R.M.D. ENGINEERING COLLEGE
(An Autonomous Institution)

DEPARTMENT OF INFORMATION TECHNOLOGY

REGULATION 2021

COURSE OUTCOME STATEMENTS

SEMESTER III

21MA302 – DISCRETE MATHEMATICS

Course Code	Course Outcome Statement
C201.1	Examine the validity of the logic and proofs.
C201.2	Demonstrate the usage of mathematical indication, permutation, combination, recurrence relations and generating functions.
C201.3	Apply graph theory techniques to solve real life problems.
C201.4	Apply algebraic techniques to formulate and solve group theoretic problems.
C201.5	Utilize the significance of lattices and Boolean algebra in computer science and engineering.

21IT301 – OBJECT ORIENTED PROGRAMMING PRINCIPLES

Course Code	Course Outcome Statement
C202.1	Demonstrate the applications of object-oriented principles.
C202.2	Practice the usage of Core Java datatypes, classes, operators, control statements.
C202.3	Experiment the usage of arrays, collections and exception frameworks in core Java.
C202.4	Demonstrate the implementation of multithreading and IO Streams in Core Java.
C202.5	Experiment the usage of functional programming and Lambda in core java.

21CS404 – OPERATING SYSTEMS

Course Code	Course Outcome Statement
C203.1	Describe the operating systems structure, virtualization, functions, Inter process communication and process concepts.
C203.2	Examine various CPU scheduling algorithms and thread mechanism.
C203.3	Interpret the importance of process synchronization and deadlocks.
C203.4	Examine the various memory management Strategies.
C203.5	Describe the file management, Disk management and IO Management concepts in operating system.

21CS402 – DESIGN AND ANALYSIS OF ALGORITHMS

Course Code	Course Outcome Statement
C204.1	Examine the efficiency of recursive and non-recursive algorithms mathematically.
C204.2	Compare the efficiency of Brute force, Divide and conquer, Decrease and conquer, Transform and conquer algorithmic techniques.
C204.3	Infer the suitability of Dynamic programming and Greedy techniques.
C204.4	Demonstrate the usage of iterative improvement technique for optimization.
C204.5	Examine the limitations of algorithmic power and formulate the problems using backtrackingand branch and bound technique.

21EC341 – ANALOG AND DIGITAL COMMUNICATION

Course Code	Course Outcome Statement
C205.1	Describe the different types of Analog Communication Systems **.**
C205.2	Explain various Pulse and Data Communication Techniques.
C205.3	Describe the different types of Digital Communication Schemes.
C205.4	Solve Source Coding and Error Control Coding problems.
C205.5	Explain the Principles of Multi-User Radio Communication.

21CS301 – DIGITAL PRINCIPLES AND SYSTEM DESIGN (LAB INTEGRATED)

Course Code	Course Outcome Statement
C206.1	Employ Boolean Algebra and Karnaugh Map methods to simplified Boolean functions.
C206.2	Design various combinational Logic circuits.
C206.3	Design synchronous sequential Logic circuits.
C206.4	Design asynchronous sequential Logic circuits.
C206.5	Examine the usage of memory and programmable logic.

21IT311 – OBJECT ORIENTED PROGRAMMING PRINCIPLES LABORATORY

Course Code	Course Outcome Statement
C207.1	Develop Java programs for simple applications that make use of classes packages and Interfaces.
C207.2	Develop Java programs with array list and exception handling.
C207.3	Develop Java programs with inheritance and polymorphism.
C207.4	Design applications using file processing, generic programming and multithreaded programming.
C207.5	Develop real-world applications using OOP Concepts.

21CS412 – OPERATING SYSTEMS LABORATORY

Course Code	Course Outcome Statement
C208.1	Practice system calls and shell programming.
C208.2	Develop various CPU scheduling algorithms.
C208.3	Experiment Inter process communication mechanism, deadlock detection and avoidance algorithms.
C208.4	Design page replacement and disk scheduling algorithms.
C208.5	Experiment file allocation strategies.

21IT312 – MINI PROJECT-I

Course Code	Course Outcome Statement
C209.1	Examine appropriate methodologies for solving problems related to real life situations using the engineering knowledge.
C209.2	Comprehend the existing solutions and summarize problem definition.
C209.3	Test design strategies for providing solution to a problem.
C209.4	Inspect the skills of collaboration and working in teams.
C209.5	Organize ideas clearly both orally and in written.

