DR. A.P.J. ABDUL KALAM TECHNICAL UNIVERSITY,

LUCKNOW

Revised Evaluation Scheme & Syllabus

MBA
(Business Analytics)

First Year

AS PER
AICTE MODEL CURRICULUM

(Effective from the Session: 2020-21)

MBA (Business Analytics) 1st Year Course Structure in accordance with AICTE Model Curriculum Effective w.e.f. Academic Session 2020-21

SEMESTER I

SN	CODE	SUBJECT	PERIODS			INTERNAL EVALUATION SCHEME				END SEMESTER		TOTAL	CREDIT
			L	T	P	CT	TA	PS	TOTAL	TE	PE		
1	KMBA101	MANAGEMENT CONCEPTS & ORGANISATIONAL BEHAVIOUR	4	0	0	30	20	0	50	100	0	150	3
2	KMBA102	MANAGERIAL ECONOMICS	4	0	0	30	20	0	50	100	0	150	3
3	KMBA103	FINANCIAL ACCOUNTING FOR MANAGERS	4	0	0	30	20	0	50	100	0	150	3
4	KMBA104	BUSINESS STATISTICS AND ANALYTICS	4	0	1	30	20	0	50	100	0	150	3
5	KMBA105	MARKETING MANAGEMENT	4	0	0	30	20	0	50	100	0	150	3
6	KBMA106	INTRODUCTION TO BUSINESS ANALYTICS & DATA SCIENCE	4	0	0	30	20	0	50	100	0	150	3
7	KMBA107	DESIGN THINKING	2	0	0	15	10	0	25	50	0	75	2
												975	20
		Lab / Practical											
8	KMBA151	IT SKILLS LAB -1	0	0	3	0		50	50	-	100	150	3
9	KMBA152	BASICS OF DATA MANAGEMENT WITH " R"	0	0	3	0	0	25	25	0	50	75	3
												1200	26

SEMESTER II

SN		SUBJECT	PERIODS			INTERNAL EVALUATION SCHEME				END SEMESTER		TOTAL	CREDIT
			L	T	P	CT	TA	PS	TOTAL	TE	PE		
1	KMBA201	BUSINESS ENVIRONMENT & LEGAL ASPECT OF BUSINESS	4	0	0	30	20	0	50	100	0	150	3
2	KMBA202	DATA MINING TECHNIQUES – PREDICTIVE MODELING & PATTERN DISCOVERY- USING R	3	0	1	15	10	25	50	100	0	150	3
3	KMBA203	BUSINESS RESEARCH METHODS	4	0	0	30	20	0	50	100	0	150	3
4	KMBA204	FINANCIAL MANAGEMENT & CORPORATE FINANCE	3	1	0	30	20	0	50	100	0	150	
5	KMBA205	OPERATIONS MANAGEMENT	3	1	0	30	20	0	50	100	0	150	3
6	KMBA206	QUANTITATIVE TECHNIQUES FOR MANAGERS (QTM)	4	0	0	30	20	0	50	100	0	150	3
Lab / Practical													
7	KMBA251	INTRODUCTION TO PYTHON	1	0	3	0	0	25	25	0	50	75	2
8	KMBA252	DATA VISUALIZATION & DESCRIPTIVE ANALYTICS USING R	1	0	3	15	10	25	50	0	100	150	3
9	KMBA253	IT SKILLS LAB-2	0	0	2	0	0	25	25	0	0	25	1
10	KMBA254	MINI PROJECT -2	0	0	3	0	0	25	25	0	25	50	2
		TOTAL										1200	26

MANAGEMENT CONCEPTS AND ORGANISATIONAL BEHAVIOUR

Course Credit: 3   Contact Hours: 40

Course Objectives:

1. To provide basic understandings of management processes
2. To help the students understand the concepts of organizational behaviour
3. To apply the concepts of management and organizational behaviors in real world situations
4. Familiarizing the students with the contemporary issues in management.
5. Developing managerial and leadership skills among students

UNIT I (8 Lectures)
Fundamentals of Management: Management practices from past to present, Different levels of management, Managerial skills and Managerial Functions , Case Studies
Planning- Objective of planning, Planning process, Types of planning, Types of plans, Management by Objective, Decision-making- types, process & techniques,. Case Studies

UNIT-II (8 Lectures)
Organising & Staffing- Types of organization, Organization structure and decentralization of authority, Meaning of staffing, Recruitment, selection & placement, Training & development..
Directing & Controlling- Principle of directing, Essence of coordination, Different control techniques, Management by exception. Case Studies

UNIT III(8 Lectures)
Fundamentals of individual behavior, Personality, types of personality, Personal effectiveness, meaning of Attitudes, Types, Components, attitude formation and attitude change. Meaning & Type of Group Behaviour, Interpersonal skills, Transactional Analysis, Johari Window,
UNIT IV (8 Lectures)
Motivation:, Theory of Motivation: Maslow's, Herzberg's, McClelland, Contemporary theories of Motivation: Self Determination Theory, Self Efficacy Theory, Vroom's Expectancy Theory, Equity Theory, Reinforcement Theory, Meaning of Perception, process, behavioral applications of perception. Case Studies
UNIT V: (8 Lectures)
Leadership: What is leadership, types of leaders and leadership styles, traits and qualities of effective leader, trait theory, LSM – Leadership Situational Model, Team Building, Tuckman Model of Team Development.
Organizational Change: Meaning of organizational change approaches to managing organizational change, creating a culture for change, implementing the change, Kurt Lewin Model of change. Case Studies

COURSE OUTCOME

Course Outcomes	Bloom's taxonomy
CO 1: Developing understanding of managerial practices and their perspectives.	• Knowledge (K 2) • Remembering (K1)
CO2: Understanding and Applying the concepts of organizational behavior	• Knowledge (K 2) • Applying (K 4)
CO 3: Applying the concepts of management and analyze organizational behaviors in real world situations	• Applying (K 4) • Analyzing (K 5)
CO 4: Comprehend and practice contemporary issues in management.	• Comprehending (K 3)
CO 5: Applying managerial and leadership skills among students	• Applying (K4)

Suggested Readings

1. Koontz Harold &Weihrich Heinz – Essentials of management (Tata McGraw Hill, 5th Edition,2008)
2. L. M. Prasad- Principles and Practices of Management, Sulatn Chand & Sons, 7th edition, 2007.
3. Stephen P. Robbins, ―Organizational Behaviour‖, 12th Edition, Prentice Hall
4. Dr. Premvir Kapoor, Principles and Practices of Management, Khanna Publishing House, Delhi
5. Robbins & Coulter - Management (Prentice Hall of India, 9th Edition)
6. Principles of Management, George R. Terry & S.G. Franklin, AITBS, Delhi.
7. N M Khandelwal- Indian Ethos & Values for Management- Himalyan Publishing
8. Fred Luthans, ―Organizational Behaviour‖, 12th Edition, McGraw Hill International Edition
9. Aswathappa K, ―Organizational Behaviour (Text, Cases and Games)‖, Himalaya Publication
10. UdaiPareek, ―Organizational Behavior‖, Oxford University Press

MANAGERIAL ECONOMICS KMBA 102

Course Credit: 3   Contact Hours: 40

Course Objective:

1. To understand the importance of Managerial Economics in management and businesses
2. To apply the principles of managerial economics in achieving business objectives
3. Be equipped with the tools necessary in forecasting product demand
4. Understand and be able to apply latest pricing strategies
5. Understand and analyze the macro environment affecting the business decision making.

