

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY
DWARKA, NEW DELHI-110078

MBA(ANALYTICS)

First and Second Semesters

Scheme and Syllabus

2022-23 onwards

Master of Business Administration (Analytics)

Programme Outcomes (POs)

On completing the programme students should be able to:

PO1: Demonstrate an understanding of management concepts, principles and theories, and apply them in the context of organizational work practices.

PO2: Apply analytical and critical thinking skills to analyze the dynamic business environment and identify entrepreneurial and business opportunities and risks.

PO3: Prepare business strategies, develop concomitant functional and operational strategies and implement them in an integrated manner to efficiently and effectively achieve the functional goals and the business objectives.

PO4: Demonstrate an understanding of decision-making processes at various levels of the organization with respect to resources mobilization and their efficient deployment and use to achieve the set goals.

PO5: Demonstrate the ability to analyze management problems, to identify and collect relevant data and to apply a creative problem-solving approach.

PO6: Identify and recommend the information technology-based interventions to achieve organizational goals

PO7: Benchmark organizational and managerial practices against the principles of good governance, ethical conduct, corporate social responsibility, and the imperatives of long-term societal welfare.

PO8: Demonstrate effective communication and interpersonal skills as well as the ability to work with and lead teams.

PO9: Develop a lifelong learning approach manifested in their attitude to learn, unlearn, and relearn and in their pursuit of excellence in professional, personal and social life.

Programme Specific Outcomes (POs)

PSO1: To develop competent analytical skills with strong managerial virtues relevant to professional managerial practice through life-long learning and application.

PSO2: To apply the fundamental knowledge of management combined with business analytics skill to optimally solve the complex business problems.

PSO3: To foster an ability to critically analyse, synthesise and create viable solutions to decision making problems

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

SECOND SEMESTER

Code No.	Paper	Type	L	T/P	Credits
MBA(A) 112	Corporate Finance	Core	3	-	3
MBA(A) 114	Business Research	Core	3	-	3
MBA(A) 116	Data Visualization	Skill Enhancement	2	-	2
MBA(A) 118	Econometrics	Core	3	-	3
MBA(A) 120	Business Performance Modelling	Skill Enhancement	3	-	3
MBA(A) 122	Risk Assessment and Mitigation	Core	3	-	3
MBA(A) 124	Data Modelling with Python	Skill Enhancement	2	-	2
MBA(A) 126	MOOCs/Open elective	Ability Enhancement	3	-	3
MBA(A)128	Minor Project	Ability Enhancement	-	-	4
MBA(A)251	Data Visualization Lab	Skill Enhancement	-	2	1
MBA(A)253	Data Modelling with Python Lab	Skill Enhancement	-	2	1
	Total		22	4	28

Note:

*The student is required to choose one MOOC course of 3 credits at PG level as per his or her preference/choice from Swayam portal or any other online educational platform approved by the UGC / regulatory body from time to time. After completing the course, the student must produce successful course completion certificate for claiming the credit. The course chosen by the student should be intimated to the MOOC Coordinator of the respective institution. Alternatively, student can pursue any course at PG level offered in the campus by any USS/College with due intimation to the Program Coordinator/Dean/Director of the School/College.

A Post-Graduate Diploma in Management will be awarded, if a student wishes to exit at the end of first year/second semester upon successful completion. A Student having qualified in Post Graduate Diploma in Management from GGSIP University can join the MBA programme in 3rd Semester any time during the period. The procedure for depositing credits earned, its shelf life, redemption of credits, would be as per UGC (Establishment and Operationalisation) of Academic Bank of credits (ABC) scheme in higher education) Regulations 2021. The admission would be subject to availability of seats in the programme. Number of years spent for studies of this programme cannot be more than N+2 year

Approved in the Academic Council meeting held on 22.03.2023 vide Agenda Item No. 55.77

SEMESTER -I

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

Management Process and Organizational Behaviour

Course Code: MBA (A) - 101L - 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, Wehrich, H, Mark V, Cannice, M.V. Essentials of Management – An International Innovation and Leadership Perspective, MC.Graw Hill.

