oustees - Provisions and Practices under the relevant Act and statutory provisions.	6L
2	New Employment Practices: Outsourcing, Contingent Workers, Employee Leasing.	4L
3	Labour Market: Concept, Broad Types of Labour Market	2L
4	Employment of Contract Labourers: Provisions and Practices under the relevant Act	4L
5	Concept of Wage and Compensation: Minimum Wage, Fair Wage,	6L

	Living Wage, Wage Policy, Wage/Salary, Real Wage, Components of Wages: Basic, Dearness Allowances, House Rent Allowances, City Compensatory Allowance, Other Allowances, Wage Fixation, Pay for different types of employees, Managerial/ Executive Compensation-.Wage Administration Pay Roll Management, Deductions etc	
6	Dearness Allowance: Methods of DA payment, Consumer Price Index, Neutralization	2L
7	Productivity and Wages: Productivity Bargaining, Incentive Payments, Productivity Linked Bonus, Incentives –Individual & Group, Case Studies on Productivity Bargaining, Reward strategy	4L
8	Employee Benefits: Statutory & Voluntary Benefits - Fringe Benefits , Retirement Benefits – Provident Fund, Gratuity, Pension, Medical Insurance; ESOP, fundamentals of Computations of taxable income, overtime, etc Reward Management, team rewards & psychological contract.	6L
9	Employee Welfare and Working Conditions: Statutory and voluntary measures	2L
10	Case Studies – Productivity bargaining, Incentive, Bonus and Reward.	4L

**Suggested Readings:**

**Text Book (TB)**

1. Understanding Wages in India: Sharma, A. M., HPH
2. Labour Economics & Labour Relations: Raynolds, G. L., Practice Hall
3. Human Resource Management: Gupta, C. B., Sultan Chand & Co

**Reference Book(RB):**

1. Belcher, D.W.: Wage and Salary Administration, Practice Hall
2. Mondy, R.W. & Noe, R.M. : Human Resource Management, Pearson

**5. COURSE OUTCOMES**

CO	Details/Statement	Action Verb	Knowledge Level
CO1	Understand key concepts and statutory provisions related to employment policies, labour laws, and wage components.	Define, Outline, Illustrate	Understand
CO2	Analyze employment practices, wage structures, and benefit systems to identify legal and organizational implications.	Examine, Differentiate, Explain	Apply
CO3	Design integrated compensation, incentive, and reward strategies that enhance productivity while ensuring legal and ethical compliance.	Assess, Evaluate, Formulate	Create

**6. Mapping of course outcomes to module/course content**

Module	CO1	CO2	CO3
1	1	-	-
2	1	-	-
3	1	-	-

4	-	2	-
5	-	2	-
6	-	2	-
7	-	-	3
8	-	-	3
9	-	-	3

**7. Mapping of the Course outcomes to Program Outcomes**

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
CO1	<b>3</b>	<b>3</b>	<b>3</b>	<b>1</b>	3	3	<b>3</b>
CO2	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	2	2	<b>3</b>
CO3	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	1	2	<b>3</b>

**Course Name: Labour Laws**

**Course Code: HR-303**

**(Semester III)**

**Category: Elective**

**[4 Credits: 40 Hrs]**

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**1. Course Prerequisite:**

Students should have a foundational understanding of the Indian Constitution, particularly Fundamental Rights and Directive Principles of State Policy. Basic knowledge of industrial relations, organizational behavior, and the functioning of labour markets will also aid in better comprehension of labour laws and their applications.

**2. Course Learning Objectives:**

By the end of the course, students will:

- Understand the evolution and structure of labour laws in India, including their constitutional and policy foundations.
- Gain in-depth knowledge of key labour legislations across wages, industrial relations, social security, safety, and welfare.
- Develop the ability to interpret and apply legal provisions to real-world workplace scenarios through analysis of case studies and legal disputes.

**3. Teaching methodology and evaluation system for the course:**

**Teaching methodology** – The course uses lectures and case discussions, student presentations, and a comprehensive final examination to achieve these objectives.

**Evaluation System – Continuous Internal Assessment (Twice in a semester)**

CIA1 and CIA2 (Total: 40 Marks each)

- Class Test (Objective + Subjective): 25 Marks (Duration: 1 hour)
- Assignment: 10 Marks
- Attendance: 5 Marks

**End-Semester Exam (60 Marks) – Summative Assessment.**

**4. Course Content:**

**Course Name:** Labour Laws

**Course Code:** HR [303]

**Hours per Week:** 4L

**Credits:** 4

Sl. No.	Topic	40L
1	Legal Framework: Legal Framework and Evolution of Labour Laws in India.	2L
2	Labour Codes: Overview on Codes on Occupational Safety, Health & Welfare, Wages, Industrial Relations, and Social Security.	2L
3	Laws relating to Occupational Safety, Health and Welfare: Factories Act, 1948; Plantations Labour Act, 1951; Mines Act, 1952; The Contract Labour (Regulation and Abolition) Act, 1970; The West Bengal Shops & Establishment Act, 1963.	8L
4	Laws relating to Wages: Payment of Wages Act, 1936; Minimum Wages	8L

	Act, 1948; Payment of Bonus Act, 1965; Equal Remuneration Act, 1976.	
5	Laws relating to Industrial Relations: Trade Unions Act, 1926; Industrial Employment (Standing Orders) Act, 1946; Industrial Disputes Act, 1947.	6L
6	Laws relating to Social Security: The Employees' Compensation Act, 1923; The Employees' State Insurance Act, 1948; The Employees' Provident Funds and Miscellaneous Provisions Act, 1952; The Maternity Benefit Act, 1961; The Payment of Gratuity Act, 1972.	8L
7	Laws relating to Equal Opportunity and Workplace Discrimination: Protection of Human Rights Act, 1993, The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013.	2L
8	Case studies: Disputes on employment conditions.	4L

### 5. Suggested Readings:

#### **Text Book (TB)**

1. Labour Laws: Taxman Publications
2. Labour Law in Factories, Mines, Plantations etc.: Srivastava, S.C., Prentice Hall
3. Legal Aspects of Business: Pathak, A., Tata McGraw Hill

#### **Reference Book (RB):**

1. Labour Laws in India : Malik, P.L., Eastern Law House
2. Labour Laws – A Practical Guide to Manage Day to Day Labour Problem: Samant, S.R., Labour Law Agency, Mumbai
3. Labour Relations in India: Agarwal, S.L., McMillan

### 6. COURSE OUTCOMES

CO	Details/Statement	Action Verb	Knowledge Level
CO1	Understand the historical evolution and key provisions of major labour laws and labour codes in India.	Define, Outline, Illustrate	Understand
CO2	Interpret and apply relevant legal statutes to assess workplace practices and compliance issues.	Examine, Differentiate, Explain	Apply
CO3	Critically evaluate labour law cases and develop legally sound solutions to complex employment and industrial relations problems.	Assess, Evaluate, Formulate	Create

### 7. Mapping of course outcomes to module/course content

Module	CO1	CO2	CO3
1	1	-	-
2	1	-	-
3	-	2	-

4	-	2	-
5	-	2	-
6	-	2	-
7	-	2	-
8	-	-	3

**8. Mapping of the Course outcomes to Program Outcomes**

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
CO1	3	1	1	1	2	1	3
CO2	3	2	2	2	3	2	3
CO3	3	3	3	3	3	3	3

**Course Name: Performance Management**  
**Course Code: HR-304**  
**(Semester III)**  
**Category: Elective**  
**[4 Credits: 40 Hrs]**

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**1. Course Prerequisite:**

- Sound understanding of basic HRM principles and practices.
- Basic familiarity with payroll management and reward systems.

**2. Course Learning Objectives:**

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

- **Explain** the principles, processes, and legal-ethical considerations of performance management and its integration with strategic human resource management.
- **Analyze** various performance appraisal methods, coaching techniques, and organizational systems to assess and enhance individual and organizational performance.
- **Design** effective performance management frameworks, including goal-setting models, technology-enabled tools, and reward mechanisms aligned with contemporary workplace trends.

**3. Teaching methodology and evaluation system for the course:**

**Teaching methodology** – The course uses lectures, hands on practical sessions in software and case discussions, student presentations, and a comprehensive final examination to achieve the stated objectives.

**Evaluation System – Continuous Internal Assessment (Twice in a semester)**

CIA1 and CIA2 (**Total: 40 Marks each**)

- Class Test (Objective + Subjective): 25 Marks (Duration: 1 hour)
  - Assignment: 10 Marks
  - Attendance: 5 Marks
- End-Semester Exam (60 Marks)** - Summative Assessment.

**4. Course Content:**

**Course Name: Performance Management**  
**Course Code: HR 304**  
**Hours per Week: 4L**  
**Credits: 4**

<b>Module I</b>		
<b>1</b>	Introduction to Performance Management Concept, Scope, Objectives, Link with Strategic HRM, Performance Appraisal vs. Performance Management	4
<b>2</b>	Performance Planning and Goal Setting SMART Goals, KRAs, KPIs,	4

	Performance Contracts, Alignment with Organizational Goals	
3	Performance Monitoring and Coaching Continuous Feedback, Documentation, Role of Managers, Coaching Techniques	4
4	Performance Appraisal Methods Traditional and Modern Methods (MBO, 360-degree, BARS, Forced Distribution, etc.)	4
5	Legal and Ethical Issues in Performance Management Bias, Discrimination, Data Privacy, Ethics in Appraisal	4
<b>Module II</b>		
6	Linking Performance with Rewards Compensation, Incentives, Promotions, Career Planning, Pay-for-Performance	4
7	Managing Underperformance Causes, Counselling, Disciplinary Action, Legal Aspects	4
8	Organizational Performance Management Systems Balanced Scorecard, HR Scorecard, Benchmarking	4
9	Technology in Performance Management HRIS, PMS Software, AI Tools for Performance Analytics	4
10	Global Trends and Future Directions Gig Economy, Remote Work Challenges, Continuous Performance Management	4

### **Suggested Readings:**

#### **Textbooks**

1. Aguinis, H. (2019). Performance Management, 4th Edition, Pearson Education.
2. Armstrong, M. (2020). Armstrong's Handbook of Performance Management, Kogan Page.

#### **Reference Books**

3. Rao, T.V. (2016). Performance Management and Appraisal Systems, Sage Publications India.
4. Herman, A. (2021). Performance Management: Integrating Strategy Execution, Methodologies, Risk, and Analytics, Routledge.
5. Deb, T. (2009). Performance Appraisal and Management, Excel Books.

### **6. Course Outcomes**

<b>CO</b>	<b>Details/Statement</b>	<b>Action Verb</b>	<b>Knowledge Level</b>
<b>CO 1</b>	<b>Explain</b> the principles, processes, and legal-ethical considerations of performance management and its integration with strategic human resource management.	Comprehend Articulate, Interpret	Understand
<b>CO 2</b>	<b>Analyze</b> various performance appraisal	Examine, Compare,	Analyze

	methods, coaching techniques, and organizational systems to assess and enhance individual and organizational performance.	Contrast	
<b>CO 3</b>	<b>Design</b> effective performance management frameworks, including goal-setting models, technology-enabled tools, and reward mechanisms aligned with contemporary workplace trends.	Design, Develop, Conceptualize	Create

### 7. Mapping of course outcomes to module/ course content

Module	CO1	CO2	CO3
1	3	-	-
2	3	-	-
3	3	-	-
4	-	3	-
5	-	3	-
6	-	3	-
7	-	3	
8	-	3	
9	-	-	3
10	-	-	3

### 8. Mapping of the Course outcomes to Program Outcomes

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
CO1	3	3	3	3	3	3	3
CO2	3	3	3	2	2	2	3
CO3	3	3	3	1	1	2	3

**Course Name: Team Dynamics at Work**  
**Course Code: HR-305**  
**(Semester III)**  
**Category: Elective**  
**[4 Credits: 40 Hrs]**

1. **Course Prerequisite:**

- Sound understanding of the basics of organizational behaviour required.
- Elementary familiarity with the principles of social psychology is desirable.

2. **Course Learning Objectives:**

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

- **Explain** the foundational concepts of teams and teamwork, including team types, development stages, communication dynamics, and the role of leadership in organizational settings.
- **Analyze** the factors influencing team effectiveness, such as conflict resolution styles, power dynamics, motivation strategies, and performance measurement tools.
- **Design** collaborative and innovative team environments by applying principles of team formation, communication, decision-making, and adaptability to emerging trends like remote and cross-functional teamwork.

3. **Teaching methodology and evaluation system for the course:**

**Teaching methodology** – The course uses lectures, hands on practical sessions in software and case discussions, student presentations, and a comprehensive final examination to achieve the stated objectives.

**Evaluation System – Continuous Internal Assessment (Twice in a semester)**

CIA1 and CIA2 **(Total: 40 Marks each)**

- Class Test (Objective + Subjective): 25 Marks (Duration: 1 hour)
  - Assignment: 10 Marks
  - Attendance: 5 Marks
- End-Semester Exam (60 Marks)** - Summative Assessment.

4. **Course Content:**

**Course Name: Team Dynamics at Work**

**Course Code: HR 305**

**Hours per Week: 4L**

**Credits: 4**

<b>Module I</b>		
<b>1</b>	Understanding Teams and Teamwork Definitions, Importance, Types of Teams, Team vs. Group, Role of Teams in Organizations	4
<b>2</b>	Team Development and Formation Stages of Team Development	4

	(Tuckman Model), Team Roles, Diversity in Teams	
3	Team Communication and Collaboration Barriers to Communication, Effective Communication in Teams, Virtual Team Collaboration	4
4	Team Leadership and Decision Making Leadership Styles in Teams, Participative Decision Making, Conflict Resolution	4
5	Motivation and Engagement in Teams Motivational Theories, Team Incentives, Engagement Strategies	4
<b>Module II</b>		
6	Power, Politics, and Influence in Teams Sources of Power, Managing Team Politics, Building Influence	4
7	Managing Conflicts in Teams Types of Conflict, Conflict Management Styles, Role of Negotiation	4
8	Creativity and Innovation in Teams, Team-based Innovation, Brainstorming Techniques, Design Thinking	4
9	Team Performance Measurement, Team KPIs, Assessment Tools, Feedback Mechanisms	4
10	Trends and Challenges in Team Dynamics, Remote Teams, Cross-functional Teams, Future of Teamwork	4

### 5. Suggested Readings:

#### **Textbooks**

1. Robbins, S. P., & Judge, T. A. (2019). Organizational Behavior, 18th Edition, Pearson Education.
2. Levi, D. (2016). Group Dynamics for Teams, 5th Edition, Sage Publications.

#### **Reference Books**

3. Katzenbach, J. R., & Smith, D. K. (2003). The Wisdom of Teams, Harper Business.
4. Lencioni, P. (2002). The Five Dysfunctions of a Team, Jossey-Bass.
5. West, M. A. (2012). Effective Teamwork: Practical Lessons from Organizational Research, 3rd Edition, Wiley-Blackwell.

### 6. Course Outcomes

CO	Details/Statement	Action Verb	Knowledge Level
CO 1	<b>Explain</b> the foundational concepts of teams and teamwork, including team	Comprehend Articulate, Interpret	Understand

	types, development stages, communication dynamics, and the role of leadership in organizational settings.		
<b>CO 2</b>	<b>Analyze</b> the factors influencing team effectiveness, such as conflict resolution styles, power dynamics, motivation strategies, and performance measurement tools.	Examine, Compare, Contrast	Analyze
<b>CO 3</b>	<b>Design</b> collaborative and innovative team environments by applying principles of team formation, communication, decision-making, and adaptability to emerging trends like remote and cross-functional teamwork.	Design, Develop, Conceptualize	Create

### 7. Mapping of course outcomes to module/ course content

Module	CO1	CO2	CO3
1	3	-	-
2	3	-	-
3	3	-	-
4	-	3	-
5	-	3	-
6	-	3	-
7	-	3	
8	-	3	
9	-	-	3
10	-	-	3

### 8. Mapping of the Course outcomes to Program Outcomes

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
CO1	3	3	3	3	3	3	3
CO2	3	3	3	2	2	2	3
CO3	3	3	3	1	1	2	3

**Course Name: Security Analysis And Investment Management**  
**Course Code: FM-301**  
**(Semester III)**  
**Category: Electives**  
**[4 Credits: 40 Hrs]**

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**1. Course Prerequisite:**

- Basic knowledge of Financial Management and Financial Accounting
- Familiarity with fundamental economic concepts like interest rates, inflation, and risk.
- Understanding of quantitative methods and basic statistics is recommended.