UNIT –I (6 Hours)
Basic Concepts and principles: Definition, Nature and Scope of Economics-Micro Economics and Macro Economics, Managerial Economics and its relevance in business decisions. Fundamental Principles of Managerial Economics - Incremental Principle, Marginal Principle, Opportunity Cost Principle, Discounting Principle, Concept of Time Perspective, Equi-Marginal Principle, Utility Analysis, Cardinal Utility and Ordinal Utility. Case Studies

UNIT –II (8Hours)
Demand and Supply Analysis: Theory of Demand, Types of Demand. Determinants of demand, Demand Function, Demand Schedule, Demand curve, Law of Demand, Exceptions to the law of Demand, Shifts in demand curve, Elasticity of Demand and its measurement. Price Elasticity, Income Elasticity, Arc Elasticity. Cross Elasticity and Advertising Elasticity. Uses of Elasticity of Demand for managerial decision making, Demand forecasting meaning, significance and methods.(numerical Exercises) Case Studies
Supply Analysis; Law of Supply, Supply Elasticity; Analysis and its uses for managerial decision making. Price of a Product under demand and supply forces . Case Studies

UNIT –III (10Hours)
Production and cost Analysis: Production concepts & analysis; Production function, Types of production function, Laws of production: Law of diminishing returns, Law of returns to scale.
Cost concept and analysis: Cost, Types of costs, Cost output relationship in the short-run. Cost output relationship in the Long-run. Estimation of revenue. Average Revenue, Marginal Revenue . Case Studies

UNIT –IV (10Hours)
Market structures: Perfect and Imperfect Market Structures, Perfect Competition, features, determination of price under perfect competition. Monopoly: Feature, pricing under monopoly, Price Discrimination. Monopolistic: Features, pricing under monopolistic competition, product differentiation. Oligopoly: Features, kinked demand curve, cartels, price leadership. Case Studies

UNIT –V (6Hrs)
National Income; Concepts and various methods of its measurement, Circular flows in 2 sector, 3 sector, 4 sector economies, Inflation, types and causes, Business Cycle & its phases.

Course Outcomes:

Course Outcomes	Bloom's taxonomy
CO1: Students will be able to remember the concepts of micro economics and also able to understand the various micro economic principles to make effective economic decisions under conditions of risk and uncertainty.	• Knowledge (K 2) • Remembering (k1)
CO2: The students would be able to understand the law of demand & supply & their elasticities , evaluate & analyse these concepts and apply them in various changing situations in industry . Students would be able to apply various techniques to forecast demand for better utilization of resources.	• Knowledge (K 2) • Applying (K 4) • Synthesizing (K6) • Evaluating (K7)
CO3: The students would be able to understand the production concept and how the production output changes with the change in inputs and able to analyse the effect of cost to business and their relation to analyze the volatility in the business world	• Comprehending (K 3) • Applying (K 4) • Analyzing (K 5) • Evaluating (K7)
CO4: The students would be able to understand & evaluate the different market structure and their different equilibriums for industry as well as for consumers for the survival in the industry by the application of various pricing strategic	• Applying (K 4) • Analyzing (K 5) • Synthesizing (K6)
CO5: The students would be able to analyse the macroeconomic concepts & their relation to micro economic concept & how they affect the business & economy.	• Knowledge (K 2) • Comprehending(K 3)

Suggested Readings
1. Managerial Economics ,D.N.Dwivedi,Vikas Publication, 7th Ed
2. Managerial Economics, GEETIKA, McGraw-Hill Education 2nd Ed.
3. Managerial Economics: Concepts and Applications (SIE), THOMAS& MAURICE, McGraw-Hill Education, 9th Ed
4. Managerial Economics, H.L Ahuja, S.Chand, 8th Ed
5. Managerial Economics – Theory and Applications, Dr.D.M.Mithani, Himalaya Publications, 7th Ed.
6. Sociology & Economics for Engineers, Dr. Premvir Kapoor, Khanna Publishing House

FINANCIAL ACCOUNTING AND ANALYSIS
KMBA 103

Course Credit: 3   Contact Hours: 40

Course Objectives:

1) To understand the fundamentals, basic theory and concepts of financial accounting.
2) To have a knowledge about various Accounting Standards used in preparation of financial statements.
3) To have an understanding of preparation and presentation of financial statements.
4) To acquire knowledge about various techniques used for analysing financial statements with its application.
5) To enable students acquainted with current trends and social responsibility accounting.

UNIT I (6Hrs)

Meaning and Scope of Accounting: Evolution and Users of Accounting, Basic Accounting terminologies, Principles of Accounting, Accounting Concepts & Conventions, Accounting Equation, Deprecation Accounting.

UNIT II (6Hrs)

Mechanics of Accounting: Accounting Standards and IFRS: International Accounting Principles and Standards; Matching of Indian Accounting Standards with International Accounting Standards, Double entry system of Accounting, journalizing of transactions; Ledger posting and Trial Balance.

UNIT III (12 Hrs)

Presentation of Financial Statement: Preparation of final accounts (Profit & Loss Account and Balance Sheet) according to companies act 2013 (vertical format), Excel Application to make Balance sheet, Case studies and Workshops, Preparation of Cash Flow Statement and its analysis.

UNIT IV (10 Hrs)

Analysis of financial statement: Ratio Analysis- Solvency ratios, Profitability ratios, activity ratios, liquidity ratios, Market capitalization ratios; leverage Ratio, Detailed Analysis using excel application.

UNIT V (6 Hrs)

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

Course Outcome:

After successful completion of this course students will be able to

Course Outcome	Bloom's Taxonomy
CO1.Understand and apply accounting concepts, principles and conventions for their routine monetary transaction.	Knowledge (K2)/ Comprehending (K 3)
CO2. Understand about IFRS, Ind AS and IAS for preparation and reporting of financial statements.	Knowledge (K2) Synthesizing (K6)/
CO3. Create and prepare financial statements and Cash flow in accordance with Generally Accepted Accounting Principles	Remembering (k1) Analysing (K 4) /
CO4. Analyse, interpret and communicate the information contained in basic financial statements and explain the limitations of such statements.	Evaluating (K7))
CO5. Recognising various types of accounting and utilize the technology and social responsibility in facilitating and enhancing accounting and financial reporting processes	Knowledge (K2) Applying (K 4)

Suggested Readings
1. Maheshwari S.N &Maheshwari S K – A text book of Accounting for Management (Vikas, 10th Edition)
2. Essentials of Financial Accounting (based on IFRS), Bhattacharya (PHI,3rd Ed)
3. Khan and Jain - Financial Management (Tata McGraw Hill, 7th Ed.)
4. PC Tulsian- Financial Accounting (Pearson, 2016)
5. Dhamija - Financial Accounting for managers: (Prentice Hall, 2nd Edition).
6. Narayanswami - Financial Accounting: A Managerial Perspective (PHI,5th Ed)
7. DhaneshkKhatri- Financial Accounting (TMH,2015)
8. Ambrish Gupta - Financial Accounting: A Managerial Perspective (Prentice Hall, 4th Edition)
9. Ramchandran&Kakani - Financial Accounting for Management (TMH, 2nd Edition).
10. Mukherjee - Financial Accounting for Management (TMH, 2nd Edition).

BUSINESS STATISTICS & ANALYTICS
KMBA 104

Course Credit: 3   Contact Hours: 40 hours

Course Objectives
1. Understand the different basic concept / fundamentals of business statistics.
2. Understand the importance of measures of Descriptive statistics which includes measures of central tendency, Measures of Dispersion, Time Series Analysis, Index Number, Correlation and Regression analysis and their implication on Business performance.
3. Understand the concept of Probability and its usage in various business applications.
4. Understand the Hypothesis Testing concepts and use inferential statistics- t, F, Z Test and Chi Square Test
5. Understand the practical application of Descriptive and Inferential Statistics concepts and their uses for Business Analytics.

Unit I (10 Sessions): Descriptive Statistics
Meaning, Scope, types, functions and limitations of statistics, Measures of Central tendency – Mean, Median, Mode, Quartiles, Measures of Dispersion – Range, Inter quartile range, Mean deviation, Standard deviation, Variance, Coefficient of Variation, Skewness and Kurtosis.

Unit II (8 Sessions):Time Series & Index Number
Time series analysis: Concept, Additive and Multiplicative models, Components of time series, Trend analysis: Least Square method - Linear and Non- Linear equations, Applications in business decision-making.
Index Numbers:- Meaning , Types of index numbers, uses of index numbers, Construction of Price, Quantity and Volume indices:- Fixed base and Chain base methods.

Unit III (6 Sessions): Correlation & Regression Analysis
Correlation Analysis: Rank Method & Karl Pearson's Coefficient of Correlation and Properties of Correlation.
Regression Analysis: Fitting of a Regression Line and Interpretation of Results, Properties of Regression Coefficients and Relationship between Regression and Correlation.

Unit IV (8 Sessions): Probability Thoery & Distribution
Probability: Theory of Probability, Addition and Multiplication Law, Baye's Theorem
Probability Theoretical Distributions: Concept and application of Binomial; Poisson and Normal distributions.

