GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY

DWARKA, NEW DELHI-110078

MBA(ANALYTICS)

Scheme and Syllabus

2022-23 onwards

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY, NEW DELHI

MASTER OF BUSINESS ADMINISTRATION (ANALYTICS)

Criteria for Electives and Assessment

* Record to be maintained by faculty and made available to the examination branch of the University, if required.
* The student is required to earn at least 104 credits to complete the degree.

The internal assessment of the students (**out of 25 marks**) shall be as per the criteria given below:

1. **Class Test-I**   - **15 marks**

   A written test to be conducted on the date communicated by the University as per Academic Calendar for the Class Test.

2. **Individual Presentation/Viva-Voce/Group Discussion***   -   **10 marks**

3. **The Assessment of Summer Training Project in the Third Semester and Project Dissertation in the Fourth Semester shall be as follows.**

Internal Assessment	-	40 Marks
External Assessment (Viva Voce)	-	60 Marks

Note: The Scheme and Syllabus as per the Ordinance 11 of the University.

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY, NEW DELHI

MASTER OF BUSINESS ADMINISTRATION (ANALYTICS)

FIRST SEMESTER

Code No.	Paper	Type	L	T/P	Credits
MBA(A) 101	Management Process and Organisational Behaviour	Core	3	-	3
MBA(A) 103	Accounting for Management	Core	3	-	3
MBA(A) 105	Economics and Quantitative Analysis	Core	3	-	3
MBA(A) 107	Information Technology for Management	Core	3	-	3
MBA(A) 109	Communication in Organizations	Skill Enhancement	3	-	3
MBA(A) 111	Marketing Management	Core	3	-	3
MBA(A) 113	Introduction to Analytics and R	Skill Enhancement	2	-	2
MBA(A) 115	Data Preparation and Exploration	Core	2	-	2
MBA(A) 151	Information Technology for Management –Lab	Skill Enhancement	-	2	1
MBA(A) 153	Introduction to Analytics and R –Lab	Skill Enhancement	-	2	1
MBA(A) 155	Data Preparation and Exploration – Lab	Skill Enhancement	-	2	1
	Total		22	6	25

SEMESTER -I

Management Process and Organizational Behaviour

Course Code: MBA (A) - 101   **L - 3, Credits – 3**

Objective: This course is designed to expose the students to fundamental concepts of management, its process and behavioural dynamics in organizations.

Course Outcomes:

CO1: Enumerate, explain, compare and analyze the concepts, theories and principles that have evolved in specific historical contexts and informed both academic thinking and practices related to the field of management.

CO2: Identify and discuss the functions of management i.e. planning, organizing, leading and controlling, relate them with the roles of managers at different levels of the organization and classify the skills necessary for effective performance of their functions.

CO3: Apply the knowledge of management theory and of organizational behaviour to analyze managerial issues and take decisions consistent with the organizational objectives of efficiency and effectiveness.

CO4: Analyze the complexities of work organizations and develop a multidisciplinary approach to address interpersonal and intra organizational issues.

Course Content

Unit I

Introduction to Management: Meaning and Nature of Management, Evolution of Management, Tasks and Responsibilities of a Professional Manager, Management by Objectives, Case Study.

(8 hours)

Unit II

Process of Management: Planning- Concept, Process and Techniques, Directing – Definition, Principles and Process, Controlling - Definition, Process and Techniques, Decision Making – Concept, Importance and Models, Case Study.   **(8 hours)**

Unit III

Fundamentals of Organizational Behaviour: Organizational Behaviour - Nature and Scope, OB Models – merits and demerits, Personality – concept and types, Perception and Attitude, Learning – concept and theories, Motivation – definition, importance and theories, Managing stress at Work – concept and techniques, Organization Structure – concept and types, Case Studies.

Organizational Processes and Structure: Organizational Design and Structure, Organizational Culture and Climate, Cross Cultural Organizational Behaviour   **(16 hours)**

Unit IV

Group and their Dynamics, Work Teams: Group and their dynamics – Concept and Types, Work Teams – definition and importance, Stages of team Building and its behavioural dynamics, Leadership - Concept, Importance and Styles, Organizational Justice - Concept, Importance and Types.   **(10 hours)**

Suggested Books: (Latest Editions)

1. Robbins. Judge, S.P., T.A., Vohra, N. Organizational Behaviour. Pearson Education
2. Nahavandi, A. et al., Organizational Behaviour. Sage Publication
3. Greenberg, J. and Baron, R.A. Behaviour in Organization. Pearson Education
4. Stoner, J.A.F., Freeman, R.E., Kodwani, A.D., et.al. Management. Pearson Education.
5. Newstorm, J.W. & Davis, K. Organizational Behaviour Human Behaviour at Work, McGraw Hill Education
6. Koontz, H, Weihrich, H, Mark V, Cannice, M.V. Essentials of Management – An International Innovation and Leadership Perspective, MC.Graw Hill.