**2. Course Learning Objectives:**

- To understand the various investment avenues, their features, and the associated risks and returns.
- To develop the ability to construct and manage investment portfolios aligned with investor objectives and market conditions

**3. Teaching methodology and evaluation system for the course:**

**Teaching methodology**–Lectures and Presentations, Interactive Discussions and Case Studies, Guest Lectures.

**Evaluation System– Continuous Internal Assessment (Twice in a semester)**

CIA1 and CIA2 (Total: 40 Marks each)

- Class Test (Objective + Subjective): 25 Marks (Duration: 1 hour)
- Assignment: 10 Marks
- Attendance: 5 Marks
- End-Semester Exam (60 Marks)-Summative Assessment.

**4. Course Content:**

**Course Name: Security Analysis and Investment Management**

**Course Code: FM 301**

**Hours per Week: 4L Credits: 4**

Sr.No	Topics	No of Lectures
1	<b>Investment Alternatives and Objectives:</b> Introduction to various investment options and objectives, focusing on their risk-return profiles and suitability for different investor needs.	2L
2	<b>Risk and Return:</b> Definition of Risk and Return- Different types of Risk measurement of Risk and Return of single security - Beta of Security	4L
3	<b>CAPM Model:</b> Idea and interpretation - SML and CML. Analysis and interpretation- Usefulness	3L

4	<b>Security Analysis:</b> Concept of Security- Fundamental and Technical Analysis, Economic Analysis, Company Analysis, Industry Analysis, Difference between Fundamental and Technical Analysis - support and resistance. Charts and graphs - line chart - Candlestick Chart - various patterns) - Dow Theory - Elliot Wave Theory	6L
5	<b>Security Valuation:</b> Valuation of Bond - YTM and its calculation- Duration of Bond- Concept of Immunization- Valuation of Shares	4L
6	<b>Portfolio Concept:</b> Concept of portfolio, Brief idea on Portfolio Management, measurement of Portfolio risk and return,	4L
7	<b>Portfolio Theory:</b> Markowitz Portfolio theory - Efficient Frontier and selection of Optimum Portfolio, Basics of EMH, Sharp Single Index Model - Arbitrage pricing theory and Multi-Factor Theory.	7L
8	<b>Equity Portfolio Management:</b> Overview and Strategies, Passive and Active Management	3L
9	<b>Bond Portfolio Management Strategies - Overview and Strategies, Passive and Active Management</b>	3L
10	<b>Mutual fund and performance Evaluation:</b> Concept of Mutual fund, trend of Mutual Fund in India, measuring performance of mutual fund, Sharpe's ratio, Treynor's ratio, alpha ratio, and beta	4L

### 5. Suggested readings:

1. Fischer and Jordon, Security Analysis and Portfolio Management, Prentice Hall.
2. Kevin, S, Security Analysis and Portfolio Management, Prentice Hall
3. Copeland, Weston & Shastri, Multinational Financial Analysis, Pearson
4. Nagarajan & Jayabal, Security analysis and portfolio management, New Age International
5. Avadhani, V.A., Security Analysis and Portfolio Management, Himalaya Publishing
6. Bhalla. B.K. Investment Management, S Chand Publication
7. Tripathi, V., Security Analysis and Portfolio Management Text and Cases, Taxmann's

### 6. Course Outcomes:

Course Outcomes	Details/Statement	Action Verb	Knowledge Level
CO 1	Ability to understand the fundamental concepts of risk, return, security valuation, and investment alternatives to explain their relevance in financial decision-making.	Explain	Understand
CO 2	Ability to analyze financial data and market trends using tools such as technical and fundamental analysis, CAPM, and portfolio theories to assess investment performance.	Illustrate	Analyze
CO 3	Ability to create an optimal investment portfolio by integrating risk-return analysis, valuation techniques, and portfolio management strategies.	Solve	Create

### 7. Mapping of course outcomes to module /course content/topic

Chapter No.	CO1	CO2	CO3
1	1		
2	2	1	
3		1	
4	3	2	

5		2	3
6		2	1
7		1	3
8			2
9			3
10	1		2

### 8. Mapping of the Course out comes to Program Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	2	3	2	2	2	1
CO2	3	2	2	2	3	2	2
CO3	3	3	3	2	3	2	2

**Course Name: Taxation**

**Course Code: FM-302  
(Semester III)**

**Category: Elective  
[4 Credits: 40 Hrs]**

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**1. Course Prerequisite:**

Basic understanding of core commerce and finance subjects. This includes fundamental knowledge of income, expenditure, profit, and structure of financial statements as well as a general awareness of business law and economics.

- 2. Course Learning Objectives:** After completion of this course, the learners will be able to
- i. **Understand the fundamental principles and structure of the taxation system** in the country, including both **Direct and Indirect Taxes** (e.g., Income Tax, GST).
  - ii. **Interpret and apply key provisions of tax laws** related to individual and corporate taxation, deductions, exemptions, and compliance procedures.
  - iii. **Compute tax liability** for individuals, firms, and companies in accordance with current tax regulations.
  - iv. **Analyze the impact of taxation on business decisions**, financial planning, and organizational strategy.

**3. Teaching methodology and evaluation system for the course:**

**Teaching methodology**–Lectures and Presentations, Interactive Discussions and Case Studies, Guest Lectures.

**Evaluation System– Continuous Internal Assessment (Twice in a semester)**  
CIA1 and CIA2 (Total: 40 Marks each)

- Class Test (Objective + Subjective): 25 Marks (Duration: 1 hour)
- Assignment: 10 Marks
- Attendance: 5 Marks
- **End-Semester Exam (60 Marks)**-Summative Assessment.

**4. Course Content:**

**Course Name: Taxation**

Course Code: FM 302

Hours per Week: 4L Credits: 4

Sr.No	Topics	Lec
1	<b>Basic concepts:</b> Meaning and classification, Income Tax and its basic terms like Income, Assesses, Assessment year, Previous year, Residential Status, Incidence of Tax, Rate of tax, Permanent Account Number, Heads of Income	3L
2	<b>Residential Status and Tax Incidence:</b> Individual and Corporate	4L
3	<b>Exempted Income Under Section 10</b>	2L
4	<b>Heads of income:</b> Salaries, Income from House Property, Profits and Gains from Business or Profession, Capital Gains, Income from Other sources	10L
5	<b>Miscellaneous Provisions:</b> Clubbing of Income, set off and carry forward of losses,	2L
6	<b>Deduction from gross total income:</b> 80CCC,80D, 80DDB, 80E, 80G, 80GG, 80GGA, 80C and 80	4L
7	<b>Computation of Tax Liability and Filing of Return:</b> Assessment procedure-Self assessment; Advance tax; Tax deduction at source; Tax collection at source ; Minimum Alternative Tax	3L
8	<b>Tax Planning:</b> Scheme of Tax Planning, Tax Planning for Salaries, Tax Planning for Profits and gains of Business or Profession, Tax Planning for Capital Gains Tax Planning, Case Studies	3L
9	<b>Customs Act and Valuation; Levy and Exemption:</b> Basic Concepts only	2L
10	<b>Goods and Service Tax:</b> GST in India, Features and Advantages, Structure of GST in India: CGST, SGST, UTGST, IGST, Taxes subsumed by GST, Commodities kept outside the scope of GST. Procedure for Registration; Deemed Registration, Cancellation of Registration, Revocation of Cancellation of Registration. Levy and Collection of Tax under GST:16 Rates structure of GST, Scope of supply, Composition Scheme under GST	7L

### 5. Suggested Reading:

1. Lal and Vasisht, Direct Taxes, Pearson Education
2. Singahnia, Direct Taxes,Taxman
3. Singhanian, Indirect Taxes,Taxman
4. Bhagawati Prasad,Direct tax law and Practice.
5. Gaurand Narang,Income Tax law and Practices, Kalyani Publisher
6. T. B. Chatterjee and V. Jalan, How to handle - GST-TDS and GST-TCS, GST audit, GSTAnnual Return,Book Corporation
7. V.Balachandran:Indirecttaxation:GoodsandServiceTaxandCustomsLaw,Sultan Chand& Sons
8. Systematic Approach to Direct Taxation, Containing Income Tax & International Taxation, Dr. Girish Ahuja, Dr. Ravi Gupta, Wolters Kluwer Private Limited.

## 6. Course Outcomes:

Course Outcomes	Details/Statement	Action Verb	Knowledge Level
<b>CO 1</b>	Demonstrate a clear understanding of the fundamental concepts and structure of direct and indirect taxation in India.	Describe	Understand
<b>CO 2</b>	Accurately compute tax liabilities of individuals, firms, and companies under prevailing tax laws.	Compute and Apply, Analyze	Apply
<b>CO 3</b>	Apply relevant tax provisions to various real-world scenarios in business and personal finance contexts.	Prepare, Apply, Analysis	Apply
<b>CO 4</b>	Analyze the implications of tax laws on business decisions, financial planning, and investment strategies.	Analysis, Evaluation	Apply

## 7. Mapping of course outcomes to module /course content/topic

Sr.No.	CO1	CO2	CO3	CO4
1	1			
2	2			
3		3		
4		2		
5		2		
6			3	
7			2	
8			1	
9				1
10				2

## 8. Mapping of the Course outcomes to Program Outcomes

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7
<b>CO1</b>	1	1	1	1	2	1	3
<b>CO2</b>	1	2	2	3	2	2	1
<b>CO3</b>	3	3	3	3	3	3	3
<b>CO4</b>	2	1	1	3	1	2	1

**Course Name: Financial Analytics and Modelling**  
**Course Code: FM-303**  
**(Semester III)**  
**Category: Electives**  
**[4 Credits: 40 Hrs]**

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**1. Course Prerequisite:**

- Basic knowledge of Financial Management.
- Familiarity with basic Microsoft Excel.
- Understanding of quantitative methods and basic statistics is recommended.

**2. Course Learning Objectives:**

- To analyze the payoff structures and pricing of forwards, futures, options, and swaps.
- To evaluate the use of derivatives in hedging, speculation, and arbitrage.
- To understand the clearing, settlement, and margin systems in derivative markets.

**3. Teaching methodology and evaluation system for the course:**

**Teaching methodology**–Lectures and Presentations, Interactive Discussions and Case Studies, Guest Lectures.

**Evaluation System– Continuous Internal Assessment (Twice in a semester)**

CIA1 and CIA2 (Total: 40 Marks each)

- Class Test (Objective + Subjective): 25 Marks (Duration: 1 hour)
- Assignment: 10 Marks
- Attendance: 5 Marks
- End-Semester Exam (60 Marks)-Summative Assessment.

**4. Course Content:**

**Course Name: Financial Analytics and Modelling**

**Course Code: FM 303**

**Hours per Week: 4L Credits: 4**

Sr.No	Topics	No of Lectures
1	<b>Introduction to Financial Modelling:</b> Introduction, Basics of Financial Modelling, Functions, Nature, Applications of Financial Modelling, Uses of Financial Models.	2L
2	<b>Excel for Financial Modelling:</b> Formatting of Excel Sheets, Use of Excel Formula Function, Charts and Graphs, Table formula and Scenario building, Logical and Lookup (Vlookup, Match), Pivot Tables.	3L
3	<b>Introduction to Financial Statements:</b> Understanding Income Statement, Balance Sheet, Cash Flow Statement, and Financial Reporting Mechanics	3L
4	<b>Financial Statements Analysis:</b> Financial Analysis Techniques, Inventories, Long Lived Assets, Non-Current Liabilities, Financial Statement Application	3L

5	<b>Ratio Analysis:</b> Ratio analysis of Industries, Du point Analysis, Peer to peer analysis, Preparation of Financial Analysis report on an industry	5L
6	<b>Financing Decision:</b> Time value of money, Long term financing, Cost of capital, Measure of Leverage, Project Finance, Project evaluation, stage of project, construction & development phase, funding during investment phase, Life of project, and Decision making	7L
7	<b>Equity Research Modelling:</b> Concepts of Equity, Analyzing and Forecasting Revenue and Costs, Project Future Financial Statements, Performa Adjustments, Compute Margins/Ratios, Valuation- Discounted Cash Flow Method (DCF)	4L
8	<b>Advanced Modelling &amp; Real-World Applications:</b> Leveraged Buyout (LBO) model (overview), Merger & Acquisition (M&A) model (basic), Sector-specific models (banking, real estate, manufacturing), ESG considerations in modelling	4L
9	<b>Introduction to Financial Analytics:</b> Definition, relevance, and scope of Financial Analytics, recent trends in financial analytics	2L
10	<b>Techniques of Financial Data Analysis and Forecasting:</b> Types of Data, Cross-sectional Data, Panel Data, Time series analysis, Classical Linear Regression Model, Financial Functions: PV, NPV, IRR, Sensitivity Analysis and Simulation Analysis, etc.	7L

## 5. Suggested Readings:

1. Financial valuation and modelling by Sheeba Kapil, Wiley
2. Mastering Financial Modeling in Microsoft Excel by Alastair L. Day, Pearson India
3. Financial Analytics by Pitabas Mohanty, Wiley
4. Financial Modelling by Simon Benninga
5. Financial Modelling by Paul Pignataro

## 6. Course Outcomes:

Course Outcomes	Details/Statement	Action Verb	Knowledge Level
CO 1	Ability to understand the structure, purpose, and applications of financial models used in corporate finance and investment decision-making.	Explain	Understand
CO 2	Ability to analyze and evaluate financial statements, ratios, and project financing techniques to support strategic business decisions.	Illustrate	Analyze
CO 3	Ability to create dynamic, Excel-based financial models including forecasting, valuation (DCF), and scenario analysis for real-world business cases.	Solve	Create

## 7. Mapping of course outcomes to module /course content/topic

Sr.No.	CO1	CO2	CO3
1	1		
2	1	2	3
3	2	1	
4	2	1	2
5		2	2
6		2	2

7		2	3
8			3
9	2		2
10		2	3

#### 8. Mapping of the Course outcomes to Program Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	1	2	2	1	1	1	1
CO2	1	3	2	1	1	1	2
CO3	2	3	3	2	2	1	3

**Course Name: Indian Financial System**

**Course Code: FM-304**

**(Semester III)**

**Category: Electives**

**[4 Credits: 40 Hrs]**

**1. Course Prerequisite:**

Basic understanding of economics, commerce and accounting subjects. This includes fundamental knowledge of banks, finance, primary market and secondary market, and economic principles as well as a general awareness of business law and macroeconomics.

**2. Course Learning Objectives:** After completion of this course, the learners will be able to

- i. Understand the key components of the Indian financial system, including financial institutions, financial markets, financial instruments, and financial services.
- ii. To evaluate the role of various financial intermediaries in the economy such as banks, non-banking financial companies (NBFCs), insurance companies, and mutual funds.
- iii. To understand the operation of stock exchanges like the **BSE** (Bombay Stock Exchange) and **NSE** (National Stock Exchange) and the role of market participants (brokers, investors, etc.)
- iv. To analyze different types of financial instruments available in the Indian market, such as equity shares, bonds, derivatives (futures and options), and government securities.
- v. To evaluate the features, risks, and returns associated with various financial instruments.

**3. Teaching methodology and evaluation system for the course:**

**Teaching methodology**–Lectures and Presentations, Interactive Discussions and Case Studies, Guest Lectures.

**Evaluation System– Continuous Internal Assessment (Twice in a semester)**

CIA1 and CIA2 (Total: 40 Marks each)

- Class Test (Objective + Subjective): 25 Marks (Duration: 1 hour)
- Assignment: 10 Marks
- Attendance: 5 Marks
- **End-Semester Exam (60 Marks)**-Summative Assessment.