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

Accounting for Management

Course Code: MBA (A) - 103L - 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) - 105L - 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.

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

Information Technology for Management

Course Code: MBA (A) - 107L - 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, Thomson Learning.
5. Mukta Sharma and Surabhi Shankar. Computer Applications, Galgotia Publishing Company.
6. Saini A.K. and Mukta Sharma, Web Technologies, GalgotiaPublishng Company.

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

Communication in Organizations

Course Code: MBA (A) - 109L - 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.

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

Marketing Management

Course Code: MBA (A) - 111L - 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., & Golemund, 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 tools 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 Kaufmann 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.

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

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.

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

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.

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

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.

SEMESTER-II

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

Corporate Finance

Course Code: MBA (A) - 112L - 3, Credits – 3

Objective: The course is aimed to provide an understanding of the essential elements of financial management and the financial environment in which the business firm operates. The paper will examine the objective of shareholder wealth maximization which encompasses much of modern corporate finance and its implication for decision making in the present context.

Course Outcomes:

CO1: Demonstrate the sound understanding of the concept, functions and importance of financial management for a business firm.

CO2: Analyse the convolutions associated with management of short-term and long-term funds in the corporate capital structure.

CO3: Demonstrate the ability to assess and manage financial risks and recommend an optimum capital portfolio for a firm.

CO4: Combine the knowledge of financial management and investment, financing, dividend policy and working capital decisions for ensuring optimum valuation of a firm.

Course Content

Unit I

Introduction: Financial Management Nature, scope and objectives; Time Value of Money, Computation of EMI, Annuity, Annuity Due, Concept of Risk and Return (including CAPM) Valuation of bonds and equities. **(10 Hours)**

Unit II

Capital Structure: Net Income Approach, Net Operating Income Approach, Traditional Approach and MM Approach, Cost of Capital: Leverage Analysis, Operating Leverage, Financial Leverage, Combined Leverage. EBIT- EPS Analysis, Capital Gearing. **(10 Hours)**

Unit III

Capital Budgeting: Conventional and DCF Methods, Cash flows for investment analysis, Risk Analysis-Certainty Equivalent Factor, Risk Adjusted Discounting Rate, Decision Tree, Independent and Dependent Risk Analysis, Replacement Decisions, Sensitivity Analysis, Scenario analysis using spread sheet. **(10 Hours)**

Unit IV

Dividend Policy: Walter Model, Gordon Model, MM Approach, Lintner Model; Working Capital Management: approaches, estimation; Management of Inventories; Management of Cash (Various Theoretical Models); Management of Receivables and Marketing Securities.

(12 Hours)

Note: MS-Excel Functions and Formulas to be used.

Suggested Readings: (Latest Editions)

1. Brigham, E. F., & Houston, J. F. Fundamentals of Financial Management. Cengage Learning India Pvt Ltd.
2. Khan, M.Y., & Jain, P.K. Financial Management: Text & Problems. Tata McGraw Hill.
3. Prasanna, C. Financial Management: Theory and Practice. Tata McGraw Hill.
4. Van Horne, James, C. Principles of Financial Management, Pearson.
5. Pandey, I.M. Financial Management, Pearson Education.
6. Ravi Kishore. Financial Management, Taxmann's Publications.

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

Business Research

Course Code: MBA (A) - 114L - 3, Credits – 3

Objective: To acquaint the student with the concepts of research, research design, research process concepts, tools and techniques of data analysis and the process of effective report writing to conduct research and analysis for effective decision making.

Course Outcomes:

CO1: Identify and differentiate between different types of research and research designs.

CO2: Formulate and articulate research questions and specify research objectives and hypothesis.

CO3: Critically analyze and evaluate the existing literature to identify the research gaps and prepare a research proposal for scientific study.

CO4: Design a sample study employing statistical tools and techniques, develop data collection instruments comprising scale items and test their validity and reliability.