Unit V (8 Sessions) *Hypothesis Testing& Business Analytics*
Hypothesis Testing: Null and Alternative Hypotheses; Type I and Type II errors; Testing of Hypothesis: Large Sample Tests, Small Sample test, (t, F, Z Test and Chi Square Test)
Concept of Business Analytics- Meaning types and application of Business Analytics, Use of Spread Sheet to anlayze data-Descriptive analytics and Predictive analytics.

Course Outcome	Blooms Taxanomy
CO1. Gaining Knowledge of basic concept / fundamentals of business statistics.	• Knowledge (K 2)
CO2. To compute various measures of central tendency, Measures of Dispersion, Time Series Analysis, Index Number, Correlation and Regression analysis and their implication on Business performance.	• Remembering (K1) • Applying (K 4)
CO3. Evaluating basic concepts of probability and perform probability theoretical distributions	• Comprehending (K 3) • Applying (K 4)
CO4. To apply Hypothesis Testing concepts and able to apply inferential statistics- t, F, Z Test and Chi Square Test	• Analyzing (K 5) • Synthesizing (K6)
CO5. To perform practical application by taking managerial decision and evaluating the Concept of Business Analytics.	• Evaluating (K7) • Applying (K 4)

Suggested Readings

1. G C Beri – Business Statistics, 3rd ed, TATA McGrawHill.
2. Chandrasekaran & Umaparvathi-Statistics for Managers, 1st edition, PHI Learning
3. Davis , Pecar – Business Statistics using Excel, Oxford
4. Ken Black – Business Statistics, 5th ed., Wiley India
5. Levin and Rubin – statistics for Management, 7th ed., Pearson
6. Lind, Marchal, Wathen – Staistical techniques in business and economics, 13th ed, McGrawHill
7. Newbold, Carlson, Thorne – Statistics for Business and Economics, 6th ed., Pearson
8. S. C.Gupta – Fundamentals of Statistics, Himalaya Publishing
9. Walpole – Probability and Statistics for Scientists and Engineers, 8th ed., Pearson

MARKETING MANAGEMENT

COURSE CREDIT : 3   Contact Hours: 40

 Course Objectives
1. Assess market opportunities by analyzing customers, competitors, collaborators, context, and the strengths and weaknesses of a company.
2. Understand consumers' requirements and their behaviors.
3. Develop effective marketing strategies to achieve organizational objectives.
4. Communicate and defend your recommendations and critically examine and build upon the recommendations of your classmates both quantitatively and qualitatively.
5. Develop the understanding the current global and digital aspect of marketing.

Unit 1(6 hours)
Introduction: Nature and scope of marketing, Various marketing orientations, Need, Want, Demand, Elements of Marketing mix, customer value and the value delivery process.
Understanding Consumer Behavior: Buying motives, factors influencing buying behavior, buying habits, stages in consumer buying decision process, types of consumer buying decisions.

Unit 2 (8 hours)
Market segmentation, Targeting and Positioning: Meaning, Factors influencing segmentation, Market Aggregation, Basis for segmentation, Segmentation of Consumer. Targeting: Meaning, Basis for identifying target customers, Target Market Strategies. Positioning: Meaning, product differentiation strategies, tasks involved in positioning. Branding: Concept of Branding, Brand Types, Brand equity, Branding Positioning.

Unit 3 (8 hours)
Product Decisions: Concept, product hierarchy, new product development, diffusion process, Product Life cycle, Product mix strategies. Packaging / Labeling: Packaging as a marketing tool, requirement of good packaging, Role of labeling in packaging. Pricing Decisions: Pricing concepts for establishing value, Pricing Strategies-Value based, Cost based, Market based, Competitor based, New product pricing – Price Skimming & Penetration pricing

Unit 4 (8 hours)
Place Decision: Meaning, Purpose, Channel alternatives, Factors affecting channel choice, Channel design and Channel management decisions, Channel conflict, Retailing & Types of Retailers. Advertising: Advertising Objectives, Advertising Budget, Advertising Copy, AIDA model, Public Relation: Meaning, Objectives, Types, and Functions of Public Relations. Sales Promotion: Sales Promotion Mix, Kinds of promotion, Tools and Techniques of sales promotion, Push-pull strategies of promotion, Personal Selling: Concept, Features, Functions, Steps/process involved in Personal Selling, Direct Marketing: Meaning, Features, Functions, Growth and benefits of direct marketing, different forms.

Unit 5 (6 hours)
CRM: Meaning, Relationship Marketing Vs. Relationship Management, Types of Relationship Management, Significance of Customer Relationship Management. Global Marketing: current scenario, Global Marketing environment, Entry strategies, Global P's of Marketing., Recent trends and Innovation in Marketing- Green Marketing, Agile Marketing

Course Outcomes: Upon the successful completion of this course, the student will be able to:

Course Outcome	Bloom's taxonomy
CO1. Remember and Comprehend basic marketing concepts.	• Remembering (k1) • Knowledge (K 2)
CO2. Understand marketing Insights on application of basic marketing concepts.	• Synthesizing (K6) • Comprehending(K3)
CO3. Able to Apply and develop Marketing Strategies and Plans	Applying (K 4)
CO4. Understand and Analyzing Business/ Consumer Markets and ability Identify & evaluate Market Segments and Targeting	• Analyzing (K 5)
CO5. Develop skills to understand the current global and digital aspect of marketing.	• Evaluating (K7)

Recommended Text Books :
1. Marketing Management: A South Asian Perspective - Kotler, Keller, Kevin 15/e, Pearson Education, 2016.
2. Marketing Management - Ramaswamy V. S. & Namakumari S, 6/e, Sage Publication India Pvt Ltd., 2018.
3. Marketing Management - Tapan Panda, 5/e, Excel Publication, 2007.
4. Fundamentals of Marketing Management - Etzel M. J, B J Walker & William J. Stanton, 14/e, McGrawHill Education Publishers, 2015.
5. Marketing: Asian EditionPaul Bainies, Chris Fill Kelly Page third edition, Oxford.

DESIGN THINKING

Course Credit: 2   Contact Hours: 20 hours

Course Objectives:

1. How to make use of practical design thinking methods in every stage of your problem, with the help of method templates
2. How to apply design thinking to your problems in order to generate innovative and user centric solutions
3. How to initiate a new working culture based on a user-centric approach, empathy, ideation, prototyping, and playful testing
4. How to employ ethnographic and analysis methods, such as interviews, focus groups, and surveys
5. How to prototype early and fast, as well as test your prototypes so as to reduce risks and accelerate organizational learning

Unit 1: (8 Hrs.)

Innovation & Creativity: What is Innovation? What is creativity? Difference between innovation and creativity, Role of creativity and innovation in organizations, dynamics of creative thinking, becoming creatively fit as an individual, creative insight, idea generation, idea evaluation, creativity in teams, team's environment and creativity, creating climate for creativity and an enterprise, creating an environment that keeps creative people creating, managing creative employees, leading for creativity and innovation, creativity to innovation

Unit 2: (6 Hrs.)

Fundamentals of Design: Introduction to elements and principles of design. Learning basics of design – dot, line, shape, form as fundamental design components. Principles of design – simplicity, unity, proportion, emphasis, rhythm and balance. Learning design laws such as Gestalt's law.

Unit 3: (8 Hrs.)

Empathy & Understanding Problem: Learn how to understand users, techniques to empathize with users and identify key user problems. Learn how to gain insights from empathy and define problems statements. Empathy tools – techniques for getting empathy insights through interviews empathy maps, emotional mapping, observation

Unit 4: (8 Hrs.)

Design Thinking Process: Introduction to design thinking, history of design thinking, wicked problems, case studies in design thinking, design thinking process, implementing the process in driving innovation, design thinking in social innovations Tools of design thinking – persona, customer journey map, AS-IS, TO-BE Processes, product lockdown workshops An exercise in design thinking– implementing design thinking for making the process of a user better. Student to choose one industry segment to implement design thinking process.

Unit 5: (6 Hrs.)

