MANAGEMENT INFORMATION SYSTEM

Semester I **Course Code 1T2** **Type of Course: Core**

Course Name: MANAGEMENT INFORMATION SYSTEM

Credits 3 **Number of lectures: 30**

Detailed Course Objectives

CO1	The student will be able to **describe** different types of management information system from management activity point of view and will also be able to **identify** and **work out** KRAs, BOPs and BPPs for various organisations/systems.
CO2	The student will be able to **identify** the master data, **draw** report format and interface matrix while making a **model** of DSS.
CO3	The student will be able to **suggest** the conceptual model of PMS and will also be able to **draw** a system model of integrated system (PMS+SCM+Accounting and Billing)
CO4	The student will be able to **describe** the key features of ERP, SCM and CRM and will also be able to **draw** functional flow and process flow diagrams for various transactions.
CO5	The student will be able to **enumerate** the factors affecting system performance and will also be able to **comment** on the operational feasibility of IT system under consideration.

	Detailed Contents:	**Reference Book, Publisher, Edition, Page No.**
Module 1	Concepts & Types of Information Systems. Components of MIS. Information Activities. Strategic Management of Business. Balance Score Card, Scorecard and Dashboard, measures	Management Information Systems (1st Edition) Giridhar Joshi, Oxford University Page **7** of **99** of business operations and business performance. Steps for strategic design of MIS. Press Chap 1 Management Information Systems (4th Edition) Waman S Jawadekar, McGraw Hill Publication, Chap 10
Module 2	Applications of MIS in Manufacturing Sector: Model of Information Processing System. Application of Model to personnel management, financial management, production management, marketing management.	Management Information Systems (4th Edition) Waman S Jawadekar, McGraw Hill Publication, Chap 12
Module 3	Introduction to Service Sector, creating distinctive service, service concept, service process cycle, service management system, MIS application in Service industry – banking & insurance	Management Information Systems (4th Edition) Waman S Jawadekar, McGraw Hill Publication, Chap 13
Module 4	Enterprise Management System. ERP Systems, Models of business functions integration. ERP Model and Modules. Business organization model. ERP product characteristics. Benefits of ERP. ERP Product evaluation. ERP implementation. SCM & CRM. EMS Model.	Management Information Systems (4th Edition) Waman S Jawadekar, McGraw Hill Publication, Chap 15
Module 5	Technology of Information Systems. Introduction, data processing, Transaction processing, Application processing, information system process, OLAP, TQM of Information system. Real time systems. Case tools and I-CASE.	Management Information Systems (4th Edition) Waman S Jawadekar, McGraw Hill Publication, Chap 16

Other Reference books and sources:

1. Ashok Arora and Akshya Bhatia, "Management Information systems", Excel Books.
2. A.K. Gupta, "Management Information System ", S. Chand & Co
3. M. Jaiswal, "Management Information systems", – Oxford publishing house
4. Oz, "Management Information Systems", Thomson Learning Books, 3rd Edition

DATA VISUALIZATION FOR MANAGERS

Semester III **Course Code 3T1** **Type of Course Elective**

Course Name BA1: DATA VISUALIZATION FOR MANAGERS

Credits 4 **Number of hours: 40**

Detailed Course Objectives

CO1	The student will be able to **identify** and **use** Interactive data visualization software desktop tools and will also be able to **create** Interactive data visualization software desktop workspace
CO2	The student will be able to **connect** data and will also be able to **use** Interactive data visualization software's File Types effectively.
CO3	The student will be able to create analytics pane and will also be able to use Sort, Filters, Sets, Groups and Hierarchy functions
CO4	The student will be able to **create** calculations to enhance the data visualisation
CO5	The student will be able to **build** effective dashboard