Accounting for Management

Course Code: MBA (A) - 103   **L - 3, Credits – 3**

Objective: The course aims at enabling students to understand the basic accounting principles and techniques of preparing & presenting the accounts for users of accounting information. The course also familiarizes the students with the basic cost and management accounting concepts and their applications in managerial decision making.

Course Outcomes:

CO1: Demonstrate sound understanding of fundamental accounting principles, accounting standards and accounting techniques.

CO2: Construct financial statements by collecting, recording and classifying the financial information from divergent source.

CO3: Critically analyse and interpret financial statements of a company.

CO4: Demonstrate the ability to extract and use meaningful financial information for managerial decision making.

Course Content

Unit I

Financial Accounting: Scope and Nature of Accounting, Accounting concepts, Principles & Standards, Accounting Cycle, Journalisation, Subsidiary Books; Ledger Posting, Preparation of Trial Balance, Rectification of Errors. Capital and Revenue Expenditure & Income. Fixed Assets and Depreciation Accounting. Preparation of Final Accounts, Manufacturing Account; Trading Account, Profit and Loss Account; Balance Sheet (with adjustments)   **(12 Hours)**

Unit II

Cost Accounting: Objectives, Classification of Cost, Preparation of Cost Sheet, Material Cost Accounting, Perpetual Inventory Control, Inventory Valuation, EOQ, ABC Analysis, Setting of Reorder Level, Maximum Level, Minimum Level, Labour Costing, Overhead Cost Allocations, Over and Under Absorption.   **(10 Hours)**

Unit III

Performance Evaluation Techniques: Introduction to Budgeting and Budgetary Control; Performance Budgeting; Classification of Budget; Fixed and Flexible Budgets, Zero Based Budgeting, Standard Costing and Variance Analysis; Balanced Scorecard; Responsibility Accounting.   **(10 Hours)**

Unit IV

Decision Making Techniques: Financial Statement Analysis, Ratio Analysis, Common Size Statements, Du Pont Analysis, Marginal Costing, Application of Marginal Costing in Decision Making, Cost Volume Profit Analysis; Profit Planning, Management Accounting for Decision Making and Control; EVA; Introduction to Activity Based Costing, Target Costing, Life Cycle Costing; Uniform Costing.   **(10 Hours)**

Suggested Readings: (Latest Editions)

1. Arora, M. N. Cost Accounting Principles & Practice. Vikas Publishing House.
2. Jawahar, L. Advanced Management Accounting. S. Chand & Company.
3. Periasamy, P. Financial, Cost and Management Accounting. Himalaya Publishing.
4. Khan, M.Y. & Jain, P.K. Management Accounting. McGraw Hill Education.
5. Maynard, Jennifer. Financial Accounting, Reporting & Analysis. Oxford University Press
6. Horngren, C.T., Foster, G., Datar, S.M. Cost Accounting: A Managerial Emphasis. Pearson Education

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY, NEW DELHI
MASTER OF BUSINESS ADMINISTRATION (ANALYTICS)

Economics and Quantitative Analysis

Course Code: MBA (A) - 105
                                                            L - 3, Credits – 3

Objective: The course will provide an understanding and relevance of modern economic concepts, precepts, tools and techniques in evaluating business decisions taken by a firm. Additionally, it provides sound knowledge of fundamentals of statistics and statistical techniques for effective decision making in organizations.

Course Outcomes:

CO1: To understand the concepts of cost, nature of production and its relationship to business operations.
CO2: To integrate the concept of price and output decisions of firms under various market structure.
CO3: Understand relevance & need of quantitative methods for making business decisions.
CO4: Demonstrate a sound knowledge of fundamentals of statistics and statistical techniques.
CO5: Apply quantitative methods to solve a variety of business problems.