**4. Course Content:**

**Course Name: Indian Financial System**

Course Code: FM 304

Hours per Week: 4L Credits: 4

Sr.No.	Topics	Lec.
1	<b>Indian Financial System</b> :Financial system, Financial Assets, Financial Intermediaries, Financial Markets, Classification, Components of Financial Market, Financial Instruments, Multiplicity of Financial Instruments	4L
2	<b>Money Market:</b> Definition, Money Market and Capital Market and their Features, Objectives, Features of a Developed Money Market, Importance of Money Market, Composition of Money Market, Money Market Instruments, Structure of Indian Money Market, Features of Indian Money Market.	4L
3	<b>New Issue Market:</b> Relationship between New Issues Market and Stock Exchange, Functions of New Issue Market, methods of floating of new Issues, Players in the New Issue Market, general guide lines for new issue.	4L

4	<b>Secondary Market :</b> Introduction, Control Over Secondary Market, Registration of Stock Brokers, Registration Procedure, Listing of securities, Method of Trading in a Stock Exchange, settlement procedure, online trading, defects of Indian capital markets, Depository services, Emergence of NSE, Objectives, Features of NSE Comparative analysis of BSE & NSE functioning.	4L
5	<b>Commodity Market:</b> Introduction, Commodity Market in India, Commodity Exchanges	2L
6	<b>Securities and Exchange Board of India:</b> SEBI–Background, Objectives, Functions, Powers, Organization, SEBI and the Central Government, SEBI Guidelines for Primary Market, Secondary Market.	2L
7	<b>Mutual Funds:</b> Concept - Types - Nature – NAV& SIP – Trends in Indian Mutual Fund Market –SEBI & Mutual Fund, Role of AMFI.	2L
8	<b>Merchant Banking:</b> Concept -Types -Functions - Trends in Merchant Banking in India -SEBI & Merchant Banking, features, scope and importance of venture capital, Nitin Desai committee on venture capital, Angel investment.	4L
9	<b>Leasing &amp; Hire Purchase Finance:</b> Definition of Leasing, Types of Lease, The Leasing Process, Definition of Hire Purchase, Rights of Hirer, Rate of Interest, and Evaluation of Leasing & Hire Purchase as method of financing, Case studies	6L
10	<b>Financial Services:</b> Discounting, Factoring – meaning, Types, cost and benefits, Factoring v/s discounting; Forfeiting – working of forfeiting, benefits. Securitisation of Debt - Types of securities, structure and benefits of securitization, securitization v/s factoring.	4L
11	<b>Credit Rating Agencies:</b> Concept - Functions - Different Credit Rating Agencies – Popular Symbols–SEBI & Credit Rating	4L

## 5. Suggested Readings:

1. Fabozzi: Financial Markets & Institutions, Pearson
2. Guruswamy: Financial services and Markets, Thomson Learning
3. Khan: Indian Financial Systems, TataMcGraw-Hill
4. Gordon Natarajan, Financial Markets and Services, Himalaya Publishing
5. Pathak: Indian Financial System, Pearson
6. L. M. Bhole, Jitendra Mahakund, Financial Institutions & Markets–Structure, Growth & Innovation; TataMc GrawHill

## 6. Course Outcomes:

Course Outcomes	Details/Statement	Action Verb	Knowledge Level
CO 1	Able to explain the various components of the Indian financial system, including: Financial markets (money, capital, Financial institutions)	Describe	Remembering and Understand
CO 2	Able to identify various financial institutions (banks, insurance companies, mutual funds, etc.) Financial instruments (stocks, bonds, derivatives, etc.), the role of Regulatory bodies (RBI, SEBI, IRDAI, etc.)	Understand, Apply, Analyze	Apply
CO 3	Understand the significance of capital markets, stock exchanges (NSE, BSE), and their role in raising funds.	Prepare, Apply	Apply

<b>CO 4</b>	Analyze financial instruments like government securities, corporate bonds, and stocks, and understand their pricing mechanisms	Evaluation	Apply
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**7. Mapping of course out comes to module/course content/topic**

Sr.No.	CO1	CO2	CO3	CO4
1	1			
2	2			
3	1			
4		3		
5		2		
6		2	3	
7			2	
8			1	
9				2
10				3
11				1

**8. Mapping of the Course out comes to Program Outcomes**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7
<b>CO1</b>	1	2	1	2	1	2	3
<b>CO2</b>	2	3	1	2	1	3	1
<b>CO3</b>	2	1	3	2	2	1	3
<b>CO4</b>	2	2	1	3	1	2	1

**Course Name: Banking and Insurance Management**

**Course Code: FM-305**

**(Semester I)**

**Category: Elective**

**[4 Credits: 40 Hrs]**

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**1. Course Prerequisite:**

A good understanding of basic finance concepts (such as financial statements, time value of money, capital budgeting, etc.) is essential. Students should be familiar with balance sheets, income statements, and cash flow statements.

**2. Course Learning Objectives:** After completion of this course, the learners will be able to

- i. Develop a strong understanding of the banking system, including the role of central banks, commercial banks, and other financial institutions in the economy
- ii. Understand the functions of financial institutions such as funding, lending, payment systems, and risk management.
- iii. Understand how insurance products (life, non-life, health, etc.) are used to mitigate risk for individuals, businesses, and institutions.
- iv. Understand the legal frameworks that govern both banking and insurance, including relevant regulatory bodies (e.g., RBI, SEBI, and IRDAI) and international standards.
- v. Learn about various types of financial risks such as credit risk, market risk, liquidity risk, operational risk, and insurance risk.

**3. Teaching methodology and evaluation system for the course:**

**Teaching methodology**–Lectures and Presentations, Interactive Discussions and Case Studies, Guest Lectures.

**Evaluation System– Continuous Internal Assessment (Twice in a semester)**

CIA1 and CIA2 (Total: 40 Marks each)

- Class Test (Objective + Subjective): 25 Marks (Duration: 1 hour)
- Assignment: 10 Marks
- Attendance: 5 Marks
- **End-Semester Exam (60 Marks)**-Summative Assessment.

**4. Course Content:**

**Course Name: Banking and Insurance Management**

Course Code: FM 305

Hours per Week: 4L Credits: 4

**SEMESTER III**  
**FM 305 Banking and Insurance Management**  
**(4 credit: 40 Hours)**

Sr.No.	Topics	Lec.
1	<b>Introduction to banks :</b> Scheduled and non-scheduled banks – Origin & Development- Evolution and growth of banking system in India – Present Structure -Recommendations of Narasimham Committee –Challenges before Indian commercial banks – Opportunities for Indian commercial banks – Strengths and weaknesses of Indian commercial banks – Banking sector reforms	3L
2	<b>Asset Liability Management and Non-Performing Assets:</b> Concept of ALM – Objectives – Functions – Process – Measurement and Management of Risks, Concept of NPAs, NPAs in Indian commercial banks, Causes, Suggestions and steps for containing NPAs, Prudential norms	3L
3	<b>Capital Adequacy in Banks-</b> Functions of capital funds in commercial banks– Capital adequacy – Basle norms on capital adequacy – Capital adequacy norms in Indian commercial banks – Present position of capital adequacy in Indian commercial banks	4L
4	<b>Credit Management</b> - Cardinal principles of sound bank lending –Formulating loan policy – Factors influencing loan policy – Contents of loan policy –Evaluating credit applicant – Loan supervision.	4L
5	<b>Banking Related Laws:</b> Limitation Act 1963, Bankers’ Book Evidence Act 1891, Lenders Liability Act, Banking Ombudsman, SARFAESI Act 2002, Lok Adalats, Recovery of debtors due to banks and financial Institutions Act ,1993 (DRT Act).	5L
6	<b>Introduction to Insurance:</b> Understanding Risk – Kinds of Risk; Need and Scope of Insurance; basic principles of insurance; essentials of insurance contracts, types of Insurance; understanding the risk and return relationship and the role of insurance; concept of indemnity.	5L
7	<b>Life Insurance:</b> Life Insurance: Meaning, evolution and growth of Life Insurance in India, principles of life insurance; Life Insurance Organisation in India, types of Life Insurance Policies- Term, Whole life, endowment, unit linked pension plan, and with or without profit policy. Health Insurance: Meaning, Need and Benefits	6L
8	<b>General Commercial Insurance:</b> General Insurance: Meaning, Nature and Importance of General Insurance. Types: Fire, Motor, Agriculture and Marine with their specific features, functions and purpose.	4L
9	<b>Insurance Documents:</b> Insurance Documents: Proposal Forms, other forms like Premium Receipt, Policy Contract, Renewal Premium Receipt; Other insurance documents.	2L
10	<b>Computation of Premiums/ Bonus:</b> Premium Calculation – including rebates, mode of rebate, large sum assured policies rebate: Extra premium, under premiums, computation of benefits, Surrender value and paid up value	4L

**5. Suggested reading**

1. Agarwal, OP, Banking & Insurance, Himalaya Publishing House, Mumbai
2. George E Rejda, Principles of Risk Management & Insurance, Pearson Education, New Delhi
3. Balachandran S., General Insurance, Insurance Institute of India, Mumbai
4. Arthur C., William Jr., Michael Smith, Peter Young, Risk Management and Insurance, Tata McGraw Hill Publishing Company, New Delhi
5. TripathyNaliniPrava&Prabir Pal, Insurance Theory & Practice, Prentice Hall of India Pvt. Ltd., New Delhi
6. Balachandran S., Life Insurance, Insurance Institute of India, Mumbai
7. George E. Rejda, Principles of risk management and Insurance, Pearson: Delhi.
8. Harrington. Niehaus, Risk management and Insurance management RISK, McGraw Hill: New York.
9. P.K. Gupta, Insurance and Risk Management, Himalaya Publishing House: Mumbai.

10. Kanika Mishra, Fundamentals of Life Insurance: Theories and Applications, Prentice Hall
11. M.N. Mishra, Principles and Practices of Insurance, S. Chand and Sons
12. Radhaswamy N. Vinayakam and SV Vasudevan, Insurance Principles and Practice, S. Chand & Co., New Delhi

#### 6. Course Outcomes:

Course Outcomes	Details/Statement	Action Verb	Knowledge Level
CO 1	Identify and explain the structure, functions, and operations of various types of financial institutions, including central banks, commercial banks, investment banks, and non-banking financial companies (NBFCs)	Understand, Summarize	Remembering and Understand
CO 2	Analyze the role of banking in economic development and monetary policy, market risk, liquidity risk. Able to understand Assets and liability of banks.	Understand, Analyze	Interpret
CO 3	Analyze and assess the functioning of different types of insurance policies, including life insurance, health insurance, property insurance	Prepare	Use
CO 4	Able to recommend insurance solutions for individuals and businesses, taking into account risk factors, regulatory considerations, and financial objectives	Evaluation	Apply

#### 7. Mapping of course out comes to module/course content/topic

Sr.No.	CO1	CO2	CO3	CO4
1	2			
2	3			
3	3			
4		3		
5		2		
6		2	2	
7			2	
8			3	
9				2
10				3

#### 8. Mapping of the Course out comes to Program Outcomes

	PO 1	PO 2	PO 3	PO 4	PO5	PO 6	PO7
CO1	1	2	2	1	2	3	3
CO2	3	2	1	3	2	2	2
CO3	3	2	3	2	2	1	3
CO4	1	3	1	3	1	3	1

**Course Name: Statistics for Business Analytics**  
**Course Code: BA-301**  
**(Semester III)**  
**Category: Elective**  
**[4 Credits: 40 Hrs]**

.....  
**1. Course Prerequisite:**

- Familiarity with Basic Mathematical Skills
- Introductory Concepts in Probability
- Graphical and Visual Interpretation Skills
- Foundational Understanding of Data Types

**2. Course Learning Objectives:**

By the end of the course, students will:

- Develop a deep **understanding** of statistical methods and their applications in business analytics.
- **Apply** probability distributions and inferential statistics to solve real-world business problems.
- **Perform** advanced hypothesis testing, regression analysis, and time-series forecasting for strategic decision-making.
- **Analyze** business datasets using statistical methods for predictive modelling and risk assessment.

**3. Teaching methodology and evaluation system for the course:**

**Teaching methodology** – The course uses lectures and case discussions, student presentations, and a comprehensive final examination to achieve these objectives.

**Evaluation System – Continuous Internal Assessment (Twice in a semester)**  
 CIA1 and CIA2 (Total: 40 Marks each)

- Class Test (Objective + Subjective): 25 Marks (Duration: 1 hour)
- Assignment: 10 Marks
- Attendance: 5 Marks

**End-Semester Exam (60 Marks)**- Summative Assessment.

**4. Course Content:**

**Course Name: Advanced AI in Business**

**Course Code: BA 404**

**Hours per Week: 4L**

**Credits: 4**

Sl. No.	Topic	No of Lectures
1	<b>Foundations of Business Statistics:</b> Statistics its importance and applications in Business decision-making. Data Classification and Types: Structured vs. unstructured data; qualitative vs. quantitative data. Scales	3L

	of Measurement: Nominal, ordinal, interval, and ratio scales. Exploratory Data Analysis (EDA): Identifying patterns and anomalies in data. Graphical Representation of Data: Histograms, box plots, scatter plots, and pie charts.	
2	<b>Descriptive Statistical Measures:</b> Measures of Central Tendency (Empirical and positional): Mean (arithmetic, geometric, harmonic), median, mode. Measures of Dispersion: Range, variance, standard deviation, coefficient of variation. Moments, Skewness, and Kurtosis: Understanding the shape of data distributions. Percentiles, Quartiles, and Deciles: Application in business analytics	2L
3	<b>Probability Theory and Distributions:</b> Basic Probability Concepts: Classical, empirical, and subjective probability, Rules of Probability: Addition and multiplication rules, conditional probability, Bayes' Theorem: Applications in risk assessment and decision-making, Random Variables and Expectation: Discrete and continuous variables, expected value calculation, Probability Distributions: Binomial, Poisson, Normal, Exponential, and their business applications.	5L
4	<b>Sampling Theory and Estimation:</b> Concept of Population and Sample: Census vs. sample studies, Sampling Techniques: Simple random, stratified, systematic, and cluster sampling, Sampling Distribution of the Mean and Proportion: Law of large numbers and Central Limit Theorem, Point and Interval Estimation: Confidence intervals for means and proportions, Determining Sample Size: Applications in business research.	4L
5	<b>Hypothesis Testing and Inference:</b> Concept of Hypothesis Testing: Null and alternative hypotheses, significance level, Errors in Hypothesis Testing: Type I and Type II errors, Parametric Tests: One-sample and two-sample t-tests, Paired sample t-test, Z-test for population means and proportions, Analysis of Variance (ANOVA): One-way and two-way ANOVA. P-Value and Decision Making: Role in hypothesis testing.	5L
6	<b>Correlation and Regression Analysis:</b> Correlation Analysis: Pearson's and Spearman's correlation coefficients, interpretation, Simple Linear Regression: Model building, assumptions, and interpretation, Multiple Linear Regression: Estimating and evaluating models, coefficient significance testing, Multicollinearity and Autocorrelation: Causes, detection, and remedies, Application in Business Forecasting: Demand and sales prediction.	5L
7	<b>Non-Parametric Statistical Methods:</b> Need for Non-Parametric Methods, Chi-Square Test: Test for independence and goodness-of-fit, Mann-Whitney U Test: Comparing two independent samples, Kruskal-Wallis Test, Wilcoxon Signed-Rank Test.	4L
8	<b>Time Series Analysis and Forecasting :</b> Components of Time Series: Trend, seasonality, cyclical, and irregular variations, Moving Average Method: Simple and weighted moving averages, Exponential Smoothing Techniques: Single, double, and Holt-Winters smoothing, Decomposition of Time Series: Additive and multiplicative models, Introduction to ARIMA Models: Application in business forecasting	4L
9	<b>Decision Theory and Business Analytics:</b> Statistical Decision Making: Expected monetary value (EMV) approach, Decision Trees: Construction and application in risk analysis, Bayesian Decision Analysis: Decision-making under uncertainty, Sensitivity Analysis: Evaluating model robustness, Optimization Methods in Business Analytics: Introduction to	4L

	linear and integer programming.	
10	<b>Advanced Statistical Methods in Business Analytics:</b> Introduction to Predictive Analytics: Understanding predictive modelling, Principal Component Analysis (PCA): Dimensionality reduction in business data, Cluster Analysis: Hierarchical and k-means clustering for market segmentation, Outlier Detection and Anomaly Analysis: Business fraud detection techniques, Introduction to Statistical Machine Learning: Basics of supervised and unsupervised learning.	4L

## 5. Suggested Readings:

1. Business Statistics, J.K. Sharma, Vikas Publishing House, 2019
2. Fundamentals of Business Statistics, S.C. Gupta, Indra Gupta, Himalaya Publishing House, 2013
3. Business Analytics: The Science of Data-Driven Decision Making, U. Dinesh Kumar, Wiley India
4. Statistical Methods, S.P. Gupta, Sultan Chand & Sons, 2021
5. Statistics for Management, Richard I. Levin, David S. Rubin, Sanjay Rastogi, Pearson India.