	Detailed Contents:	**Reference Book, Publisher, Edition, Page No.**
Module 1	**Creating Visual Analytics with Interactive data visualization software Desktop –** Shortcomings of Traditional Information Analysis, Business Case for visual analysis, The Interactive data visualization software, Software Ecosystem, Introducing Interactive data visualization software Desktop Workspace	Tableau your Data, Daniel G Murray, 2nd Edition, Wiley Publishing, ISBN-13: 978-8126573448, Chapter 1
Module 2	**Connecting Data –** How to connect Data, what are generated values, Use of Data Connection and Data Extract, Joining Database Table with Tableau, Blending different Data sources in single Worksheet, Data Quality Problem	Tableau your Data, Daniel G Murray, 2nd Edition, Wiley Publishing, ISBN-13: 978-8126573448, Chapter 2
Module 3	**Building Visualisation** – Fast and Easy Analysis via "Show me", how "Show Me" works, Trendlines and Reference Lines, Sorting Data in Interactive data visualization software, Enhancing views with Filters, Sets, Groups and Hierarchies	Tableau your Data, Daniel G Murray, 2nd Edition, Wiley Publishing, ISBN-13: 978-8126573448, Chapter 3
Module 4	**Creating Calculations to Enhance Data-** Aggregation, Calculated Values and Table Calculations, Using Calculation Dialogue box, Binding Formulas using Table Calculations, Table Calculation Functions, Flexibility to Calculation Parameters, Function Reference appendix	Tableau your Data, Daniel G Murray, 2nd Edition, Wiley Publishing, ISBN-13: 978-8126573448, Chapter 4
Module 5	**Bringing together with Dashboard –** Dashboard as facilitator, Interactive data visualization software for improving Dashboard, Right and Wrong Ways to build a Dashboards, Best practices to build Dashboard, Building advanced Dashboard, Sharing Dashboard with Interactive data visualization software Reader and Server, Designing Mobile Consumption, Interactive data visualization software and Load Speed	Tableau your Data, Daniel G Murray, 2nd Edition, Wiley Publishing, ISBN-13: 978-8126573448, Chapter 8

Other Reference books and sources

1. Tableau 10 Complete Reference: Transform your business with rich data visualizations and interactive dashboards with Tableau 10, Joshua MilliganPackt Publishing Limited, ISBN-13: 978-1789957082
2. Visual Analytics with Tableau, Alexander Loth, John Wiley & Sons, ISBN-13: 978-1119560203
3. Tableau Cookbook - Recipes for Data Visualization, Shweta Sankhe-Savale, Packt Publishing Limited, ISBN-13: 978-1784395513
4. Tableau: Creating Interactive Data Visualizations, Jen Stirrup, Ashutosh Nandeshwar, Ashley Ohmann, Matt Floyd, Packt Publishing Limited, ISBN-13: 978- 1787124196

DATA MINING

Semester III **Course Code 3T2** **Type of Course Elective**

Course Name BA2: DATA MINING

Credits 4 **Number of hours: 40**

Detailed Course Objectives

CO1	Given overview of Data Mining and Data pre-processing, the future manager will be able to **outline** major research challenges of data mining, Kinds of data and applications, Data Cleaning; Data Integration; Data Reduction; Data Transformation and Data Discretization.
CO2	Given the overview of Data Warehousing, the future manager will be able to **classify** the Concept of Data Warehousing using Data Cube and OLAP and also able to identify the process of Data Generalisation
CO3	Given the details pertaining to Pattern Mining, the future manager will be able to evaluate Patterns using colossal patterns, mining compressed or approximate patterns; explore patterns and its applications.
CO4	Given the details pertaining to Pattern Mining, the future manager will be able to **analyse** clusters using partitioning method, hierarchical method, density-based method and grid-based method
CO5	Given the details pertaining to Pattern Mining, the future manager will be able to **correlate** the use of data mining to the society and also will be able to explain the trend in data mining.