CO5: Analyze quantitative data by identifying and applying various statistical tests and interpret the results for drawing generalizations.

CO6: Write a report and present the findings in a structured manner with coherent arguments in logically persuasive style and analyze the implications for both practice and future research.

Course Contents

Unit I

Introduction: Meaning, Purpose and Nature of research; Research; Problem: Formulation; Research Objectives and Research Questions; Research Process; Hypothesis: Formulation. Constructs; Variables; Review of Literature: Purpose, Types and Techniques. **(12 Hours)**

Unit II

Research Design: Meaning, importance and types of research designs; Sampling: Defining target population, sampling frame, sampling units; Sampling Methods; Determining sample size; Considerations in sample design. Sampling & Non-Sampling Errors. **(8 Hours)**

Unit III

Questionnaire: Meaning, purpose, structured vs. unstructured questionnaires, designing questionnaire. Measurement scale: meaning, types, steps in scale formulation, reliability and validity of a measurement scale. **(10 Hours)**

Unit IV

Data Analysis: Descriptive Statistics, Hypothesis Testing, Parametric and Non-Parametric Tests: Analysis of Variance, Multiple and Logistic regression, Exploratory and Confirmatory Factor Analysis; Discriminant Analysis; Report Writing: Research Report Components, Process of Report Writing. **(12 Hours)**

Note: Software Tools to be used for enhanced learning.

Suggested Readings: (Latest Editions)

1. Cooper, D. R. and Schindler P. S. Business Research Methods. Tata McGraw Hill Education Pvt. Ltd.
2. Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E. Multivariate Data Analysis. Pearson Education.
3. Montgomery, D.C. Design and Analysis of Experiments (International Student Edition). John Wiley & Sons.
4. Cochran, W.G. Sampling Techniques. John Wiley & Sons.
5. Johnson, R.A., & Wichern, D.W. Applied Multivariate Statistical Analysis New Delhi, Prentice Hall of India.
6. Zikmund, W.G. et al. Business Research Methods. New Delhi: Cengage Learning

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

Data Visualization

Course Code: MBA (A) - 116

L - 2, Credits – 2

Objective: The students will be able to learn different visualisation tools and will be able to apply them on real life data.

Course Outcomes:

CO1: Understand the importance of data visualization and the design and use of many visual components.

CO2: Learn to wisely use various visualization structures such as tables, spatial data, time-varying data, tree and network, etc.

CO3: Learn the basics of colours, views, and other popular and important visualization-based issues.

CO4: Learn basic algorithms in data visualization.

Course Content

Unit I

Introduction: meaning, importance, results analysis, categorization of different business outcomes, contribution of result analysis to meeting business outcomes **(6 Hours)**

Unit II

Data Analysis: Identification of target audience for reporting the results of a data analysis, Identifying the right delivery mode and format to report the results of a data analysis. **(7 Hours)**

Unit III

Data Summarization: Comprehending and identifying the need for change in content of a report as per target audience requirement, Summarizing the results into a clear narrative. **(7 Hours)**

Unit IV

Visualization: Identify the different visualizations that can be used to support the reporting of analysis results, distinguish between the pros and cons of using a specific visualization to represent certain types of data, Select the right tool to create the visualizations, Comprehend the importance of version control and uploading the report in a knowledge base. **(8 Hours)**

Suggested Readings: (Latest Editions)

1. Nussbaumer, Knaflic, Cole. Storytelling with Data: A Data Visualization, Wiley Publication
2. Healy, Kieran. Data Visualization – A Practical Introduction, Princeton University Press
3. Jones, Ben. Communicating Data with Tableau: Designing, Developing and Delivering Data, O'Reilly Publications.
4. Wilke, Claus O. Fundamentals of Data Visualization: A Primer on Making Informative and Compelling Figures, O'Reilly Publications.
5. Kirk, A. Data visualisation: A handbook for data driven design. Sage Publication.
6. Sosulski, K. Data visualization made simple: insights into becoming visual. Routledge.

