



**JECRC**<sup>TM</sup>  
**UNIVERSITY**  
BUILD YOUR WORLD

**School of Management**

**Syllabi and Course Structure**

**Master of Business Administration  
Business Analytics (IOA)**

**Academic Programmes**

**Batch (2022-2024)**

**Total Credits for the Batch 2022 – 24 = 104 Credits**

1. **Minimum Credit required = 104**
2. **Total Relaxation = \*10% relaxation for Mooc, NPTEL & Swayam courses**
3. **No relaxation in Core and Fundamental subjects**
4. **Option can be availed in Specialization, Interdisciplinary and General subjects.**

**Summary Sheet**

Semester	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	Total	Min. Credit req. for degree
Credit	28	28	28	20	104	*10% relaxation for Mooc, NPTEL & Swayam courses

Type	Foundation	Core	Specialization	Interdisciplinary	General
Total Credit	16	40	36	8	4

**Semester I**

FIRST SEMESTER						
Sub Code	Sub Name	L	T	P	C	Type
MBA017A	Principles of Economics & Market	4	-	-	4	C
MBA018A	Managerial Effectiveness & Ethics	4	-	-	4	C
MBA019A	Accounting & Finance	4	-	-	4	F
MBA020A	Organizational Behaviour & Human Resources Management	3	1	-	4	F
MBA021A	Quantitative Techniques & Analytics	3	1	-	4	G
MBA022A	Information Technology for Management	3	-	2	4	F
MBA023A	Entrepreneurship	3	1	-	4	ID
	<b>TOTAL</b>	<b>24</b>	<b>3</b>	<b>2</b>	<b>28</b>	

**Semester II**

SECOND SEMESTER						
Sub Code	Sub Name	L	T	P	C	Type
MBA028A	Corporate & Business Law	3	-	-	4	F
MBA039A	Statistics with R	2	1	2	4	S
MBA040A	Python Programming	2	1	2	4	S
MBA 027A	Managing Finance In A Digital World	4	-	-	4	C
MBA041A	Information Technology Law	3	-	2	4	ID
MBA042A	Structured Query Language	2	1	2	4	S
MBA043A	SaS and Tableau	3	1	2	4	S
	<b>TOTAL</b>	<b>19</b>	<b>4</b>	<b>10</b>	<b>28</b>	

### Semester III

<b>THIRD SEMESTER</b>						
<b>Sub Code</b>	<b>Sub Name</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>	<b>Type</b>
MBA032A	Analytics for Finance	4	-	-	4	S
MBA033A	Marketing Management & Research	4	-	-	4	C
MBA034A	Financial Markets	4	-	-	4	C
MBA044A	Natural Language Processing	2	1	2	4	S
MBA045A	Social Media Analytics	2	-	4	4	S
MBA046A	Machine Learning and Artificial Intelligence	2	-	4	4	S
MBA047A	Big Data Analytics	2	-	4	4	S
	TOTAL	<b>20</b>	1	14	<b>28</b>	

### Semester IV

<b>FOURTH SEMESTER</b>						<b>Type</b>
<b>MBA 100A</b>	Dissertation	-	-	40	20	C
	TOTAL		-	<b>40</b>	<b>20</b>	

#### **Program Educational Objective (PEO)**

1. To attain a general level of competence in management
2. To become able to act with creative, innovative and entrepreneurial potential with management tools.
3. To make a successful career in industry, business and entrepreneurship
4. To explore and develop leadership, teamwork, social, legal ethical responsibilities in business and society.
5. To possess professional skills form employment and lifelong learning in management.

#### **Program Objective (PO)**

1. **[POb1].** Apply appropriate practical tools in management perspective.
2. **[POb2].** Articulate business framework in terms of purposeful aspects.
3. **[POb3].** Portray inter linkages among functional areas of an enterprise.
4. **[POb4].** Analyze and interpret the performance of an enterprise and its diverse functional units.
5. **[POb5].** Describe various concepts in management and express their application in specific business situation.
6. **[POb6].** Illustrate a problem faced by a venture and demonstrate the application of specific concepts(s) in that context.
7. **[POb7].** Portray the external environment faced by an enterprise and its inference to enterprise's nearby and potential time.
8. **[POb8].** Figure out the linkages between an enterprise's external surroundings and its internal forces and reveal the ability to form a strategy and steps of its implementation.
9. **[POb9].** Develop critical thinking skills to take up the role as Business Analysts and Professionals in the Business Domains.
10. **[POb10].** Articulate, illustrate and demonstrate the ability to develop Natural language processing models. Implement and deploy programs based on Relationship Extraction, POS Tagging and Clustering Algorithms based on NLP.
11. **[POb11].** Analyze and understand patterns and techniques in social media & Mobile Analytics to solve complex problems.

12. [POb12]. Implement Machine Learning techniques and the Programming Framework to obtain acceptable decisions for the Real-World problems.

**Program Outcomes (PO)**

**PO1:** Develop as an individual with the conceptual as well as practical knowledge in the field of analytics, comprising of business studies and metrics, statistics, information technology and management.

**PO2:** Develop the ability to understand how to create data structures in R: vectors; arrays and matrices; lists and data frames.

**PO3:** Develop the fundamental understanding of python programming and apply the concepts in data structure and algorithms and Object-Oriented Programming.

**PO4:** Design and implement complex database schemas. Learn to navigate the treacherous world of storing dates and times.

**PO5:** Develop the ability to understand Tableau Interface, Panes and Implement Visualization Techniques. Prepare, Deploy and Publish Stories, Dashboards based on Analytical Cases.

**PO6:** Develop critical thinking skills to take up the role as Business Analysts and Professionals in the Business Domains.

**PO7:** Articulate, illustrate and demonstrate the ability to develop Natural language processing models. Implement and deploy programs based on Relationship Extraction, POS Tagging and Clustering Algorithms based on NLP.

**PO8:** Analyze and understand patterns and techniques in social media & Mobile Analytics to solve complex problems.

**PO9:** Implement Machine Learning techniques and the Programming Framework to obtain acceptable decisions for the Real-World problems.

**PO10:** Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology.

**PO11:** Elicit views of others, mediate disagreements and help reach conclusions in group settings

**PO12:** Demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering

**Semester I**

FIRST SEMESTER						
Sub Code	Sub Name	L	T	P	C	Type
MBA017A	Principles of Economics & Market	4	-	-	4	C
MBA018A	Managerial Effectiveness & Ethics	4	-	-	4	C
MBA019A	Accounting & Finance	4	-	-	4	F
MBA020A	Organizational Behaviour & Human Resources Management	3	1	-	4	F
MBA021A	Quantitative Techniques & Analytics	3	1	-	4	G
MBA022A	Information Technology for Management	3	-	2	4	F
MBA023A	Entrepreneurship	3	1	-	4	ID
	<b>TOTAL</b>	<b>24</b>	<b>3</b>	<b>2</b>	<b>28</b>	

**Principles of Economics and Markets**  
**SUBJECT CODE: MBA017A**  
**CREDITS: 4**

**Course Objective**

The objective of the course is, the fundamentals of economics and with relationship with business, to know and learn about the demand and Supply Analysis, to learn about the macroeconomic policies and financial investment markets.

**Unit 1: The Economic Way of Thinking**

Introduction to economics: concept of scarcity- trade-offs, opportunity cost, basic economic problems, microeconomics and macroeconomics, managerial economics-meaning and nature. Business Cycle: Business Cycle- Features, Phases, Causes and Measures for Controlling Business Cycles. Concept of Inflation, Deflation, FDI, National Income- Concepts and Measurements.

Sectoral Composition: Contribution of Agriculture, industry and services sector towards economic development, Government Initiatives to boost up each sector

**Unit 2: Demand & Supply Analysis and Estimation**

Demand Analysis- meaning of demand, determinants of demand, demand equation, Law of Demand, elasticity of demand, types of elasticity (numerical), measurement of elasticity, Demand forecasting-meaning, types and measurement, supply- meaning, determinants, Law of Supply, market equilibrium.

**Unit 3: Production Analysis and Market Competition**

Production-meaning, production function, laws of production-law of variable proportions and laws of returns to scale, isoquants, economies of scale; Cost analysis- Meaning of cost, Cost concepts, (problems), cost function- SR & LR, LAC curve; Breakeven analysis- BEP (numerical), Cost & Economies of scale.

Types of markets: perfect competition, monopoly, monopolistic competition and oligopoly; profit-maximization-alternative forms of organization; marginal revenue, marginal cost, and profit maximization, profit maximization by a competitive firm: short-run profit maximization by a competitive firm and long-run profit maximization. Oligopoly Market: Oligopoly-price searchers-meaning, cartels, conditions for cartel success; advanced pricing-extensions of oligopolistic pricing: limit entry pricing, price rigidity and kinked demand; price leadership, volume pricing.

**Unit 4: Indian Economy**

Introduction: Characteristics of Indian economy as developing economy, Economic growth vs Economic development, causes and solutions for economic development, Measurement of Development- Human Development Index (HDI) and other measurements.

Policy and Economic Reforms : Economic Policies- New Economic Policy (LPG); monetary policy, fiscal policy; Industrial Policy, Foreign Trade Policy, FDI, Economic reforms- current economic reforms (SAP-Structural Adjustment Programs), privatization, disinvestment, Demonetization, GST.

Economic Planning: Need for Finance Commission, Role and functions of Finance commission of India, need and importance of NITI Aayog, Functions of NITI Aayog.

**Unit 5: Financial System**

Over view: Over view of the Financial System, Financial Institutions, Financial Markets, Financial Instruments and Services, Role of financial Intermediaries, Source of Funds,

Application of Funds, Role of Financial Regulatory and Promotional Institutions like RBI, SEBI, IRDA, PFRDA.

Financial Markets:

Monetary policy-Tools, Goals and Targets, structure of interest rates – Nominal and real interest rate, Money Market- instruments, utility, eligibility: Call, Notice & Term Money Market, Commercial Bills, Commercial Paper, Certificate of Deposits, T-Bills issue & yield-computation, Repo, market for financial Guarantees, Discount market, Government (Gilt-edged) Securities Market & design, Banking institutes, Insurance companies

Equities Market-Primary Markets –SEBI norms (ICDR regulations), exit routes, introduction to public issues, types of issues, appointing Merchant Bankers & other intermediaries, Filing DRHP & types of prospectuses, book building mechanism, types of investors, ASBA,Secondary Markets-Purpose & procedures for listing (post-IPO); SEBI framework, role of stock exchanges-NSE, BSE, role of secondary market intermediaries, Depositories, Overview of Bond market and recent developments, Financial Services:

Various Savings plans, Non-Bank Financial intermediaries -Leasing, Hire purchase, Credit rating, Factoring, Forfaiting, Non-Bank Statutory Financial Organizations.Technology in Financial Services: Digital currencies, Emerging technologies, FinTech operational, technology, and regulatory risks, Block chain, Cryptocurrency and Bit coins, Cyber-security law in India, Big data and Chat bots, Role of Artificial Intelligence.