Design Thinking in Various Sectors (Health sector, Finance, Education, Infrastructure) Design thinking case studies in retail, design thinking case studies in banking, design thinking case studies in management decisions

Course Outcomes: Upon the successful completion of this course, the student will be able to:

Course Outcome	Bloom's Taxonomy
CO1. How to make use of practical design thinking methods in every stage of your problem.	Knowledge (K2) Applying (K4)
CO2. How to apply design thinking to your problems in order to generate innovative and user centric solutions	Applying (K4)
CO3. How to initiate a new working culture based on a user-centric approach, empathy, ideation, prototyping, and playful testing	Applying (K4)
CO4. How to employ ethnographic and analysis methods, such as interviews, focus groups, and surveys	Applying (K4)
CO5. How to prototype early and fast, as well as test your prototypes so as to reduce risks and accelerate organizational learning	Applying (K4) Analyzing (K5)

Text Books:

1. Hundred things every designer needs to know about people – Susan Weins Chenk, New Riders Publication

2. 101 Design Methods: A Structured Approach for Driving Innovation in Your Organization by Vijay Kumar, Wiley Publication

3. Design of Business: Why Design Thinking is the Next Competitive Advantage by Roger L. Martin, Harvard Business Press

Reference Books:

1. How to kill creativity - Amabile, T. (2006) , SAGE Publication

2. Universal principles of Design - William Lidwell, Kritina Holden, Jill Butler, Rockport Publishers

3. Universal methods of design – Bruce hanignton, Rockport Publishers

4. Empathy: Why it matters, how to get it - Roman Kizanie, TarcherPerigee Publishers

5. The Art of Empathy: A complete Guide to life's most essential skill - Karla McLaren, Sounds True Publishers

Introduction to Business Analytics and Data Science

Course Credit: 3   Contact Hours: 40 hours

Course Objectives:
1. Understanding the Role of Business Analyst and Data Science in business.
2. Understanding the basic concept of data management and data mining techniques
3. To understand the basic concept of machine learning
4. To understand the application of business analysis.
5. Understanding the basic concept of Data Science Project Life Cycle.

Unit 1: (6 Hrs.)
Introduction: What is business analytics? Historical Overview of data analysis, Data Scientist vs. Data Engineer vs. Business Analyst, Career in Business Analytics, What is data science, Why Data Science, Applications for data science, Data Scientists Roles and Responsibility

Unit 2: (8 Hrs.)
Data: Data Collection, Data Management, Big Data Management, Organization/sources of data, Importance of data quality, Dealing with missing or incomplete data, Data Visualization, Data Classification
Data Science Project Life Cycle: Business Requirement, Data Acquisition, Data Preparation, Hypothesis and Modeling, Evaluation and Interpretation, Deployment, Operations, Optimization.

Unit 3: (8 Hrs.)
Introduction to Data Mining, The origins of Data Mining, Data Mining Tasks, OLAP and Multidimensional data analysis, Basic concept of Association Analysis and Cluster Analysis.
Unit 4: (6 Hrs.)
Introduction to Machine Learning: History and Evolution, AI Evolution, Statistics Vs Data Mining Vs, Data Analytics Vs, Data Science, Supervised Learning, Unsupervised Learning, Reinforcement Learning, Frameworks for building Machine Learning Systems.
Unit 5: (8 Hrs.)
Application of Business Analysis: Retail Analytics, Marketing Analytics, Financial Analytics, Healthcare Analytics, Supply Chain Analytics.

Course Outcomes: Upon the successful completion of this course, the student will be able to:

Course Outcome	Bloom's Taxonomy
CO1. Understand the basics of business analysis and Data Science	Knowledge (K2)
CO2. Understand data management and handling and Data Science Project Life Cycle	Comprehending (K3)
CO3. Understand the data mining concept and its techniques	Applying (K4)
CO4. Understand and Analyzing machine learning concept	Analyzing (K5)
CO5. Understand the application of business analysis in different domain	Applying (K4)

Text Books:
1. Essentials of Business Analytics: An Introduction to the methodology and its application, Bhimasankaram Pochiraju, SridharSeshadri, Springer
2. Introduction to Machine Learning with Python: A Guide for Data Scientists 1st Edition, by Andreas C. Müller, Sarah Guido, O'Reilly

3. Introduction to Data Science, Laura Igual Santi Seguí, Springer

Reference Book:
1. Introduction to Data Mining, Pang-Ning Tan, Michael Steinbach, Vipin Kumar, Pearson Education India
2. An Introduction to Business Analytics, Ger Koole, Lulu.com, 2019

IT SKILLS LAB-1

Course Credit: 3   Contact Hours: 40

Course Objectives
1. To provide knowledge about the functioning of computers and its uses for managers
2. To provide hands on learning on Internet and its applications
3. To provide hands on learning on Word processing software
4. To provide hands on learning of applications on Spreadsheet software
5. To provide hands on learning on Presentation software

UNIT I (05 hours) Conceptual Framework
Hardware: (a) Input devices - keyboard, printing devices, voice speech devices, scanner, MICR, OMR, Bar code reader, digital camera etc. (b) Output devices - Visual Display UNIT, printers, plotters (c) Storage Devices – Magnetic storage devices, Optical storage devices, Flash Memory.
Software: Types of software with examples; Introduction to languages, compiler, interpreter and Assembler, Operating System Functions, Types and Classification, Elements of GUI based operating system. Network and Internet: Types of computer networks (LAN, WAN and MAN), Netiquettes, Basic services over Internet like WWW, FTP, Telnet, Gopher, URL, Domain names, Web Browsers, Multimedia and its applications: Concepts of Text, Graphics, Animation, Audio, Images, Video. Multimedia Application in Education, Entertainment, Marketing. Names of common multimedia file formats,
UNIT II : Windows and Users Interface (Lab Work)- 7 hours
Windows operating System: Introduction and characteristics, Elements of GUI. Using Mouse, My Computer Icon, The Recycle Bin, Status Bar, Start and Menu & Menu-selection, Running an Application, Windows Explorer: Viewing of File, Folders and Directories Creating and Renaming of files and folders Opening and closing of different Windows, Windows Setting: Control Panels, Wall paper and Screen Savers Setting the date and Sound. Concept of menu, Using Help, Using right Button of the Mouse, Creating Short cuts, Basics of Window Setup, Notepad, Window Accessories
UNIT III: Word Processor Software (Lab Work) – 8 hours
Word processing concepts: Opening, Saving, Closing the file, Opening an existing document, Selecting text, Editing text, Finding and replacing text, printing documents, Creating and Printing Merged Documents, Character and Paragraph Formatting, Page Design and Layout. Editing and Profiling Tools: Checking and correcting spellings. Using Graphics, Tables, Charts, Document Templates and Wizards.

UNIT IV: Spreadsheet Software (Lab Work) – 10 hours
Spreadsheet Package Spreadsheet: Concept and Working Interface, Creating, Saving and Editing a Workbook, Inserting, Deleting Work Sheets, entering data in a cell / formula Copying and Moving from selected cells, handling operators in Formulae. Functions in Spreadsheet: Mathematical, Logical, statistical, text, financial, Date and Time functions, Using Function Wizard. Formatting a Worksheet and Cell: changing data alignment, changing date, number, character or currency format, changing font, adding borders and colors. Printing worksheets, Charts and Graphs – Creating, Previewing, and Modifying Charts. Integrating word processor, spread sheets, web pages.
UNIT V: Presentation Software (lab Work) – 8 hours

Interface of the Presentation Package: Creating, Opening and Saving Presentations. Professional Look of the Presentation: Working in different Design & Views, Working with Slides. Formatting and Editing: Text, Image and Paragraph formatting, Checking Spelling and Correcting Typing Mistakes, Making Notes Pages and Handouts, Drawing and Working with Objects, Adding Clip Art and other pictures, Designing Slide Shows, Running and Controlling a Slide Show, Printing Presentations.