Approved in the Academic Council meeting held on 22.03.2023 vide Agenda Item No. 55.77

Approved in the Academic Council meeting held on 22.03.2023 vide Agenda Item No. 55.77

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

ECONOMETRICS

Course Code: MBA (A) - 118L - 3, Credits – 3

Objective: This course takes an intuitive approach to apply the techniques of econometrics for problem solving. The course aims at providing a hands-on practical approach for econometric tests, methods of estimation, and interpretation of the results to solve the business problems.

Course Outcomes:

CO1: Understand the nature and behaviour of time series data

CO2: Apply econometrics techniques on the real-life economic data.

CO3: Derive a relationship between two or more series for useful implications, and forecast the series based on various types of regression equations.

CO4: Validate financial economics theories and methods with the help of empirical data.

Course Content

Unit I

Econometrics: Meaning, Nature, scope and methodology of Econometrics, Types of Data, Returns in econometric modelling, process of formulation of econometric model. Simple Linear Regression Model: Assumptions, Procedures and properties of OLS estimator, Co-efficient of determination, Tests of significance, Maximum Likelihood Method; Multiple Linear Regression Analysis: Method of least squares, Properties of OLS estimator, Test of significance of regression coefficient, R^2 and adjusted R^2 .

(12 hours)

Unit II

Issues with Classical Regression Model: Multicollinearity, Autocorrelation and Heteroscedasticity; Functional forms; Dummy variables-Nature and uses. Stationary Time Series Models: Stochastic process, Stationary, Modeling AR, MA, ARMA processes, Deterministic and stochastic trends, unit roots, testing unit roots – Dickey & Fuller, Phillips and Perron tests.

(10 hours)

Unit III

Modelling Volatility: Conditional Heteroscedastic Models: ARCH Models, GARCH Models, Estimation of GARCH Models, Forecasting with GARCH Model, Asymmetric GARCH Models, The GARCH-in-Mean Model, Volatility and Correlation: The VECH Model, The Diagonal VECH Model, The BEKK Model, The Constant Correlation Model, the Dynamic Correlation Model. Vector Autoregressive Models: Issues in VAR, Hypothesis Testing in VAR

(10 hours)

Unit IV

Advanced Topics in Regression Analysis Selected Topics: Dynamic Econometric Models: distributed lag models; autoregressive models; instrumental variable estimation; simultaneous equation models. Panel Data Models Methods of estimation; fixed effects model; random effects model.

(10 hours)

Suggested Readings: (Latest Editions)

1. Dougherty, C. Introduction to Econometrics. Oxford University.
2. Gujarati, D. N. Basic Econometrics. Mc GrawHill Education.
3. Studenmund. Using Econometrics; A Practical Guide. Pearson Education.
4. Wooldridge, J. Introductory Econometrics - A Modern Approach. Cengage Learning Pvt. Ltd.
5. Hatekar, N.R. Principles of Econometrics, Sage.
6. Kacapyr, E. A Guide to Basic Econometric Techniques, Routledge.

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

Business Performance Modelling

Course Code: MBA (A) - 120L - 3, Credits – 3

Objective: The Students will be able to categorize the different performance metrics based on different business outcomes, compute the performance of the model, describe different hyperparameters that can maximize model performance, apply different techniques to identify hyperparameters, use different optimization algorithms and apply the concepts behind hyperparameter tuning, batch normalization.

Course Outcomes:

CO1: To understand Performance metrics for algorithms on different business outcomes

CO2: To model performance computation as per specified business outcome and mapping it.

CO3: Understand Different Optimization algorithms and analysis.

CO4: Working on BPM use cases.