### Course Outcomes

CO1: Identify the relationship between economic theories and business decisions.

CO2: Evaluate business decisions based on Demand and Supply concepts.

CO3: Assess market competition and structure for different products.

CO4: Interpret various macroeconomic policies for better understanding of the economy.

CO5: Apply financial market norms towards investment decisions.

### MAPPING COURSE OUTCOMES LEADING TO THE ACHIEVEMENT OF PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOMES:

Course Outcome	Program Outcome						
	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	2		1				
CO2		2				2	
CO3							2
CO4				2			
CO5					2		

H = Highly Related; M = Medium L = Low

### Text Books

- Ahuja, H.L. Advanced Economic Theory(Micro Economics), S.Chand&Co, New Delhi

### References:

- Browning Edgar K. &Jacquel Line M. Browning, Micro Economics and application, Kalyani publishers, New Delhi.
- Gould John P. and Edward P.Lazear, Micro Economic Theory, All India Traveller Book-seller, New Delhi.
- Koutsoviannis Modern Micro Economics, Macmillan Press Limited, New Delhi.
- Dewett. K.K. Micro Economics, S.Chand&Co, New Delhi
- Price, M.C, Welfare Economics, Macmillian, London.

- Lipsey & Chrystal, Economics, Indian Edition, Oxford University Press.
- Dominick Salvatore, Micro Economics Theory and Application, Oxford University Press.

**Managerial Effectiveness and Ethics**  
**SUBJECT CODE: MBA018A**  
**CREDITS: 4**

**Course Objective**

The Objective of the Course is, to understand the competencies and skillsets, to know and learn about the effective reading, writing, speaking, listening and presentation skills and to learn the leadership skills for organizational building to create strong teams.

**Unit 1: Communication and Presentation Skills**

Effective Communication: Introduction, importance of communication, process of communication, types of communication, principles of effective communication, technology and business communication, addressing the barriers to communication. Oral and Non-verbal Communication, business etiquette.

Listening & Reading Skills, Written Communication: Written communication: memos, proposals, letter writing, circulars, notices, agenda and minutes of the meetings, report writing. CV and resume writing, Email writing and etiquette.

Presentation Skills: Learn to design effective & engaging presentations; Master powerful & effective verbal & non-verbal communication techniques; Gain insight into effective techniques for calming nerves; Create compelling PowerPoint presentations; Use videos and audio to enhance the experience

**Unit 2: Assertiveness and Emotional Intelligence**

Increase self-awareness; Deal more confidently and professionally with conflict and anger; make, refuse and accept requests more effectively; Handle inter-personal issues more confidently and effectively; three main categories of behavior within the assertiveness model: passive, aggressive and assertive, give and receive feedback more effectively.

Emotional Intelligence: Elements of Emotional Intelligence – Self Awareness, Managing Self, Motivation, Empathy, Social Skills; Review of your interpersonal skills, how to adapt and manage particular situations, use your emotions to your advantage, build stronger relationships, how to empathize with others, how to manage your stress levels, how to overcome challenging situations

**Unit 3: Leadership Skills for Effectiveness**

Understand the leadership skills necessary for effective managers; meaning of organization culture; building an organization culture; meaning of networking; building networking across various business functions, similarities and differences between leadership and management, Key managerial skills- Motivating others, delegating effectively, giving feedback.

Leadership Challenges: Understand leadership theories, leadership challenges and strategies, negotiation: meaning, importance, mapping leadership styles, expanding professional and personal networks.

#### **Unit 4: Team Building and Conflict Resolution**

Meaning of team building; explain the main features and roles of a team; Tuckman's stages of team development: forming, storming, norming, performing and adjourning, recognizing behaviors at every stage, team building through management games, how to handle a team, characteristics of high performing team, leadership resourcing and developing a team, why teams fail, work teams – cross functional team, virtual team, self-managed team.

Conflict Resolution: Gain a thorough understanding of the sources, causes and types of conflict; master all six phases of the conflict resolution process; understand the five main approaches to conflict resolution; apply conflict resolution approaches; use parts of the conflict resolution process to recognize and prevent conflict before it escalates; develop communication tools such as agreement frames and open questions

#### **Unit 5: Role of Ethos in Management**

History and relevance; meaning, principles practiced by Indian companies; role of Indian ethos in managerial practices; Indian heritage in business management, production and consumption; work ethos and values for Indian managers; ethics v/s ethos; Indian management v/s western management.

Ethos and Work Culture: Meaning, features, values for Indian, relevance of value based management in global change; impact of values on stakeholders: employees, customers, government, competitors and society; values for managers, trans-cultural human values in management and management education; secular v/s spiritual values in management; stress management through meditation and yoga; leadership changing scenario from Karta in a joint family to managers today; contemporary approaches to leadership; Karma, Laws of Karma.

Business Ethics in Management: Definition and nature of business ethics; need and benefit; ethical values; myths and ambiguity; ethical principles in business; theories of Ethics, Absolution vs Relativism, Theological approach, Deontological Approach, Kohlberg's 6 stages of moral development; Ethical dilemma, characteristics; ethical decision making, reasoning, and resolution process; ethical culture in organizations; developing codes of ethics and conduct; ethical value-based leadership; understanding ethics in the context of Indian business; ethical dilemma in areas of Finance, HRM, Marketing and International Business

#### **Course Outcomes**

CO1: Explain the competencies and skillsets needed for an effective manager.

CO2: Demonstrate effective reading, writing, speaking, listening and presentation skills to communicate effectively to audience in business situations.

CO3: Analyze and integrate leadership skills for organizational building.

CO4: Create strong teams with the necessary skills to achieve results.

CO5: Assess contribution of Indian culture and ethos to service, leadership and management.

#### **MAPPING COURSE OUTCOMES LEADING TO THE ACHIEVEMENT OF PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOMES:**

Course Outcome	Program Outcome						
	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3						
CO2			2				
CO3		2		2			
CO4					2		
CO5						2	2



H = Highly Related; M = Medium L = Low

**Text & References:**

- Fernando, Corporate Governance: Principal Policies & Practices, Pearson Education, New Delhi.
- Fernando, Business Ethics and Corporate Governance, Pearson, New Delhi.
- Business Benchmark (Upper-Intermediate) (2nd Edition) Guy Brook- Hart, Cambridge University Press, New Delhi.
- Successful Meetings (1st Edition) John Hughes and Andrew Mallett, Oxford University Press.
- Successful Presentations (1st Edition) John Hughes and Andrew Mallett, Oxford University Press.

**Accounting and Finance**  
**SUBJECT CODE: MBA019A**  
**CREDITS: 4**

**Course Objective**

The Objective of the Course is, to understand the basics of Cost and Financing Accounting, to know and learn about the labour costs and overheads and to understand the double entry system and to understand the concept of cost methods and planning control.

**Unit 1: Basics of Cost and Financial Accounting**

Sources of data (internal & external) –concept of cost – cost classification based on nature of expenses, function, variability – cost behaviour with use of graphs – concept of cost objects, cost units & cost centres- Data analysis and statistical techniques.

Define financial accounting – purposes of financial statements for the users – main elements of financial reports – conceptual framework – definitions of asset, liability, equity, income & expenses-prudence.

Concepts of relevance, faithful presentation, materiality, substance over form, going concern, business entity, accruals, consistency, comparability, verifiability, understandability and timeliness

**Unit 2: Accounting for costs – Materials, labour and overheads**

Accounting for material costs – ordering, receiving & issuing material –methods of valuing purchases and issues (FIFO & Weighted Average methods only) – EOQ – inventory levels – Accounting for labour – direct & indirect cost of labour – remuneration methods (individual & group) – labour turnover – overtime & idle time – labour efficiency, capacity & volume ratios

Accounting for overheads – allocation of overheads to production & nonproduction departments – apportion service overheads to production departments - production overhead absorption rates – entries for accounting of material, labour& overhead costs

**Unit 3: Accounting records, double entry accounting systems and Recording transactions:**

Main data sources for accounting – different business documents such as sales order, purchase order, goods received note, quotation, goods despatched note, invoice, credit & debit notes, receipt, remittance advice, cash vouchers – understand the double entry

accounting & duality concept – types of transactions such as sales, purchases, payments & receipts.

Recording into journals – ledger accounts – balancing of ledger accounts – accounting for discounts, sales tax – recording cash transactions – accounting & valuation of inventories – accruals & prepayments – tangible & non-tangible assets – depreciation & amortisation accounting – receivables & payables – provisions & contingencies – errors & rectification – bank reconciliation statements

#### **Unit 4 - Trial balance, financial statements:**

Statements of profit or loss and other comprehensive income, cash flow statements, balance sheet – events after reporting period – interpretation of financial statements – use of basic ratios related to profitability, liquidity, and activity and resource utilisation-Describe the principle of the equity method of accounting for Associate entities.

#### **Unit 5: Methods and techniques of costing for different industries and planning and control**

##### **Costing methods for different industries**

Understanding of applying job & batch costing, Process costing (including joint products & by-products, equivalent production), service costing – understand the differences between absorption & marginal costing

##### **Costing techniques for planning and control**

Understand the use of budgets and standard costs for planning & control – flexible budgets – reconciliation budgeted profits with actuals – meaning & calculation of standard costs – computation of simple variances v/s budgets & standards

##### **Course outcomes:**

CO 1: Understanding the basics of cost and financial accounting and the related concepts, principles and terminologies.

CO 2: Understanding the application of costing for various cost components

CO 3: Understanding the accounting records maintenance rules and systems and record keeping aspects

CO 4: Use of costing techniques under different types of industries for different circumstances and evaluating the costing techniques facilitating planning and control of activities that drive the performance of an organisation.

CO 5: Understand the importance of preparation of trial balance and the different types of financial statements prepared for disclosure and further analytical purposes

#### **MAPPING COURSE OUTCOMES LEADING TO THE ACHIEVEMENT OF PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOMES:**

Course Outcome	Program Outcome						
	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	1	2					
CO2			2				
CO3				2			
CO4				2	2		
CO5						2	2

H = Highly Related; M = Medium L = Low

### **Text Books & References:**

1. An introduction by Eddie McLaney & Peter Atrill, Pearson publication.
2. Advanced accountancy by S. P Jain & Narang K L.
3. Accounting: All In one for Dummies by Wiley.