21CS313 – APTITUDE AND CODING SKILLS-I

Course Code	Course Outcome Statement
C210.1	Develop vocabulary for effective communication and reading skills.
C210.2	Build the logical reasoning and quantitative skills.
C210.3	Develop error correction and debugging skills in programming.

SEMESTER IV

21MA301 – PROBABILITY AND STATISTICS

Course Code	Course Outcome Statement
C211.1	Demonstrate the usage of modern probability theory and standarddistributions.
C211.2	Categorize the probability models and function of random variables based on one- and two-dimensional random variables.
C211.3	Employ the concept of testing the hypothesis in real life problems.
C211.4	Identify the applications of design of experiment.
C211.5	Employ the statistical quality control methods in engineering and management problems

21IT402 – WEB TECHNOLOGY FOUNDATION

Course Code	Course Outcome Statement
C212.1	Design the Web pages using HTML5 and CSS.
C212.2	Design the Web pages using advanced features in HTML5 and CSS3.
C212.3	Design Web application using JavaScript.
C212.4	Develop responsive web application using Jquery .
C212.5	Develop web application using ES6 JavaScript with proper error handling.

21CS401 – COMPUTER ARCHITECTURE

Course Code	Course Outcome Statement
C213.1	Explain the basic principles and operations of digital computers.
C213.2	Design Arithmetic and Logic Unit to perform fixed- and floating-point operations.
C213.3	Develop pipeline architectures for RISC Processors.
C213.4	Interpret Various IO and Memory sub systems.
C213.5	Describe Parallel Processing and Multicore Architecture.

21IT403 – DATABASE MANAGEMENT SYSTEMS

Course Code	Course Outcome Statement
C214.1	Employ database concepts and SQL for effective relational database design.
C214.2	Construct ER model and formulate Relational model to perform database design effectively.
C214.3	Interpret the importance of transactional concepts in database design.
C214.4	Compare and contrast various indexing strategies and query optimization in database systems.
C214.5	Describe distributed database implementation, NoSQL enterprise client server databases.

21GE301 – UNIVERSAL HUMAN VALUES-II: UNDERSTANDING HARMONY

Course Code	Course Outcome Statement
C215.1	Demonstrate the importance of value education.
C215.2	Identify the responsibilities in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind.
C215.3	Express better relationship among others.
C215.4	Identify the importance of nature and existence.
C215.5	Interpret the implications of holistic view of harmony on professional ethics.

21IT401 – SOFTWARE ENGINEERING (LAB INTEGRATED)

Course Code	Course Outcome Statement
C216.1	Compare different process models.
C216.2	Formulate the agile methodologies for software development.
C216.3	Employ the steps of requirements engineering process for Analysis Modeling.
C216.4	Employ systematic procedure for software design and deployment.
C216.5	Compare and contrast the various testing and maintenance techniques.
C216.6	Inspect the key activities in managing a software project.

21IT411 – WEB TECHNOLOGY LABORATORY

Course Code	Course Outcome Statement
C217.1	Design simple web pages using markup languages like HTML and XHTML.
C217.2	Develop dynamic web pages using DHTML and java script that is easy to navigate anduse.
C217.3	Develop server-side web pages that have to process request from client-side web pages.
C217.4	Create interactive and dynamic web pages using jQuery tool.
C217.5	Create event driven web servers using NodeJS.

21IT412 – DATABASE MANAGEMENT SYSTEMS LABORATORY

Course Code	Course Outcome Statement
C218.1	Experiment typical data definitions and manipulation commands.
C218.2	Design applications to test Nested and Join Queries.
C218.3	Design simple applications that use Views.
C218.4	Design applications that require a Front-end Tool.
C218.5	Experiment the use of Tables, Views, Functions and Procedures.

21CS414 – APTITUDE AND CODING SKILLS-II

Course Code	Course Outcome Statement
C219.1	Develop advanced vocabulary for effective communication and reading skills.
C219.2	Build an enhanced level of logical reasoning and quantitative skills.
C219.3	Develop error correction and debugging skills in programming.
C219.4	Employ data structures and algorithms in problem solving.

