Data Analytics

Unit 1: Components of Decision-making process
Business intelligence, Decision Support Systems, Data ware-housing.

Unit 2: Data analysis and exploration
Mathematical models for decision making, data mining, data preparation, data exploration.

Unit 3: Introduction of Big data and Hadoop Echosystem
Big data definition, Elements of Big data, Big data analytics, Big Data Stack, Virtualization and
Big data, virtualization approaches, Hadoop Ecosystem, Hadoop Distributed file system(HDFS,
MapReduce, Hadoop YARN, Hbase, Hive, Pig and Pig latin, Sqoop, ZooKeeper, Flume, Oozie.

Unit 4: Data mining tasks
Regression and association rules- structure of regression model, single linear regression, and
multiple linear regression.
Classification - classification problems, Classification models, classification trees, Bayesian
methods.

Unit 5: Association rules and clustering
Structure of association rules, Single dimension association rules, Apriori algorithm, General
association rules. Clustering – clustering methods, partition methods, Hierarchical methods.

Unit 6: Exploring R
Basic Features of R, Exploring RGui, Working with vectors, Handeling data in R workspace.
Reading datasets and exporting data from R, Manipulating and processing data in R.

Project Management

Project Management

Unit 1. Introduction to Project Management: (5)
Project and Project Management (PM), Role of project Manager, System view of PM,
Organization, Stakeholders, Project phases and lifecycle, Context of IT projects, process groups,
mapping groups to Knowledge areas

Unit 2. Project Integration Management: (5)
Strategic planning and project selection, Developing a Project Management Plan, Directing and
Managing Project Work, Monitoring and Controlling Project Work, Performing Integrated
Change Control, Closing Projects or Phases

Unit 3. Project Scope, Time and Cost management: (9)
Planning Scope Management, Collecting Requirements, Defining Scope, Creating the Work
Breakdown Structure, Validating Scope, Controlling Scope
Planning Schedule Management, Defining Activities, Sequencing and Estimating Activity,
Resources & Duration, Developing & Controlling Schedule
Basic Principles of Cost Management, Planning Cost Management, Estimating Costs,
Determining the Budget, Controlling Costs

Unit 4. Quality Management: (6)
Importance, Planning Quality Management, Performing Quality Assurance, Controlling Quality,
Tools and Techniques for Quality Control, Modern Quality Management, Improving IT Project
Quality

Unit 5. Human Resource management: (6)
Importance, keys to managing people, human resource planning, acquiring, developing and
managing project team, software assistance.

Unit 6. Risk management: (5)
Importance, risk management planning, sources of risk, risk identification, qualitative and
quantitative risk analysis, risk response planning, risk monitoring and control.

Real-time Operating System

CS8C03. REAL TIME OPERATING SYSTEM

Section - I

Unit 1. Basic Real Time Concepts & Hardware Considerations
Terminology, Real Time System Design issues, Examples of Real-Time Systems

Unit 2. Hardware Considerations
Basic Architecture, Hardware Interfacing, Central Processing Unit, Memory, Input / Output, Other special devices

Unit 3. Real-Time Operating System
Real-Time Kernels, Theoretical Foundation of Real-Time Operating System, Scheduling ,Inter Task Communication and synchronization, System Services for Application Programs, Memory Management, Selecting Real Time Operating Systems ,Case study : POSIX .

Section - II

Unit 4. Software Requirements Engineering
Requirements - Engineering process, Types of Requirements, Requirements Specification for Real-Time Systems, Formal Methods in Software Specification, Structured Analysis and Design, Object-Oriented Analysis and the Unified Modeling, Organizing the Requirements Document, Organizing and Writing Requirements, Requirements Validation and Review.

UNIT 4. Programming Language and the Software Production Process
Coding of Real Time Software, Assembly Language, Procedural Language, Object-Oriented Language,. Overview of programming languages for real time systems. Real time features of JAVA, C# languages, Special Real Time Languages, Compiler Optimization of code.

UNIT 5 Metrics & Cost Estimation
Lines of Code, McCabe's Metric ,Halstead's Metric ,Function points, Feature Points , Metric for Object –Oriented Software. Fault Tolerance ,Cost Estimation using COCOMO , Basic COCOMO, Detailed COCOMO, COCOMO II model .

Unit 6. Study of Commercial RTOS
Architecture of RT Linux, Initialization Task Management in RT Linux,

Scheduling, Memory Management, Task Synchronization.

Text Books:
1. Real- Time Systems Design and Analysis.. Tools for the Practitioner by Phillip A Laplante, Seppo J.Ovaska ,Wiley - 4th Edition (For Units 1, 2, 3, 4,5)
2. Embedded Real Time Systems: Concepts, Design and Programming - Dr. K.V.K. Prasad - Black Book, Edition: 2014 (Unit 6)

References :
1 . Real Time Systems Theory and Practice , Rajib Mall , Pearson Education .