## **Organizational Behaviour and Human Resources Management**

**SUBJECT CODE: MBA020A**

**CREDITS: 4**

### **Course Objective**

The Objective of the course is, to equip students to analyse the organizational culture and conflict management and to impart the knowledge of leadership and motivational theories and to enable the students to evaluate the strategic human resource management and industrial relations emerging trends in IHRM.

### **Unit 1: Organizational Behavior**

Introduction to Organizational Behavior, Meaning and Importance of OB, Historical developments, the importance of Interpersonal skills, Contributing Disciplines to OB, OB model, Challenges and Opportunities for OB, Workforce Diversity, Dynamics of diversity. Application of OB in organizations, OB in Global Context

Individual behavior: The basis for understanding Work Behavior. Factors responsible for Individual differences at workplace Attitudes- Meaning, components, Values- Meaning, Types of values, the importance of values in organization. Attitude, components, Factors affecting attitude formation, Ways to change employee attitude, Types of job-related attitudes, Job Satisfaction. Personality, Theories of personality, Personality traits that influence Work Behavior. Groups- Defining and classifying groups, need for group formation, Tuckman's stages of group development, Group properties – Norm, Status, Size, Composition, Cohesiveness, Group decision making Techniques, Cost of working in groups, Teams v/s Groups, Importance of teams in contemporary workplace

### **Unit 2: Motivation and Leadership**

Motivation and Group dynamics: Theories of motivation - Content Theories - Need Hierarchy Theory, Hygiene Motivation Theory, Existence Relatedness Growth (ERG) Theory, Theory X-Y, Three needs theory. Process Theories- Equity Theory, Expectancy Theory, Application of motivation concepts at workplace settings – Discussion.

Leadership: Meaning and importance, Leader v/s Manager, Traits of a leader\*

Trait Approach to leadership – Traits of a leader, are leaders born or made? Behavioral Approach, Ohio and Michigan studies, Managerial Grid; Situational Approach - Fiedler's Contingency model, Hersey Blanchard situational leadership theory, Path Goal Theory, Contemporary leadership theories - Transactional, Transformational, Charismatic, Visionary Leadership. Leadership challenges in current context.

Power and Politics; Managing Conflict: Power – Meaning, Bases of power, Dependence – The key to power, consequences of power, Power tactics, Political tactics for increasing power base, Organizational Politics, Causes and consequences, Impact of power and politics in organizations. Meaning and importance of conflict in organizations, Views of conflict,

functional and dysfunctional conflict, Conflict process and conflict handling styles, functional and dysfunctional conflicts, Conflict process.

### **Unit 3: Organizational Structure and Culture**

Organizations and Organization Theory: Introduction to organizations, importance, evolution of organization theory and design, dimensions of organizational design, characteristics and design, and organizational configuration, Mintzberg's Organizational types, contemporary design Ideas.

Strategy, Organization Design and Effectiveness: The role of strategic direction in organization design, organizational purpose, strategic intent, operative goals, importance; SWOT framework for selecting strategy; Porter's competitive forces and strategies; strategies and organization design; other factors affecting organization design; The Balanced Scorecard Approach to Effectiveness; identifying company strategies and effectiveness criteria.

Organization Structure: Organization structure; information-sharing perspective on structure vertical information sharing, horizontal information sharing; organization design alternatives, reporting relationships; departmental grouping options, functional, divisional, geographic, and matrix structure, conditions for the matrix, horizontal structure characteristics; virtual networks and outsourcing; external and internal factors impacting organization structure, hybrid structure, applications of structural design, structural alignment, symptoms of structural deficiency, Organization design essentials.

Organizational Culture: Meaning, definition of organization culture, and importance of organizational culture; uniform cultures; strong vs weak cultures, creating and sustaining culture, creating an ethical and positive organizational culture; Internal and external conflict management, progressive corporate culture that enables Innovation and change.

### **Unit 4: Human Resource Management and Industrial Relations**

Introduction to HRM, and Manpower Planning: Introduction to Human Resource Management, Evolution of HRM, Importance, HRM functions, Forces changing HRM, Human Resource Planning - Meaning, Process, HRP Models, Human Resource Forecasting methods, Challenges and relationship with other Human resource functions, Job analysis, Job Description, Job evaluation, Features of the competitive business environment (Globalization, Technology, E-commerce, Demographic changes, Diversity), Global Human Resource Planning, Quality of work life. Cultural awareness – Iceberg Model of Culture. Business trends in HR.

International HRM and Emerging Horizons of HRM: Concept, importance, an model of International HRM; Challenges of International HR Managers; Global HR practices; E-HRM; HRIS (Human Resource Information System); Measuring intellectual capital; Impact of HRM practices on organizational performance; contemporary issues in Human Resource Management.

Basics of Industrial Relations and HR Analytics: Basics of Industrial Relations – meaning and importance, trade unions, workers participation in management, collective bargaining, HR Analytics – Introduction, Evolution, Steps in HRA, Applications of HRA, how analytics helps in negotiation and bargaining

### **Unit 5: Talent Management**

Recruitment and Selection: Recruitment - meaning and process, Purpose of Recruitment, Types of Recruitment - Internal - Job postings, Employee Referral Programs, Temporary worker pools and External recruitment – Virtual Job Fairs, Executive Search Firms,

Employment agencies, Recruitment advertising. Factors affecting Recruitment, Recent Trends in Recruitment. Human Capital Management – Meaning and definition, ROI of HCM – Human capital ROI, Training Investment Value, Turnover Rates, Selection- meaning, selection procedure, Types of tests used in Selection, Consequences of selection decisions, Interview and Types of interviews. Placement and Induction.

Talent Management: Training- meaning, need and importance of training, Distinction between training and development, methods of training – On the Job & Off the Job, process of training, recent developments in training, Succession Planning, Strategies for Accelerating Development for succession, Performance appraisal, meaning, importance, various performance appraisal methods, Drawbacks of Performance Management System, challenges and limitations. HR Metrics – Meaning, Key HR metrics, 5 W’s of measuring ROI (Who, When, What, Where, Why), ROI of L&D..

Employee Rewards: Employee Rewards -meaning, concepts and definitions, Objectives of giving compensation to employees, Components of remuneration, types of employee benefits, financial and non-financial benefits, factors affecting wage and salary, salary components, salary structure, employee welfare, safety issues in organizations, work life balance and factors attributing to increased awareness for work life balance, Work Life Balance Intervention.

**Course Outcomes**

- CO1: Identify the challenges and opportunities in applying organizational behavior and develop understanding of self and others’ behavior in organizations.
- CO2: Describe the implications of motivational theories and the influence of different leadership styles on employees.
- CO3: Develop an understanding of the principles and theory of organization; examine the reciprocal relationship between the organizational structure, strategies, and systems and the factors that impact organizational structures and design.
- CO4: Comprehend the basic principles of strategic human resource management, and practices of talent acquisition and its management.
- CO5: Develop the components of employee rewards and analyze the changing scenario of industrial relations and emerging trends in International Human Resource Management.

**MAPPING COURSE OUTCOMES LEADING TO THE ACHIEVEMENT OF PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOMES:**

Course Outcome	Program Outcome						
	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	2						2
CO2		2					
CO3					2		
CO4			2			2	
CO5				2			

H = Highly Related; M = Medium L = Low

**Text Books**

- Stephen Robins, Organisational Behaviour PHI

**References:**

- K. Ashwathappa, Organisational Behaviour, Tata McGr
- Keith Davis, Organisational Behaviour, Tata Mc Graw-Hill
- Keith Davis, Human Behaviour at Work, Tata McGraw-Hill
- Greenberg, J. & Baron, R.A., Behaviour in Organizations, Pearson Education, 2005.
- John W. Newstrom and Keith Davis, Organizational Behaviour: Human Behaviour at Work, Tata McGraw Hill, New Delhi, 1993.
- Luthans, F., Organizational Behaviour, McGraw – Hill International Edition 2005.
- R. D. Agarwal, Organisation and Management, Tata McGraw Hill, New Delhi, 1995.
- Robbins, S.P., Organizational Behaviour,(11th Edn.), Prentice Hall India, 2005.
- Schermerhorn, J.R. Jr.; Hunt, J.G. & Osborn, R.N., Managing Organizational Behaviour, John Wiley & Sons, 1985.
- Srivastava, S.,Organizational Behaviour, Galgotia Publications, 2000.

**HUMAN RESOURCE MANAGEMENT****Text:**

Garry Dessler, Human Resource Management, Pearson Publications

**References:**

1. Edward, B Flippo, Personnel Management, Mc Graw hill International Ed.
2. Dale Yoder, Personnel Management and Industrial Relation,
3. Monappa& Sayiaddin, Personnel Management, Vikas Publishing Company
4. Desimone; Human Resource Development, Thomson Learning
5. VSP Rao, Human Resource Management, Excel Publications
6. K Aswathappa; Human Resource and Personnel Management; McGraw- Hill Companies
7. Bohlander; Managing Human Resources; Thomson Learning. Ed. 13 2004

**Quantitative Techniques and Analytics****SUBJECT CODE: MBA021A****CREDITS: 4****Course Objective:**

The objective of this course is, to understand basic mathematical tools and techniques for solving complex business problems and explain the role of descriptive statistics and associate the different aspects of probability, probability distributions and decision theory with business problems and hence solve them for better decisions and to describe various operation research techniques to get optimum solutions in business problems .