## 6. Course Outcomes:

Course Outcomes	Details/Statement	Action Verb	Knowledge Level
CO 1	Develop a deep <b>understanding</b> of statistical methods and their applications in business analytics.	Discuss, Determine, Examine	Understand
CO 2	<b>Apply</b> probability distributions and inferential statistics to solve real-world business problems.	Demonstrate, Use, Implement	Apply
CO 3	<b>Perform</b> advanced hypothesis testing, regression analysis, and time-series forecasting for strategic decision-making.	Demonstrate, Use, Implement	Apply
CO 4	<b>Analyze</b> business datasets using statistical methods for predictive modelling and risk assessment.	Examine, Compare, Contrast	Analyze

## 7. Mapping of course outcomes to module / course content

Module	CO1	CO2	CO3	CO4
1	3	-	-	

2	3	-	-	
3	3	-	-	
4	-	3	-	
5	-	3	-	
6	-	3	-	
7	-	-	3	
8	-	-	3	3
9	-	-	-	3
10	-	-	-	3

**8. Mapping of the Course outcomes to Program Outcomes**

	P O 1	P O 2	P O 3	P O 4	P O 5	P O 6	P O 7
C O 1	3	3	2	2	1	1	3
C O 2	3	3	3	2	1	1	2
C O 3	3	3	2	2	1	1	3
C O 4	3	3	2	3	2	2	3

**Course Name: Data Mining**

**Course Code: BA-302**

**(Semester III)**

**Category: Elective**

**[4 Credits: 40 Hrs]**

**1. Course Prerequisite:**

- I. Understanding of relational database concepts (tables, rows, columns). Familiarity with simple data types (text, numbers, dates). Experience working with spreadsheet software (Excel/Sheets)
- II. Ability to write basic SELECT queries with WHERE clauses. Understanding of simple table joins (INNER JOIN). Experience with basic data filtering and sorting
- III. Knowledge of fundamental statistical concepts (mean, median, distributions). Understanding of data visualization basics (charts, graphs). Awareness of common business metrics (KPIs, trends analysis)

**2. Course Learning Objectives:**

- I. Develop advanced SQL skills to extract, clean, and transform raw business data into analysis-ready formats using complex queries, joins, window functions, and data preprocessing techniques.
- II. Apply SQL-powered data mining techniques (classification, clustering, association rules) to solve real-world business problems in marketing, finance, and operations through case-based learning.
- III. Design complete data analysis solutions by integrating SQL with visualization tools (Tableau/Power BI) and programming languages (Python/R) to deliver actionable business insights.

**3. Teaching methodology and evaluation system for the course:**

**A. Teaching methodology –**

- Lectures and Presentations
- Interactive Discussion
- Case Studies
- Guest Lectures.

**B. Evaluation System –**

- Internal Assessment (25 Marks)
- Assignment (10 Marks)
- Attendance (5 Marks)
- Internal Exam (40 Marks)- Summative Assessment [CIA1, CIA2]
- End-Semester Exam (60 Marks)- Summative Assessment.

**4. Course Outcomes:**

By the end of this course, students will be able to –

- **Understand** and **Apply** SQL Fundamentals to write and execute basic to advanced SQL queries, including filtering, sorting, aggregating, joining, and transforming data, to extract meaningful insights from relational databases.
- **Analyse** datasets using SQL to identify patterns, trends, and outliers, and prepare data for data mining techniques such as classification, clustering, and regression by cleaning, preprocessing, and transforming raw data.
- **Evaluate** the suitability of various data mining techniques for specific business problems and implement SQL-based solutions to support decision-making processes.

- **Design and optimize** SQL queries and database structures for efficient data retrieval and analysis and create integrated solutions using SQL with visualization tools and programming languages for real-world business applications.

CO #	Course Outcome (CO)	Action Verbs	Bloom's Level	Key Focus Areas
CO1	Understand and apply SQL fundamentals to write and execute basic to advanced queries (filtering, sorting, aggregating, joining, transforming data).	Understand, Apply, Write, Execute	Understanding (L2), Applying (L3)	SQL syntax, query writing, data transformation
CO2	Analyse datasets using SQL to identify patterns, trends, and outliers; prepare data for mining (cleaning, preprocessing).	Analyse, Identify, Prepare	Analyzing (L4)	Data exploration, cleaning, preprocessing for mining
CO3	Evaluate suitability of data mining techniques (classification, clustering, regression) and implement SQL-based solutions for business problems.	Evaluate, Implement	Evaluating (L5), Applying (L3)	Technique selection, SQL-driven decision support
CO4	Design and optimize SQL queries/database structures; integrate SQL with visualization tools and programming languages for business applications.	Design, Optimize, Create, Integrate	Creating (L6), Applying (L3)	Query optimization, database design, tool integration

## 5. Course Content:

**Course Name - Data Mining**

**Course Code - BA302**

**Hours per Week - 4L:0T:0P**

**Credits – 4**

Module	Topic	No of Lectures
1	<p><b>Introduction to Data Mining and Databases</b></p> <p>Introduction to Data Mining - Definition and Importance of Data Mining, Applications in Business (Marketing, Finance, Operations, etc.)</p> <p>Overview of Databases and Data Warehousing - Relational Databases vs. Data Warehouses, Structured vs. Unstructured Data, OLTP vs. OLAP Systems</p> <p>Introduction to SQL - What is SQL? Role of SQL in Data Mining, Basic SQL Syntax and Commands</p>	3
2	<p><b>SQL Fundamentals</b></p> <p>Setting Up the Environment with Oracle online</p> <p>Data Types and Database Design - Data Types in SQL (INT, VARCHAR, DATE, etc.), Basics of Database Design (Tables, Rows, Columns), Primary Keys and Foreign Keys</p> <p>Data Mining Process and CRISP-DM Framework - Understanding the CRISP-DM Methodology, Business Understanding, Data Understanding, Data Preparation, Modeling, Evaluation, Deployment</p>	3
3	<p><b>SQL Fundamentals – Querying &amp; Filtering</b></p> <p>Basic SQL Queries - SELECT, FROM, WHERE, Filtering Data with Conditions</p> <p>Sorting and Limiting Data - ORDER BY Clause, LIMIT and OFFSET</p> <p>Aggregation Functions - COUNT, SUM, AVG, MIN, MAX, GROUP BY and HAVING Clauses</p>	3
4	<p><b>SQL Joins &amp; Subqueries</b></p> <p>Joins in SQL - INNER JOIN, LEFT JOIN, RIGHT JOIN, FULL OUTER JOIN, Self-Joins and Cross Joins</p> <p>Subqueries and Nested Queries - Writing Subqueries in SELECT, WHERE, and FROM Clauses, Correlated Subqueries</p> <p>Working with Strings and Dates - String Functions (CONCAT, SUBSTRING, REPLACE, etc.), Date Functions (DATEADD, DATEDIFF, etc.)</p> <p>Data Cleaning and Transformation - Handling NULL Values, Using CASE Statements, Data Type Conversion (CAST, CONVERT)</p>	4
5	<p><b>Advanced SQL for Data Mining</b></p>	3

	<p>Window Functions - ROW_NUMBER(), RANK(), DENSE_RANK(), OVER() Clause and PARTITION BY</p> <p>Advanced SQL Techniques - Common Table Expressions (CTEs), Recursive Queries</p> <p>SQL for Data Exploration - Exploring Data Distributions, Identifying Outliers and Missing Data</p>	
6	<p><b>Data Preprocessing &amp; EDA with SQL</b></p> <p>Introduction to Data Mining Techniques - Classification, Clustering, Regression, Association Rules</p> <p>Data Preparation for Mining - Data Cleaning and Preprocessing in SQL, Handling Missing Data and Outliers</p> <p>Exploratory Data Analysis (EDA) with SQL - Summarizing Data , Identifying Patterns and Trends</p> <p>Association Rule Mining - Market Basket Analysis, SQL Queries for Frequent Item sets</p>	4
7	<p><b>Core Data Mining Techniques</b></p> <p>Classification with SQL - Using SQL to Prepare Data for Classification Models, Decision Trees and Logistic Regression Basics</p> <p>Clustering with SQL - Preparing Data for Clustering Algorithms (e.g., K-Means), Identifying Clusters in Data</p> <p>Regression Analysis with SQL - Preparing Data for Linear Regression, SQL for Feature Engineering</p> <p>Time Series Analysis - SQL for Time-Based Data Aggregation, Trend Analysis and Forecasting</p> <p>Text Mining with SQL - Extracting Insights from Text Data, Using SQL for Sentiment Analysis (Basic)</p>	3
9	<p><b>SQL Applications</b></p> <p>SQL for Customer Segmentation - RFM Analysis (Recency, Frequency, Monetary), Segmenting Customers Using SQL</p> <p>SQL for Sales and Marketing Analytics - Analyzing Sales Trends, Campaign Performance Analysis</p> <p>SQL for Financial Data Analysis - Analyzing Financial Statements, Fraud Detection Basics</p> <p>SQL for Supply Chain and Operations - Inventory Management Analysis, Supplier Performance Metrics</p> <p>SQL for HR Analytics - Employee Performance Analysis, Attrition and Retention Analysis</p>	7
9	<p><b>Advanced Topics and Real-World Applications</b></p> <p>Big Data and SQL - Introduction to Big Data, SQL on Big Data Platforms (e.g., Hive, Spark SQL)</p> <p>Data Visualization with SQL - Integrating SQL with Visualization Tools (e.g., Tableau, Power BI), Creating Dashboards from SQL Queries</p> <p>SQL for Predictive Analytics - Preparing Data for Machine Learning Models, SQL Integration with Python/R</p> <p>Data Mining in Business Intelligence - Role of SQL in BI Tools, Case Studies of Data Mining in Business</p>	5
10	<p><b>Ethics, Case Studies &amp; Future Trends</b></p> <p>Ethical Considerations in Data Mining - Privacy and Security Concerns, Ethical Use of Data</p> <p>Case Studies - Retail: Market Analysis, Banking: Fraud Detection, Healthcare: Patient Segmentation</p> <p>SQL Optimization and Performance Tuning - Indexing and Query Optimization, Best Practices for Efficient Queries</p> <p>Cloud-Based SQL Solutions - Introduction to Cloud Databases, SQL in the Cloud Environment</p> <p>Future Trends in Data Mining and SQL - AI and Machine Learning Integration, automation in Data Mining</p> <p>Revision of course</p>	5

## 6. Suggested Readings:

- Database Management Systems by Raghu Ramakrishnan and Johannes Gehrke
- Data Mining: Concepts and Techniques by Jiawei Han, Micheline Kamber, and Jian Pei
- SQL for Beginners: A Step-by-Step Guide to Learn SQL (Structured Query Language) by Dr. Krishna Rungta
- Data Mining and Warehousing by Parteek Bhatia

- Database System Concepts by Korth, Sudarshan, and Silberschatz

## 7. Mapping of course outcomes to module / course content

Module	Module Title	CO1	CO 2	CO3	CO 4	Key Focus Areas
1	Intro to Data Mining & Databases	3	2	1	3	Basic concepts, SQL role
2	SQL Fundamentals	1	2	3	3	Database design, CRISP-DM
3	SQL Querying & Filtering	1	2	3	3	SELECT, WHERE, GROUP BY
4	SQL Joins & Subqueries	1	1	2	2	Joins, data cleaning
5	Advanced SQL for Data Mining	2	1	2	1	Window functions, CTEs
6	Data Preprocessing & EDA with SQL	2	1	1	2	Missing data, EDA
7	Core Data Mining Techniques	3	1	1	2	Classification, clustering prep
8	SQL Applications	2	1	1	1	Business case implementations
9	Advanced Topics & Real-World Apps	3	2	2	1	Big Data, visualization
10	Ethics & Future Trends	3	3	1	2	Optimization, cloud SQL

## 8. Program Outcomes (POs):

1. Graduates of the MBA program are expected to demonstrate competence in basic level of commerce, social and information sciences, fundamental quantitative methods and specialized functional domains of management appropriate to the program.
2. Graduates of the program are expected to be able to use appropriate knowledge and skills to identify, formulate, investigate, analyze and solve complex business problems in order to reach substantiated conclusions.
3. Graduates of the program are expected to be able to design solutions for complex multi-dimensional corporate problems and execute systems, components or processes that meet specified needs using contemporary techniques, resources, and management tools with appropriate attention to applicable standards and relevant strategic framework.
4. Graduates of the program are expected to work effectively as a member and leader in teams preferably in a multi-disciplinary setting.
5. Graduates of the program are expected to communicate effectively with all the stakeholders as a part of his role as a manager
6. Graduates of the program are expected to apply ethical principles and make ethical choices for the larger interest of Enterprise, Public and Society.
7. Graduates of the program are expected to engage in independent and life-long learning to evolve as responsible Corporate Leaders.

## 9. Mapping of the Course outcomes to Program Outcomes

PO #	PO Description	CO1	CO2	CO3	CO4	Justification
PO1	Competence in commerce & information sciences	3	2	2	2	CO1 (SQL fundamentals) directly aligns with IT competence. CO2-CO4 apply this to business contexts.
PO2	Analyze/solve complex business problems	3	3	3	2	All COs contribute: SQL querying (CO1), data pattern analysis (CO2), technique selection (CO3).
PO3	Design solutions using contemporary tools	2	3	3	3	CO2 (data prep), CO3 (mining solutions), and CO4 (optimized systems) strongly align.
PO4	Teamwork in multi-disciplinary settings	1	2	2	2	CO2-CO4 involve collaborative projects (data cleaning, mining implementations).
PO5	Stakeholder communication	1	2	2	3	CO4 (visualization integration) requires presenting insights; CO2-CO3 involve reporting findings.
PO6	Ethical principles	1	1	2	3	CO3 (evaluation of techniques) and CO4 (real-

	application					world apps) address data privacy/ethics.
<b>PO7</b>	Lifelong learning	2	2	2	3	CO4 (emerging tech integration) fosters adaptability; others require continuous skill updates.

**Course Name: Data Science for Business - I**

**Course Code: BA-303**

**(Semester III)**

**Category: Elective**

**[4 Credits: 40 Hrs]**

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**1. Course Prerequisite:**

- Sound understanding of basic **statistical techniques** (classical inference).
- Basic familiarity with **stochastic modelling** (regressions, factor analysis).

**2. Course Learning Objectives:**

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

- **Explain** the core concepts of data science, including data types, data handling techniques, and the role of tools such as R and RStudio in business analytics workflows.
- **Analyze** data sets using exploratory data analysis (EDA), supervised and unsupervised machine learning techniques, and appropriate data visualization tools to derive actionable insights.
- **Design** end-to-end data science solutions by integrating data wrangling, modeling, and visualization techniques while considering ethical and privacy considerations in real-world business scenarios.

**3. Teaching methodology and evaluation system for the course:**

**Teaching methodology** – The course uses lectures, hands on practical sessions in software and case discussions, student presentations, and a comprehensive final examination to achieve the stated objectives.

**Evaluation System – Continuous Internal Assessment (Twice in a semester)**

CIA1 and CIA2 (**Total: 40 Marks each**)

- Class Test (Objective + Subjective): 25 Marks (Duration: 1 hour)
  - Assignment: 10 Marks
  - Attendance: 5 Marks
- End-Semester Exam (60 Marks)** - Summative Assessment.

**4. Course Content:**

**Course Name: Data Science for Business - I**

**Course Code: BA 303**

**Hours per Week: 4L**

**Credits: 4**

<b>Module I</b>		
<b>1</b>	Data Science fundamentals - Definition, Importance in Business, Data Science Workflow, Applications in Various Domains	4
<b>2</b>	Data Types and Data Handling Structured vs. Unstructured	4

	Data, Databases, Data Cleaning, Data Wrangling, calling Excel & CSV Formats	
3	Overview of CRAN R: concept of open source community managed platforms, installation, environment, and core packages; Introduction to the Posit RStudio IDE: layout, script editor, console, and projects; Using R Cloud: setwd(), cloud-based coding and project management; setting up accounts and collaborative tools; sample coding walkthrough using R syntax for basic data import, summary, and visualization.	4
4	Intermediate level programming in R: Syntax, Data Types, Control Structures, Libraries, modified environments e.g. H2O	4
5	Data Visualization Charts, using sink.file(), ggplot and stargazer, Dashboarding Principles, Communicating Data Insights	4
<b>Module 2</b>		
6	Exploratory Data Analysis (EDA), Univariate & Bivariate Analysis, Outlier Detection, Feature Engineering	4
7	Regression and Classification Techniques Linear Regression, Logistic Regression, Decision Trees, Model Evaluation	4
8	Clustering and Recommendation Systems, K-Means Clustering, Hierarchical Clustering, Collaborative Filtering	4
9	Introduction to Machine Learning Supervised vs. Unsupervised Learning, Business Use-Cases, Model Building Lifecycle	4
10	Ethics, Privacy and Future Trends in Data Science Bias, Fairness, AI in Business, Career Paths, Future Technologies	4

### 5. Suggested Readings:

#### **Text Book (TB)**

1. Provost, F., & Fawcett, T. (2013). Data Science for Business, O'Reilly Media.
2. Bhardwaj, R. K. (2020). Data Science for Managers, Sage Publications India.

#### **Reference Book (RB):**

3. Matloff, Norman. The Art of R Programming, No Starch Press.
4. Kabacoff, Robert I. R in Action: Data Analysis and Graphics with R, Manning Publications.
5. Grolemund, Garrett & Wickham, Hadley. R for Data Science, O'Reilly Media.