Course Content

Unit-I

Introduction: Performance metrics for algorithms on different business outcomes, categorization of performance metrics. **(10 Hours)**

Unit-II

Model performance: Computation as per specified business outcome; Hyperparameters description for maximizing model performance; techniques for identifying hyperparameters – grid search, random search, Bayesian optimization **(11 Hours)**

Unit-III

Optimization algorithms: meaning, features, purpose, types - minibatch gradient descent, RMSprop, Adam **(11 Hours)**

Unit-IV

Hyperparameter tuning: meaning, concepts behind hyperparameter tuning and their application, batch normalization. **(10 Hours)**

Suggested Readings: (Latest Editions)

1. Loguna, Manuel, Marklund, Johan, Business Process Modeling, Simulation and Design, Pearson Publication.
2. Havey, Michael, Essentials Business Process Modeling, O'Reilly Media Inc.
3. Southeikal, H. Prashanth, Data for Business Performance: Model to Transform Business Data into an Enterprise, Technics Publications.

4. Agrawal, T. Hyperparameter Optimization in Machine Learning: Make Your Machine Learning and Deep Learning Models More Efficient. New York, NY, USA: Apress.
5. Hutter, F., Kotthoff, L., & Vanschoren, J. Automated machine learning: methods, systems, challenges (p. 219). Springer Nature.
6. Zheng, A. Evaluating machine learning models: a beginner's guide to key concepts and pitfalls. O'Reilly Media.

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

Risk Assessment and Mitigation

Course Code: MBA (A) - 122L - 3, Credits – 3

Objective: The students will be able to learn the techniques for risk assessment and mitigation for the different models.

Course Outcomes:

CO1: Demonstrate knowledge of the range of business and data related risks faced by organisations.

CO2: Understand the algorithm approach to risk management through risk identification, risk measurement and risk management (or mitigation)

CO3: Understand modelling risk mitigation measures.

CO4: Understand operational risk and how to counter measures to manage it.

Course Content

Unit I

Introduction: Describe the various factors that contribute to algorithmic risk such as flawed data or assumptions, coding errors, insufficient sample sizes, Comprehend the impact that risk factors might have on the outcome of the algorithmic model **(10 Hours)**

Unit II

Risk Estimation: Compute deviation from expected outcomes of model by testing it with multiple inputs; Apply different techniques to estimate the risks involved when the model deviates from expected outcomes **(10 Hours)**

Unit III

Mitigation: Categorize the various mitigation measures that can be introduced to counter each type of model risk, select suitable checks and mitigation measures to counter the risk. **(11 Hours)**

Unit IV

Measures of Mitigation: Translate mitigation measures into a structured corrective action that can be communicated to the rest of the organization . **(11 Hours)**

Suggested Readings: (Latest Editions)

1. Trendowicz, Adam, Software Cost Estimation, Benchmarking, and Risk Assessment: The software Decision-Makers' Guide to Predictable Software Development, Springer.

2. Fundamentals of Risk Management: Understanding, Evaluating and Implementing Effective Risk Management by Paul Hopkin, kobo publication.
3. Business Risk and Simulation Modelling in Practice, By MICHAEL REES, ISBN: 978-1-118-90404-6 , Wiley publication.
4. Risk Analysis Foundations, Models, and Methods, by Louis Anthony Cox Jr. (Author),Publisher : Springer,ISBN-10 : 9780792376156
5. Kramer, Anne, Model Based Testing Essentials: Guide to the ISTQB Certified Model Based Tester Foundation Level, John Wiley & Sons.
6. Karasan, A. Machine Learning for Financial Risk Management with Python: Algorithms for Modeling Risk. O'Reilly.

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

Data Modelling with Python

Course Code: MBA (A) -124 L - 2, Credits – 2

Objective: The students will be able to learn about the information needs of Management and shall also get hands on training of statistical data analysis through Python Programming

Course Outcomes:

CO1: Understand Python as a useful scripting language for data analysis.

CO2: To have hands-on training of Statistical Data Analysis through Python Programming

CO3: To Design and implement object-oriented applications.