Course Outcomes

Upon successful completion of this course, the student should be able to:

S. No.	Course Outcome	Bloom's Taxonomy
1	CO1. Gain in depth knowledge about the functioning of computers and its uses for managers	Knowledge (K2)
2	CO2. Learn to use Internet and its applications	Applying (K4) Synthesizing (K6)
3 4	CO3. Understand and implement Word processing software	Applying (K4) Knowledge (K2)
5	CO4. Learn applications on Spread sheet softwares	Analyse (K5)
	CO5. Analyse and learn Presentation software	

Suggested Readings

1. Nasib Singh Gill – Handbook of Computer Fundamentals, Khanna Publishing House, Delhi
2. Shrivastava-Fundamental of Computer& Information Systems (Wiley Dreamtech)
3. Leon A and Leon M - Introduction to Computers (Vikas, 1st Edition).
4. ITL ESL – Introduction to Information Technology (Pearson, 2nd Edition).
6. Introduction to Computers, Norton P. (TATA McGraw Hill)
7. Leon - Fundamentals of Information Technology, (Vikas)
8. Satish Jain-BPB's Computer Course Windows 10 with MS Office 2016 (BPB)
9. Linda Foulkes- Learn Microsoft Office 2019: A comprehensive guide to getting started with Word, PowerPoint, Excel, Access, and Outlook (Packt Publishing Limited)

Basics of Data Management with "R"

Course Credit: 2   Contact Hours: 20 hours

Course Objectives
1. To provide basic knowledge of R Syntax
2. To provide practical experience of Data analysis using R
3. To provide practical insight of using R to calculate descriptive statistics

1. Learn the basics of R Syntax
2. Learn how to organize and modify data in R using data frames and dplyr
3. Learn how to prepare data for analysis in R using dplyr and tidyr.
4. Learn the basics of how to create visualizations using the popular R package ggplot2
5. Learn the basics of aggregate functions in R with dplyr, which let us calculate quantities that describe groups of data
6. Learn the basics of joining tables together in R with dplyr
7. Learn to use R or manually calculate the mean, median, and mode of real-world datasets
8. Learn how to quantify the spread of the dataset by calculating the variance and standard deviation in R
9. Learn how to calculate three important descriptive statistics- Quartiles, Quantiles, and Interquartile range that describe the spread of the data
10. Learn about the statistics used to run hypothesis tests and use R to run different t-tests that compare distributions.

COURSE OUTCOME

Course Outcome	Bloom's Taxonomy
CO1. To gain knowledge of knowledge of R Syntax	Knowledge (K2)
CO2.To gain practical experience of Data analysis using R	Applying (K4) Synthesizing (K6)

Business Environment & Legal Aspect of Business

Course Credit: 3   Contact Hours: 40

Course Objectives:

1. The basic objective of the course is to develop understanding and provide knowledge about business environment to the management students.

2. To promote basic understanding on the concepts of Business Environment and international business environment.

3. To provide basic understanding of law of contract

4. To impart basic understanding of provisions of Companies Act concerning incorporation and regulation of business organizations.

5. To appraise the students on the leading practical application oriented case studies – relevant and updated and analyzing case laws in arriving at conclusions facilitating business decisions.

Unit I - (10Hrs)

Introduction to Micro Environment –
Meaning of Business & Business Environment,, Types of Business Organizations , SWOT analysis , Types of Environment-Internal to the Enterprise (Value System, Management Structure and Nature, Human Resource, Company Image and Brand Value, Physical Assets, Facilities, Research & Development, Intangibles, Competitive Advantage), External to the Enterprise , Micro- Suppliers, Customers, Market Intermediaries; Macro- Demography, Natural, Legal & Political, Technological,) Michael Porter's Five Forces Analysis, Competitive Strategies
Unit II - (6 Hrs)

Macro Cont: Economic, Socio-Cultural, Competitive & International Environment –
Economy, Competition, Socio-cultural and International); Business Environment with reference to Global Integration; Comparative Analysis of Business Environment: India and Other Countries , Factors affecting international business environment, Business Policy : LPG model & International forces in business.
UNIT- III (8 hrs)

Law of Contract: Definition, essentials and types of contracts, offer definition and essentials, acceptance – definition and essentials, consideration – definition and essentials, exceptions to the rule, no consideration, no contract, doctrine of privity of contract, capacity of parties, free consent, quasi contract, legality of object, performance of contract, termination of contract, remedies for breach of contract.
Sale of Goods Act: Essentials, sale v/s agreement to sell. Condition v/s warranties, rights of unpaid seller
UNIT IV (8hrs)

Companies Act Definition, characteristics and kinds of companies, steps in formation of company. Memorandum of Association, Articles of Association, prospectus. Directors:

appointment, power, duties and liabilities, meeting and resolutions: types of meetings. Auditor: appointment, rights and liabilities, modes of winding up of a company.

UNITV (8 hrs)

Consumer Protection Act: Definitions - Aims and objectives, Consumer protection councils, Redressal agencies and penalties for violation.

The Information Technology Act: Definition, Digital Signature, Electronic Governance, Attribution, Acknowledgment and Dispatch of Electronic Records, Sense Electronic Records and Sense Digital Signatures, Regulation of Certifying   Authorities, Digital Signature Certificates, Duties of Subscribers, Penalties and Offences.

S. No.	Course Outcome	Bloom's Taxonomy
1	CO1) Develop understanding and fundamental knowledge about business environment	Remembering (k1) Knowledge (K 2)
2	CO2) Develop understanding on the concepts of Business Environment and international business environment.	K2 Knowledge
3	CO3) Develop basic understanding of law of contract	K2 Knowledge
4	CO4) understanding of provisions of Companies Act concerning incorporation and regulation of business organizations	K2 Knowledge
5	CO5) Able to analyze case laws in arriving at conclusions facilitating business decisions.	K4 Applying K5 Analysing

Suggested Readings

1.   Business Environment ---Francis Cherunilam, Himalaya Publishing House
2.   Business Environment: Test and Cases , PAUL, Mc Graw Hill Education , 3rd Ed.
3.   V. Neelamegam – Business Envirnoment (VrindaPublications , 2nd Edition)
4.   Shaikh & Saleem - Business Environment (Pearson, 2nd Edition)
5.   International Business Environment—Ian Brooks, Jamie Weatherstom and GrahmWilkinson
6.   Kuchhal M.C. - Business Law (Vikas Publication)
7.   Gulshan S.S. - Business Law Including Company Law (Excel Books)
8.   N D Kapoor – Elements of Mercantile Law – Sultan Chand-2014.

Data Mining Techniques – Predictive Modeling and Pattern Discovery- using R

Course Credit: 3   Contact Hours: 40 Hrs

Course Objectives:
- Understanding of data mining and its functions
- Understanding of classification, clustering algorithms
- To apply classification and clustering methods applicable to predictive analytics using R
- Understanding of how to formulate predictive analytics using R
- Understand pattern discovery using R

Unit 1: (8 hrs)
Data Mining: Overview, Motivation, Definition & Functionalities, Data Processing, Form of Data Preprocessing, Data Cleaning. : Missing Values, Noisy Data,(Binning, Clustering, Regression, Computer and Human inspection),Inconsistent Data, Data Integration and Transformation. Data Reduction:-Data Cube Aggregation, Dimensionality reduction, Data Compression.

Unit 2: (8 hrs)
Classification: Definition, Data Generalization, Analytical Characterization, Analysis of attribute relevance, Mining Class comparisons, Statistical measures in large Databases, Statistical-Based Algorithms, Distance-Based Algorithms, Decision Tree-Based Algorithms. Clustering: Introduction, Similarity and Distance Measures, Hierarchical and Partitional Algorithms. Hierarchical Clustering-CURE and Chameleon. Association rules: Introduction, Large Item sets, Basic Algorithms, Parallel and Distributed Algorithms, Neural Network approach

Unit 3: (8 hrs)
Data Mining process- CRISP -DM Methodology, Data Collection and Business understanding, Data and Datasets, importing data into R, Data Preprocessing: Data Cleaning, Transforming variables, creating variables, Dimensionality Reduction, Modeling: Exploratory data analysis, dependency modeling using association rules, clustering, anomaly detection,

Unit 4: (8 hrs)
Predictive analytics-Evaluation Metrics, Tree-Based Model, Support Vector Machines, Artificial Neural Networks and deep learning, Model Ensembles, Evaluation- The holdout and random subsampling, cross validation, bootstrap estimates, recommended procedures, reporting and deployment, Case Study.