**Unit 1:Descriptive Statistics**

Introduction to statistics and analytics, need for analytics, data types and scales, sources of data, types of classification of data. Frequency distribution, grouped and ungrouped, frequency distribution, continuous distribution-diagrammatic and graphic representation: line diagram, bar diagram, rectangle diagram and pie diagram, Graphs- Histogram, frequency polygon, cumulative frequency curves, tabulation-one way and two way table. Various measures of central tendency, concepts and applications of Mean, Median, Mode, Geometric Mean and Harmonic Mean. Measure of Variation. Different measures of dispersion, significance of dispersion, requisites of a good measure of variation. Range, Inter-Quartile Distance, Standard Deviation, mean deviation, quartile deviation, Coefficient of variation

**Unit 2: Introduction to Probability and Sampling**

Basic Concepts, relevance to management decisions, rules of probability, relevance of permutation and combinations to probability, theoretical Probability Distributions: Binomial, Poisson and normal Distributions

Sampling and Sampling Distributions, Population and Samples, Types of Sampling: Simple Random, Stratified, Systematic and Cluster Sampling, Sampling Distributions, Standard Errors, Sampling from Normal Populations, Central Limit Theorem

### **Unit 3**

#### **Hypothesis testing and Regression Analysis**

Correlation analysis: significance of measuring correlation, correlation and causation. Karl Pearson's coefficient of correlations, rank correlation. Regression analysis: need for regression, types of regression models, simple linear regression, concepts of multiple regression. Hypothesis Testing-Basic Concepts, One Tailed and Two Tailed Tests, Type I and Type II Errors, One Sample Tests, Hypothesis Testing of Means when Population Standard Deviation is Known and when Unknown, Hypothesis Testing of Proportions for Large Samples, Two Sample Tests for Equality of Means for Large and small Samples, Equality of Means for Dependent Samples, Difference between Proportions for Large Samples. Concepts and applications, Chi-square as a test of (a) independence (b) goodness of fit. Analysis of variance (ANOVA) - one way and two-way classifications

### **Unit 4:**

#### **Operations Research**

Introduction to Operations Research, Application of LPP in Management, Advantages of LPP, Problem Formulation, Graphical Solution Procedure, Special Cases, Sensitivity Analysis. Transportation Problem: General Structure, Various methods for finding initial solution, Optimal Solution: Modified Distribution method; Variations: Unbalanced Transportation Problem, maximization case. Assignment Problem: General Structure, Finding Optimal Solution, Maximization problem, Restrictions on Assignments, Alternate Optimal solutions. Terminology; Networking Concepts; Rules for drawing network diagram; CPM Computations: CPM Terminology, Finding critical path – Different Floats; PERT Computations: Computation of earliest and latest allowable times, Probability of meeting the scheduled dates; Concept of Project Crashing, Time-Cost Tradeoff

### **Unit 5:**

#### **Information Systems and Project Scheduling**

Overview, introduction to computers– Hardware, Software, impact of IS in business, digital divide, concept of systems, components of IS. MS Word - Introduction, Insert Menu options, Formatting, Tables and borders, Image handling, Insert Function, Hyperlink, , Track changes, Formatting & editing restrictions, Mail merge, Macro, Tables, Print ,Document Protection, Bibliography, Citation. MS PowerPoint -Exploring the PowerPoint Window, Slide layouts, Formatting, Design template, Outline and slide sorter views, Speakers notes, Header & footer, Master Slide, Insert Function, Slide transition, Animation, Action Buttons, Custom Show, Set up Show, Keyboard tips during slide show. MS Excel-

Introduction, Custom fill, protection, Mathematical operations, Range, Formulas, linking worksheets - workbooks, short cut methods, Tables and Graphs, Data Functions in MS Excel - Functions in excel (Mathematical, Text, Date/time, Financial, Statistical, Logical functions, VLOOKUP and HLOOKUP, Situation Analysis (Scenario), Creation of Trial balance, P&L Accounts and Balance sheets. Terminology; Networking Concepts; Rules for drawing network diagram; CPM Computations: CPM Terminology, Finding critical path – Different Floats; PERT Computations: Computation of earliest and latest allowable times, Probability of meeting the scheduled dates; Concept of Project Crashing, Time-Cost Tradeoff

### Course Outcomes

CO1: Employ descriptive statistical techniques in managerial decision making.

CO2: implement and employ the use of probabilistic and sampling techniques with regards to problem solving.

CO3: Understand, classify and conceptualize various methods of hypothesis testing and regression modelling.

CO4: Describe and implement operation research techniques to make better business decisions.

CO5: Understand the concepts of managerial project scheduling and learn the usability of Microsoft Office suite effectively.

### MAPPING COURSE OUTCOMES LEADING TO THE ACHIEVEMENT OF PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOMES:

Course Outcome	Program Outcome						
	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	2						
CO2			2				
CO3							
CO4		2		2	2		
CO5						2	2

H = Highly Related; M = Medium L = Low

### Text Books & References

- Anderson D.R; Sweeny D.J, Williams T.A,Statistics for Business and Economics, Cengage learning, 2002.
- Kazinier L.J., & Pohl N.F., Basic Statistics for Business and Economics, New York: McGraw Hill, 2004.
- Levin Richard I. & Rubin David S.,Statistics for Management, Pearson Education India, 1998.
- Stephen .K.C., Applied Business Statistics: Text, Problems and Cases. New York: Harper and Row, 2002.
- Sharma, J.K., Business Statistics, Pearson Education India, 2007.

### Information System for Managers

**SUBJECT CODE: MBA022A**

**CREDITS: 4**

### Course Objective

The objective of the course is, to understand how information systems support business strategy, processes and how to analyses the framework of MIS (Management Information System) and how to access the business information systems and application of information system in a ERP.

### Unit 1: Introduction

Management Information System Basics, Framework of MIS, Information Needs and its Economics, Systems Approach, Objectives of MIS, Advantages and Disadvantages of Information Systems, Approaches of MIS Development, Constraints in Developing MIS, Limitations of MIS, Computer Based Information Systems.

### Unit 2: Information Systems for Decision Making



Introduction, Transaction Processing System, Decision Making in MIS, Intelligence Support Systems, Decision Support System, Executive Information System, AI and Expert System, Office Automation System, Computer Hardware and Software for Information Systems, Data Communications and Client Server Computing.

**Unit 3: Decision Support Systems**

Definition, Evolution of DSS, Objectives of DSS, Classification of DSS, Characteristics and Components of DSS, Functions of a DSS, Development of DSS, Group DSS, Relationship between MIS and DSS, DSS Measures of Success in Organizations, Applications of DSS, Future Developments in DSS.

**Unit 4: Information Systems in Business**

Office Information Systems, Types of Office Automation Systems, Manufacturing Information System, Marketing Information System, Quality Information System, Financial and Accounting Information System, Research and Development Information System, Human Resource Information System, Cross Functional Information System.

**Unit 5 :Applications of Information Systems**

Strategic Management Information System, Information Resources Management, Enterprise Resource Planning, Role of IT in Enterprise Modeling, ERP Selection and Applications, ERP Implementation, Applications of IT in Business, E-Commerce, E-Business, Information and Internet Security, E-Governance.

**Course Outcomes**

CO 1: Develop an understanding of Management Information Systems, their advantages and functionality.

CO 2: Identify and conceptualize diverse Information Systems for Decision Making processes.

CO 3: Learn how to use Decision Support Systems in business scenarios and demonstrate their usefulness.

CO 4: Assess different types of Business Information Systems by identifying, classifying, and categorizing them.

CO 5: Explain and assess different uses of Information Systems in a business setting.

**MAPPING COURSE OUTCOMES LEADING TO THE ACHIEVEMENT OF PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOMES:**

Course Outcome	Program Outcome						
	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1			2				
CO2		2					
CO3					2		
CO4				2		2	2
CO5	2						

H = Highly Related; M = Medium L = Low

**Text Books & References**

1. Norton P, Introduction to Computers, Tata McGraw-Hill, 2010.
2. Potter T, Introduction to Computers, John Wiley & Sons (Asia) Pvt Ltd, 2010.

3. Morley D & Parker CS, Understanding Computers – Today and Tomorrow, Thompson Press, 2009.
4. Jawadekar, WS, Management Information System, Tata Mc Graw Hill, 2009
5. Mclead R & Schell G, Management Information Systems; Pearson Prentice Hall, 2009.
6. O’Brein, JA, Introduction to Information Systems; Tata Mc Graw Hill, 2009.

**Entrepreneurship**  
**SUBJECT CODE: MBA023A**  
**CREDITS: 4**

**Course Objective:**

The objective of the Course is, to expose the students to the entrepreneurial cultural and industrial growth and understand the scope of an entrepreneurship and to know the importance of business plan and major elements of business plan.

**Unit 1: Introduction to Entrepreneurship**

Introduction, importance of entrepreneurship, definitions of entrepreneurship, history and evolution of entrepreneurship, types of entrepreneurs, myths of entrepreneurship, women entrepreneurship in India. Qualities of successful entrepreneurs, motives and drives to take up entrepreneurship, careers in entrepreneurship, behavioral traits of entrepreneurs, entrepreneurial decision process

**Learning Outcome:** To understand the framework of entrepreneurial competence.

**Unit 2: Stages in entrepreneurship development**

Opportunity Recognition, Identify problems and unmet needs, develop solutions to address problems, identify market gaps, sensing market opportunities, evaluation of opportunities. Sources of ideas, idea generation methods, brainstorming, secondary research, creativity and innovation, idea vs. opportunity matching, selection of ideas, ideas to market place, idea testing with potential customers

**Unit 3: Internal Environment Analysis**

Identify the available resources, develop a unique selling proposition, identify strengths and weaknesses, assess the availability and advantage of resources, and assess the capability to attract investments. Elements of external environment, PEST to PESTEL to STEEPLE, identifying opportunities and threats in the external environment, matching internal environment factors to the external environment factors, political environment and government policies. Understand the existing competition both domestic and international, industry analysis using the tool Michael Porter’s five forces, studying the competitor strategies

**Unit 4: Business Plan**

Meaning of Business Plan, Entrepreneurial Process, Importance of Business Plan, Components of Business Plan, Reasons for Failure of Business Plan, Business Model Canvas, Value Proposition, Criteria for selection of Product/Service. Market Analysis, Market Research, Feasibility Report, Market Segmentation, Developing the Product Mix, Developing the Marketing Mix, 4Ps and the 7Ps. Breakeven Analysis, Pro Forma Profit & Loss Statements, Pro Forma Balance Sheets, Cash flow and Funds Flow Statements. Incubation

Centers, Approaching the Investors, Elevator Pitch, Seed capital, Angel Investors, Angel Networks, Venture Capitalists, Private Equity, LBO, Equity vs Debt Funding, Internal vs External Funds. Selection of Technology, Decision on Types of Processes, Plant Layout, Selection of Machinery, Capacity Planning, Quality Parameters, Make or Buy Decisions. Forms of Organization, Proprietorship, Partnership, LLP, Public Limited, Legal Issues, Organization Design, Organization Structure

### Unit 5: Institutions that Support Entrepreneurship

Role of SMEs in India, Classification of MSMEs, Government Support to SMEs, Problems for Indian SMEs, Sickness in SMEs, Causes of Sickness, Remedial Measure. SIDBI, KVIC, NIESBUD, IDBI, NSIC, NEN, AWAKE, CEDOK

#### Course Outcomes

CO1: Define the concepts and explain the models of entrepreneurship.

CO2: Recognize the various stages in entrepreneurship development.

CO3: Articulate the characteristics required to become successful entrepreneurs. Identify and appraise strategies for growth of new ventures.

CO4: Create alternative Business Plans, appraise them and conclude on the most suitable Business Plan. Also prioritize on the next best alternatives.

CO5: Understand the institutional support.

