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

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<tr>
<th>SN</th>
<th>CODE</th>
<th>SUBJECT</th>
<th>PERIODS</th>
<th>INTERNAL EVALUATION SCHEME</th>
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Lab / Practical

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| SN | 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 |
| 6 | KMBA206 | QUANTITATIVE TECHNIQUES FOR MANAGERS (QTM) | 4 | 0 | 0 | 30 | 20 | 0 | 50 | 100 | 0 | 150 |
| 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 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)

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

<table>
<thead>
<tr>
<th>Course Outcomes</th>
<th>Bloom’s taxonomy</th>
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</table>
| CO 1: Developing understanding of managerial practices and their perspectives. | |• Knowledge (K 2)  
• Remembering (K 1) |
| 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 (K 4) |

### Suggested Readings

4. Dr. Premvir Kapoor, Principles and Practices of Management, Khanna Publishing House, Delhi
9. Aswathappa K, —Organizational Behaviour (Text, Cases and Games), Himalaya Publication
10. UdaiPareek, —Organizational Behaviorl, Oxford University Press
MANAGERIAL ECONOMICS K MBA 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)

UNIT –II (8 Hours)
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 (10 Hours)

UNIT –IV (10 Hours)

UNIT –V (6 Hrs)
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:

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<tr>
<th>Course Outcomes</th>
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| 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
4. Managerial Economics, H.L Ahuja, S.Chand, 8th 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, Depreciation 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

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<tbody>
<tr>
<td>CO1. Understand and apply accounting concepts, principles and conventions for their routine monetary transaction.</td>
<td>Knowledge (K2)/ Comprehending (K3)</td>
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<tr>
<td>CO2. Understand about IFRS, Ind AS and IAS for preparation and reporting of financial statements.</td>
<td>Knowledge (K2) Synthesizing (K6)/ Remembering (K1)</td>
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<tr>
<td>CO3. Create and prepare financial statements and Cash flow in accordance with Generally Accepted Accounting Principles</td>
<td>Analysing (K4) / Evaluating (K7))</td>
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<tr>
<td>CO4. Analyse, interpret and communicate the information contained in basic financial statements and explain the limitations of such statements.</td>
<td>Knowledge (K2) Applying (K4)</td>
</tr>
<tr>
<td>CO5. Recognising various types of accounting and utilize the technology and social responsibility in facilitating and enhancing accounting and financial reporting processes</td>
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</table>

Suggested Readings

2. Essentials of Financial Accounting (based on IFRS), Bhattacharya (PHI, 3rd Ed)
4. PC Tulsian- Financial Accounting (Pearson, 2016)
Course Objectives

1. Understand the different basic concepts/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 Theory & 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 analyze data-Descriptive analytics and Predictive analytics.
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<tr>
<td>CO1. Gaining Knowledge of basic concept / fundamentals of business statistics.</td>
<td>• Knowledge (K2)</td>
</tr>
<tr>
<td>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.</td>
<td>• Remembering (K1)   • Applying (K4)</td>
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<tr>
<td>CO3. Evaluating basic concepts of probability and perform probability theoretical distributions</td>
<td>• Comprehending (K3)   • Applying (K4)</td>
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<tr>
<td>CO4. To apply Hypothesis Testing concepts and able to apply inferential statistics- t, F, Z Test and Chi Square Test</td>
<td>• Analyzing (K5)    • Synthesizing (K6)</td>
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<tr>
<td>CO5. To perform practical application by taking managerial decision and evaluating the Concept of Business Analytics.</td>
<td>• Evaluating (K7)    • Applying (K4)</td>
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Suggested Readings

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

Unit 3 (8 hours)

Unit 4 (8 hours)

Unit 5 (6 hours)
Course Outcomes: Upon the successful completion of this course, the student will be able to:

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| CO1. Remember and Comprehend basic marketing concepts.                        | Remembering (k1)  
|                                                                                   | Knowledge (K2)                      |
| 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 (K4)                      |
| CO4. Understand and Analyzing Business/ Consumer Markets and ability Identify & evaluate Market Segments and Targeting | Analyzing (K5)                      |
| CO5. Develop skills to understand the current global and digital aspect of marketing. | Evaluating (K7)                     |

Recommended Text Books:

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:
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<td>CO2. How to apply design thinking to your problems in order to generate innovative and user centric solutions</td>
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<td>CO3. How to initiate a new working culture based on a user-centric approach, empathy, ideation, prototyping, and playful testing</td>
<td>Applying (K4)</td>
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<tr>
<td>CO4. How to employ ethnographic and analysis methods, such as interviews, focus groups, and surveys</td>
<td>Applying (K4)</td>
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<td>CO5. How to prototype early and fast, as well as test your prototypes so as to reduce risks and accelerate organizational learning</td>
<td>Applying (K4) Analyzing (K5)</td>
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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

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

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:

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<tr>
<th>Course Outcome</th>
<th>Bloom’s Taxonomy</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO1. Understand the basics of business analysis and Data Science</td>
<td>Knowledge (K2)</td>
</tr>
<tr>
<td>CO2. Understand data management and handling and Data Science Project Life Cycle</td>
<td>Comprehending (K3)</td>
</tr>
<tr>
<td>CO3. Understand the data mining concept and its techniques</td>
<td>Applying (K4)</td>
</tr>
<tr>
<td>CO4. Understand and Analyzing machine learning concept</td>
<td>Analyzing (K5)</td>
</tr>
<tr>
<td>CO5. Understand the application of business analysis in different domain</td>
<td>Applying (K4)</td>
</tr>
</tbody>
</table>
Text Books:
1. Essentials of Business Analytics: An Introduction to the methodology and its application, Bhimasankaram Pochiraju, Sridhar Seshadri, Springer
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
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


UNIT III: Word Processor Software (Lab Work) – 8 hours


UNIT IV: Spreadsheet Software (Lab Work) – 10 hours


UNIT V: Presentation Software (lab Work) – 8 hours

Course Outcomes

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

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

Suggested Readings

2. Shrivastava-Fundamental of Computer& Information Systems (Wiley Dreamtech)
5. Introduction to Computers, Norton P. (TATA McGraw Hill)
7. Satish Jain-BPB's Computer Course Windows 10 with MS Office 2016 (BPB)
# 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

<table>
<thead>
<tr>
<th>Course Outcome</th>
<th>Bloom’s Taxonomy</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO1. To gain knowledge of knowledge of R Syntax</td>
<td>Knowledge (K2)</td>
</tr>
</tbody>
</table>
| CO2. To gain practical experience of Data analysis using R | Applying (K4)  
| | Synthesizing (K6) |
SEMESTER II

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 –

Unit II - (6 Hrs)


UNIT- III (8 hrs)


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.

UNIT V (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.

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

Suggested Readings

5. International Business Environment—Ian Brooks, Jamie Weatherstom and GrahmWilkinson
6. Kuchhal M.C. - Business Law (Vikas Publication)
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)

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

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>CO1: Understanding of data mining and its functions</td>
<td>• Knowledge(K2)</td>
</tr>
<tr>
<td></td>
<td>• Remembering(K1)</td>
</tr>
<tr>
<td>CO2: Understanding of classification, clustering algorithms</td>
<td>• Comprehending(K3)</td>
</tr>
<tr>
<td></td>
<td>• Analyzing(K5)</td>
</tr>
<tr>
<td>CO3: To apply classification and clustering methods applicable to predictive analytics using R</td>
<td>• Applying(K4)</td>
</tr>
<tr>
<td>CO4: Understanding of how to formulate predictive analytics using R</td>
<td>• Applying(K4)</td>
</tr>
<tr>
<td>CO5: Understand pattern discovery using R</td>
<td>• Analyzing (K5)</td>
</tr>
<tr>
<td></td>
<td>• Applying(K4)</td>
</tr>
</tbody>
</table>

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

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)

Unit 4 (6 Sessions)

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.

COURSE OUTCOME

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

Suggested Readings
1. Research Methodology, Deepak Chawla, Neena Sondhi, Vikas Publication
2. Business Research Methods, Naval Bajpai, Pearson Education
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)


UNIT II (10 Hrs)


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)


UNIT V (4 Hrs)

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

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

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.)
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.)
9) Ravi.M Kishore – Financial Management (Taxman, 7th Ed)
10) Fundamentals to Financial Management, Brigham & Houston, 14/e, Cengage Learning
Course Credit: 3  
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:

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:

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Course Outcomes</th>
<th>Bloom’s Taxonomy</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO1.</td>
<td>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.</td>
<td>• Knowledge (K2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Comprehending (K3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Remembering (K1)</td>
</tr>
<tr>
<td>CO2.</td>
<td>Understand and apply the concepts of Material Management, Supply Chain Management and TQM perspectives.</td>
<td>• Knowledge (K2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Remembering (K1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Applying (K4)</td>
</tr>
<tr>
<td>CO3.</td>
<td>Identify and evaluate the key factors and their interdependence of these factors in the design of effective operating systems.</td>
<td>• Comprehending (K3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Applying (K4)</td>
</tr>
<tr>
<td>CO4.</td>
<td>Analyze / understand the trends and challenges of Operations Management in the current business environment.</td>
<td>• Analyzing (K5)</td>
</tr>
<tr>
<td>CO5.</td>
<td>Apply techniques for effective utilization of operational resources and managing the processes to produce good quality products and services at competitive prices.</td>
<td>• Synthesizing (K6)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Evaluating (K7)</td>
</tr>
</tbody>
</table>

Suggested Readings:-

8. Gopalakrishnan, P. & Sundaresan, M. – Materials Management (Prentice Hall of India)
Credit 3
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
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

<table>
<thead>
<tr>
<th>CO1:</th>
<th>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.</th>
<th>Knowledge (K2)/Remembering (K1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO2:</td>
<td>To formulate linear programming problem and to find optimal solution by graphical simplex method.</td>
<td>Knowledge (K2)</td>
</tr>
<tr>
<td>CO3:</td>
<td>Be able to build and solve Transportation Models and Assignment Models also to solve game theory problems by understanding pure and mix strategies.</td>
<td>Applying (K4)</td>
</tr>
<tr>
<td>CO4:</td>
<td>To assign optimal sequence of different jobs on different machines and develop understanding of queuing theory concepts.</td>
<td>Applying (K4)</td>
</tr>
<tr>
<td>CO5:</td>
<td>To implement replacement of equipments at right time and able to implement project management concepts like CPM, PERT to reduce cost and time.</td>
<td>Synthesizing (K6)/Evaluating (K7)</td>
</tr>
</tbody>
</table>

## Suggested Readings

3. Apte - Operation Research and Quantitative Techniques (Excel Books)
5. Natarajan - Operation Research (Pearson)
6. Singh & Kumar — Operation Research (UDH Publisher edition 2013)
8. Vohra - Quantitative Techniques in Management (Tata McGraw-Hill, 2nd)
Introduction to Python

Course Credit: 3
Contact Hours: 40 Hrs

Course Objective:
- Understand fundamentals of Python and Jupyter 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, Jupyter 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:

<table>
<thead>
<tr>
<th>Course Outcome</th>
<th>Bloom’s Taxonomy</th>
</tr>
</thead>
</table>
| CO1: Students will be able to understand fundamentals of Python and Jupyter Notebook. | • Knowledge (K 2)  
• Remembering (K1) |
| CO2: Students would be able to understand the data structure, dataframes 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

Reference Books:

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 45° 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:

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

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

Reference Books:
1. Davis, Pecar – Business Statistics using Excel, Oxford
2. Ken Black – Business Statistics, 5th ed., Wiley India
4. Big Data Visualization, James D. Miller, Packt Publishing Ltd.
IT SKILLS LAB-2

Lab work

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

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Course Outcome</th>
<th>Bloom’s Taxonomy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CO1. To gain knowledge of pivot table and understand the validating &amp; auditing techniques</td>
<td>Knowledge (K2)</td>
</tr>
<tr>
<td>2</td>
<td>CO2. Learn to use different charting techniques in MS Excel</td>
<td>Applying (K4)</td>
</tr>
<tr>
<td>3</td>
<td>CO3. Learn to use different formatting techniques in MS Excel</td>
<td>Synthesizing (K6)</td>
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<tr>
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<td></td>
<td>Applying (K4)</td>
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<tr>
<td></td>
<td></td>
<td>Knowledge (K2)</td>
</tr>
</tbody>
</table>
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

<table>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CO1. To gain knowledge of issues challenge of the industry</td>
<td>Knowledge (K2)</td>
</tr>
<tr>
<td>2</td>
<td>CO2. Learn to prepare report on the application of emerging technologies in the selected industry</td>
<td>Applying (K4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Synthesizing (K6)</td>
</tr>
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