INSTITUTE OF DISTANCE EDUCATION

UNIVERSITY OF MADRAS

MBA DEGREE PROGRAMME

(With effect from 2021-2022)

Addition to one of Elective Specialization viz: MBA-Business Data Analytics in the Existing six Elective Specialization of MBA Programme offering in the Institute of Distance Education.

Specializations: MBA-Business Data Analytics

Semester: IV **Total Credits: 12**

Elective Paper	Elective Subjects of Business Data Analytics	Credit	INT	EXT	TOTAL
Paper 1	Big Data Analytics	3	20	80	100
Paper 2	Data Security	3	20	80	100
Paper 3	R-Programming	3	20	80	100
Paper 4	Data Mining	3	20	80	100

SEMESTER –IV
PAPER I: BUSINESS ANALYTICS

UNIT I

Introduction to Analytics, Data & Basic Statistics- Big Data – Big Data in HR. – evolution of Big Data Revolution-Technology Driving Big Data. Data Deluge - Structured data – Web 2.0 & Arrival of Big Data. –Unstructured Data. – Semi-Structured Data. Difference between structured and Semi-structured Data – Composition of Big Data then and now. – Enterprise Applications & Bespoke IT Applications.

UNIT II

Demystifying Big data-Characteristics of Big Data-Deep Web & Surface Web Getting Started with Business Intelligence (BI)- Definition of Busines Intelligence. – Features of Business Intelligence. – Visibility provided by BI. – Differences between ERP & BI. - Difference between Big Data & Business Intelligence. Data Analytics using Microsoft Excel- Use Excel to sort data with pivot tables-create histograms and other charts for data visualization-calculate summary statistics-create indicator variables for qualitative information

UNIT III

Measuring association between variables - Visually examine data (via Excel charts, spark lines, etc.) and identify trends-Construct linear regression models in Excel-Evaluate linear regression model quality-Use models to forecast demand and interface with Excel Solver to make operational decisions.

UNIT IV

Analytics applications for finance - Learn how to forecast sales using trend data Prepare pro-forma financial statements - Understand the link between growth and financing needs - Learn to calculate sustainable growth rate algebraically and also by using Excel Goal seek-Forecasting Budgeting numbers for HR Costs & Predictive modeling in HR-Basics of Time Series, Time Series on Summarized Reports & Forecasting, Logistic Regression, Decision Trees, Creating a policy on basics of Analytics

UNIT V

Information Management in Analytics- Analytic Software - R, Excel, Solver; Basic of Big Data– Hadoop, HDFS, Hive, Pig, Python

REFERENCE BOOKS:

1) R NPrasad, SeemaAcharya, Fundamentals of Business Analytics, Wiley India Pvt. Ltd.
2) ConardCarlberg, Predictive Analytics: Microsoft® Excel, Pearson Education, Inc.
3) Damador N Gujarati, Dawn C Porter, SangeethaGunasekar, Basic Econometrics, McGraw Hill

4) Ken Black, Applied Business Statistics: Making Better Business Decisions 7th Edition, Wiley India Pvt. Ltd.

PAPER – II: DATASECURITY

UNIT I

INTRODUCTION

History, What is Information Security?, Critical Characteristics of Information, NSTISSC Security Model, Components of an Information System, Securing the Components, Balancing Security and Access, The SDLC, The SecuritySDLC

UNIT II

SECURITYINVESTIGATION

Need for Security, Business Needs, Threats, Attacks, Legal, Ethical and ProfessionalIssues

UNIT III

SECURITYANALYSIS

Risk Management: Identifying and Assessing Risk, Assessing and Controlling Risk

UNIT IV

LOGICALDESIGN

Blueprint for Security, Information Security Poicy, Standards and Practices, ISO17799/BS 7799, NIST Models, VISA International Security Model, Design of Security Architecture, Planning for Continuity

UNIT V

PHYSICALDESIGN

Security Technology, IDS, Scanning and Analysis Tools, Cryptography, Access Control Devices, Physical Security, Security andPersonnel

REFERENCE BOOK:

1. Michael E Whitman and Herbert J Mattord, "Principles of Information Security", Vikas Publishing House, New Delhi, 2003

2.Micki Krause, Harold F. Tipton, " Handbook of Information Security Management", Vol 1-3 CRC Press LLC,2004.