### 6. Course Outcomes

CO	Details/Statement	Action Verb	Knowledge Level
CO 1	Explain the core concepts of data science,	Comprehend	

	including data types, data handling techniques, and the role of tools such as R and R Studio in business analytics workflows.	Articulate, Interpret	Understand
<b>CO 2</b>	<b>Analyze</b> data sets using exploratory data analysis (EDA), supervised and unsupervised machine learning techniques, and appropriate data visualization tools to derive actionable insights.	Examine, Compare, Contrast	Analyze
<b>CO 3</b>	<b>Design</b> end-to-end data science solutions by integrating data wrangling, modeling, and visualization techniques while considering ethical and privacy considerations in real-world business scenarios.	Design, Develop, Conceptualize	Create

### 7. Mapping of course outcomes to module/ course content

Module	CO1	CO2	CO3
1	3	-	-
2	3	-	-
3	3	-	-
4	-	3	-
5	-	3	-
6	-	3	-
7	-	3	
8	-	3	
9	-	-	3
10	-	-	3

### 8. Mapping of the Course outcomes to Program Outcomes

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
CO1	3	3	3	3	3	3	3
CO2	3	3	3	2	2	2	3
CO3	3	3	3	1	1	2	3

**Course Name: Data Visualization & Storytelling**

**Course Code: BA-304**

**(Semester III)**

**Category: Elective**

**[4 Credits: 40 Hrs]**

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**1. Course Prerequisite:**

- Basic understanding of **management principles** (e.g., organizational behaviour, business environment).
- Familiarity with **functional areas** (marketing, finance, operations).
- Prior exposure to **statistical methods for** business decision-making frameworks is recommended

**2. Course Learning Objectives:**

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

- **Understand** the fundamentals of business analytics and the importance of data visualization in decision- making.
- **Use** data visualization tools like Excel, Tableau, and Power BI to create impactful business insights.
- **Develop** data storytelling techniques to effectively communicate analytical findings.
- **Apply** visualization and analytics frameworks for solving real-world business problems.

**3. Teaching methodology and evaluation system for the course:**

**Teaching methodology** – The course uses lectures, hands on practical sessions in software and case discussions, student presentations, and a comprehensive final examination to achieve these objectives.

**Evaluation System – Continuous Internal Assessment (Twice in a semester)**

CIA1 and CIA2 (Total: 40 Marks each)

- Class Test (Objective + Subjective): 25 Marks (Duration: 1 hour)
- Assignment: 10 Marks
- Attendance: 5 Marks

**End-Semester Exam (60 Marks)-** Summative Assessment.

**4. Course Content:**

**Course Name: Data Visualization & Storytelling**

**Course Code: BA 304**

**Hours per Week: 4L**

**Credits: 4**

S l . N o .	Topic	No of Lect ures
1	<b>Introduction to Business Analytics and Data-Driven Decision Making:</b> Introduction to Business Analytics: Definition, importance, and applications in various industries, Types of Business Analytics: Descriptive, Diagnostic, Predictive, and Prescriptive analytics, Role of Data in Decision-Making: Data-driven vs. intuition-based decisions, Overview of Data Analytics Tools: Excel, Tableau, Power BI, and other BI tools.	<b>3L</b>
	<b>Data Understanding and Preparation:</b> Types of Data in Business Analytics:	

2	Structured, unstructured, categorical, numerical, Data Collection Methods and Sources: Internal vs. external data, APIs, databases, and spreadsheets, Data Cleaning and Pre- processing: Handling missing values, duplicate data, and inconsistencies, Data Transformation: Normalization, standardization, and aggregation, Hands-on Practice: Data cleaning in Excel, Tableau, and Power BI.	3L
3	<b>Introduction to Data Visualization:</b> Why Data Visualization Matters? Understanding human perception and cognitive biases, Principles of Effective Data Visualization: Simplicity, clarity, accuracy, and storytelling, Choosing the Right Visualization: Bar charts, line charts, scatter plots, heat maps, and more, Best Practices in Data Visualization: Colour selection, labelling, avoiding misleading charts,	3L
4	<b>Data Visualization in Microsoft Excel:</b> Excel as a Visualization Tool: Strengths and limitations, Creating Basic Charts and Graphs: Bar charts, line charts, pie charts, histograms, Advanced Excel Visualizations: Pivot tables, slicers, sparklines, waterfall charts, Dashboard Creation in Excel: Combining multiple charts for insights, Hands-on Practice: Building an interactive business dashboard in Excel.	5L
5	<b>Data Visualization in Tableau :</b> Introduction to Tableau: Interface, data connections, and workspace overview, Building Basic Visualizations: Line charts, bar charts, maps, scatter plots, Advanced Tableau Features: Calculated fields, parameters, dynamic filtering, Creating Interactive Dashboards: Filters, tooltips, and storytelling in Tableau, Hands-on Practice: Building an interactive sales performance dashboard in Tableau	5L
6	<b>Data Visualization in Power BI:</b> Introduction to Power BI: Data modeling, Power Query, and DAX basics, Building Basic Visualizations: Column charts, line charts, matrix tables, cards, Advanced Power BI Features: Drill-through, bookmarks, and dynamic measures, Creating Interactive Reports and Dashboards: Filters, slicers, and KPI Indicators, Hands-on Practice: Building a financial performance dashboard in Power BI.	5L
7	<b>Data Storytelling for Business Communication:</b> What is Data Storytelling? Elements of a compelling data story, Framing Business Problems Through Data: Understanding audience needs, Narrative Techniques for Data Presentation: Context, insights, and call to action, Case Studies in Data Storytelling: Real-world examples from marketing, finance, and operations, Hands-on Practice: Creating a data-driven business presentation Using insights from Tableau or Power BI.	4L
8	<b>Business Applications of Data Visualization &amp; Storytelling:</b> Marketing Analytics: Customer segmentation, campaign performance, churn analysis, Financial Analytics: Revenue forecasting, cost analysis, investment dashboards, Supply Chain Analytics: <b>Inventory optimization, demand forecasting, supplier performance, HR Analytics:</b> Employee performance, retention analysis, diversity & inclusion metrics, Hands-on Practice: Building industry-specific dashboards using Excel, Tableau, or Power BI.	4L
9	<b>Common Pitfalls in Data Visualization and Storytelling :</b> Recognizing and Avoiding Bias in Data Representation, Common Data Visualization Mistakes: Cherry-picking, misleading scales, improper labelling, Ethical Considerations in Data Storytelling: Transparency, accuracy, avoiding misrepresentation, Ensuring Data Quality and Reliability: Best practices for clean, accurate data, Case Study Analysis: Examining real- world instances of misleading data visualizations.	4L
10	<b>Emerging Trends in Data Visualization and Business Analytics:</b> AI and Automation in Data Visualization: Automated insights, predictive analytics integration, Augmented Analytics in BI Tools: AI-powered recommendations in Power BI & Tableau, Real-Time Dashboards: Monitoring business performance in real-time, Personalized and Interactive Data Storytelling: Adaptive dashboards for different stakeholders, Future of Business Analytics: Industry 4.0, Big Data, and AI-driven insights.	4L

## 5. Suggested Readings:

### Text Book (TB)

1. Business Analytics: The Science of Data-Driven Decision Making, U Dinesh Kumar,

- Wiley India,2017
2. Storytelling with Data: A Data Visualization Guide for Business Professionals, Cole Nussbaumer Knaflic, Wiley, 2015

**Reference Book (RB):**

1. The Big Book of Dashboards: Visualizing Your Data Using Real-World Business Scenarios, Steve Wexler, Jeffrey Shaffer, Andy Cotgreave, Wiley, 2017.
2. Data Visualization: A Practical Introduction, Kieran Healy ,Princeton University Press, 2018.
3. Information Dashboard Design: Displaying Data for At-a-Glance Monitoring, Stephen Few, Analytics Press,2013.

**6. COURSE OUTCOMES**

CO	Details/Statement	Action Verb	Knowledge Level
CO 1	<b>Understand</b> the fundamentals of business analytics and the importance of data visualization in decision- making.	Comprehend Articulate, Interpret	Understand
CO 2	<b>Use</b> data visualization tools like Excel, Tableau, and Power BI to create impactful business insights.	Demonstrate, Use, Implement	Apply
CO 3	<b>Develop</b> data storytelling techniques to effectively communicate analytical findings.	Create, Design, Conceptualiz e	Create
CO 4	<b>Apply</b> visualization and analytics frameworks for solving real-world business problems.	Demonstrate, Use, Implement	Apply

**7. Mapping of course outcomes to module / course content**

Module	CO1	CO2	CO3	CO4
1	3	-	-	
2	3	-	-	
3	3	-	-	
4	-	3	-	
5	-	3	-	
6	-	3	-	
7	-	-	3	
8	-	-	3	3
9	-	-	-	3
10	-	-	-	3

**8. Mapping of the Course outcomes to Program Outcomes**

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
CO1	3	3	3	3	3	3	3

CO <sub>2</sub>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>
CO <sub>3</sub>	<b>3</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>3</b>
CO <sub>4</sub>	<b>3</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>3</b>

**Course Name: Big Data Technology**

**Course Code: BA-305**

**(Semester III)**

**Category: Elective**

**[4 Credits: 40 Hrs]**

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**1. Course Prerequisite:**

- I. Basic Programming and Data Handling Skills – Understanding of Python or any high-level language and basic data structures.
- II. Foundations of Business Management and Decision-Making – Familiarity with business functions like marketing, finance, and operations.
- III. Fundamentals of Statistics and Quantitative Techniques – Concepts like mean, variance, regression, and correlation for analytical reasoning.

**2. Course Learning Objectives:**

- I. To introduce the fundamental concepts and ecosystem of Big Data and explore its relevance in solving complex business problems.
- II. To equip students with hands-on knowledge of Big Data technologies such as Hadoop, Spark, NoSQL, and tools for data ingestion, processing, and visualization.
- III. To enable students to design, implement, and evaluate data-driven strategies using analytics and machine learning techniques, while understanding ethical and strategic implications.

**3. Teaching methodology and evaluation system for the course:**

**A. Teaching methodology –**

- Lectures and Presentations
- Interactive Discussion
- Case Studies
- Guest Lectures.

**B. Evaluation System –**

- Internal Assessment (25 Marks)
- Assignment (10 Marks)
- Attendance (5 Marks)
- Internal Exam (40 Marks)- Summative Assessment [CIA1, CIA2]
- End-Semester Exam (60 Marks)- Summative Assessment.

**4. Course Outcomes:**

By the end of this course, students will be able to –

- Understand and Analyze Big Data Concepts and Ecosystem to demonstrate an understanding of Big Data characteristics and analyze the Big Data ecosystem, including Hadoop, Spark, and NoSQL databases, to identify their roles in solving business problems.
- Apply Big Data Technologies and Tools for Data Processing to ingest, process, and store large datasets, and evaluate their effectiveness in addressing real-world business challenges.
- Design and Implement Data Analytics and Machine Learning Solutions/models using Big Data tools and frameworks to derive actionable insights and solve business problems such as customer segmentation, fraud detection, and predictive maintenance.
- Evaluate Ethical and Strategic Implications of Big Data in Business including data privacy, governance, and monetization, and propose solutions to address challenges in adopting Big Data technologies.

CO #	Course Outcome (CO)	Action Verbs	Bloom's Level	Key Focus Areas
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CO1	Understand and Analyze Big Data Concepts and Ecosystem to demonstrate an understanding of Big Data characteristics and analyze the Big Data ecosystem, including Hadoop, Spark, and NoSQL databases, to identify their roles in solving business problems.	Understand, Analyze, Identify	<b>Understand (Level 2) &amp; Analyze (Level 4)</b>	Big Data characteristics, Ecosystem (Hadoop, Spark, NoSQL), Business problems
CO2	Apply Big Data Technologies and Tools for Data Processing to ingest, process, and store large datasets, and evaluate their effectiveness in addressing real-world business challenges.	Apply, Evaluate	<b>Apply (Level 3) &amp; Evaluate (Level 5)</b>	Hadoop, Spark, NoSQL, Data pipelines, ETL tools
CO3	Design and Implement Data Analytics and Machine Learning Solutions/models using Big Data tools and frameworks to derive actionable insights and solve business problems such as customer segmentation, fraud detection, and predictive maintenance.	Design, Implement, Solve	<b>Create (Level 6) &amp; Apply (Level 3)</b>	Analytics, ML models, Predictive insights, Real-world use cases
CO4	Evaluate Ethical and Strategic Implications of Big Data in Business including data privacy, governance, and monetization, and propose solutions to address challenges in adopting Big Data technologies.	Evaluate, Propose, Address	<b>Evaluate (Level 5) &amp; Create (Level 6)</b>	Ethics, Data Governance, Strategy, Privacy Laws (e.g., DPDPA)

## 5. Course Content:

**Course Name - Big Data Technology**

**Course Code - BA305**

**Hours per Week - 4L:0T:0P**

**Credits – 4**

Module	Topic	No. of Lectures
1	<p><b>Introduction to Big Data</b></p> <p>Big Data: Definition, Characteristics, and Importance; Key concepts: Volume, Velocity, Variety, Veracity, Value; Evolution of Big Data in the business world</p> <p>Big Data Ecosystem: Overview of the Big Data landscape (Hadoop, Spark, NoSQL, etc.); Role of cloud computing in Big Data</p> <p>Business Applications of Big Data: Use cases in retail, finance, healthcare, and marketing; Case study: How Netflix uses Big Data for recommendations</p> <p>Big Data and Business Decision-Making: Data-driven decision-making frameworks; Role of Big Data in strategic planning</p> <p>Ethical and Legal Considerations in Big Data: Data privacy, Digital Personal Data Protection Act (DPDPA), and other regulations; Ethical challenges in data collection and usage</p>	5
2	<p><b>Big Data Technologies and Tools</b></p> <p>Introduction to Hadoop Ecosystem: HDFS (Hadoop Distributed File System); MapReduce framework</p> <p>Apache Spark for Big Data Processing: Spark architecture and components; Comparison of Hadoop and Spark</p> <p>NoSQL Databases: Types of NoSQL databases (Document, Key-Value, Columnar, Graph); Use cases for MongoDB, Cassandra, and Neo4j</p> <p>Data Warehousing and Data Lakes: Differences between data warehouses and data lakes; Tools like Amazon Redshift, Snowflake, and Azure Data Lake</p>	4
3	<p><b>Big Data Ecosystem &amp; Cloud Platforms</b></p> <p>Cloud Platforms for Big Data: Overview of AWS, Google Cloud, and Azure Big Data services; Setting up a Big Data environment on the cloud</p> <p>Data Ingestion and Extract, Transform, Load (ETL) Tools: Tools like Apache Kafka, Apache NiFi, and Talend; Hands-on: Data ingestion using Kafka</p> <p>Big Data Security and Governance: Security challenges in Big Data; Tools and frameworks for data governance</p>	3
4	<p><b>Data Analytics Foundations</b></p>	3

	Introduction to Data Analytics: Descriptive, Predictive, and Prescriptive Analytics; Business applications of analytics Data Cleaning and Preprocessing: Techniques for handling missing data, outliers, and noise; Tools like Pandas and OpenRefine	
5	<b>Advanced Visualization &amp; Business Insights</b> Data Visualization Principles: Importance of visualization in business communication; Best practices for creating effective visualizations Tools for Data Visualization: Tableau, Power BI, and QlikView; Creating dashboards in Tableau Advanced Visualization Techniques: Geospatial visualization, network graphs, and interactive dashboards; Hands-on: Advanced Tableau features Case study: How companies use visualization for decision-making	3
6	<b>Machine Learning for Big Data</b> Introduction to Machine Learning: Supervised vs. Unsupervised Learning; Applications of ML in business Data Preparation for Machine Learning: Feature engineering and selection; Data preprocessing with Python Supervised Learning Algorithms: Regression and Classification; Building a predictive model Unsupervised Learning Algorithms: Clustering and Dimensionality Reduction; K-means clustering with Python	4
7	<b>AI &amp; Deep Learning in Big Data</b> AI and Big Data: Role of AI in analysing large datasets; Case study - AI-driven customer insights Deep Learning for Big Data: Introduction to neural networks; Tools like TensorFlow and Keras Natural Language Processing (NLP): Text mining and sentiment analysis; NLP with Python Machine Learning in Business Applications: Fraud detection, customer segmentation, and churn prediction; Case study - Machine learning in finance.	4
8	<b>Big Data in Business Domains</b> Leveraging Big Data for Competitive Advantage: Data-driven business models; Case study: Amazon's use of Big Data. Monetizing Big Data: Opportunities and challenges in monetizing data; Case study - Google's advertising model. Big Data in Marketing and Customer Analytics: Customer journey mapping and personalization; Tools for marketing analytics. Big Data in Operations and Supply Chain: Predictive maintenance and inventory optimization; Case study: Walmart's supply chain analytics. Big Data in Finance and Risk Management: Fraud detection and credit scoring; Case study - Big Data in banking. Big Data in Healthcare: Predictive analytics for patient care; Case study: IBM Watson Health.	6
9	<b>Implementation Challenges</b> Technical Challenges in Big Data Implementation: Scalability, integration, and performance issues Organizational Challenges in Big Data Adoption: Change management and skill gaps Risk Management in Big Data Projects: Identifying and mitigating risks	4
10	<b>Future Trends</b> Emerging Trends in Big Data: IoT, blockchain, and edge computing Big Data and Industry 4.0: Role of Big Data in smart manufacturing Ethical AI and Responsible Data Usage: Bias in AI and fairness in algorithms Future of Big Data in Business: Preparing for the next wave of data-driven innovation Course Revision and Project Presentations: Student presentations on Big Data projects; Feedback session	4