Unit 5: (8 hrs)
Transactional Dataset, Apriori Analysis, Generating Filtering Rules, Plotting, Sequential Dataset, Apriori Sequence Analysis, Understanding The Results, Business Cases
Course Outcome:

After successful completion of this course students will be able to

Course Outcomes	Bloom's Taxonomy
CO1: Understanding of data mining and its functions	• Knowledge(K2) • Remembering(K1)
CO2: Understanding of classification, clustering algorithms	• Comprehending(K3) • Analyzing(K5)
CO3: To apply classification and clustering methods applicable to predictive analytics using R	• Applying(K4)
CO4: Understanding of how to formulate predictive analytics using R	• Applying(K4)
CO5: Understand pattern discovery using R	• Analyzing (K5) • Applying(K4)

Text Books :
1. Data Mining with R: Learning with Case Studies, Luís Torgo, Chapman and Hall/CRC; 2 edition

Reference Books:
1. R Data Mining: Implement data mining techniques through practical use cases and real world datasets, Andrea Cirillo, Packt Publishing; 1 edition
2. R Data Science Essentials, By Raja B. Koushik, Sharan Kumar Ravindran, Packt Publishing

BUSINESS RESEARCH METHODS KMBA 203

Course Credit: 3   Contact Hours:40

Course objectives
1. Understand the concept / fundamentals of research and their types.
2. Understand the practical application of various research techniques.
3. Understand the importance of scaling & measurement techniques and sampling techniques
4. Understand the importance of coding, editing, tabulation and analysis in doing research.
5. Understanding and applying the concept of statistical analysis which includes ANOVA technique and   technique of report writing.

Unit 1 (8 Sessions)

Research: – Definition, Meaning, Importance types and Qualities of Research; Research applications in functional areas of Business, Emerging trends in Business research.

Research & the Scientific Method: Characteristics of scientific method. Steps in Research Process ,Concept of Scientific Enquiry: – Formulation of Research Problem – Management Question – research Question – Investigation Question , Research Proposal – Elements of a Research Proposal, Drafting a Research Proposal, evaluating a research proposal.

Unit 2 (8 Sessions)

Research design: Concept, Features of a good research design, Use of a good research design; Qualitative and Quantitative research approaches, Comparison – Pros and Cons of both approaches., Exploratory Research Design: Concept, Types: Qualitative techniques – Projective Techniques, Depth Interview, Experience Survey, Focus Groups, Observation.

Descriptive Research Designs: Concept, types and uses. Concept of Cross-sectional and Longitudinal Research , Experimental Design: Concept of Cause, Causal relationships, Concept of Independent & Dependent variables, concomitant variable, extraneous variable, Treatment, Control group.

Unit 3 (6 Sessions)

Scaling & measurement techniques: Concept of Measurement: Need of Measurement; Problems in measurement in management research – Validity and Reliability. Levels of measurement – Nominal, Ordinal, Interval, Ratio. Attitude Scaling Techniques: Concept of Scale – Rating Scales viz. Likert Scales, Semantic Differential Scales, Constant Sum Scales, Graphic Rating Scales – Ranking Scales – Paired comparison & Forced Ranking – Concept and Application.

Unit 4 (6 Sessions)

Sampling:Basic Concepts: Defining the Universe, Concepts of Statistical Population, Sample, Characteristics of a good sample. Sampling Frame (practical approach for determining the sample frame expected), Sampling errors, Non Sampling errors, Methods to reduce the errors, Sample Size constraints, Non Response., Probability Sample: Simple Random Sample, Systematic Sample, Stratified Random Sample, Area Sampling & Cluster Sampling. , Non Probability Sample: Judgment Sampling, Convenience Sampling, Purposive Sampling, Quota Sampling & Snowballing Sampling methods. Determining size of the sample – Practical considerations in sampling and sample size, sample size determination.

Unit 5 (8 Sessions)

Data Analysis: Editing, Coding, Tabular representation of data, frequency tables, Construction of frequency distributions, Graphical Representation of Data: Appropriate Usage of Bar charts, Pie charts, Histogram.

Hypothesis: Qualities of a good Hypothesis –Framing Null Hypothesis & Alternative Hypothesis. Concept of Hypothesis Testing – Logic & Importance. Analysis of Variance: One way and two way Classifications.

Mechanism of Report Writing- Report Preparation: Types, Report Structure: preliminary section, main report, interpretation of results, suggestions and recommendations, limitations of the study, Report formulation.

COURSE OUTCOME

Course Outcomes	Blooms Taxanomy
CO1. Knowledge of concept / fundamentals for different types of research.	• Knowledge (K 2)
CO2. Applying relevant research techniques.	• Remembering (K1) • Applying (K 4)
CO3. Understanding relevant scaling & measurement techniques and should use appropriate sampling techniques	• Comprehending (K 3) • Applying (K 4)
CO4.Synthesizing different techniques of coding, editing, tabulation and analysis in doing research.	• Analyzing (K 5) • Synthesizing (K6)
CO5.Evaluating statistical analysis which includes ANOVA technique and prepare research report.	• Evaluating (K7)

Suggested Readings

1. Research Methodology, Deepak Chawla, NeenaSondhi, Vikas Publication

2. Business Research Methods, Naval Bajpai, Pearson Education

3. Research Methodology, C R Kothari, New Age International.

4. Business Research Methods by Donald Cooper & Pamela Schindler, TMGH, 9th Edition.

5. Business Research Methods by Alan Bryman & Emma Bell, Oxford University Press, 2ndEdition.

6. Business Research Methods by T N Srivastava & Shailaja Rao, TMH Publication, 2ndEdition

FINANCIAL MANAGEMENT AND CORPORATE FINANCE KMBA 204

Course Credit: 3   Contact Hours: 40 Hrs

Course Objectives: This course is intended to introduce the basic theory, concepts and practical applications in corporate finance and to enable students to analyse various corporate decisions. The course objectives are outlined below:

1) To understand the fundamentals, various models and agency problems of Corporate Finance.
2) To acquire knowledge about various techniques used for analysing various long-term projects.
3) To have an understanding about various capital structure techniques and selecting best source of finance.
4) To have an understanding of various dividend models and its applicability.
5) To acquaint students about corporate valuation in mergers and acquisitions.

UNIT I (6 Hrs)

Introduction to Finance & Corporate Finance: Corporate Finance & its scope, Corporate Governance and Agency Problem, Corporate valuation Models: Asset Based Valuation Model, Earning based Valuation Model, Cash flow-based Model, CAPM Model, APT, EVA Analysis, Introduction to start-up finance, Financial Decisions, Time Value of Money.

UNIT II (10 Hrs)

Investment and Financing Decision: Concept of Opportunity Cost, Cost of Debenture, Preference and Equity capital, Composite Cost of Capital, Cash Flows as Profit and components of Cash Flows, Capital Budgeting Decisions, Calculation of NPV and IRR, Excel Application in Analysing Projects.

UNIT III (10 Hrs)

Financial Decision: Capital Structure, Relevance and Irrelevancy theory, Leverage analysis – financial, operating and combined leverage along with its implications, EBIT EPS Analysis, Point of Indifference.

UNIT IV (10 Hrs)

Dividend Relevance: Factors affecting Dividend Policy, Forms of Dividends, Types of Dividend Policies, Dividend Models: Walter and Gordon Model, Miller- Modigliani (MM) Hypothesis.

UNIT V (4 Hrs)

Mergers and Acquisition: Introduction, Exchange Ratio, Synergy Benefits, Post Merger EPS, Post Merger Price of share, Required rate of return of merged company, De-Merger.

Course Outcome: After successful completion of this course students will be able:

Course Outcome	Bloom's Taxonomy
CO1 Understand the different basic concept / Models of Corporate Finance and Governance CO2 Understand the practical application of time value of money and evaluating long term investment decisions CO3 Develop analytical skills to select the best source of capital, structure and leverage. CO4 Understand the use and application of different models for firm's optimum dividend pay-out. CO5 Understand the recent trends of mergers and acquisition and its valuation	• Knowledge (K2) • Remembering(K1) • Analyzing (K5) • Evaluating(K7) • Analyzing(K5) • Synthesizing(K6) • Comprehending(K3) • Applying(K4) • Comprehending(K3) • Synthesizing (K6)

Suggested Readings

1) Khan and Jain - Financial Management (Tata McGraw Hill, 7th Ed.)
2) Pandey I M - Financial Management (Vikas, 11th Ed.)
3) William HakkaBettnerCarcello- Financial and Management Accounting (TMH-16th Ed.)
4) Sheebakapil-Fundamental of financial management (Wiley,2015)
5) Prasanna Chandra - Fundamentals of Financial Management (TMH, 9th Ed.)
6) Bark DemazoThampy- Financial Management (Pearson,2nd Ed.)
7) R P Rustagi - Financial Management (Galgotia, 2000, 2nd revised ed.)
8) Damodaran, A., Applied Corporate Finance, 3rd Edition, Wiley, 2012
9) Ravi.M Kishore – Financial Management (Taxman, 7th Ed)
10) Fundamentals to Financial Management, Brigham & Houston, 14/e, Cengage Learning
11) Van Horne - Financial Management and Policy (Prentice hall, 2003, 12th Ed.)