Course Content
Unit I

Introduction: Nature, Scope and Significance of Managerial Economics, its Relationship with other Disciplines, Opportunity cost Principle, Production Possibility Curve, Incremental Concept, Cardinal and Ordinal Approaches to Consumer Behaviour: Equi-Marginal Principle, Law of Diminishing Marginal Utility, Indifference Curve Analysis.   **(10 Hours)**

Unit II

Demand Analysis and Market Structures: Demand Function, Determinants of Demand, Elasticity of Demand, Demand Estimation and Forecasting, Applications of Demand Analysis in Managerial Decision Making; Market Structures: Price-Output decisions under Perfect Competition, Monopoly, Monopolistic Competition and Oligopoly.   **(10 Hours)**

Unit III

Measures of Central Tendency: Descriptive Statistics: Measures of central tendency, concept of dispersion, measures of dispersion: absolute and relative measures, skewness-meaning and measures, kurtosis-meaning and measures, bivariate analysis: concept of correlation, measures of correlation, regression meaning, regression lines, OLS regression: assumptions, computation of regression coefficients, standardized and unstandardized regression coefficients. Decision making based on Regression Analysis   **(12 Hours)**

Unit IV

Probability Analysis: Concept and meaning of probability, theorems of probability: addition, multiplications, Bayes' theorem, probability distribution: Discrete and Continuous distribution-binomial, Poisson and Normal Distribution. Application of Probability in decision making.   **(10 Hours)**

Suggested Readings: (Latest Editions)

1. H. Craig Petersen, W Cris Lewis, Sudhir K. Jain. Managerial Economics. Pearson Education.
2. Sharpe, N.R., De Veaux, R.D., and Velleman, P.F. Business Statistics. Pearson.
3. Robert S. Pindyck Daniel L. Rubinfeld, Mehta, P.L. Microeconomics. Pearson Education.
4. Vohra, N.D. Quantitative Techniques in Management. McGraw Hill Education.
5. Aczel, Amir D., Sounderpandian, J.,& Saravanan P. Complete Business Statistics, India. McGraw Hill Education.
6. Salvatore, D. Managerial Economics in a Global Economy. Oxford University Press.

Information Technology for Management

Course Code: MBA (A) - 107   **L - 3, Credits – 3**

Objective: The primary objective of this course is to familiarize the student coming from diverse background with basic concepts of information technology, its components and their applications in business processes.

Course Outcomes:

CO1: Recall the components of an Information Technology based system.
CO2: Identify the challenges in storage and retrieval of data.
CO3: Classify the software into various types on the basis of different criteria.
CO4: Create and analyze the database using SQL and spreadsheet tools.
CO5: Build an appropriate computer network as per the organizational needs
CO6: Develop web pages using HTML
CO7: Contrast the information systems for managerial decision making
CO8: Understand the new and emerging technologies.

Course Content

Unit I

Information Technology: Components of IT systems, Characteristics and Classification of Computers. Computer Architecture, Computer Memory: Types of Memory, Storage devices, Mass Storage Systems. Concept of Cloud Computing, Data Centres and their challenges.

(06 Hours)

Unit II

Computer Software: Types of Software. System Software: Introduction to Operating System, Need, Functions and Types of Operating systems. Introduction to GUI. Compiler, Interpreter and Assembler, Types of Computer Programming Languages.
Application Software and their uses. Features of Good Software and emerging trends in software development. Spreadsheet and Presentation Software. Data Analysis using Excel.
DBMS: Traditional File concepts and Database Environment, Database Management Systems Concepts, Types of Data Models, ER Modeling, Integrity Constraints, SQL queries.

(14 Hours)

Unit III

Data Communication and Networks: Concepts of Data Communication, Types of Data-Communication Networks, Communications Media, Concepts of Computer Networks, Primary Network Topologies, Network Architectures-The OSI Model, Inter-Networking devices. The Internet, Intranet and Extranets: Internet Services, World Wide Web, Creating Web Pages using HTML.