CO4: To develop the ability to write data mining applications using Python

Course Content

Unit I

Introduction : Features of Python, Python as a data science platform, Introduction to Spyder, Setting working Directory, Creating and saving a script file, File execution, clearing console, removing variables from environment, clearing environment, Commenting script files, Variable creation, Arithmetic and logical operators, Data types and associated operations: Strings, Lists, Arrays, Tuples, Dictionary, Sets, Range, Introduction to Numpy

(7 Hours)

Unit-II

Introduction to Jupyter notebook: Environment setup, Pandas dataframe, Reading files, Exploratory data analysis, Data preparation and preprocessing, Data visualizations with matplotlib: scatter plots, line plots, box plots, bar charts and histograms

(7 Hours)

Unit-III

Control structures: if-else family, for loop, for loop with if break, while loop, Descriptive statistics, Hypothesis testing, correlation and covariance, Linear and multiple Regression, classification, Logistic Regression

(7 Hours)

Unit-IV

Introductory overview of Text Mining: Data Mining vs. Text Mining, Text Mining and Text Characteristics, Predictive Text Analytics, Text Mining Problems, case studies using different data sets.

(7

Hours)

Suggested Readings: (Latest Editions)

1. Miller, Thomas, W. Modelling Techniques in Predictive Analytics with Python and R: A Guide to Data Science, Pearson.

2. McKinney, William, Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython, O'Reilly.
3. Downey, Allen and Elkner, Jeffrey and Meyers, Chris Learning with Python, Dreamtech Press.
4. Nageswara, Rao R. Core Python Programming, Dreamtech Publications.
5. VanderPlas, J. Python data science handbook: Essential tools for working with data. "O'Reilly Media, Inc."
6. Thareja, R. Python Programming: Using Problem Solving Approach. Oxford University Press

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

MOOCs Course/Open Elective

Course Code: MBA (A) - 126L - 3, Credits – 3

To remove rigid boundaries and facilitate new possibilities for learners in education system, study webs of active learning for young aspiring minds is India's Nation Massive Open Online Course (MOOC) platform. Massive Open Online Courses (MOOCs) are online courses which are designed to achieve the three cardinal principles of India's education policy: Access, Equity and Quality. MOOCs provide an affordable and flexible way to learn new skills, career development, changing careers, supplemental learning, lifelong learning, corporate eLearning & and deliver quality educational experiences at scale and more.

A student is required to earn 3 credits by completing quality –assured MOOC programme offered on the SWAYAM portal or any other online educational platform approved by the UGC / regulatory body from time to time at PG level. Successful Completion Certificate should be submitted to respective institute for earning the course credit.

Alternatively, student can pursue any course offered in the campus by any USS/College at PG level with due intimation to the Program Coordinator/Dean /Director of the School/College.

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

Minor Project

Course Code: MBA (A) -128

Credits – 4

The Project must focus on the application of management concepts, management theory or techniques studied in the first and second semester to understand and address an organizational or social issue or challenge. The project may be based on secondary or primary sources of data.

On completion of the project students are required to submit a project report.

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

Data Visualization - Lab

Course Code: MBA (A) -251

P - 2, Credits – 1

Lab will be based on Paper MBA (A) -116 and will basically cover the Data Visualization and illustration techniques using Tableau.

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

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

Data Modelling with Python - Lab

Course Code: MBA (A) - 253

P - 2, Credits – 1

Lab will be based on Paper MBA (A) -124 and will basically cover the following: Introduction to J. Notebook, illustrations, charts using matplotlib in Python, text mining and various machine learning models.