OPERATIONS MANAGEMENT KMBA 205

Course Credit: 3   Contact Hours: 40

Course Objectives:-

1. To understand the role of Operations in overall Business Strategy of the firm.
2. To understand the application of operations management policies and techniques to the service sector as well as manufacturing firms.
3. To identify and evaluate the key factors and their interdependence of these factors in the design of effective operating systems.
4. To understand the trends and challenges of Operations Management in the current business environment.
5. To familiarize the students with the techniques for effective utilization of operational resources and managing the processes to produce good quality products and services at competitive prices.

UNIT –I (7 sessions) Production Concepts:

Introduction, meaning, nature and scope of production and operations management. Difference between production and operations management. Productivity, factors affecting productivity and productivity measurement. Work study— Method study and work measurement. Production Technology – Types of manufacturing processes. Plant location and types of plant layout.

UNIT –II (8 sessions) Operations Concepts:

Services scenario in India, difference between product and service, characteristics of services, classification of services, product and service design, factors affecting service design, service designing process, service blueprinting, service capacity planning. Dimensions of quality in services, understanding service quality gap, measuring service quality using SERVQUAL model. Case Studies

UNIT-III (10 sessions) Material and Inventory Management:

Types of production planning, process of production planning and control (PPC) – routing, scheduling and loading. Master production schedule, aggregate production planning. Types of inventories, inventory control techniques- EOQ, ABC, VED, FSN, HML and SDE (Simple numerical problems on Inventory control techniques). Just-in-time (JIT) and KANBAN. Case Studies

UNIT-IV (8 sessions) Supply Chain Management:

Overview of supply chain management, conceptual model of SCM, supply chain drivers, measuring supply chain performance, core and reverse supply chain, global supply chain, inbound and outbound logistics, Bullwhip effect in SCM, push and pull systems, lean manufacturing, agile manufacturing, role of IT in SCM. Demand forecasting in supply chain—
Simple moving average method, weighted moving average method, linear regression and exponential smoothing method. Case Studies

UNIT-V (7 sessions) Productivity and Quality:

TQM, Deming's 14 principles, Juran's quality triology, PDCA cycle, KAIZEN, quality circles, 7QC tools and its 7 new management tools, ISO 9000-2000 clauses, six sigma, Total Productive Maintenance (TPM), 5S. Case Studies

Expected Course Outcomes:

S.No.	Course Outcomes	Bloom's Taxonomy
CO1.	Understand the role of Operations in overall Business Strategy of the firm - the application of OM policies and techniques to the service sector as well as manufacturing firms.	• Knowledge (K2) • Comprehending (K 3) • Remembering (K1)
CO2.	Understand and apply the concepts of Material Management, Supply Chain Management and TQM perspectives.	• Knowledge (K2) • Remembering (K1) • Applying (K4)
CO3.	Identify and evaluate the key factors and their interdependence of these factors in the design of effective operating systems.	• Comprehending (K3) • Applying (K4)
CO4.	Analyze / understand the trends and challenges of Operations Management in the current business environment.	• Analyzing (K5)
CO5.	Apply techniques for effective utilization of operational resources and managing the processes to produce good quality products and services at competitive prices.	• Synthesizing (K6) • Evaluating (K7)

Suggested Readings:-

1. Aswathappa, K. & Bhat, K.S.-- Production and Operations Management (Himalaya Publishing House, 2nd Edition)
2. Chase, R.B., Shankar, R. & Jacobs, F.R. -- Operations & Supply Chain Management (Tata McGraw Hill, 14th Edition)
3. Chunawalla, S.A. & Patel, D.R. – Production & Operations Management (Himalaya Publishing House, 9th Edition)
4. Chary, S.N. -- Production and Operations Management (Tata McGraw Hill, 6th Edition)
5. Charantimath, P.M. – Total Quality Management (Pearson Education, 3rd Edition)
6. Bedi, Kanishka – Production & Operations Management (Oxford University Press, 3rd Edition)
7. Adam, Everett E. & Ebert, Ronald J. – Production and Operations Management (Prentice Hall, 5th Edition)
8. Gopalakrishnan, P. & Sundaresan, M. – Materials Management (Prentice Hall of India)

QUANTITATIVE TECHNIQUES FOR MANAGER KMBA 206

Credit 3   Contact Hour: 40

Course Objectives

1. Understand the importance of the use of OR application in decision Making environment
2. To formulate LPP and Obtain Graphical Solutions & Acquire General idea of the Simplex method.
3. To understand and solve transportation & assignment models.
4. To know optimal sequence model and understand concepts of queuing theory.
5. To identify right time for replacement of equipment and understand project management techniques

Unit I (6 Sessions)-Operations Research & Decision Making Environments

Operations Research:- Uses, Scope and Applications of Operation Research in managerial decision-making .*Decision-making environments:*- Decision-making under certainty, uncertainty and risk situations; Decision tree approach and its applications.

Unit II (10 Sessions)-Linear Programming Problem & Transportation Problem

Linear programming: Mathematical formulations of LP Models for product-mix problems; graphical and simplex method of solving LP problems; duality.

Transportation problem: Various methods of finding Initial basic feasible solution-North West Corner Method, Least Cost Method & VAM Method and optimal solution-Stepping Stone & MODI Method, Maximization Transportation Problem

Unit III (8 Sessions)-Assignment model & Game Theory

Assignment model: Hungarian Algorithm and its applications, Maximization Assignment Problem.

Game Theory: Concept of game; Two-person zero-sum game; Pure and Mixed Strategy Games; Saddle Point; Odds Method; Dominance Method and Graphical Method for solving Mixed Strategy Game.

Unit IV (6 Sessions)-Sequencing & Queuing Theory

Sequencing Problem: Johnsons Algorithm for n Jobs and Two machines, n Jobs and Three Machines, Two jobs and m - Machines Problems.

Queuing Theory: Characteristics of M/M/I Queue model; Application of Poisson and Exponential distribution in estimating arrival rate and service rate; Applications of Queue model for better service to the customers.

Unit V (6 Sessions)-Replacement Problem & Project Management

Replacement Problem: Replacement of assets that deteriorate with time, replacement of assets which fail suddenly.

Project Management: Rules for drawing the network diagram, Applications of CPM and PERT techniques in Project planning and control; crashing of operations.

Course Outcomes

CO1:	Be able to understand the characteristics of different types of decision-making environments and the appropriate decision making approaches and tools to be used in each type.	Knowledge (K2)/ Remembering (K1)
CO2:	To formulate linear programming problem and to find optimal solution by graphical simplex method.	Knowledge (K2)
CO3:	Be able to build and solve Transportation Models and Assignment Models also to solve game theory problems by understanding pure and mix strategies.	Applying (K 4)
CO4:	To assign optimal sequence of difference jobs on different machines and develop understanding of queuing theory concepts.	Applying (K 4)
CO5:	To implement replacement of equipments at right time and able to implement project management concepts like CPM, PERT to reduce cost and time.	Synthesizing(K6)/ Evaluating (K7)

Suggested Readings

1. R. Panneerselvam - Operations Research (PHI, 2nd Edition)
2. Sharma J K - Operations Research (Pearson, 3rd Edition
3. Apte-Operation Research and Quantitative Techniques (Excel Books)
4. S Kalawathy-Operation Research (Vikas IVth Edition)
5. Natarajan- Operation Research(Pearson)
6. Singh & Kumar—Operation Research(UDH Publisher edition 2013)
7. Taha Hamdy - Operations Research - An Introduction (Prentice-Hall, 9th edition)
8. Vohra - Quantitative Techniques in Management (Tata McGraw-Hill, 2nd)
9. Kothari - Quantitative Techniques (Vikas 1996, 3rd Edition).