#### MAPPING COURSE OUTCOMES LEADING TO THE ACHIEVEMENT OF PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOMES:

Course Outcome	Program Outcome						
	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	2						
CO2		2	2				
CO3					2		
CO4				2		3	
CO5							2

H = Highly Related; M = Medium L = Low

#### Text & References

1. Alexis Leon , Enterprise Resource Planning
2. Vinod K. Garg and N. K. Venkitakrishnan, Enterprise Resource Planning, Concepts and Practice

#### References:

1. Amrit Tiwana, Knowledge Management Toolkit
2. Ganesh Natarajan and Sandhya Shekhar, Knowledge Management, Enabling Business Growth
3. Sunil Chopra and Peter Meindl, Supply Chain Management, Strategy, Planning, and Operations
4. Kristin Anderson and Carol Kerr, Customer Relationship Management
5. James G. Barnes, Secrets of Customer Relationship Management

### Semester II

SECOND SEMESTER						
Sub Code	Sub Name	L	T	P	C	Type
MBA028A	Corporate & Business Law	3	-	-	4	F
MBA039A	Statistics with R	2	1	2	4	S
MBA040A	Python Programming	2	1	2	4	S
MBA 027A	Managing Finance In A Digital World	4	-	-	4	C
MBA041A	Information Technology Law	3	-	2	4	ID
MBA042A	Structured Query Language	2	1	2	4	S
MBA043A	SaS and Tableau	3	1	2	4	S
	<b>TOTAL</b>	<b>19</b>	<b>4</b>	<b>10</b>	<b>28</b>	

## **Corporate & Business Law**

**Subject Code: MBA028A**

**Credits: 4**

### **Unit 1: Nature of the contract and consideration**

The Indian contract act 1872 – Definition of contract - Essential elements of a valid contract – clarification of contracts – offer and acceptance and Communication of offer and Acceptance and Revocation.

Consideration – Capacity to contract – Free consent - Legality of object –void agreement.

Performance of contract – offer to perform contracts which need not be performed – by whom contract must be performed who can demand performance. Discharge of Contract – meaning – methods – by performance –by agreement – impossibility of performance.

### **Unit 2: Breach of contract and the sale of goods act**

Remedies for Breach of Contract – Introduction Recession – Damages – Specific Performance – injunction - Quasi contracts. Contract of Indemnity and guarantee – Contract of bailment and pledge – Contract of Agency – Creation of agency – Rights, duties and liabilities of an agent - Termination of agency.

Sale of Goods Act :

Formation of contract of Sale - caveat emptor - Express and implied conditions and warranties – Performance of Contract of Sale – Rights of an unpaid Seller.

### **Unit 3: Companies act and memorandum of association**

Meaning, Definition & Salient Features of Companies Act, 2013 - Kinds of Companies - Promotion, Role of Promoters-Incorporation of a Company.

Memorandum of Association, Contents & Alteration - Articles of Association, Contents & Alteration - Prospectus, Contents & Consequences of misstatement - Doctrine of Ultra Virus & Indoor Management.

### **Unit 4: Directors and corporate governance**

Directors-Appointment, Qualification-Disqualification - Membership in a Company, Modes of acquiring Membership - Rights and Liabilities of Members, Termination of Membership - Corporate Governance- Meaning, benefits of good governance, factors influencing corporate governance.

## **Unit 5: General and Statutory Meeting, Extraordinary Meetings**

General and Statutory Meeting, Extraordinary Meetings -Resolutions, Meaning and Kinds - Role of Company Secretary with respect to meetings. Meaning and modes of winding up - Powers of court in winding up - Consequences and procedures for winding up - Powers, Liabilities and Duties of Liquidators.

## **Statistics with R** **Subject Code: MBA039A** **Credits: 4**

### **Course Objective:**

The objective of this module is to make students exercise the fundamentals of statistical analysis in an R environment. They would be able to analyze data for the purpose of exploration using descriptive and inferential statistics. Students will understand probability and sampling distributions and learn the creative application of linear regression in a multivariate context for predictive purposes.

### **Module 1: Introduction to R Programming**

R and R Studio, Logical Arguments, Missing Values, Characters, Factors and Numeric, Help in R, Vector to Matrix, Matrix Access, Data Frames, Data Frame Access, Basic Data Manipulation Techniques, Usage of various apply functions – apply, lapply, sapply and tapply, Outliers treatment.

### **Module 2: Descriptive Statistics**

Types of Data, Nominal, Ordinal, Scale and Ratio, Measures of Central Tendency, Mean, Mode and Median, Bar Chart, Pie Chart and Box Plot, Measures of Variability, Range, Inter-Quartile-Range, Standard Deviation, Skewness and Kurtosis, Histogram, Stem and Leaf Diagram, Standard Error of Mean and Confidence Intervals.

### **Module 3: Probability, Probability & Sampling Distribution**

Experiment, Sample Space and Events, Classical Probability, General Rules Of Addition, Conditional Probability, General Rules For Multiplication, Independent Events, Bayes' Theorem, Discrete Probability Distributions: Binomial, Poisson, Continuous Probability Distribution, Normal Distribution & t-distribution, Sampling Distribution and Central Limit Theorem.

### **Module 4: Statistical Inference and Hypothesis Testing**

Population and Sample, Null and Alternate Hypothesis, Level of Significance, Type I and Type II Errors, One Sample t Test, Confidence Intervals, One Sample Proportion Test, Paired Sample t Test, Independent Samples t Test, Two Sample Proportion Tests, One Way Analysis of Variance and Chi Square Test.

### **Module 5: Correlation and Regression**

Analysis of Relationship, Positive and Negative Correlation, Perfect Correlation, Correlation Matrix, Scatter Plots, Simple Linear Regression, R Square, Adjusted R Square, Testing of Slope, Standard Error of Estimate, Overall Model Fitness, Assumptions of Linear Regression, Multiple Regression, Coefficients of Partial Determination, Durbin Watson Statistics, Variance Inflation Factor.

**Python Programming**  
**Subject Code: MBA040A**  
**Credits: 4**

**Course Objective:**

This module will help students gain much needed knowledge pertaining to Python Programming, so as to prepare them for the advanced modules such as ML. Python scripting is user-friendly and is the most used language in industry when it comes to designing and scripting applications with respect to Emerging Technologies.

**Module 1: Introduction**

History of Python, Need of Python Programming, Applications Basics of Python Programming Using the REPL(Shell), Running Python Scripts, Variables, Assignment, Keywords, Input-Output, Indentation.

**Module 2: Types, Operators and Expressions**

Types - Integers, Strings, Booleans; Operators- Arithmetic Operators, Comparison (Relational) Operators, Assignment Operators, Logical Operators, Bitwise Operators, Membership Operators, Identity Operators, Expressions.

**Module 3: Data Structures and Control Flow**

Lists, Operations, Slicing, Methods, Tuples, Sets, Dictionaries, Sequences, Comprehensions, Conditional blocks using If, Else and El-if, For Loop, For loop using Ranges, String, list and Dictionaries, While Loop, Loop Manipulation using Pass, Continue, Break and Else, Conditional and Loops Block.

**Module 4: Functions Modules and Packages**

Defining Functions, Calling Functions, Passing Arguments, Keyword Arguments, Default Arguments, Variable-length arguments, Anonymous Functions, Function Returning Values, Scope of the Variables in a Function - Global and Local Variables. Creating modules, Name Spacing, Introduction to PIP, Installing Packages via PIP, Using Python Packages.

**Module 5: Object Oriented Programming & Exception Handling**

Classes, Self-Variable, Methods, Constructor Method, Inheritance, Overriding Methods, Data Hiding, Difference between an Error and Exception, Handling Exception, Try Except Block, Raising Exceptions, and User Defined Exceptions.

**Course Outcomes:**

- CO1: To understand why Python is a useful scripting language.
- CO2: To learn how to use lists, tuples, and dictionaries in Python programs.
- CO3: To learn how to write loops and decision statements in Python.
- CO4: To learn how to design object-oriented programs with Python classes.
- CO5: To learn how to use exception handling in Python applications for error handling.

**Textbooks:**

1. R.Nageswara Rao, 2018, Core Python Programming, Dreamtech.
2. John Hearty, 2016, Advanced Machine Learning with Python, Packt.

**References:**

1. Jake VanderPlas, 2016, Python Data Science Handbook: Essential Tools for Working with Data, O'Reilly.

2. Mark Lutz, 2010, Programming Python, O'Reilly.

**Managing Finance In A Digital World**  
**Subject Code: MBA027A**  
**Credits: 4**

**Course Objective**

To understand the central role that finance plays in an organisation, and how and why technologies used impact the finance function, how to use and examine data collected and processed by machines to create and preserve value for organisations and how the finance function is structured and shaped, and how it interacts with other parts of the organisation to achieve the objectives of the whole organisation.

**Unit1 - ROLE OF FINANCE FUNCTION**

Different types of organisations – functions of an organisation – the roles of finance function – enabling value creation through planning, forecasting and resource allocation – data collection – types of analysis to produce insight – potential impact of technology - How finance communicates to influence key stakeholders

**Unit 2 – TECHNOLOGY IN DIGITAL WORLD**

Characteristics and Dynamics of Fourth Industrial Revolution – Cloud Computing – Big Data Analytics – Process Automation – Artificial Intelligence – Data Visualisation – Block chain – Internet of things – Mobile – 3-D Printing – New areas of Finance to focus on – Areas of Finance susceptible to automation – Digital mindsets for Finance – Ethics of the use of technology

**Unit 3 - DATA AND INFORMATION IN A DIGITAL WORLD**

Using Data for: Decision making, Understanding the customer, Developing-customer value proposition, Enhancing operational efficiency, Monitoring data, Ethics of Data usage – Assessment of Data needs – Extraction, Transformation and Loading (ETL) Systems - Business Intelligence (BI) systems – Big Data Analytics – Data visualization

**Unit 4 – SHAPE AND STRUCTURE OF FINANCE FUNCTION**

Structure of Finance function from the roles that generate information to the roles that turn information into insights and communicate insights to decision makers – Hierarchical shape of Finance function – Shared Services and Outsourcing of Finance Function – Retained Finance – Automation & Diamond shape of Finance Function – Finance operation to generate information and preliminary insight – FP & A , Taxation, corporate reporting, decision support to produce insights – Business partnering to influence organisations to make appropriate decisions – Leading Finance team to create the required impact for the organisation.

**Unit 5 – FINANCE INTERACTING WITH ORGANISATIONS:**

Process management – product and service management – supply chain management

Market segmentation – big data analytics in marketing – channel management – sales forecasting & management

Staff acquisition – staff development – performance management – motivation and reward systems

IT infrastructure – IT systems support – cost and benefits of IT systems

### **Course Outcome:**

CO1: To understand how the finance function enables, shapes and narrates value creation thorough planning, forecasting, resource allocation, performance management and financial reporting.

CO2: To understand key technologies and their impact on an organisation including, cloud computing, big data, data analytics, process automation, artificial intelligence, data visualisation, block chain, internet of things.

CO3: To understand how the finance function can use data and information to assist operations in enhancing operational efficiency.