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

COs and POs Mapping - MBA (Analytics) Programme

Semester & Course Title	Subject Code	Course Outcomes	Program outcomes								
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
SEMESTER I											
Management Process and Organisational Behaviour	MBA(A) 101	CO1	3	2	2	2	1	2	3	3	2
		CO2	2	2	2	2	2	1	1	3	2
		CO3	3	3	3	3	2	2	1	2	2
		CO4	2	2	2	3	3	2	1	3	2
Accounting for Management	MBA(A) 103	CO1	3	1	2	2	1	1	1	1	2
		CO2	3	2	3	2	2	2		2	
		CO3	3	3	2	2	2	2	1		1
		CO4	3	2	3	3	3	1			
Economics and Quantitative Analysis	MBA (A) - 105	CO1	3	1	2	3	3	2	1	1	3
		CO2	3	1	2	2	3	2	2	2	3
		CO3	3	2	2	3	3	2	1	2	2
		CO4	3	2	2	3	3	2	2	1	3
		CO5	3	2	2	3	3	2	1	1	3
Information Technology for Management	MBA (A) - 107	CO1	2	1	1	1	1	1	1	2	1
		CO2	1	1		2	2	3	1	1	2
		CO3	1	1	1	2	2	1	1	2	1
		CO4	2	1	1	2	1	1	2	1	1
		CO5	2	2	3	2	1	2	1	1	2
		CO6	1	2	2	1	1	1	1	1	1
		CO7	3	2	2	1	1	1	2	1	1
		CO8	1	1	1	2	1	1	1	1	1
Communication in Organizations	MBA (A) - 109	CO1	2	3	3	2	2	1	1	3	2
		CO2	2	2	3	3	3	2	1	3	2
		CO3	2	3	2	2	3	3	2	2	1
		CO4	2	3	3	2	2	2	1	3	2
		CO5	2	3	3	3	3	2	1	3	2
Marketing Management	MBA (A) - 111	CO1	3	3	3	3	3	2	2	3	2
		CO2	3	3	3	3	3	2	2	3	2

		CO3	3	3	2	3	3	3	2	3	2
		CO4	3	3	3	3	3	3	2	3	2
		CO5	2	2	2	2	2	2	3	3	2
Introduction to Analytics and R	MBA (A) -113	CO1	3	2	3	2	3	2	3	2	2
		CO2	2	2	3	2	2	2	3	2	1
		CO3	2	2	2	3	2	2	2	3	2
		CO4	2	3	3	2	2	3	3	2	1
Data Preparation and Exploration	MBA (A) -115	CO1	3	3	1	3	3	3	1	1	2
		CO2	2	3	1	3	2	2	2	3	3
		CO3	2	3	3	2	1	3	2	3	2
		CO4	3	2	3	1	3	2	2	3	1

SEMESTER II			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
Corporate Finance	MBA (A) -112	CO1	3	3	2	2	2	1	2	1	2
		CO2	3	3	3	3	1	2	1	1	1
		CO3	3	3	3	3	2	1	2	2	
		CO4	3	3	3	3	3		1	2	1
Business Research	MBA (A) -114	CO1	3	3	3	3	2	1	2	1	2
		CO2	3	3	3	2	2	1	2	1	2
		CO3	3	3	3	3	2	1	2	3	3
		CO4	3	3	3	3	3	2	2	2	2
		CO5	2	3	2	3	3	3	3	3	2
		CO6	2	3	2	3	3	2	2	3	3
Data Visualization	MBA (A) -116	CO1	3	2	1	2	3	2	1	2	2
		CO2	2	3	1	3	2	3	1	3	2
		CO3	3	2	3	2	3	2	3	2	3
		CO4	2	3	1	3	2	3	1	3	1
ECONOMETRICS	MBA (A) -118	CO1			3	2	2	3	3	3	2
		CO2	3	3	3	3	3	3	3		
		CO3	3	3	3	3	3	3		2	
		CO4	3	3	3	3	3	2	2		3
Business Performance Modelling	MBA (A) -120	CO1	3	3	1	3	3	3	1	3	3
		CO2	2	2	2	3	2	2	2	3	2
		CO3	3	2	3	2	3	2	3	2	1
		CO4	3	2	3	3	3	2	3	3	2
Risk Assessment	MBA (A) -	CO1	2	3	2	3	2	3	2	3	1

and Mitigation	122										
		CO2	2	2	1	3	2	2	1	3	2
		CO3	3	2	2	3	3	2	2	3	1
		CO4	3	2	1	3	3	2	1	3	2
Data Modelling with Python	MBA (A) -124	CO1	2	2	2	1	1	2	2	1	2
		CO2	2	2	2	2	1	2	1	1	1
		CO3	2	2	2	1	1	3	1	2	2
		CO4	1	1	2	1	1	3	1	1	2