SEMESTER V

21CS501 – COMPUTER NETWORKS

Course Code	Course Outcome Statement
C301.1	Explain the fundamental concepts of computer networks and physical layer.
C301.2	Interpret various protocols and techniques used in the data link layer.
C301.3	Interpret the network layer services and network layer protocols.
C301.4	Describe the various protocols used in the transport layer.
C301.5	Explain the various application layer protocols.

21IT501 – BIG DATA ANALYTICS

Course Code	Course Outcome Statement
C302.1	Identify Big Data and its Business Implications.
C302.2	Examine the descriptive analytics using statistics
C302.3	Compare and contrast various predictive modeling techniques.
C302.4	Examine Big Data Hadoop Framework
C302.5	Experiment Python and R programming for Data Analytics.

21IT502 – OBJECT ORIENTED SYSTEMS DESIGN

Course Code	Course Outcome Statement
C303.1	Employ unified process and use case diagram for object-oriented system design
C303.2	Create static UML Diagrams.
C303.3	Create Dynamic UML Diagrams.
C303.4	Examine Design patterns in object-oriented systems designs.
C303.5	Formulate the system design using object-oriented principles.

21EC441 – MICROPROCESSORS AND INTERFACING (LAB INTEGRATED)

Course Code	Course Outcome Statement
C304.1	Describe the basic architecture, operation, programming of 8 0 8 6 microprocessor.
C304.2	Describe the design of basic and multiprocessor systems and their bus timings.
C304.3	Design the 8086 interfaces with memory, I/O and other peripheral chips.
C304.4	Describe the basic architecture and programming of 8051 microcontroller.
C304.5	Experiment interfacing of peripherals with 8086 microprocessor and 8051 microcontrollers

ELECTIVE – I

21IT928 - WEB DEVELOPMENT FRAMEWORKS

Course Code	Course Outcome Statement
C305.1	Design Web pages using text formatting, graphics, audio, and video.
C305.2	Create application using ReactJS and REST API .
C305.3	Design web application using latest React Framework.
C305.4	Employ various React features including functions, components, and services.
C305.5	Design application using React JS Hooks.

21CS511 – NETWORKS LABORATORY

Course Code	Course Outcome Statement
C306.1	Practice the various networking commands in different OS and troubleshoot it
C306.2	Demonstrate error detection & correction and flow control mechanisms in network programming.
C306.3	Experiment network communication using raw sockets.
C306.4	Experiment the usage of various network programming APIs and application layer protocols.
C306.5	Examine various network protocols through simulation.

21IT511 – OBJECT ORIENTED SYSTEMS DESIGN LABORATORY

Course Code	Course Outcome Statement
C307.1	Create simple applications that make use of classes, packages and interfaces.
C307.2	Design application using exception handling.
C307.3	Design various application with inheritance and polymorphism.
C307.4	Create real-world applications using object-oriented programming concepts.
C307.5	Design applications using aggregation and composition.

21IT512 – BIG DATA ANALYTICS LABORATORY

Course Code	Course Outcome Statement
C308.1	Setup Hadoop Framework to study the Hadoop ecosystem.
C308.2	Construct Structured and unstructured data using NOSQL commands.
C308.3	Practice Map-Reduce using word count and matrices multiplication program.
C308.4	Setup Mongo DB, Cassandra, HBase, HyperTable to execute NOSQL commands.
C308.5	Examine DGIM Algorithm, Bloom Filter, K-means Clustering for Big Data Analytics.

21CS512 – ADVANCED APTITUDE AND CODING SKILLS-I

Course Code	Course Outcome Statement
C309.1	Develop vocabulary for effective communication and reading skills.
C309.2	Build the logical reasoning and quantitative skills.
C309.3	Develop error correction and debugging skills in programming.

SEMESTER-VI

21CS701 –CLOUD COMPUTING

Course Code	Course Outcome Statement
C310.1	Explain the main concepts and key technologies of cloud computing.
C310.2	Describe the various cloud services and platforms to cater the requirements in the growth of the businesses.
C310.3	Describe the cloud infrastructure and virtualization that help in the development of cloud.
C310.4	Explain the high-level automation and orchestration systems that manage the virtualized infrastructure.
C310.5	Summarize the programming paradigms used in cloud and how cloud software deployments scale to large numbers of users.