CO4: To understand the contemporary transformation of the finance function in the digital era from roles that generate information to roles that turn information into insight and how finance communicates that insight to decision-makers.

CO5: To understand how the finance function helps manage operations, marketing and Sales, HR and IT functions in creating and preserving value.

## **Information Technology Law**

**Subject Code: MBA041A**

**Credits: 4**

### **Unit 1: Introduction to Information Technology**

Introduction to Information Technology, Information, Data, Fundamentals of Hardware and Software, Problem solving and Program Design, Operating System, Software, System Software, Application Software, Utility Software, Data Storage, Program Implementation, Applications and implications of Information and Communication Technology, Information Processing, Word Processing, Spread Sheet, Presentation

### **Unit 2 Introduction to Networking**

An Introduction to Networking, Networking Standards and the OSI Model, Transmission Basics, and Networking Media, Introduction to TCP/IP Protocols, Topologies and Ethernet Standards, Network Hardware, WANs and Remote Connectivity, Wireless Networking, Network Operating Systems, TCP/IP Networking, Network Security

### **Unit 3 Cyber World-1**

Cyber space- Cybercrimes- types : cyber stalking, forgery and fraud, crime related to IPR (Copyright issues, trademark issues, software patenting issues), cyber terrorism, & computer vandalism. Software Licensing.

### **Unit 4 Cyber World -2**



Introduction to Cyber Security, Cyber Crime and Cyber Law, Social Media Overview and Security, ECommerce and Digital Payment, Digital Devices Security , Tools and Technologies for Cyber Security, Data Privacy and Data Security

### **Unit 5 – Cyber Regulations**

Cyber Law, Scope of Cyber laws- e commerce, online contracts, IPRs, E-taxation, E Governance and cybercrimes, issues relating to investigation, cyber forensic, IT ACT- 2000, Relevant provisions under IT Act 2000, Electronic Signature Law

## **Structured Query Language**

**Subject Code: MBA042A**

**Credits: 4**

### **Course Objective:**

This module will help students gain much needed knowledge pertaining to Relational Database Management Systems, Data Models, SQL query processing, Normalization along with an introduction to No SQL Database systems using Mongo DB.

### **Module 1: Introduction to Database Management Systems**

Introduction-Database System Applications, Purpose of Database Systems, Views of Data, Data Abstraction, Instances and Schemas, Data Models, Database Languages, DDL, DML, Database Architecture, Database Users and Administrators, Database Design, ER Diagrams, Entities, Attributes and Entity Sets, Relationships and Relationship sets, Integrity Constraints, Views.

### **Module 2: SQL Operators and Relational Theorems**

Relational Algebra and Calculus, Selection and Projection, Set Operations, Renaming, Joins, Division, Relational calculus, Tuple Relational Calculus, Domain Relational Calculus, Forms of Basic SQL Query, Nested Queries, Comparison Operators, Aggregate Operators, NULL values, Logical connectives, AND, OR and NOT, Outer Joins, Triggers.

### **Module 3: Normalization**

Problems Caused by Redundancy, Decompositions, Functional Dependencies, Normal Forms, First, Second, Third Normal forms, BCNF, Properties of Decompositions, Loss less Join Decomposition, Dependency Preserving Decomposition, Multi Valued Dependencies, Fourth Normal Form, Join Dependencies, Fifth Normal Form.

### **Module 4: Transactions**

Transaction Management, Transaction Concept, Transaction State, Implementation of Atomicity and Durability, Concurrent, Executions, Serializability, Recoverability, Implementation of Isolation, testing for serializability, Concurrency Control, Lock, Timestamp Based Protocols, Validation Based Protocols, Recovery, Failure Classification, Storage Structure, Atomicity, Log Based Recovery, Remote Backup Systems.

### **Module 5: No SQL**

Overview of No SQL, Types of No SQL Databases, No SQL Storage Architecture, CRUD Operations in MongoDB, Querying, Modifying and Managing No SQL Databases, Indexing

and Ordering, Migrating from RDBMS to No SQL, No SQL in Cloud, Database Administration.

**SaS and Tableau**  
**Subject Code: MBA043A**  
**Credits: 4**

**Course Objective:**

This course will provide students and exposure towards SaS, Tableau and its usability in the field of analytics. The course comprises an introduction to SaS, its procedures, visualizations along with Tableau application usage and visualization basics.

**Module 1: Introduction to SaS**

Overview of SaS university edition, Deploying SaS Studio on virtual platform, File Management, SaS libraries, importing data, Structure of Data and Data Types, Program Syntax, saving data, PROC IMPORT and PROC CONTENTS, Displaying Data and Generating Logs, List Input.

**Module 2: SaS Programming**

Variables and Syntax Rules, Data Set Options, Operators, In-File Statement, Input Styles, Select Statements, Leave and Continue, Decision Making via SaS, Where Statement, Looping Constructs, SaS Functions, Arrays and Array Processing, Modifying and Combining Data Sets.

**Module 3: SaS Procedures**

Proc Data, Proc Sort, Proc Means Sort, Proc Means, Proc Univariate, Proc Freq, Proc Plot, Proc Sgplot, Proc Summary, Proc Contents, Proc Append, Proc Copy, Proc SQL, Proc Delete, Proc Format, Proc Import, Proc Export, Proc Transpose, Proc GChart, Proc GPlot, Proc Report.

**Module 4: Visualization with Tableau -I**

Tableau Software Ecosystem, Toolbar Icons, Data Window and Aggregation, Tableau Data Source, Data Extract, Connect to Data, Measure Names, Number of Records & Measures, Heat Maps, Tree maps, Bar Chart, Line Chart, Area Fill Charts, Pie Chart, Scatter Plot, Circle View, Bullet Graph, Packed Bubble, Histogram, Boxplot and Gantt Chart, Sorting Data, Enhancing Views with Filters, Sets, Groups & Hierarchies.

**Module 5: Visualization with Tableau – II**

Cross-tabulation, Dashboard Designing, Dashboard Actions, Joining Database, Functions in Tableau, Aggregate Functions, Numeric Functions, Date Functions, Stories, Advanced Mapping, Advanced Parameters, Tableau Best Practices, Combining Multiple Dashboards into Stories, Publishing Stories and Dashboards.

**Course Outcomes:**

CO1: Deploy SaS in a virtual environment and import data for analysis.

CO2: Prepare and manipulate datasets for analysis in SaS.

CO3: Perform exploratory data analysis within SaS environment using various procedures and functions.

CO4: Understand Tableau Interface, Panes and Implement Visualization Techniques.

CO5: Prepare, Deploy and Publish Stories, Dashboards based on Analytical Cases.

**Textbooks:**

1. Ron Cody, 2018, An Introduction to SaS University Edition, SaS Institute.

2. Ron Cody, 2018, Learning SaS by Example, SaS Institute.
3. Deepti Gupta. 2018, Applied Analytics through Case Studies Using SaS, Apress.

**References:**

1. Joshua N. Milligan, 2015, Learning Tableau, Packt.
2. Ben Jones, 2014, Communication Data with Tableau: Designing, Developing and Delivering Data Visualization, O'Reilly.

**III SEMESTER**

THIRD SEMESTER						
Sub Code	Sub Name	L	T	P	C	Type
MBA032A	Analytics for Finance	4	-	-	4	S
MBA033A	Marketing Management & Research	4	-	-	4	C
MBA034A	Financial Markets	4	-	-	4	C
MBA044A	Natural Language Processing	2	1	2	4	S
MBA045A	Social Media Analytics	2	-	4	4	S
MBA046A	Machine Learning and Artificial Intelligence	2	-	4	4	S
MBA047A	Big Data Analytics	2	-	4	4	S
TOTAL		20	1	14	28	

**Analytics for Finance**  
**SUBJECT CODE: MBA032A**  
**CREDITS: 4**

**Course Objective:**

This subject illustrates the aspects of Financial Data Analysis. The students will gain exposure towards important financial concepts such as Optimization, Exchange Rate Analysis, Sharpe-Ratio, Mean-Variance Optimization and Trading Strategy Designing based on application-oriented study.

**Unit 1 (Introduction to Financial Analytics)**

Computational Intelligence, Mathematically Purity versus Fundamental Weakness, Need of Pragmatic & Practical Approach, Overview of Optimization Techniques, Analytics Laboratory, Financial Statistics, Financial Statistics with R.

**Unit 2 (Security Analysis & Risk Measurement)**

Return Analysis, Visualization of Security Data, Adjusting Stock Splits & Mergers, Cleansing of Security Data, Analyzing Exchange Rate, Normal Mixture Models, Generating Prices from Log Returns.

**Unit 3 (Sharpe Ratio & Markowitz Mean-Variance Optimization)**

Time Periods & Annualizing, Ranking Investment Candidates, The Quantmod R Package, Measuring Income Statement Growth, Quadratic Programming, Data Mining with Portfolio Optimization, Lasso and Ridge Regression for Penalties.

**Unit 4 (Financial Data Clustering)**

K-Means Clustering, Dissecting K-Means Algorithm, Gaussian Graphical Models, Covariance & Precision Matrices, Visualizing Covariance, The Wishart Distribution, Glasso Algorithm, Decision Making Based on Clustering.

**Unit 5 (Simulation of Trading Strategies)**

Foreign Exchange Market, Chart Graphical Analytics, Momentum Indicators, Entries & Exits and Profitability, The State Machine, Simulation Summary.

**Course Outcomes:**

CO1: Conceptualize and enumerate the concepts of Financial Analytics.

CO2: Aggregate and implement different methods under Security Analysis and Risk Measurements.

CO3: Employ the use of Portfolio Optimization, Return Assessment based on different mathematical concepts such as Sharpe Ratio and Mean-Variances.

CO4: Deploy clustering of financial data and implement several distributions including Wishart and Glasso Algorithms.

CO5: Understand and simulate various Trading Strategies under the Finance domain based on Momentum Indicators & State Machines.

**MAPPING COURSE OUTCOMES LEADING TO THE ACHIEVEMENT OF PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOMES:**

Course Outcome	Program Outcome						
	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	M					M	
CO2		M		L			M
CO3				M		M	
CO4		M			M		H
CO5	M			M			H

H = Highly Related; M = Medium L = Low

**Textbooks:**

1. Bennett & Hugen (2016). Financial Analytics with R. Cambridge University Press.

**References:**

1. Penman (2019). Financial Statement Analysis & Security Valuation. McGraw-Hill.
2. Easton, McAnally, Sommers & Zhang. (2018). Financial Statement Analysis & Valuation. Cambridge Business Publishers.
3. David Clark and Mary Buffett (2008). Warren Buffett and the Interpretation of Financial Statements: The Search for the Company with a Durable Competitive Advantage. Scribner Helfert (2001). Financial Analysis: Tools & Techniques. McGraw-Hill

**Marketing Management & Research**

**SUBJECT CODE: MBA033A**

**CREDITS: 4**

**Course Objective:**

This course focuses on the practical application of marketing orientation, techniques and methods inside enterprises and organizations and on the management of a firm’s marketing resources and activities. The learners will be provided with a solid grounding in marketing

management, which includes engaging projects. The learners will be able to analyse consumer data, create marketing campaigns, develop digital / social media content and make successful marketing decisions. The learners will emerge with the experience and expertise to embark on managerial roles in marketing and the transferable skills to make an impact in any organization.