(12 Hours)

Unit IV

Functional and Enterprise Systems: Data, Information and Knowledge Concepts, Decision Making Process, Concept and Classification of Information Systems. Security Issues in Information Technology, Emerging Trends in Information Technology: Block Chain, Artificial Intelligence, Machine Learning, Internet of Things and their applications.   **(10 Hours)**

Suggested readings: (Latest Editions)

1. ITL Education Solutions. Introduction to Information Technology, 2/e, Pearson Education.
2. Turban, Rainer and Potter. Introduction to Information Technology, John Wiley and Sons.
3. Behl R. Information Technology for Management, McGrawHill Education.
4. Joseph A. Brady and Ellen F Monk. Problem Solving Cases in Microsoft and Excel, homson Learning.
5. Mukta Sharma and Surabhi Shankar. Computer Applications, Galgotia Publishing Company.
6. Saini A.K. and Mukta Sharma, Web Technologies, Galgotia Publishng Company.

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MASTER OF BUSINESS ADMINISTRATION (ANALYTICS)

Communication in Organizations

Course Code: MBA (A) - 109

L - 3, Credits – 3

Objective: The aim of the course is to train students to enhance their skills in written and oral communication. The course will help students develop competence in communication so that they can successfully handle the challenges of all types of communication in business environment.

Course Outcomes:

CO1: Recognize the scope and significance of communication and its relevance for enhancing individual and organizational performance in the context of global business operations.

CO2: Explain the concepts, theories and principles of communication informing various communication strategies and practices aimed at effective communication with different stakeholders of the organization.

CO3: Identify and apply various tools and techniques for developing appropriate communications strategies aimed at positioning for organization and build brand image.

CO4: Exhibit the use of interpersonal communication skills and etiquettes for impactful business dealings and lasting relationship build in reflected in dressing sense, listening skills, cultural sensitivity etc.

CO5: Devise an effective communication strategy and protocols that can be successfully employed by the individuals and teams while participating in business negotiations.

Course Content

Unit I

Introduction to Business Communication: Business communication – definition, importance. Forms and types of communication (Downward, upward, horizontal and lateral communication), Formal and informal communication network. Process of communication, Barriers and Gateways to communication. **(12 hours)**

Unit II

Written Communication and Application of Communication: Principles of Written Communication – 7C's Concept. Business and Commercial Letter (Request letters, Good News letters, Persuasive letters, Sales letters). Job application and Resume Writing. **(12 Hours)**

Unit III

Oral Communication: Principles of Oral Presentations, Factors Effecting Presentation, Video-conferencing and Skype, Non-Verbal Communication (Para language, Time, Space, Silence, Body language). Relating through Informative and Persuasive speeches, Listening. **(8 hours)**

Unit IV

Recent Trends in Business Communication: Online Communication and Personal Relationships, Handling Online Meetings, Business Communication via Social Network, Writing Social Blogs. Inter-cultural communication. Ethical and Legal Issues. **(10 hours)**

Suggested Readings (Latest Editions)

1. Courtland L. Bovée et. al., Business Communication Today, Pearson
2. Steve Duck and David T. McMahan, The Basics of Communication, Sage, South Asia
3. Lesikar R et.al., Business Communication: Connecting in a Digital World, McGraw Hill.
4. Murphy H et.al., Effective Business Communication, McGraw Hill.
5. Reddy C.R. Business Communication, Wiley Publications.
6. Chaturvedi M. Art and Science of Business Communication, Pearson.

Marketing Management

Course Code: MBA (A) - 111   **L - 3, Credits – 3**

Objective: This course is aimed at enabling students to understand the basic marketing concepts, processes and techniques. It will help develop and prioritise appropriate marketing strategies to meet the organizations marketing objectives and address its marketing challenges

Course Outcomes:

CO1: Discuss the importance of a customer-centric approach and critically evaluate marketing function, concepts and theories, processes and techniques.

CO2: Identify and explain the major forces in the macro and micro environment that impact marketing strategy development and implementation.

CO3: Apply key marketing concepts and tools to develop and prioritise appropriate marketing strategies to meet the organizations marketing objectives and address its marketing challenges.

CO4: Explain the importance of synchronizing the elements of a customer driven marketing strategy and apply IT based tools that provide for a seamless customer experience.

CO5: Anticipate future challenges and devise marketing strategies to adapt to the imperatives of sustainable development.