21IT601 – MOBILE ARCHITECTURE AND DEVELOPMENT

Course Code	Course Outcome Statement
C311.1	Explain android architecture and various mobile platforms.
C311.2	Create android application with basic building blocks.
C311.3	Employ graphics and multimedia for Android application development.
C311.4	Test the developed applications and publish for user.
C311.5	Explain the development of applications for iOS and windows platform.

ELECTIVE II

21IT909 – ADVANCED JAVA – JEE

Course Code	Course Outcome Statement
C312.1	Employ the concepts of JEE and Maven.
C312.2	Experiment the core technologies and framework of JEE in real world applications.
C312.3	Examine Data persistence using simple JDBC integration.
C312.4	Setup and configure Hibernate to interpret ORM Architecture.
C312.5	Employ logging process and spring security in real world applications.

ELECTIVE III

21IT930 – ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

Course Code	Course Outcome Statement
C313.1	Explain the problem solving and search strategies.
C313.2	Demonstrate the techniques for knowledge representation and reasoning.
C313.3	Interpret various forms of learning, artificial neural networks and its applications.
C313.4	Experiment various machine learning algorithms.
C313.5	Employ AI and machine learning algorithms to solve real world problems.

21CS611 – MOBILE APPLICATION DEVELOPMENT LABORATORY

Course Code	Course Outcome Statement
C314.1	Design mobile applications using GUI and Layouts.
C314.2	Design mobile applications using Event Listener.
C314.3	Create mobile applications using Databases.
C314.4	Create mobile applications using RSS Feed, Internal/External Storage, SMS, Multithreading,and GPS.
C314.5	Create own mobile app for simple needs.

21CS711 – CLOUD COMPUTING LABORATORY

Course Code	Course Outcome Statement
C315.1	Setup various virtualization tools such as Virtual Box, VMware workstation.
C315.2	Design and deploy a web application in a PaaS environment.
C315.3	Experiment the simulation of cloud environment to implement new schedulers.
C315.4	Setup and usage of generic cloud environment that can be used as a private cloud.
C315.5	Manage large data sets in a parallel environment using Hadoop.

21IT611– MINI PROJECT-II

Course Code	Course Outcome Statement
C316.1	Examine appropriate methodologies for solving problems related to real life situations using the engineering knowledge.
C316.2	Comprehend the existing solutions and summarize problem definition.
C316.3	Test design strategies for providing solution to a problem.
C316.4	Inspect the skills of collaboration and working in teams.
C316.5	Organize ideas clearly both orally and in written.

21CS614 – ADVANCED APTITUDE AND CODING SKILLS-II

Course Code	Course Outcome Statement
C317.1	Develop advanced vocabulary for effective communication and reading skills.
C317.2	Build an enhanced level of logical reasoning and quantitative skills.
C317.3	Develop error correction and debugging skills in programming.
C317.4	Apply data structures and algorithms in problem solving.

SEMESTER-VII

ELECTIVE IV

21IT921 – BLOCKCHAIN TECHNOLOGIES

Course Code	Course Outcome Statement
C401.1	Describe the basic concepts and technology used for Blockchain.
C401.2	Describe the concepts of consensus algorithm.
C401.3	Create Ethereum Blockchain contract.
C401.4	Design web3 Apps using Solidity on Ethereum platform.
C401.5	Use smart contract in real world application.

ELECTIVE V

21IT931 – MICROSERVICE ARCHITECTURE

Course Code	Course Outcome Statement
C402.1	Identify the need for Microservice architecture.
C402.2	Design applications based on Microservice patterns.
C402.3	Demonstrate the usage of Spring Boot, Maven build framework.
C402.4	Examine Eureka and configure Spring Cloud.
C402.5	Design applications using Docker Microservices.

SEMESTER-VIII

21IT811 – PROJECT WORK

Course Code	Course Outcome Statement
C403.1	Examine appropriate methodologies for solving problems related to real life situations using the engineering knowledge.
C403.2	Comprehend the existing solutions and summarize problem definition.
C403.3	Test design strategies for providing solution to a problem.
C403.4	Inspect the skills of collaboration and working in teams.
C403.5	Organize ideas clearly both orally and in written.