### **Module 1: Introduction to marketing management**

Definition of marketing – marketing planning and process – association of needs and offerings – selling and marketing – consumer behavior and buying decision process – marketing mix – marketing research – customer relationship management – sales – marketing environment – developing marketing strategies and plans – value and value chain – marketing planning – components of a marketing plan.

### **Module 2: Marketing research**

Marketing research, analysis and forecasting - information gathering and analysis - process of marketing research - research planning - types of research design - data collection - sample size analysis - forecasting - demand forecasting methods and logic - understanding consumers - factors influencing consumer behaviour and purchase decisions.

### **Module 3: Shaping the market offerings**

Definition of product – definition of services - classification and attributes of products - differentiation and the 4Ps - steering the product life - product hierarchy - product system and mix – packaging, labelling, warranties and guarantees – pricing – types of prices – methods of pricing – new product development - distribution channel management – roles and types of channels – e-business – retailing and wholesaling – brand positioning – competition – brand identity – brand strength – brand equity – product life cycle.

### **Module 4: Communicating value**

Integrated marketing communication – advertising – sales promotion – public relations and publicity – direct and interactive marketing – word of mouth of marketing – sales promotion – technology and marketing: social media marketing, e-marketing, search engine optimization, email marketing, display advertising, pay per click, blogging, social and business networking, product opinion sites, affiliate marketing, syndication on the internet, trust in internet marketing, ethical and legal issues.

### **Module 5: Marketing ethics**

Marketing ethics - fundamental issues in the ethics of marketing - principles of ethical marketing - specific issues in marketing ethics - responsibilities of the marketer - ethical issues in political marketing - ethical challenges of social marketing - marketing in synchronization and synonymity with social relevance - strategic businesses with social relevance.

### **Course Outcomes:**

CO1: The students will obtain a basic understanding of marketing and its various aspects.

CO2: The students will be able to develop marketing strategies and plans.

CO3: The students will learn to connect with the customer and build strong brands in the market.

CO4: The students will be familiarized with the concept of digital marketing.

CO5: The students will be able to appreciate the significance of ethics in marketing.

**MAPPING COURSE OUTCOMES LEADING TO THE ACHIEVEMENT OF  
PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOMES:**

Course Outcome	Program Outcome						
	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1							
CO2							
CO3							
CO4							
CO5							

H = Highly Related; M = Medium L = Low

**Textbooks:**

1. Philip Kotler and Kevin Keller; Framework For Marketing Management; Pearson.
2. Pingali Venugopal; Marketing Management: A Decision Making Approach; SAGE Response.
3. Rajendra Nargundkar; Marketing Research: Text and Cases; McGraw Hill Education.

**Reference Books:**

1. Alexander Chernev; Strategic Marketing Management; Cerebellum Press.
2. Anne E Beall; Strategic Market Research: A Guide to Conducting Research that Drives Businesses; independently published.
3. Al Ries and Jack Trout; Positioning: The Battle For Your Mind; McGraw Hill Education.

**Financial Markets  
SUBJECT CODE: MBA034A  
CREDITS: 4**

**Course objective:**

This course will aid the learners in understanding and familiarize the concepts of financial markets and system and their importance to an effective economy. It encompasses the knowledge about the financial intermediaries and regulatory bodies in the financial market. This module will cover knowledge about various financial instruments, their features and valuations. The course also sheds light on how financial markets in the real world operate and how various financial markets differ from one another in practice. Further, it develops knowledge of rising Foreign Capital, various methods of rising and regulations.

**Module 1: Introduction to Financial Markets**

Indian Financial System – Concept of Investment and Savings - Evolution of Financial System in India - Financial System and Economic Development – Financial System Structure – Credit Creation - Money Markets and their functions - Capital Markets and their functions

**Module 2: Regulatory Bodies and Financial Intermediaries**

The Reserve Bank of India and their Functions - The Securities and Exchange Board of India and their Functions - Stock Exchanges in India and their Objectives, Functions and Significance and its working - Major international stock exchanges – Financial Intermediaries - Commercial Banks – Insurance Companies – Mutual Funds – NBFCs - Developments – Functions of Financial Intermediaries – Role of Intermediaries in a Financial System

### Module 3: Financial Instruments and Stock Market

Money Market Instruments - Capital Market Instruments – Primary Market and Secondary Market – Over the counter and Exchange Markets - – Features and Valuation of Financial Instruments - Issue of financial instruments - Stock Market – Types and Functions - Primary issue, book building process, private placement, offer for sale, buy back of shares - Various innovative financial instruments Crypto currencies (e.g., Bitcoin) and Distributed ledger technology

### Module 4: Financial Markets – Debt, Commodity, and FOREX Market

Debt Market and its types – Debt Market Instruments – Bonds – Debentures – Treasury Bills – Yield Curve – Interbank Markets - Operational Mechanism – Difficulties for development of Debt market – Commodity Market and its types – MCX, NCDEX and ICEX - Functions, administration, regulations and general mechanism – International commodity Market - Foreign Exchange Markets and its Instruments – Hedging - FOREX Derivative Markets – FX Futures, Options and FRAs

### Module 5: Foreign Capital

Forms of foreign capital – FDI and FPI – FIIs - International financial instruments – ADR, GDR, IDR and Euro bonds - Role of foreign capital in Indian financial system – Trends in foreign capital inflows to India – Regulatory framework for foreign capital flows – FERA and FEMA Acts

#### Course outcomes:

CO1: Understand the nature of financial markets, explain the principles by which financial markets operate and their importance to economy

CO2: Familiarize with participants of Financial Markets, regulatory body governing the financial markets and financial intermediaries

CO3: Explain the features of equity, debt, forex and commodity instruments

CO4: Comprehend the market operation mechanism of equity, debt, forex and commodity markets and current trends affect financial markets

CO5: Evaluate the role of foreign capital inflow, the methods to raise such finance and their regulations

#### MAPPING COURSE OUTCOMES LEADING TO THE ACHIEVEMENT OF PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOMES:

Course Outcome	Program Outcome						
	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1							
CO2							
CO3							
CO4							
CO5							

H = Highly Related; M = Medium L = Low

#### Textbooks:

1. Mr. Rajiv Ranjan Singh, Basics of Financial Market, Karvy Publishing, 2017
2. Mr. Frederic S. Mishkin, Financial Markets and Institutions, Pearson Publishing, 2017

3. MR. Bhole, Financial Institutions and Markets: Structure, Growth & Innovation, McGraw Hill Education, 2017
4. M.Y. Khan, Indian Financial System, McGraw Hill Education, 2019

**Reference books:**

1. Marc Levinson, The Economist Guide to Financial Markets, The Economist, 2015
2. Prathak Bharti, Indian Financial System, Pearson Publishing, 2018.
3. Siddhartha Sankar Saha, Indian Financial System: Financial Markets, Institutions and Services, McGraw Hill Education, 2020

**Natural Language Processing**  
**SUBJECT CODE: MBA044A**  
**CREDITS: 4**

**Course Objective:**

The course introduces the concepts of Text Analytics, Unstructured Information Analysis for better decision making by deriving valuable insights. The course will help the students understand the roots behind Text Mining which evolved from Machine Learning, Natural Language Processing and Statistics. Upon completion, students are expected to be able to describe basic concepts and methods of Text Mining, Information Extraction, Text Classification and Clustering, Topic Modelling.

**Module 1: Introduction to Text Mining**

Basics of Text Mining, Natural Language Content Analysis, Core Text Mining Operations, Associations, Using Background Knowledge for Text Mining, Domain Ontologies, Domain Lexicons. Text Mining Preprocessing Techniques, Task Oriented Approaches, NLP Tasks, Tokenization, Part-of-Speech Tagging, Syntactical Parsing and Shallow Parsing.

**Module 2: Extracting Features, Relations from Text**

Finding Implicit Features, Finding Opinion Phrases and their Polarity, Context-Specific Word Semantic Orientation, Analysis of Word and Document Frequency, tf-idf, Zipf's Law, `tf_idf` Function, Subsequence Kernels for Relation Extraction, Capturing Relation Patterns with a String Kernel.

**Module 3: Text Categorization and Clustering**

Applications of Text Categorization, Document Representation, Knowledge Engineering Approach to Text Categorization, Machine Learning Approach to Text Categorization, Evaluation of Text Classifiers. Clustering Tasks in Text Analysis, Clustering Algorithms and Clustering of Textual Data.

**Module 4: Relationships between Words**

Tokenizing by N-gram, Counting and Filtering N-gram, Analyzing Bigrams to provide Context in Sentiment Analysis, visualizing a Network of Bigrams using graph, Counting and Correlating Pairs of Words with the `widyr` Package, Counting and Correlating among Sections, Examining Pairwise Correlation.

**Module 5: Topic Modelling and Probabilistic Models for Information Extraction**

Latent Dirichlet Allocation, Word Topic Probabilities, Per-Document Classification, By-words Assignments, Alternative LDA Implementations. Hidden Markov models, Stochastic Context Free Grammar, Conditional Random fields, Parallel Learning Algorithms.



**Course Outcomes:**

CO1: Understand approaches to Syntax and Semantics in NLP.

CO2: Understand various methods for Statistical approaches to Machine Translation.

CO3: Build Models which extract information from Textual Unstructured Data.

CO4: Understand and implement Topic Modelling and Probabilistic Models for Information Extraction.

CO5: Implement and deploy programs based on Relationship Extraction, POS Tagging and Clustering Algorithms based on NLP.

**MAPPING COURSE OUTCOMES LEADING TO THE ACHIEVEMENT OF  
PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOMES:**

Course Outcome	Program Outcome						
	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	M		L				
CO2		M				M	
CO3		M			M		M
CO4	M		M	M			
CO5		H			M	H	

H = Highly Related; M = Medium L = Low

**Textbooks:**

1. Julia Silge, David Robinson, 2018, Text Mining with R-A Tidy Approach, O'Reilly

**References:**

1. Matthew L. Jockers, 2014, Text Analysis with R for Students of Literature, Springer.
2. James Pustejovsky, Amber Stubbs, 2012, Natural Language Annotation for Machine Learning, O'Reilly.
3. Steve R. Poteet, 2007, Natural Language Processing with Text Mining, Springer. James Sanger, Ronen Feldman, 2002, The Text Mining Handbook: Advanced Approaches in Analysing Unstructured Data, Cambridge.