Introduction to Python

Course Credit: 3   Contact Hours: 40 Hrs

Course Objective:
- Understand fundamentals of Python and Juypter Notebook.
- Understand the data structure, dataframes and Pandas Idioms
- Knowledge of Natural Language Processing and learning algorithm for machine learning
- Understanding of Image and Pattern Recognition

Unit 1: (10 hrs)
Introduction of Python, Juypter Notebook, Python Functions, Python Types and Sequences, Python More on Strings, Reading and Writing CSV files

Unit 2: (8 hrs)

Advanced Python Objects, map(), Numpy, Pandas, Visualization DataMatplotlib, Bar Charts, Line Charts, Scatterplots

Unit 3: (6 hrs)

The Series Data Structure, Querying a Series, The DataFrame Data Structure, DataFrame Indexing and Loading, Querying a DataFrame, Indexing Dataframes, Merging Dataframes

Unit 4: (8 hrs)

Data Aggregation and Group Operations, Time Series, Date and Time Data Types and Tools, Time Series Basics, Date Ranges, Frequencies, and Shifting, Time Zone Handling, Periods and Period Arithmetic, Resampling and Frequency Conversion, Time Series Plotting, Moving Window Functions
Unit 5: (8 hrs)

Natural Language Processing, Image Processing, Machine Learning K Nearest Neighbors Algorithm for Classification, Clustering

Course Outcomes:

Course Outcome	Bloom's Taxonomy
CO1: Students will be able to understand fundamentals of Python and Juypter Notebook.	• Knowledge (K 2) • Remembering (K1)
CO2: Students would be able to understand the data structure, data frames and Pandas Idioms.	• Knowledge (K 2) • Applying (K 4)
CO3: Understand date time functions in python	• Applying (K 4) • Knowledge (K 2)
CO4: The students would be able to understand and apply Natural Language Processing and learning algorithm for machine learning techniques.	• Comprehending (K 3) • Knowledge (K2) • Applying (K 4)
CO5: Understand Image Processing and Pattern Recognition.	• Knowledge (K 2) • Applying (K4)

Text Books:

1. Learning Python, 5th Edition by Mark Lutz, O'reilly
2. Mastering Apache Spark 2.x - Second Edition, by Romeo Kienzler, Packt Publishing Ltd.

Reference Books:

1. Python Programming for the Absolute Beginner By Michael Dawson, 2nd Edition, Premier Press, 2003
2. Image Processing and Pattern Recognition, Volume 5, 1st Edition, By Cornelius Leondes, Academic Press

Data Visualization and Descriptive Analytics

Course Credit: 3   Contact Hours: 40 Hrs

Course Objectives:
 1. To understand the implementation of descriptive statistics in R.
2. To understand the basic concept of data visualization with R.
3. To apply R functions to visualize categorical data in the form of Bars and Charts.
4. To understand the representation of Histogram, Pyramids, and Box plot in R.
5. To understand the visualization of time series and scatter plot.

Unit 1: (6 hrs)

Descriptive Analysis using R: Computing an overall summary of a variable and an entire data frame, summary() function, sapply() function, stat.desc() function, Case of missing values, Descriptive statistics by groups, Simple frequency distribution: one categorical variable, Two-way contingency table: Two categorical variables, Multiway tables: More than two categorical variables.

Unit 2: (10 hrs)

Basic Concept in R: Data Structure, Import of Data. Graphic Concept in R: Graphic System, Graphic Parameter Settings, Margin Settings for Figures and Graphics, Multiple Charts, More Complex Assembly and Layout, Font Embedding, Output with cairo_pdf, Unicode in figures, Colour settings, R packages and functions related to visualization.

Unit 3: (10 hrs)

Visualization of Categorical Data in R: Bar Chart Simple, Bar Chart with Multiple Response Questions, Column Chart with two-line labeling, Column chart with 45º labeling, Profile Plot, Dot Chart for 3 variables, Pie Chart and Radial Diagram, Chart Tables.

Unit 4: (8 hrs)

Distributions: Histogram overlay, Box Plots for group, Pyramids with multiple colors, Pyramid: emphasis on the outer and inner area, Pyramid with added line, Aggregated Pyramids, Simple Lorenz curve.

Unit 5: (6 hrs)

Shot Time Series, Areas underneath and between time series, presentation of daily, weekly and monthly values, Exceptions and Special cases in Time series, Scatter Plot for Four Quadrants differentiated by colors, Scatter Plot for Outliers Highlighted, Scatter Plot for Areas Highlighted, Exceptions and Special cases in Scatter Plot

COURSE OUTCOME: After the completion of the course the students will be able to:

Course Outcome	Bloom's Taxonomy
To understand the implementation of descriptive statistics in R.	Knowledge (K2)
To understand the basic concept of data visualization with R.	Remembering (K1) Knowledge (K2)
To apply R functions to visualize categorical data in the form of Bars and Charts.	Knowledge (K2) Applying (K4)
To understand the representation of Histogram, Pyramids, and Box plot in R.	Analyzing(K5) Applying (K4)
To understand the visualization of time series and scatter plot.	Analyzing (K5) Applying (K4)

Text Books:

1. Data Visualization with R 100 Examples by Thomas Rahlf, Springer

2. Using R for Introductory Statistics, By John Verzani, CRC Press

Reference Books:

1. Davis,Pecar – Business Statistics using Excel, Oxford

2. Ken Black – Business Statistics, 5th ed., Wiley India

3. Chandrasekaran & Umaparvathi-Statistics for Managers, 1st edition, PHI Learning

4. Big Data Visualization, James D. Miller, Packt Publishing Ltd.

IT SKILLS LAB-2

Lab work   20
Hours

Course Objective

1. To develop pivot table and understand the validating & auditing techniques
2. To understand different charting techniques in MS Excel
3. To understand different formatting techniques in MS Excel

Unit I (Lab work on spreadsheet)

Pivot Table: Developing Pivot Table, Analyzing data using goal seek and solver, Scenarios Create named scenarios. Show, edit, delete scenarios, Creating a scenario summary report. Validating and Auditing: Set, edit validation criteria for data entry in a cell range like: whole number, decimal, list, date, time, Trace precedent, dependent cells. Identify cells with missing dependents. Creating applications in Spreadsheet and Macros.

Unit II (Lab work on spreadsheet) 15 Hours

Creating and formatting Charts: Understanding chart types, column chart, bar chart, line chart, pie chart, XY Scatter chart , Area chart, surface chart, bubble chart. Create a combined chart like: column and line, column and area. Change the chart type for a defined data series, Add, delete a data series in a chart, Re-position chart title, legend, data labels. Change scale of value axis: minimum, maximum number to display, major interval. Change display units on value axis without changing data source: hundreds, thousands, millions. Format columns, bars, pie slices, plot area, chart area to display an image.

References
Excel Data Analysis: Modeling and Simulation , Hector Guerrero (Springer)
COURSE OUTCOME

S. No.	Course Outcome	Bloom's Taxonomy
1	CO1. To gain knowledge of pivot table and understand the validating & auditing techniques	Knowledge (K2)
2	CO2. Learn to use different charting techniques in MS Excel	Applying (K4) Synthesizing (K6)
3	CO3. Learn to use different formatting techniques in MS Excel	Applying (K4) Knowledge (K2)

MINI PROJECT -2

Course Credit: 2

Seminar by students

Objective –

1. To identify the issues challenge of the industry
2. To able to prepare report on the application of emerging technologies in the selected industry

In second semester, the students are required to take one industry as per his/her interest for analysis and preparing a project report. Preference should be given on the application of emerging technologies in the selected industry. It may consists of Fintech, Block chain, Financial Services, Data Science, Social Entrepreneurship or any other suitable area of interest. The report will be prepared individually. The report will be evaluated by one external examiner appointed by university.

COURSE OUTCOME

S. No.	Course Outcome	Bloom's Taxonomy
1	CO1. To gain knowledge of issues challenge of the industry	Knowledge (K2)
2	CO2. Learn to prepare report on the application of emerging technologies in the selected industry	Applying (K4) Synthesizing (K6)