## 6. Suggested Readings:

- Big Data and Analytics by Seema Acharya and Subhashini Chellappan
- Big Data: Principles and Paradigms by Rajkumar Buyya, Rodrigo N. Calheiros, and Amir Vahid Dastjerdi
- Big Data Black Book by DT Editorial Services
- Data Science and Big Data Analytics by Dr. S. K. Gupta and Dr. Neera Batra
- Big Data for Beginners – Dr. Pradeep Pasupuleti

## 7. Mapping of course outcomes to module / course content

Module #	Module Title	CO 1	CO 2	CO 3	CO 4	Key Focus Areas (Scale: 1=Low, 2=Moderate, 3=High)
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1	Introduction to Big Data	3	1	1	3	Big Data Concepts, Ecosystem, Applications, Ethics
2	Big Data Technologies and Tools	2	3	2	1	Hadoop, Spark, NoSQL, Data Lakes
3	Big Data Ecosystem & Cloud Platforms	2	3	2	1	AWS, GCP, Azure, Kafka, Governance
4	Data Analytics Foundations	1	2	3	1	Data Preprocessing, Analytics
5	Advanced Visualization & Business Insights	1	2	3	2	Tableau, Dashboards, Case Studies
6	Machine Learning for Big Data	1	2	3	1	Regression, Classification, Clustering
7	AI & Deep Learning in Big Data	1	2	3	2	Deep Learning, NLP, Use Cases
8	Big Data in Business Domains	2	2	3	3	Domain Use Cases, Monetization, Strategy
9	Implementation Challenges	1	2	2	3	Risk, Change Management, Scalability
10	Future Trends	1	2	2	3	Emerging Tech, Industry 4.0, Responsible AI

## 8. Program Outcomes (POs):

1. Graduates of the MBA program are expected to demonstrate competence in basic level of commerce, social and information sciences, fundamental quantitative methods and specialized functional domains of management appropriate to the program.
2. Graduates of the program are expected to be able to use appropriate knowledge and skills to identify, formulate, investigate, analyze and solve complex business problems in order to reach substantiated conclusions.
3. Graduates of the program are expected to be able to design solutions for complex multi-dimensional corporate problems and execute systems, components or processes that meet specified needs using contemporary techniques, resources, and management tools with appropriate attention to applicable standards and relevant strategic framework.
4. Graduates of the program are expected to work effectively as a member and leader in teams preferably in a multi-disciplinary setting.
5. Graduates of the program are expected to communicate effectively with all the stakeholders as a part of his role as a manager
6. Graduates of the program are expected to apply ethical principles and make ethical choices for the larger interest of Enterprise, Public and Society.
7. Graduates of the program are expected to engage in independent and life-long learning to evolve as responsible Corporate Leaders.

## 9. Mapping of the Course outcomes to Program Outcomes

PO #	PO Description	CO1	CO2	CO3	CO4	Justification
PO1	Demonstrate competence in commerce, social & information sciences, quantitative methods, and management domains.	3	3	3	2	Big Data concepts, analytics, and business domains span information science, quantitative methods, and management applications.
PO2	Identify, analyze, and solve complex business problems.	2	3	3	3	Data analytics, ML, and ethical frameworks are applied to solve and assess real-world business problems.
PO3	Design and execute solutions for corporate problems using modern tools and strategies.	2	3	3	2	Big Data tools (Hadoop, Spark, ML) and strategic decision-making frameworks are used to design and implement solutions.
PO4	Work effectively in teams, preferably in multi-disciplinary	1	2	2	1	Collaborative project work (e.g., presentations, case studies) in Big Data implementations supports teamwork.

	settings.					
PO5	Communicate effectively with stakeholders.	2	2	3	2	Data visualization, storytelling with dashboards, and interpretation of insights contribute to managerial communication.
PO6	Apply ethical principles in decision-making.	2	1	1	3	Ethical implications of Big Data, including governance and data privacy (DPDPA), are central to CO4.
PO7	Engage in lifelong learning for responsible corporate leadership.	2	2	3	2	Exposure to evolving Big Data trends, tools, and strategies fosters a growth mindset and continuous learning.

## Course Name: Advanced Excel for Business

Course Code: SM-301

(Semester III)

Category: Elective

[4 Credits: 40 Hrs]

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### 1. Course Prerequisite:

- I. Basic Excel Proficiency - Familiarity with fundamental Excel operations (data entry, basic formulas like SUM/AVERAGE, simple charts). Understanding of cell references (absolute/relative) and basic formatting.
- II. Foundational Business Math & Statistics - Ability to interpret basic financial terms (e.g., revenue, profit) and statistical concepts (mean, median, trends). Comfort with percentages, ratios, and basic algebra (for financial functions like NPV/IRR).
- III. Logical Problem-Solving Skills - Aptitude for breaking down business problems into data-driven steps. No prior coding experience required, but willingness to learn automation (VBA/Power Query) is essential.

### 2. Course Learning Objectives:

- I. Mastering Advanced Analytical Techniques - Utilize Excel functions, PivotTables, and statistical tools to analyze business data, derive insights, and support decision-making (CO1). Apply financial modeling and simulations (e.g., Monte Carlo, scenario analysis) to forecast outcomes (CO4).
- II. Designing Professional Dashboards & Reports - Create interactive dashboards with Pivot Charts, slicers, and conditional formatting to visualize KPIs for stakeholders (CO2). Integrate Power BI for advanced business intelligence (CO2, CO3).
- III. Automate & Optimize Business Processes - Develop macros (VBA) and Power Query workflows to automate data cleaning, reporting, and repetitive tasks (CO3). Transform unstructured data into structured formats for analysis (CO3).

### 3. Teaching methodology and evaluation system for the course:

#### A. Teaching methodology –

- Lectures and Presentations
- Interactive Discussion
- Case Studies
- Guest Lectures.

#### B. Evaluation System –

- Internal Assessment (25 Marks)
- Assignment (10 Marks)
- Attendance (5 Marks)
- Internal Exam (40 Marks)- Summative Assessment [CIA1, CIA2]
- End-Semester Exam (60 Marks)- Summative Assessment.

### 4. Course Outcomes:

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

- **SM301:CO#1** - Analyse and Evaluate Business Data Using Advanced Excel Functions, PivotTables, and statistical tools to analyse datasets, evaluate business scenarios, and interpret insights for decision-making.

- **SM301:CO#2** - Design and create dynamic dashboards with Pivot Charts, slicers, and conditional formatting to construct visual narratives that implement KPIs for stakeholders.
- **SM301:CO#3** - Develop macros and Power Query workflows to automate data cleaning and reporting tasks, optimizing efficiency in business operations.
- **SM301:CO#4** - Evaluating data into financial models and predict outcomes using scenarios/simulations to recommend data-driven strategies.

Course Outcome (CO)	Action Verbs	Knowledge Level (Bloom's)	Key Focus Areas
<b>CO1:</b> Analyse and evaluate business data using advanced Excel functions, PivotTables, and statistical tools.	Analyse, Evaluate, Interpret	<b>Analyzing, Evaluating</b>	Data analysis, statistical tools, business scenario evaluation.
<b>CO2:</b> Design and create dynamic dashboards with Pivot Charts, slicers, and conditional formatting.	Design, Create, Implement	<b>Applying, Creating</b>	Data visualization, interactive dashboards, KPIs for stakeholders.
<b>CO3:</b> Develop macros and Power Query workflows to automate data cleaning and reporting tasks.	Develop, Automate, Optimize	<b>Applying, Creating</b>	VBA macros, Power Query, process efficiency.
<b>CO4:</b> Evaluate data in financial models and predict outcomes using scenarios/simulations.	Evaluate, Predict, Recommend	<b>Evaluating, Creating</b>	Financial modeling, Monte Carlo, sensitivity analysis, data-driven strategies.

## 5. Course Content:

**Course Name - Advanced Excel for Business**

**Course Code - SM301**

**Hours per Week - 4L:0T:0P**

**Credits - 4**

Module	Topic	No of Lectures	CO
1	<b>Excel Fundamentals &amp; Data Management</b> Introduction to Excel for Business - Interface, shortcuts, and best practices, Customizing Excel for efficiency Data Entry & Validation - Data types, drop-down lists, and input restrictions Cell Referencing & Named Ranges - Absolute, relative, and mixed references, Dynamic named ranges Advanced Formatting & Custom Views - Conditional formatting, styles, and templates	4	CO1
2	<b>Business Data Analysis with Functions</b> Logical & Lookup Functions - IF, XLOOKUP, INDEX-MATCH, CHOOSE Statistical & Financial Functions - SUMIFS, COUNTIFS, NPV, IRR, PMT Text & Date Functions - TEXTJOIN, CONCAT, EOMONTH, DATEDIF Dynamic Array Functions - UNIQUE, FILTER, SORT, SEQUENCE	4	CO1, CO4
3	<b>Data Visualization &amp; Dashboards</b> Charts & Graphs for Business - Advanced charts Pivot Charts & Slicers - Interactive dashboards with slicers/timelines Conditional Formatting for Insights - Heatmaps, data bars, icon sets	4	CO2

	Power View		
4	<b>PivotTables for Business Intelligence</b> PivotTable Fundamentals - Structuring data, grouping, and calculated fields Advanced PivotTable Techniques - GETPIVOTDATA, slicers, timelines Data Model & Relationships - Multiple tables, Power Pivot basics KPIs & Power Pivot DAX Formulas - SUMX, CALCULATE, RELATED	4	CO1, CO2
5	<b>Advanced Business Modelling</b> Scenario Manager & Goal Seek - What-if analysis for decision-making Solving Optimization Problems - Linear programming for resource allocation Monte Carlo Simulation - Risk analysis using data tables Sensitivity Analysis with Data Tables	4	CO1, CO4
6	<b>Data Cleaning &amp; Transformation</b> Power Query - Importing, merging, and cleaning data Text-to-Columns & Flash Fill - Automating data restructuring Handling Errors & Missing Data - IFERROR, AGGREGATE, NA() Unstructured Data to Structured Format	4	CO3
7	<b>Automation with Macros &amp; VBA</b> Macro Recording for Repetitive Tasks VBA Basics for Business Automation - Loops, conditions, and user-defined functions Building Custom Business Tools with VBA - Automated reports, buttons, and forms Error Handling & Debugging in VBA	4	CO3
8	<b>Financial &amp; Business Analytics</b> Financial Modeling Best Practices - Building dynamic financial statements Break-even & Forecasting Models - Regression, FORECAST.ETS, TREND Loan & Investment Analysis - Amortization schedules, XIRR, XNPV Business Valuation Models	4	CO4
9	<b>Collaboration &amp; Advanced Tools</b> Shared Workbooks & Co-Authoring Excel + Power BI Integration - Connecting Excel to Power BI for dashboards Excel for Big Data (Power Query & Power Pivot) Protecting Workbooks & Security	4	CO2, CO3
10	<b>Applications (Case Studies)</b> Sales Performance Dashboard Inventory Optimization Model Financial Statement Automation	4	CO1, CO2, CO3, CO4

## 6. Suggested Readings:

- Advanced Excel for Business Analytics, Vijay Gupta, Pearson
- Excel for Managers & Business Leaders, Author: S. N. Maheshwari, Taxmann Publications
- Power Excel: Advanced Data Analysis & Reporting, Dheeraj Malhotra, BPB Publications
- Financial Modelling Using Excel, Piyush Kumar, Wiley India

## 7. Mapping of course outcomes to module / course content

Module #	Module Details	CO #1 (Analyze Data)	CO #2 (Design Dashboards)	CO #3 (Automate Workflows)	CO #4 (Financial Modeling)
1	Excel Fundamentals & Data Management	1	-	-	-
2	Business Data Analysis with Functions	3	-	-	2
3	Data Visualization &	1	3	-	-

	Dashboards				
4	PivotTables for Business Intelligence	3	2	-	-
5	Advanced Business Modelling	2	-	-	3
6	Data Cleaning & Transformation	-	-	3	-
7	Automation with Macros & VBA	-	-	3	-
8	Financial & Business Analytics	-	-	-	3
9	Collaboration & Advanced Tools	-	2	2	-
10	Applications (Case Studies)	3	3	3	3

## 8. Program Outcomes (POs):

1. Graduates of the MBA program are expected to demonstrate competence in basic level of commerce, social and information sciences, fundamental quantitative methods and specialized functional domains of management appropriate to the program.
2. Graduates of the program are expected to be able to use appropriate knowledge and skills to identify, formulate, investigate, analyze and solve complex business problems in order to reach substantiated conclusions.
3. Graduates of the program are expected to be able to design solutions for complex multi-dimensional corporate problems and execute systems, components or processes that meet specified needs using contemporary techniques, resources, and management tools with appropriate attention to applicable standards and relevant strategic framework.
4. Graduates of the program are expected to work effectively as a member and leader in teams preferably in a multi-disciplinary setting.
5. Graduates of the program are expected to communicate effectively with all the stakeholders as a part of his role as a manager
6. Graduates of the program are expected to apply ethical principles and make ethical choices for the larger interest of Enterprise, Public and Society.
7. Graduates of the program are expected to engage in independent and life-long learning to evolve as responsible Corporate Leaders.

## 9. Mapping of the Course outcomes to Program Outcomes

Program Outcome (PO)	CO1	CO2	CO3	CO4	Justification
<b>PO1:</b> Competence in commerce, quantitative methods, and management domains.	3	2	2	3	CO1/CO4 align with quantitative/financial skills; CO2/CO3 with management tools.
<b>PO2:</b> Identify, analyse, and solve complex business problems.	3	2	3	3	CO1/CO3/CO4 directly address problem-solving; CO2 supports visualization of solutions.
<b>PO3:</b> Design solutions using contemporary tools/techniques.	2	3	3	2	CO2/CO3 focus on tool-based solutions; CO1/CO4 support analytical design.
<b>PO4:</b> Work effectively in teams (multi-disciplinary).	1	2	1	1	CO2 (dashboards) often requires collaboration; others are individually focused.
<b>PO5:</b> Communicate effectively with stakeholders.	1	3	1	2	CO2 (dashboards) is communication-centric; CO4 supports financial reporting.
<b>PO6:</b> Apply ethical principles for enterprise/society.	1	1	1	2	CO4 (financial modeling) may involve ethical decision-making (e.g., risk assessment).

<b>PO7:</b> Engage in life-long learning as corporate leaders.	<b>2</b>	<b>2</b>	<b>3</b>	<b>2</b>	CO3 (automation) fosters adaptability; others encourage continuous skill development.
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**Course Name: Systems Analysis and Design**

**Course Code: SM-302**

**(Semester III)**

**Category: Elective**

**[4 Credits: 40 Hrs]**

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**1. Course Prerequisite:**

- I. Foundational Knowledge of Information Systems - Basic understanding of information systems concepts (e.g., databases, software applications, business processes). Familiarity with common system types (TPS, MIS, DSS) and their organizational roles.
- II. Introductory Programming or Database Experience - Exposure to programming logic (e.g., variables, loops, conditionals) or database fundamentals (tables, queries). Prior coursework or hands-on experience with tools like SQL, Python, or UML diagrams is beneficial but not mandatory.
- III. Business Process Awareness - Ability to analyse simple workflows (e.g., order processing, inventory management). Basic knowledge of project management terms (e.g., SDLC, feasibility studies) helps accelerate learning.

**2. Course Learning Objectives:**

- I. The students will develop the ability to analyze complex business environments and translate organizational needs into technical specifications through systems thinking methodologies, employing tools like data flow diagrams and entity-relationship modeling to document requirements and workflows.
- II. Students will master the principles of effective system design, including creating functional architectures, intuitive user interfaces, and optimized database structures using both traditional and object-oriented approaches with UML notation.
- III. They will gain practical skills in system implementation, learning to execute deployment strategies, conduct comprehensive testing protocols, and apply critical maintenance and security measures to ensure robust, sustainable information systems.