**Social Media Analytics  
SUBJECT CODE: MBA045A  
CREDITS: 4**

**Course Objective:**

This course aims at giving exposure on the advanced aspects with regards to Analytics. The course comprises Social-Media, Mobile, Text Analytics along with Web Scraping and the future advancements in the field of Analytics.

**Module 1: Overview**

Social Media, On-Line Social Network, Off-Line Social Network, Metrics and Measurement, Dashboard, Target Audience, Desired Action, Content, Market Research Online Communities, Cluster Analysis, Conjoint Analysis, Multidimensional Scaling, Social Media Listening, Social Media Scoring, Social Media Modelling.

**Module 2: Mobile Analytics**

Understanding Mobile Analytics Concepts, difference between Mobile Analytics and Site Analytics, Natural language Processing with Mobile Analytics, Text Mining for Mobile Analytics, Mobile Analytics Tools, Churn Analytics.

**Module 3: Text Analytics**

Text Data, Sources of Text Data, Information Clusters, Patterns, Trends, Tagging, Natural Learning Process, Lexical Analysis, Social Network Nodes, Linkage Structure, Node Labelling, Content-Based Classification, Word Stemming, Stemming Algorithms, Polarity of the Attitude, Psychological Profiling, Sentiment Analysis.

**Module 4: Web Scraping**

Web Scraping of unstructured data, Gathering data from HTTP and HTTPS format, Web Scraping from XML and JSON file, Regular expressions, Extraction Strategies, Term Document Matrix, Data Cleansing, Data Manipulation and Data Transformation after Scrapping.

**Module 5: Future of Analytics**

Introduction to Big Data, Predictive Analysis for Business, Social Information Processing and Distributed Computing, Advances in Machine Learning, Traditional Data Models Evolve, Analytics to Solve Social Problems, Location Based Data Explosion, Data Privacy Backlash, Internet of Things, Artificial Intelligence.

**Course Outcomes:**

- CO1: Apply and use Social Media Analytics for the betterment of the business.
- CO2: Use Mobile Analytics for solving complex business problems and to stop churn.
- CO3: Evaluate the business problem and apply analytics techniques for better output.
- CO4: Analyze and understand patterns and techniques in Social Media & Mobile Analytics to solve complex problems.
- CO5: Identify the areas of research with regards to future implementation of social media analytics based on managerial disciplines.

**MAPPING COURSE OUTCOMES LEADING TO THE ACHIEVEMENT OF PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOMES:**

Course Outcome	Program Outcome						
	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	M		M				M
CO2					M		M
CO3	M			M			
CO4	L		M			H	
CO5				M	M		H

H = Highly Related; M = Medium L = Low

**Textbooks:**

1. Galit Shamuelli, 2017, Data Mining for Business Analytics: Concepts, Techniques and Applications with R, Wiley.

**References:**

1. Luis Torgo, 2017, Data Mining with R: Learning Case Studies, Chapman.

2. Zaki & Meira, 2014, Data Mining and Analysis Fundamental Concepts and Algorithms, Cambridge.
3. Han, Kamber & Pei, 2013, Data Mining: Concepts and Techniques, Morgan Kaufmann.
4. Han, Jiawei and Kamber, Micheline, 2012, Data Mining: Concepts and Techniques, Morgan Kaufman.

## **Machine Learning & Artificial Intelligence**

**SUBJECT CODE: MBA046A**

**CREDITS: 4**

### **Course Objective:**

After this course students will gain critical knowledge and understanding about major Data Mining procedures like Decision Tree, Cluster Analysis, Neural Networks, Support Vector Machine, Bayesian Networks and Machine Learning fundamentals. Students will be able to apply and practice this gained knowledge in a variety of Business Scenarios.

### **Module 1: Classification and Regression Tree**

Classification & Regression, working of a Decision Tree, Attribute Selection Measures, Information Gain, Gain Ratio, Gini Index, Building Decision Trees, CART, C5.0, and CHAID Trees, Prediction by Decision Tree, Advantages and Disadvantages of Decision Trees, Model Overfitting, Building Decision Trees in R.

### **Module 2: Clustering**

Cluster Analysis versus Factor Analysis, Overview of Basic Clustering Methods, Agglomerative Hierarchical Clustering, Within-Group Linkage, Nearest Neighbor or Single Linkage, Furthest Neighbor or Complete Linkage, Centroid Clustering, Ward's Method, K- Means Algorithm, Dendrogram, Profiling of Cluster, Cluster Evaluation.

### **Module 3: Support Vector Machine**

Decision Boundaries for Support Vector Machine, Maximum Margin Hyperplanes, Structural Risk Minimization, Linear SVM-Separable Case, Linear SVM-Non-Separable Case, Kernel Function, Kernel Trick, Kernel Hilbert Space, Model Evaluation.

### **Module 4: Market Basket Analysis**

Market Basket Analysis and Association Analysis, Market Basket Data, Stores, Customers, Orders, Items, Order Characteristics, Product Popularity, Tracking Marketing Interventions, Association Rules, Support, Confidence, Lift, Chi-Square Value, Sequential Pattern Analysis.

### **Module 5: Introduction to Artificial Intelligence**

Current Trends in AI, Intelligent Agents, Environments, Problem Solving Agents, Searching Techniques, Knowledge and Reasoning in AI, Forms of Learning, Structure of a Neural Network, Analogy with Biological Neural Network, Activation Functions, Gradient Descent, Model Accuracy.

### **Course Outcomes:**

CO1: Understand and employ a wide variety of Statistical and Machine Learning Algorithms.

CO2: Identify the characteristics of Datasets, Problem Statement and develop Machine Learning programs with reference to known Computing Techniques.

CO3: Understand the Model Performance Evaluation and select the best one based on the solution.

CO4: Implement Machine Learning techniques and the Programming Framework to obtain acceptable decisions for the Real-World problems.

CO5: Employ the use of Artificial Neural Networks to solve real time high sized input analysis and predictions.

### **MAPPING COURSE OUTCOMES LEADING TO THE ACHIEVEMENT OF PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOMES:**

Course Outcome	Program Outcome						
	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	M					M	
CO2		M		L			M
CO3				M		M	
CO4		M			M		H
CO5	M			M			H

H = Highly Related; M = Medium L = Low

#### **Textbooks:**

1. Kevin Knight, Elaine Rich, B.Nair, 2017, Artificial Intelligence, McGraw.

#### **References:**

1. Han, Jiawei and Kamber, Micheline, 2012, Data Mining: Concepts and Techniques, Morgan Kaufman Publishers.
2. Anand Rajaraman, 2011, Mining of Massive Datasets, Cambridge University Press.
3. Mitchell, 2013, Machine Learning, McGraw Hill.
4. Stuart Russell, Peter Norvig, 2004, Artificial Intelligence – A Modern Approach, Pearson.

### **Big Data Analytics SUBJECT CODE: MBA047A CREDITS: 4**

#### **Course Objective:**

This course will help students gain knowledge and understanding about Big Data Technology, Hadoop Ecosystem and various tools related to it. The students will learn about the HDFS File System, Map Reduce Framework, analysing data using Hbase and Hive along with the Integration of R with Hadoop.

#### **Module 1: Introduction to Big Data**

What Is Big Data? History of Data Management, Evolution of Big Data, Structuring of Big Data, Elements of Big Data, Application of Big Data in the Business Context, Careers in Big Data. Business Applications of Big Data: The Significance of Social Network Data, Financial Fraud and Big Data, Fraud Detection in Insurance, Use of Big Data in the Retail Industry.

#### **Module 2: Technologies for Handling Big Data**

Distributed and Parallel Computing for Big Data, Understanding Hadoop, Cloud Computing, Grid Computing and In-Memory Technology for Big Data. VMWare Installation of Hadoop, Linux and its Shell Commands, Different Hadoop Distributions and their advantages, Hortonworks, Cloudera, MapR.

**Module 3: Understanding the Hadoop Ecosystem**

The Hadoop Ecosystem, Storing Data with HDFS, Design of HDFS, HDFS Concepts, Command Line Interface to HDFS, Hadoop File Systems, Java Interface to Hadoop, Anatomy of a file read, Anatomy of a file write, Replica placement and Coherency Model. Parallel Copying with distcp, keeping an HDFS Cluster Balanced.

**Module 4: Map Reduce Fundamentals**

Origins of Map Reduce, How Map Reduce Works, Optimization Techniques for Map Reduce Jobs, Applications of Map Reduce, Java Map Reduce classes (new API), Data flow, combiner functions, running a distributed Map Reduce Job. Configuration API, setting up the development environment, Managing Configuration.

**Module 5: Integrating R with Hadoop, Understanding Hive & Hbase**

Understanding R-Hadoop, Integration Procedure, Packages needed for R under Hadoop Ecosystem, Text Mining for Deriving Useful Information using R within Hadoop, Introduction to Hive & Hbase, Hive and Hbase Architecture, Understanding Queries, Mining Big Data with Hive & Hbase.

**Course Outcomes:**

- CO1: Understand the fundamentals of Big Data and its Applications in various Domains.
- CO2: Conceptualize and Incorporate the Technologies behind Big Data.
- CO3: Understand HDFS File Structure, Map Reduce Framework, the architectures related to them and to use them to solve complex problems.
- CO4: Integrate R with Hadoop and solve analytical problems.
- CO5: Understand and Use Hive/Hbase shell pertaining to relational data handling under Hadoop.

**MAPPING COURSE OUTCOMES LEADING TO THE ACHIEVEMENT OF PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOMES:**

Course Outcome	Program Outcome						
	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	M		L				M
CO2		M			L	M	
CO3	M						M
CO4				M		H	
CO5	M				M	H	M

H = Highly Related; M = Medium L = Low

**Textbooks:**

1. Arshdeep Bahga, 2016, Big Data Science & Analytics: A Hands-On Approach, VPT.

**References:**

1. Tom White, 2012, Hadoop: The Definitive Guide, O’Reilly.
2. Adam Shook and Donald Miner, 2012, Map Reduce Design Patterns: Building Effective Algorithms and Analytics for Hadoop and Other Systems, O’Reilly.

3. Dean Wampler, Edward Capriolo & Jason Rutherglen, 2012, Programming Hive, O'Reilly.
4. Lars George, 2011, HBase - The Definitive Guide: Random Access to Your Planet-Size Data, O'Reilly.

**Semester IV**

<b>FOURTH SEMESTER</b>						<b>Type</b>
<b>MBA100A</b>	Dissertation	-	-	40	20	C
	TOTAL		-	<b>40</b>	<b>20</b>	