Course Content

Unit I

Introduction to Marketing: Meaning and Scope of Marketing; Marketing Philosophies; Concept of Customer Value and Customer Satisfaction, Marketing Management Process-An Overview; Concept of Marketing Mix; Understanding Marketing Environment; Consumer Buyer Behavior; Market Segmentation, Targeting and Positioning; Overview of Competitive Marketing Strategies.   **(12 Hours)**

Unit II

Product and Pricing Decisions: Product Concept; Product Classifications; Product Levels; Product Differentiation; Product Mix; Product Line Decisions; Product Life Cycle-Concept & Strategies; Brand and Branding Strategies; New Product Development Process; Pricing-Pricing Objectives, Determinants of Price, Pricing Methods & Strategies.   **(10 Hours)**

Unit III

Promotion and Distribution Decisions: Concept of Integrated Marketing Communication; Promotion Mix-Advertising, Personal Selling, Publicity, Direct Marketing and Sales Promotion; Channels of Distribution; Functions of Intermediaries; Channel Design Decisions, Selecting Channel Members; Channel Management; Emerging Channels of Distribution.   **(10 Hours)**

Unit IV

Contemporary Marketing Trends and Issues: Consumer Adoption of Innovations; Rural Marketing, Social Marketing; Sustainable Marketing; Digital Marketing; Ethical Issues in Marketing; Introduction to Marketing Analytics.   **(10 Hours)**

Suggested Readings: (Latest Editions)

1. Kotler,P., Keller, K.L. , Marketing Management, Pearson Education.
2. Lamb, C.W, Hair, J.F, Sharma, D. & Mc Daniel C., Marketing- A South Asian Perspective Edition, Cengage India Pvt. Ltd, Delhi
3. Baines, P., Fill, C., Page, K., Sinha, P.K. , Marketing: Asian Edition, Oxford University Press, New Delhi.
4. Ramaswamy, V.S and Namakumari, S. , Marketing Management: A Strategic Decision Making Approach Global   Perspective Indian Context Hill , Sage
5. Walker O. C., Mullins J. & Boyd Jr. H. W., Marketing Strategy: A Decision Focused Approach, Mc Graw Hill Education.
6. Etzel, M., Walker, B., Stanton, W. and Pandit, A., Marketing   Management, McGraw Hill Education.

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY, NEW DELHI
MASTER OF BUSINESS ADMINISTRATION (ANALYTICS)

Introduction to Analytics and R

Course Code: MBA (A) -113   **L - 2, Credits – 2**

Objective: This course will help students in analysing the data with the help of R Programming technique.

Course Outcomes:

CO1: Critically thinking on import, manage and structure data files for using business analytics.
CO2: Apply analytical knowledge with the R interface and language for different fields.
CO3: Provide leadership in analytics in existing datasets into R or create new ones.
CO4: Cultivating cognitive skills acquired on existing data and performs all conventional statistical analysis tests. using R knowledge on data management.

Course Content

Unit-I

Introducing to R: R Data Structures, Help functions in R Vectors, Common Vector operations Using all and any Vectorised operations NA and NULL values Filtering Vectorised if-then else Vector Equality Vector Element names, data frames - Creating Data Frames Matrix-like operations in frames Merging Data Frames Applying functions to Data frames Factors and Tables factors and levels Common functions used with factors Working with tables - Other factors and table related functions - Control statements Arithmetic and Boolean operators and values, Recursion Replacement functions Tools for composing function code Math and Simulations in R.   **(8 Hours)**

Unit-II

Matrices, Arrays and Lists : Creating matrices - Matrix operations, Applying Functions to Matrix Rows and Columns Adding and deleting rows and columns, Vector/Matrix Distinction, Avoiding Dimension Reduction, Higher Dimensional arrays, lists, creating lists, General list operations, accessing list components and values, applying functions to lists, recursive lists.

(6 Hours)

Unit-III

Statistics : Descriptive Statistics (summary Measures) using R, Graphs and charts, Binomial distribution Poisson distribution, Normal distribution, Hypothesis Testing, Analysis of Variance (One way ANOVA, Two way ANOVA), Correlation, Simple and Multiple Linear Regression Analysis Logistic Regression, Time Series Analysis, Factor Analysis, Cluster Analysis.

(7 Hours)

Unit-IV

Advanced R Programming : Interfacing R to Other Languages, Text mining, Neural Networks, Monte Carlo methods, classification, Market Basket Analysis.