3.StuartMcClure,JoelScrambray,GeorgeKurtz,"HackingExposed",TataMcGraw-Hill, 2003

4. Matt Bishop, " Computer Security Art and Science", Pearson/PHI,2002

PAPER-III-**RPROGRAMMING**

Unit 1

Introduction to the R language

SAS versus R - R, S, and S-plus - Obtaining and managing R - Objects - types of objects, classes, creating and accessing objects - Arithmetic and matrix operations - Introduction to functions

Unit 2

Working withR

Reading and writing data - R libraries - Functions and R programming - the if statement - looping: for, repeat, while - writing functions -function arguments and options

Unit3

Graphics

Basic plotting - Manipulating the plotting window - Advanced plotting using lattice library - Saving plots

Unit 4

Standard statistical modelsin R

Model formulae and model options - Output and extraction from fitted models - Models considered:Linear regression: lm() , Logistic regression: glm() , Linear mixed models:lme()

Unit 5AdvancedR

Data management (importing, subsetting, merging, new variables, missing data etc.)Plotting**–** Loops and functions-Migration SAS to R**–** Plotting and Graphics in R

– Writing R functions, optimizing R code– Bioconductor, analysis of gene expression and genomicsdata. More on linear models – Multivariate analysis, Cluster analysis, dimension reduction methods (PCA).

Reference Books:

1. Peter Dalgaard. Introductory Statistics with R (Paperback) 1st Edition Springer-Verlag New York, Inc. ISBN0-387-95475-9
2. W. N. Venables and B. D. Ripley. 2002. Modern Applied Statistics with S. 4th Edition. Springer. ISBN0-387-95457-0
3. Andreas Krause, Melvin Olson. 2005. The Basics of S-PLUS. 4th edition. Springer-Verlag, New York. ISBN0-387-26109-5
4. Jose Pinheiro, Douglas Bates. 2000. Mixed-effects models in S and S-PLUS Springer- Verlag, Berlin. ISBN0-387-98957-9
5. AnIntroductionto R. Online manual at the R website at http://cran.r- project.org/manuals.html

PAPER-IV: DATA MINING

UNIT –I

INTRODUCTION

Data mining, Text mining, Web mining, Spatial mining, Process mining, BI process-Private and Public intelligence, Strategic assessment of implementing

UNIT - II

DATAWAREHOUSING

Data ware house – characteristics and view - OLTP and OLAP - Design and development of data warehouse, Meta data models, Extract/ Transform / Load (ETL)design

UNIT –III

DATA MINING TOOLS, METHODS AND TECHNIQUES

Regression and correlation; Classification- Decision trees; clustering –Neural networks; Market basket analysis- Association rules-Genetic algorithms and link analysis, Support Vector Machine, Ant ColonyOptimization

UNIT - IV

MODERN INFORMATION TECHNOLOGY &ITS BUSINESS OPPORTUNITIES

Business intelligence software, BI on web, Ethical and legal limits, Industrial espionage, modern techniques of crypto analysis, managing and organizing for an effective BITeam

UNIT – V

BI AND DATAMININGAPPLICATIONS

Applications in various sectors – Retailing, CRM, Banking, Stock Pricing, Production, Crime, Genetics, Medical, Pharmaceutical

REFERENCE BOOKS:

1. Jaiwei Ham and MichelineKamber, Data Mining concepts and techniques, Kauffmann Publishers
2. Efraim Turban, Ramesh Sharda, Jay E. Aronson and David King, Business Intelligence, Prentice Hall, 2008