**3. Teaching methodology and evaluation system for the course:**

**A. Teaching methodology –**

- Lectures and Presentations
- Interactive Discussion
- Case Studies
- Guest Lectures.

**B. Evaluation System –**

- Internal Assessment (25 Marks)
- Assignment (10 Marks)
- Attendance (5 Marks)
- Internal Exam (40 Marks)- Summative Assessment [CIA1, CIA2]
- End-Semester Exam (60 Marks)- Summative Assessment.

**4. Course Outcomes:**

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

- Analyse Business Needs and Model Systems using DFDs, ER diagrams, and UML to analyse business processes, translate requirements into technical specifications, and validate system models against stakeholder needs
- Design Efficient and Secure System architectures and UIs with optimized modularity (coupling/cohesion), recommend security measures, and integrate cloud/big data solutions.
- Implement systems using Agile/DevOps methodologies, test software via unit/integration and adapt solutions based on feedback.
- Evaluate Emerging Technologies for Digital Transformation for business systems, propose tech-driven solutions, and critique case studies.

Course Outcome (CO)	Action Verbs	Knowledge Level (Bloom's)	Key Focus Areas
<b>Analyse Business Needs and Model Systems</b> using DFDs, ER diagrams to translate requirements.	Analyse, Model, Translate, Validate	<b>Analyzing</b> (Level 4)	Business process modeling, DFDs, ER diagrams, stakeholder validation.
<b>Design Efficient and Secure System Architectures and UIs</b> with modularity, security, and cloud integration.	Design, Recommend, Integrate	<b>Evaluating/Creating</b> (Levels 5/6)	System architecture, coupling/cohesion, security measures, cloud/big data solutions.
<b>Implement Systems</b> using Agile/DevOps, test software, and adapt solutions based on feedback.	Implement, Test, Adapt	<b>Applying</b> (Level 3)	Agile/DevOps methodologies, unit/integration testing, iterative development.
<b>Evaluate Emerging Technologies</b> for digital transformation, propose solutions, and critique case studies.	Evaluate, Propose, Critique	<b>Evaluating</b> (Level 5)	Emerging tech (AI, IoT, blockchain), digital transformation strategies, case analysis.

## 5. Course Content:

**Course Name - System Analysis and Design**

**Course Code - SM302**

**Hours per Week - 4L:0T:0P**

**Credits - 4**

Module	Topic	No of Lectures
1	<p>Introduction to Systems Analysis and Design</p> <p>Introduction to Information Systems: Overview of information systems, their components, types (e.g., TPS, MIS, DSS), and their role in organizations.</p> <p>Systems and their Characteristics: Definition of a system, its components, and different types of systems (e.g., open vs. closed, physical vs. abstract).</p> <p>The Systems Development Life Cycle (SDLC): Introduction to the SDLC concept and various methodologies (e.g., Waterfall, Prototyping, Spiral).</p> <p>Role of the System Analyst: Understanding the responsibilities and skills required for a system analyst.</p>	4
2	<p>Systems Planning</p> <p>Preliminary Investigation: Identifying the need for a new system or system enhancements.</p> <p>Feasibility Analysis: Assessing the technical, economic, operational, schedule, and legal feasibility of a proposed system.</p> <p>Project Management Tools and Techniques: Introduction to tools and methods for planning, scheduling, and controlling system development projects.</p> <p>Systems Project Selection and Prioritization: Criteria and methods for selecting and prioritizing information system projects.</p>	4

3	<p>Requirements Gathering and Analysis</p> <p>Understanding Stakeholder Needs: Identifying and engaging with stakeholders to define system requirements.</p> <p>Requirements Elicitation Techniques: Methods like interviews, questionnaires, observation, and document analysis.</p> <p>Requirements Analysis and Modelling: Techniques like Data Flow Diagrams (DFDs) to represent data flows and processes within the system.</p> <p>Process Description Techniques: Using structured English, decision trees, and decision tables to elaborate system logic.</p>	4
4	<p>Data Modelling and Database Design</p> <p>Conceptual Data Modelling: Introduction to Entity-Relationship (ER) modelling and ER diagrams.</p> <p>Logical Database Design: Translating the conceptual model into a logical database schema.</p> <p>Relational Database Concepts: Understanding relational database structures, keys, and relationships.</p> <p>Normalization: Principles of normalization to optimize database design and reduce redundancy.</p>	4
5	<p>System Design - Architecture and User Interface</p> <p>System Architecture: Designing the overall structure and components of the system.</p> <p>User Interface Design: Principles of designing effective and user-friendly interfaces (e.g., GUI design principles, input/output forms).</p> <p>Input and Output Design: Designing data input forms, reports, and other system outputs.</p> <p>Module Design and Coupling/Cohesion: Structuring the system into well-defined modules with appropriate coupling and cohesion.</p>	4
6	<p>System Design - Object-Oriented Approaches</p> <p>Introduction to Object-Oriented Concepts: Objects, classes, inheritance, polymorphism, and encapsulation.</p> <p>Unified Modelling Language (UML): Introduction to various UML diagrams (e.g., use case diagrams, class diagrams, activity diagrams).</p> <p>Object-Oriented Analysis and Design (OOAD): Applying object-oriented principles to analyse and design systems.</p> <p>Case Tools for OOAD: Using CASE tools to support object-oriented system development.</p>	4
7	<p>System Implementation and Testing</p> <p>System Implementation Planning: Strategies for system conversion and deployment.</p> <p>Conversion Methods and Procedures: Techniques for migrating to the new system (e.g., direct cutover, parallel conversion).</p> <p>Software Testing Strategies: Unit testing, integration testing, system testing, and acceptance testing.</p> <p>Quality Assurance and Control: Ensuring the quality and reliability of the developed system.</p>	4
8	<p>System Maintenance and Security</p> <p>System Maintenance Activities: Corrective, adaptive, perfective, and preventive maintenance.</p> <p>Software Configuration Management: Managing changes and versions of the system throughout its lifecycle.</p> <p>Information System Security: Threats, vulnerabilities, and security measures (e.g., firewalls, encryption).</p> <p>Cybersecurity Concepts: Understanding cyber threats and security best practices.</p>	4
9	<p>Emerging Trends and Technologies in SAD</p> <p>Agile Methodologies: Principles and practices of agile software development.</p> <p>Cloud Computing and its Impact on SAD: Designing and implementing systems in a cloud environment.</p> <p>Big Data and Analytics: Incorporating data analytics and insights into system design.</p> <p>Artificial Intelligence and Machine Learning in SAD: Exploring the use of AI/ML in system development and functionality.</p>	4
10	<p>Case Studies and Project Work</p> <p>Real-World Case Studies: Analyzing and discussing successful and unsuccessful system development projects.</p> <p>Project Report on Information System Development: Practical application of SAD principles to a</p>	4

real or simulated business requirement.

Presentation and Discussion of Project Work: Students present their project findings and engage in discussions.

Career Opportunities in SAD: Exploring roles and career paths in system analysis and design.

## 6. Suggested Readings:

- Systems Analysis and Design, Akshay Aggarwal, Pearson Education India
- Object-Oriented Analysis and Design with UML, P. Ajithkumar, PHI Learning
- Software Engineering: Principles and Practices, Rajib Mall, McGraw Hill Education India
- Information Systems for Business, R. Panneerselvam, Prentice Hall India
- System Analysis and Design, Kenneth E. Kendall & Julie E. Kendall

## 7. Mapping of course outcomes to module / course content

Module #	Module Title	CO1	CO2	CO3	CO4	Key Focus Areas
1	Intro to SAD & SDLC	3	–	–	–	SDLC, Stakeholder Analysis
2	Systems Planning & Feasibility	2	–	1	–	Project Selection, ROI Analysis
3	Requirements Gathering & DFDs	3	–	–	–	Process Modeling, Stakeholder Elicitation
4	Data Modeling & DB Design	2	3	–	–	Normalization, Relational Design
5	System Architecture & UI Design	–	3	1	–	Modularity, HCI Principles
6	OOAD & UML	2	3	–	–	Object-Oriented Patterns
7	Implementation & Testing	–	1	3	–	DevOps, Unit/Integration Tests
8	Maintenance & Security	–	2	2	–	Cybersecurity, SCM
9	Emerging Trends (Cloud, AI, Big Data)	–	2	1	3	Tech Adoption Strategies
10	Case Studies	1	2	3	2	End-to-End Application

## 8. Program Outcomes (POs):

1. Graduates of the MBA program are expected to demonstrate competence in basic level of commerce, social and information sciences, fundamental quantitative methods and specialized functional domains of management appropriate to the program.
2. Graduates of the program are expected to be able to use appropriate knowledge and skills to identify, formulate, investigate, analyze and solve complex business problems in order to reach substantiated conclusions.
3. Graduates of the program are expected to be able to design solutions for complex multi-dimensional corporate problems and execute systems, components or processes that meet specified needs using contemporary techniques, resources, and management tools with appropriate attention to applicable standards and relevant

strategic framework.

4. Graduates of the program are expected to work effectively as a member and leader in teams preferably in a multi-disciplinary setting.
5. Graduates of the program are expected to communicate effectively with all the stakeholders as a part of his role as a manager
6. Graduates of the program are expected to apply ethical principles and make ethical choices for the larger interest of Enterprise, Public and Society.
7. Graduates of the program are expected to engage in independent and life-long learning to evolve as responsible Corporate Leaders.

### 8. Mapping of the Course outcomes to Program Outcomes

PO Description	CO1	CO2	CO3	CO4	Justification
<b>PO1:</b> Competence in commerce, social sciences, and management fundamentals	2	1	1	1	CO1 aligns with business analysis (social/management sciences), while CO2-CO4 are more technical.
<b>PO2:</b> Identify, analyze, and solve complex business problems	3	2	2	3	CO1 (problem analysis via DFDs) and CO4 (tech-driven solutions) directly address PO2.
<b>PO3:</b> Design solutions using contemporary tools/techniques	2	3	3	2	CO2 (system design) and CO3 (Agile/DevOps) are core to PO3. CO4 partially aligns via tech proposals.
<b>PO4:</b> Teamwork in multi-disciplinary settings	1	1	3	1	CO3 (Agile/DevOps) emphasizes teamwork; others are individual-focused.
<b>PO5:</b> Effective stakeholder communication	2	1	1	2	CO1 (stakeholder needs) and CO4 (case study critiques) require communication skills.
<b>PO6:</b> Ethical principles for enterprise/society	1	2	1	3	CO2 (security) and CO4 (tech ethics) address societal/ethical concerns.
<b>PO7:</b> Lifelong learning for leadership	1	1	2	3	CO4 (emerging tech evaluation) fosters continuous learning.

**Course Name: E-Commerce -Technology and Application**

**Course Code: SM-303**

**(Semester III)**

**Category: Elective**

**[4 Credits: 40 Hrs]**

**1. Course Prerequisite:**

- I. Familiarity with core business concepts such as marketing, sales, supply chain, and customer relationship management (CRM) will help students grasp e-commerce models (B2B, B2C, etc.), digital marketing strategies, and logistics in online business. Knowledge of entrepreneurship and business planning will be useful for modules like E-commerce Strategy and Entrepreneurship and Building and Managing E-commerce Platforms.
- II. Basic awareness of how websites, mobile apps, and digital platforms function, including concepts like domain registration, hosting, and SEO (Search Engine Optimization). Familiarity with social media platforms and their role.
- III. A foundational understanding of online security risks (phishing, fraud, data breaches) and basic encryption concepts will aid in comprehending E-commerce Security and Payment Systems. Familiarity with data privacy regulations (e.g., GDPR) will be helpful for modules on E-commerce Laws and Ethics and Global E-commerce.

**2. Course Learning Objectives:**

- I. Evaluate different e-commerce models (B2B, B2C, C2C, C2B) and their revenue strategies. Compare and select appropriate e-commerce platforms based on business needs.
- II. Formulate digital marketing campaigns using SEO, SEM, social media, and email marketing to attract and retain customers. Utilize web analytics tools to measure performance, track customer behaviour, and optimize strategies. Assess security risks in e-commerce transactions and implement safeguards (SSL, encryption, fraud prevention) to protect data.
- III. Examine legal frameworks affecting online businesses. Analyse supply chain logistics, international regulations, and cultural factors in global e-commerce expansion. Assess ethical concerns (data privacy, digital divide) and emerging tech trends (AI, AR/VR) shaping the future of e-commerce.

**3. Teaching methodology and evaluation system for the course:**

**A. Teaching methodology –**

- Lectures and Presentations
- Interactive Discussion
- Case Studies
- Guest Lectures.

**B. Evaluation System –**

- Internal Assessment (25 Marks)
- Assignment (10 Marks)
- Attendance (5 Marks)
- Internal Exam (40 Marks)- Summative Assessment [CIA1, CIA2]
- End-Semester Exam (60 Marks)- Summative Assessment.

**4. Course Outcomes:**

By the end of this course, students will be able to –

- Analyse different e-commerce models (B2B/B2C/C2C), compare platform technologies, and classify security/legal risks using case studies.
- Design SEO/SEM campaigns, implement social commerce tactics, and optimize strategies using web analytics to enhance customer engagement.
- Evaluate cross-border logistics/payment challenges, assess GDPR/PDP compliance, and recommend ethical AI/cultural adaptation strategies.
- Develop a business plan integrating AR/VR/AI tool, propose supply chain innovations (IoT/RFID), and pitch funding-ready solutions

CO #	Course Outcome (CO)	Action Verbs	Bloom's Level	Key Focus Areas
CO1	Analyse different e-commerce models (B2B/B2C/C2C), compare platform technologies, and classify security/legal risks using case studies.	Analyse, Compare, Classify	<b>Analyzing (Level 4)</b>	E-commerce models, platform tech, risk assessment
CO2	Design SEO/SEM campaigns, implement social commerce tactics, and optimize strategies using web analytics to enhance customer engagement.	Design, Implement, Optimize	<b>Applying (Level 3), Evaluating (Level 5)</b>	Digital marketing, Google Analytics, social commerce
CO3	Evaluate cross-border logistics/payment challenges, assess GDPR/PDP compliance, and recommend ethical AI/cultural adaptation strategies.	Evaluate, Assess, Recommend	<b>Evaluating (Level 5), Creating (Level 6)</b>	Global e-commerce, data privacy laws, ethical AI
CO4	Develop a business plan integrating AR/VR/AI tools, propose supply chain innovations (IoT/RFID), and pitch funding-ready solutions.	Develop, Propose, Pitch	<b>Creating (Level 6)</b>	Emerging tech (AI/AR/VR), IoT in SCM, entrepreneurship

## 5. Course Content:

**Course Name - E-Commerce -Technology and Application**

**Course Code - SM303**

**Hours per Week - 4L:0T:0P**

**Credits - 4**

Module	Topic	No of Lectures
1	<p><b>Introduction to E-commerce and the Digital Landscape</b>            Defining e-commerce, its evolution, and growth. Key concepts like online marketplaces, types of e-commerce (B2B, B2C, C2C, C2B), and the forces driving its expansion.            E-commerce vs. E-business. Exploring the differences and connections between the two, and the challenges faced by traditional businesses in adapting to the digital shift.            Understanding the digital landscape: The internet and World Wide Web, web technologies and tools for e-commerce, website design fundamentals, and web hosting and domain registration.            E-commerce applications across different industries: Retail, finance, manufacturing, advertising, travel, digital media, and more.</p>	4
2	<p><b>Building and Managing E-commerce Platforms</b>            Exploring different e-commerce business models and revenue generation strategies.            E-commerce platforms and technologies: Introduction to platforms like Shopify, Magento, WooCommerce, and their features and benefits.            Web and mobile application development for e-commerce, including responsive design and mobile-first approaches.            Website optimization for performance, user experience, and search engine visibility (basics of SEO).</p>	4
3	<p><b>Digital Marketing and Analytics for E-commerce</b>            Foundations of digital marketing: Understanding online marketing channels like SEO, SEM, social media marketing, email marketing, and content marketing.            Developing and implementing online marketing strategies to attract, engage, and retain customers.            Introduction to web analytics and key metrics: Using data to track website performance, customer behavior, and marketing effectiveness.            Data-driven decision making: Leveraging analytics tools and techniques to optimize website design, marketing campaigns, and business strategies.</p>	4