	Detailed Contents:	**Reference Book, Publisher, Edition, Page No.**
Module 1	Data Mining Concept – Introduction, Data Mining Roots, Data Mining Process, Large Data Sets, Data Warehouse for Data Mining, Business Aspect of Data mining, Preparing Data – Representation, Characteristics and Transformation of Raw Data, Missing data, Time Dependent Data, outlier analysis	Data Mining: Concepts Models, Methods and Algorithms, Mehmed Kantardzic, 2nd Edition,Wiley IEEE, Chapter 1 & 2
Module 2	Data Reduction – Dimensions of large data sets, feature reduction, relief algorithm, entropy measures for ranking features, PCA, Value Reduction, Feature Discretisation – Chi Merge Technique, case reduction Learning from Data-Learning Machine, SLT, Types of Learning methods, Common Learning Tasks, SVM, kNN-Nearest Neighbour Classifier, Model Selection vs Generalisation, Model Estimation, 90% Accuracy: Why not?	Data Mining: Concepts Models, Methods and Algorithms, Mehmed Kantardzic, 2nd Edition, Wiley IEEE, Chapter 3&4
Module 3	Decision Trees and Decision Rules- Decision Trees, C4.5 algorithm-DT, Unknown Attribute Values, Pruning Decision Trees, C4.5-DR, CART algorithm and Gini Index, Limitations of ecision tree and decision rules, Artificial Neural Networks – Models of Artificial Neurons, Architecture of ANNs, Learning process, Learning Tasks using ANN, Multilayer Perceptrons(MLPs), Competitive Network and Competitive Learning, SOMs	Data Mining: Concepts Models, Methods and Algorithms, Mehmed Kantardzic, 2nd Edition, Wiley IEEE, Chapter 6&7
Module 4	Association Rules- Market Basket Analysis, Algorithm Apriori, from frequent itemsets to association rules, Improving efficiency of Apriori Algorithm, EP growth model, Associative Classification Method, Multidimensional Association- Rules Mining	Data Mining: Concepts Models, Methods and Algorithms, Mehmed Kantardzic, 2nd Edition, Wiley IEEE, Chapter 10
Module 5	Web Mining and Text Mining- Web Mining, Web Content, structure and usage mining, HITS and LOGSOM algorithm, Mining Path Traversal Patterns, Page Rank Algorithm, Text Mining, LSA,	Data Mining: Concepts Models, Methods and Algorithms, Mehmed Kantardzic, 2nd Edition, Wiley IEEE, Chapter 11

Other Reference books and sources

1. Data Mining Practical Machine Learning Tools and Techniques, 2nd Edition, Elsevier Publication.
2. Introduction to Data Mining (Second Edition), Pearson Publication
3. Data Mining: The Textbook, Springer Publication
4. Mining of Massive Data, Second Edition, Cambridge University Press
5. https://towardsdatascience.com

***Open-Source BA tools like OrientDB, MongoDB, NoSQL, Trifacta Rapidminer etc should be used to elaborate the contents above.**

DATA SCIENCE USING R

Semester III **Course Code 3T3** **Type of Course Elective**

Course Name BA1: DATA SCIENCE USING R

Credits 4 **Number of hours: 40**

Detailed Course Objectives

CO1	Given overview of types of Data, the future manager will be able to read data from different files and create matrices and data frames using R
CO2	Given the overview of functions, subset and loop; the future manager will be able to explain the character functions, date function, package, control statement and do loop.
CO3	Given the basic statistical data, the future manager will be able to draw charts, histogram and plots, and measure central tendencies.
CO4	Given the data for testing of hypothesis, the future manager will be able to test the hypothesis by applying t-test, ANOVA and Chi-square test
CO5	Given the data of variables, the future manager will be able to apply Linear Regression, Logistic regression, Cluster Analysis, Time Series, Decision Tree and Random Forest

	Detailed Contents:	**Reference Book, Publisher, Edition, Page No.**
Module 1	Basic fundamentals, installation and use of software, data editing, use of R as a calculator, functions and assignments, Use of R as a calculator, functions and matrix operations, missing data and logical operators.	Introduction to Statistics and Data Analysis - With Exercises, Solutions and Applications in R By Christian Heumann, Michael Schomaker and Shalabh, Springer, 2016 Appendix A https://swayam.gov.in/nd1_noc19_ma33/preview
Module 2	Conditional executions and loops, data management with sequences, Data management with repeats, sorting, ordering, and lists.	
Module 3	Data management with repeats, sorting, ordering, and lists, Vector indexing, factors, Data management with strings, display and formatting	
Module 4	Data management with display paste, split, find and replacement, manipulations with alphabets, evaluation of strings, data frames, Data frames, import of external data in various file formats, statistical functions, compilation of data.	
Module 5	Graphics and plots, statistical functions for central tendency, variation, skewness and kurtosis, handling of bivarite data through graphics, correlations, programming and illustration with examples,	

Other Reference books and sources

1. Data Science and Big Data Analytics: Discovering, Analyzing, Visualizing and Presenting Data by EMC Education Services (2015)
2. Data Mining for Business Intelligence: Concepts, Techniques, and Applications in Microsoft Office Excel with XLMiner by Shmueli, G., Patel, N. R., & Bruce, P. C. (2010)
3. Data Analytics Using R, Seema Acharya, McGraw Hill Education, ISBN-13: 978-9352605248
4. R for Everyone: Advanced Analytics and Graphics, 2nd Edition, Jared P. Lander, Pearson Education, ISBN-13: 978-9386873521