(7 Hours)

Suggested Readings: (Latest Editions)

1. Motwani, Bharti. Data Analytics with R, Wiley Publications.
2. Chellappen, Subhashini and Acharya, Seema. Big Data and Analytics, Wiley Publications.
3. Ruiz, Diego Modejar . An Introduction to Data Analysis in R: Hands – on coding, Data Mining, Visualization and Statistics from Scratch. Springer Publications
4. Heumann, Christian, Schomaker, Michael Shalabh. Introduction to Statistics and Data Analysis, Springer Publication.
5. Wickham, H., & Grolemund, G. R for data science: import, tidy, transform, visualize, and model data. " O'Reilly Media, Inc.".
6. Maindonald, J., & Braun, J. Data analysis and graphics using R: an example-based approach. Cambridge University Press.

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY, NEW DELHI
MASTER OF BUSINESS ADMINISTRATION (ANALYTICS)

Data Preparation and Exploration

Course Code: MBA (A) - 115

L - 2, Credits – 2

Objective: This course will help students to learn importing, preparing the data before processing. Additionally it will familiarize with the tools used for data exploration and hypothesis testing.

Course Outcomes:

CO1: Explain a typical process for data collection, basic principles behind working with all types of data.

CO2: Set informed and realistic utilization of meta data.

CO3: Understand the basic principles of exploratory analysis, modern extensions to data exploration, including working with "problem data".

CO4: Be able to explore the advantages and disadvantages of various approaches to exploratory analysis.

Course Content
Unit I

Data Preparation: Data import: Open Sources of data, paid data sources, uses and characteristics of open and paid data sources, knowledge development, types of data, enterprise data, consumer data, reading and importing data from different formats, Metadata – meaning and purpose, Organizing and mapping metadata as per analysis requirement. **(6 Hours)**

Unit II

Data Pre-processing : Processed and unprocessed data, difference, anomalies in the unprocessed data, impact of unprocessed data on analytical operations, tools for pre-processing data, properties of processing tools, techniques and functions for cleaning unprocessed data, transforming incorrect data, approaches to normalize datasets, feature scaling. **(7 Hours)**

Unit III

Data Exploration: meaning, importance, limitations in exploring, tools for data exploration, properties of exploration tools, selection of right tolls for data exploration for different types of data, guidelines for data exploration, dimension reduction approaches: Principal Component Analysis, Linear Discriminant Analysis and Non-negative Matrix Factorization **(8 Hours)**

Unit IV

Data Illustration: Analyzing data relationship using scatter diagrams and other graphical techniques, using clustering to evaluate correlations between different data points, principles of hypothesis testing, drawing inferences from the results of data analysis. **(7 Hours)**

Suggested Readings (latest Editions)

1. Pyle, D. Data Preparation for Data Mining, Morgan Koufmann Publishers.
2. Hoyt, R. & Muenchen, R. Data Preparation and Exploration, Informatics Education.
3. Pimpler, E. Data Visualization and Exploration with R: A Practical Guide to Using R, RStudio and Tidyverse for Data Visualization Exploration and Data Science Applications. Geospatial Training Services.
4. Kumar, S. M. & Ahmed, U. Hands-On Exploratory Data Analysis with Python: Perform EDA techniques to understand, summarize, and investigate your data.
5. Elliott, M. Exploring data: an introduction to data analysis for social scientists. Polity.
6. Theobald, O. Data Analytics for Absolute Beginners. Cengage Learning.

Information Technology for Management –Lab

Course Code: MBA (A) - 151   **P- 2, Credits – 1**

Lab will be based on Paper MBA (A) -107 and will basically cover the following: Operating System Utilities, SQL Queries, Basic HTML Tags to create web pages. In addition the students are required to work on Spreadsheet exercises for basic operations and using data analysis tools such as What-If, Goal Seek, Problem Solver, Pivot Tables, etc.

Students are required to maintain a record of all the exercises done by them in a Lab file duly signed by the faculty.

Introduction to Analytics and R -Lab

Course Code: MBA (A) - 153   **P - 2, Credits – 1**

Lab will be based on Paper MBA (A) -113 and will basically cover the following: R Data Structures, Correlation and Regression, Neural Networks, Market Basket Analysis and other models in R Programming language.

Students are required to maintain a record of all the exercises done by them in a Lab file duly signed by the faculty.

Data Preparation and Exploration - Lab

Course Code: MBA (A) - 155   **P - 2, Credits – 1**

Lab will be based on Paper MBA (A) -115 and will basically cover the following: Normalization tools, Principal Component Analysis, Linear Discriminant Analysis, Data illustration and other Data Preparation Techniques.

Students are required to maintain a record of all the exercises done by them in a Lab file duly signed by the faculty.