4	<p><b>E-commerce Security and Payment Systems</b></p> <p>Understanding online security threats and vulnerabilities in e-commerce transactions and data.</p> <p>E-commerce security measures and protocols: Firewalls, encryption (secret-key and public-key), Secure Sockets Layer (SSL) and web security.</p> <p>Exploring electronic payment systems: Digital cash, electronic checks, online credit card processing, payment gateways, and the Secure Electronic Transaction (SET) protocol.</p> <p>Fraud prevention, risk management, and legal issues related to online payment systems.</p>	4
5	<p><b>E-commerce Laws and Ethics</b></p> <p>Introduction to e-commerce laws and regulations, including consumer protection laws and intellectual property rights in the digital space.</p> <p>Legal issues in online contracts and transactions, including e-signatures and validity of online agreements.</p> <p>Data privacy and information rights in e-commerce, including General Data Protection Regulation (GDPR) and other privacy frameworks.</p> <p>Ethical considerations and social impact of e-commerce, including issues related to accessibility, digital divide, and online conduct.</p>	4
6	<p><b>Supply Chain Management and Logistics in E-commerce</b></p> <p>Introduction to supply chain management in the context of e-commerce, including challenges and opportunities.</p> <p>E-commerce warehousing and transportation: Order fulfilment, inventory management, and logistics strategies.</p> <p>Reverse logistics and managing returns in e-commerce, including policies and procedures.</p> <p>Leveraging technology and analytics for optimizing supply chain operations and improving customer satisfaction in e-commerce.</p>	4
7	<p><b>Social media, Auctions, and Portals</b></p> <p>Social media platforms and their role in e-commerce: Building brand presence, customer engagement, and online community.</p> <p>Leveraging social networks for e-commerce success: Social commerce, influencer marketing, and user-generated content.</p> <p>Online auctions and bidding platforms, including their mechanics, risks, and benefits.</p> <p>E-commerce portals and marketplaces: Exploring different models like Amazon, Flipkart, and their impact on online retailing.</p>	4
8	<p><b>Mobile Commerce and Emerging Technologies</b></p> <p>Mobile commerce (m-commerce): Understanding its characteristics, growth drivers, and applications across various industries.</p> <p>Mobile app development for e-commerce, including user experience design, features, and platform integration.</p> <p>Emerging technologies in e-commerce: Artificial intelligence (AI), machine learning, big data, augmented reality (AR), and virtual reality (VR).</p> <p>Impact of emerging technologies on e-commerce business models, customer experience, and future trends.</p>	4
9	<p><b>Global E-commerce and International Business</b></p> <p>E-commerce in a global context: Opportunities and challenges of cross-border e-commerce.</p> <p>International legal considerations and regulations in e-commerce, including import/export regulations, tariffs, and customs procedures.</p> <p>Cultural nuances, market differences, and adaptation strategies for entering international e-commerce markets.</p> <p>International payment systems, logistics, and customer service for successful global e-commerce operations.</p>	4
10	<p><b>E-commerce Strategy and Entrepreneurship</b></p> <p>Developing e-commerce strategies: Setting objectives, defining target markets, and selecting appropriate business models.</p> <p>E-commerce entrepreneurship: Identifying online business opportunities, creating business plans, and securing funding.</p> <p>Managing an online business: Customer relationship management (CRM), operational efficiency, and performance measurement.</p> <p>Case studies and success stories in e-commerce: Analyzing innovative business models and entrepreneurial journeys.</p>	4

## 6. Suggested Readings:

- E-Commerce: An Indian Perspective by P.T. Joseph, McGraw Hill
- Digital Marketing & E-Commerce by Puneet Singh Bhatia, Pearson
- E-Commerce in India: Emerging Trends and Challenges, Dr. R.K. Tailor, Himalaya Publishing House
- Digital Payments and E-Commerce Security, Vandana Ahuja, Springer/Pearson India

## 7. Mapping of course outcomes to module / course content

Module #	Module Title	CO 1	CO2	CO 3	CO4	Key Focus Areas
1	Introduction to E-commerce and the Digital Landscape	1	3	3	3	Models, Digital Landscape
2	Building and Managing E-commerce Platforms	1	2	3	3	Platform comparison
3	Digital Marketing and Analytics for E-commerce	3	1	3	2	SEO/SEM, Social Commerce
4	Digital Marketing and Analytics for E-commerce	1	3	2	3	Risk assessment, Fraud prevention
5	E-commerce Laws and Ethics	2	3	1	3	GDPR, Legal risks
6	Supply Chain Management and Logistics in E-commerce	3	3	1	2	Cross-border logistics, IoT
7	Social media, Auctions, and Portals	3	1	3	3	Social commerce tactics
8	Mobile Commerce and Emerging Technologies	2	3	2	1	Tech integration, Innovation
9	Global E-commerce and International Business	3	3	1	2	Cross-border challenges
10	E-commerce Strategy and Entrepreneurship	3	2	2	1	Business plans, Pitching

## 8. Mapping of the Course outcomes to Program Outcomes

PO #	Program Outcome (PO) Description	CO 1	CO2	CO 3	CO4	Justification
PO1	Competence in commerce, social sciences, and management fundamentals	3	2	2	2	CO1 (e-commerce models) directly aligns with commerce fundamentals. Other COs partially support through applied knowledge.
PO2	Identify, analyze, and solve complex business problems	3	3	3	2	All COs involve problem-solving (e.g., risk analysis in CO1, marketing optimization in CO2, global logistics in CO3).
PO3	Design solutions for corporate problems using management tools	2	3	3	3	CO2 (campaign design), CO3 (compliance strategies), and CO4 (tech-driven business plans) emphasize solution design.
PO4	Work effectively in teams (multi-disciplinary settings)	1	2	2	3	CO4 (pitching solutions) and CO2/CO3 (collaborative strategies) require teamwork.
PO5	Communicate effectively with stakeholders	1	2	2	3	CO4 (business pitches) and CO2/CO3 (marketing/cross-cultural strategies) demand communication skills.
PO6	Apply ethical principles for enterprise/society	1	1	3	2	CO3 (GDPR/ethical AI) strongly aligns; CO4 (tech solutions) indirectly addresses ethics.
PO7	Engage in life-long learning as corporate leaders	2	2	2	3	CO4 (emerging tech integration) and CO1/CO3 (evolving models/regulations) foster adaptive learning.

**Course Name: Production Planning and Control**  
**Course Code: SM-304**  
**(Semester III)**  
**Category: Elective**  
**[4 Credits: 40 Hrs]**

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**1. Course Prerequisite:**

- Basics of Operations Management
- Familiarity with basic concepts of Business Mathematics
- Basic concepts of statistics

**2. Course Learning Objectives:**

By the end of the course, students will:

- Understand the Scope and Objectives of Production Planning and Control
- Apply Forecasting and Inventory Control Techniques to solve business problems
- Analyze Planning and Scheduling Methods for Operations
- Evaluate Techniques for Work Measurement and Productivity Enhancement
- Design Control Systems for Effective Production Management

**3. Teaching methodology and evaluation system for the course:**

**Teaching methodology** – The course uses lectures and case discussions, student presentations, and a comprehensive final examination to achieve these objectives.

**Evaluation System – Continuous Internal Assessment (Twice in a semester)**

CIA1 and CIA2 **(Total: 40 Marks each)**

- Class Test (Objective + Subjective): 25 Marks (Duration: 1 hour)
- Assignment: 10 Marks
- Attendance: 5 Marks

**End-Semester Exam (60 Marks)-** Summative Assessment.

**4. Course Content:**

**Course Name : Production Planning and Control**

**Course Code : SM [304]**

**Hours per Week: 4L**

**Credits: 4**

Sl. No.	Topic	Hours
1	<b>Introduction to Production Planning and Control:</b> Definition – Objectives and benefits of production Planning and Control, Functions of production planning and control, – Elements of production control – Types of production: Job production, batch production, mass production	3L
2	<b>Forecasting:</b> Importance of forecasting – Types of forecasting, their uses – General principles of forecasting – Forecasting techniques– qualitative methods and quantitative methods.	4L

3	<b>Inventory Management:</b> Functions of inventories – relevant inventory costs – ABC analysis – VED analysis – EOQ model – Inventory control systems – P-Systems and QSystems, JIT inventory, Japanese concepts.	<b>7L</b>
4	<b>Material Requirement Planning:</b> , concept, process of MRP, applications and brief details about software packages available in market <b>Enterprise Resource Planning:</b> concept and applications.	<b>4L</b>
5	Line balancing, aggregate planning- methods for aggregate planning- Chase planning, product sequencing, product control systems	<b>5L</b>
6	<b>Routing:</b> Definition – routing procedure- Route sheets – Bill of material, factors affecting routing procedure	<b>3L</b>
7	<b>Scheduling:</b> meaning and need for productivity and utilization, Scheduling polices – techniques, standard scheduling methods- job shop, flow shop, basic scheduling problems, Gantt charts.	<b>4L</b>
8	Techniques of work measurement, time study, work study, work sampling, synthesis from standard data – predetermined motion time standards.	<b>4L</b>
9	Periodic batch control, Progress reporting and expediting, Manufacturing Lead Time, Techniques for aligning completion time and due dates.	<b>3L</b>
10	<b>Dispatching:</b> Activities of dispatcher- Dispatching procedure. <b>Follow up:</b> definition – reasons for existence of functions – types of follow up.	<b>3L</b>

## 5. Suggested Readings

1. Industrial engineering and management by Dr. Ravi Shankar
2. Mart and Telsang “Industrial Engineering and Production Management” S. Chand and Company
3. James B. Dilworth “Operations Management Design, Planning and Control for manufacturing and services” Mcgraw Hill International

## 6. COURSE OUTCOMES

Course Outcomes	Details/Statement	Action Verb	Knowledge Level
<b>CO 1</b>	To understand and apply the fundamentals of Production Planning and Control, Forecasting, and Inventory Management	Discuss, Determine, Examine	Understand and Apply
<b>CO 2</b>	To apply and analyze planning, routing, scheduling, and work measurement techniques	Illustrate, Examine	Apply and analyze
<b>CO 3</b>	To evaluate and design control processes for production performance optimization	Design, Develop	Evaluate and create

### 7. Mapping of course outcomes to module / course content

Module	CO1	CO2	CO3
1	3	2	2
2	3	-	-
3	3	-	-
4	-	3	-
5	-	3	-
6	-	3	-
7	-	3	-
8	-	3	-
9	-	-	3
10	-	-	3

### 8. Mapping of the Course outcomes to Program Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	3	3	2	3	2	3
CO2	3	3	3	2	2	2	3
CO3	3	3	2	2	2	2	3

**Course Name: Statistical Methods in Data Analysis**  
**Course Code: SM-305**  
**(Semester III)**  
**Category: Elective**  
**[4 Credits: 40 Hrs]**

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**1. Course Prerequisite:**

- Familiarity with Basic Mathematical Skills
- Introductory Concepts in Probability
- Graphical and Visual Interpretation Skills
- Foundational Understanding of Data Types

**2. Course Learning Objectives:**

By the end of the course, students will:

- Understand and explain fundamental statistical and the role of statistics in business decision-making.
- Apply appropriate descriptive and inferential statistical techniques to analyze and interpret business data.
- Analyze probability distributions, sampling methods, and estimation techniques to solve real-world business problems involving uncertainty and variation.
- Evaluate and construct predictive and inferential models including regression analysis, ANOVA, and time series forecasting for effective decision-making in business contexts.
- Develop data-driven solutions using advanced statistical methods such as decision theory, PCA, cluster analysis, and non-parametric techniques for strategic and operational decisions.

**3. Teaching methodology and evaluation system for the course:**

**Teaching methodology** – The course uses lectures and case discussions, student presentations, and a comprehensive final examination to achieve these objectives.

**Evaluation System – Continuous Internal Assessment (Twice in a semester)**  
CIA1 and CIA2 (Total: 40 Marks each)

- Class Test (Objective + Subjective): 25 Marks (Duration: 1 hour)
- Assignment: 10 Marks
- Attendance: 5 Marks

**End-Semester Exam (60 Marks)-** Summative Assessment.

**4. Course Content:**

**Course Name : Statistical Methods for Data Analysis**

**Course Code : SM [305]**

**Hours per Week: 4L**

**Credits: 4**

Sl. No.	Topic	Hours
1	<b>Basic concepts of statistics:</b> definition of statistics, Role of statistics in business, Population vs. sample, variables (categorical vs. numerical), primary vs. secondary, classification of data: qualitative, quantitative data. Scales of Measurement: Nominal, ordinal, interval, and ratio scales. Exploratory Data Analysis (EDA): Identifying patterns and anomalies in data. Graphical Representation of Data: Histograms, box plots, scatter plots, and pie charts.	3L
2	<b>Descriptive Statistical Measures:</b> Measures of Central Tendency (Empirical and positional): Mean (arithmetic, geometric, harmonic), median, mode. Measures of Dispersion: Range, variance, standard deviation, coefficient of variation. Understanding the shape of data distributions. Percentiles, Quartiles, and Deciles: Application in business analytics	2L
3	<b>Probability Theory and Distributions:</b> Basic Probability Concepts: Classical, empirical, and subjective probability, Rules of Probability: Addition and multiplication rules, conditional probability, Bayes' Theorem: Applications in risk assessment and decision-making, Random Variables and Expectation: Discrete and continuous variables, expected value calculation, Probability Distributions: Binomial, Poisson, Normal, Exponential, and their business applications.	5L
4	<b>Sampling Theory and Estimation:</b> Concept of Population and Sample: Census vs. sample studies, Sampling Techniques: Simple random, stratified, systematic, and cluster sampling, Sampling Distribution of the Mean and Proportion: Law of large Numbers and Central Limit Theorem, Point and Interval Estimation: Confidence intervals for means and proportions, Determining Sample Size: Applications in business research.	4L
5	<b>Hypothesis Testing and Inference:</b> Concept of Hypothesis Testing: Null and alternative hypotheses, significance level, Errors in Hypothesis Testing: Type I and Type II errors, Parametric Tests: One-sample and two-sample t-tests, Paired sample t-test, Z-test for population means and proportions, Analysis of Variance (ANOVA): One-way and Two-way ANOVA. P-Value and Decision Making: Role in hypothesis testing.	5L
6	<b>Correlation and Regression Analysis:</b> Correlation Analysis: Pearson's and Spearman's correlation coefficients, interpretation, Simple Linear Regression: Model building, assumptions, and interpretation, Multiple Linear Regression: Estimating and evaluating models, coefficient significance testing, Multicollinearity and Autocorrelation: Causes, detection, and remedies, Application in Business Forecasting: Demand and sales prediction.	5L
7	<b>Non-Parametric Statistical Methods:</b> Need for Non-Parametric Methods, Chi-Square Test: Test for independence and goodness-of-fit, Mann-Whitney U Test: Comparing two independent samples, Kruskal-Wallis Test, Wilcoxon Signed-Rank Test.	4L
8	<b>Time Series Analysis and Forecasting:</b> Components of Time Series: Trend, seasonality, cyclical, and irregular variations, Moving Average Method: Simple and weighted moving averages.	4L
9	<b>Decision Theory:</b> Statistical Decision Making: Expected monetary value (EMV) approach, Decision Trees: Construction and application in risk analysis, Bayesian Decision Analysis: Decision-making under uncertainty, Sensitivity Analysis: Evaluating model robustness.	3L
10	<b>Advanced Statistical Methods in Data Analysis:</b> Introduction to Predictive Analytics: Understanding predictive modelling, Principal Component Analysis (PCA): Dimensionality reduction in business data, Cluster Analysis: Hierarchical and k-means clustering for market segmentation.	5L

### 5. Suggested Readings:

1. Statistics for Management by Richard I. Levin, David S. Rubin, Masood H. Siddiqui and Sanjay Rastogi, 8<sup>th</sup> edition, Pearson, 2017.
2. Complete Business Statistics by Amir Aczel, Jayavel Sounderpandian and P Saravanan, 7<sup>th</sup> edition, McGraw Hill Education, 2017.
3. Basic Econometrics by Damodar N. Gujarati, Dawn C. Porter and Sangeetha Gunasekar, 5<sup>th</sup> edition, McGraw Hill Education, 2017.
4. Operations Research: Theory and Applications by J. K. Sharma, Trinity Press, 6<sup>th</sup> Edition, 2017.

### 6. Course Outcomes:

Course Outcomes	Details/Statement	Action Verb	Knowledge Level
SM 305.1	Understand basic statistics and probability, and apply them to summarize and visualize business data.	Discuss, Determine, Examine	Understand and Apply
SM 305.2	Analyze sampling, hypothesis testing, and regression models to support business decisions and forecasting.	Calculate, Estimate	Analyze and Evaluate
SM 305.3	Apply advanced statistical and decision analysis methods to solve complex business problems.	Develop, Solve	Apply and Create

### 7. Mapping of course outcomes to module / course content

Module	CO1	CO2	CO3
1	3	-	1
2	3	-	1
3	3	-	2
4	-	3	-
5	-	3	-
6	-	3	-
7	-	3	-
8	-	1	3
9	-	-	3
10	-	-	3

### 8. Mapping of the Course outcomes to Program Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	3	2	2	1	1	3
CO2	3	3	3	2	1	1	2
CO3	3	3	2	2	1	1	3