R.M.K. ENGINEERING COLLEGE
RSM Nagar, Kavaraipettai – 601 206

Department of Computer Science and Engineering

Course Outcomes – ODD Semester 2021-2022

Sl. No.	Semester	Theory/ Practical	Course Code / Course Name
1)	3	Theory	20CS301 - Digital Principles and System Design
2)	3	Theory	20CS302- Object Oriented Programming
3)	3	Theory	20CS303 – Software Engineering
4)	3	Theory	20IT403-Database Management Systems
5)	3	Theory	20GE301-Universal Human Values 2: Understanding Harmony
6)	3	Practical	20CS311 - Object Oriented Programming Laboratory
7)	3	Practical	20IT412 –Database Management Systems Laboratory
8)	3	Practical	20CS313 -Aptitude And Coding Skills – I
9)	5	Theory	MA8551 - Algebra and Number Theory
10)	5	Theory	CS8591 - Computer Networks
11)	5	Theory	EC8691 - Microprocessors and Microcontrollers
12)	5	Theory	CS8501 - Theory of Computation
13)	5	Theory	CS8592 - Object Oriented Analysis and Design
14)	5	Theory	OCE552 - Geographic Information System
15)	5	Practical	EC8681 - Microprocessors and Microcontrollers Laboratory
16)	5	Practical	CS8582 - Object Oriented Analysis and Design Laboratory
17)	5	Practical	CS8581 - Networks Laboratory
18)	7	Theory	MG8591 - Principles of Management
19)	7	Theory	CS8792 - Cryptography and Network Security
20)	7	Theory	CS8791 - Cloud Computing
21)	7	Theory	OME752 - Supply Chain Management
22)	7	Theory	GE 8077 - Total Quality Management
23)	7	Theory	CS8079 - Human Computer Interaction
24)	7	Practical	CS8711 - Cloud Computing Laboratory
25)	7	Practical	IT8761 - Security Laboratory

ODD Semester 2021-2022

3rd Semester – B.E. CSE

20CS301 - Digital Principles and System Design	
COs	**Course Outcome : The students, after the completion of the course, are expected to ….**
CO1	Design and implement digital circuits using simplified Boolean functions
CO2	Analyze, design and implement combinational circuits.
CO3	Analyze, design and implement synchronous and asynchronous sequential circuits.
CO4	Understand Programmable Logic Devices.
CO5	Develop HDL code for combinational and sequential circuits.

20CS302– Object Oriented Programming	
COs	**Course Outcome : The students, after the completion of the course, are expected to ….**
CO1	Explain the object oriented programming concepts and fundamentals of Java
CO2	Develop Java programs with the packages, inheritance, interfaces and exceptions
CO3	Build Java applications with I/O streams, threads and generics classes
CO4	Apply strings and collections in applications
CO5	Develop interactive Java applications using swings and event handling mechanism

20CS303 –Software Engineering	
COs	**Course Outcome : The students, after the completion of the course, are expected to ….**
CO1	CO1: Summarize software engineering principles and activities involved in building largesoftware programs.
CO2	Describe the process of requirements gathering and analysisCO3: Illustrate the design process.
CO3	Analyse the various testing methods
CO4	Implement the source coding and Error control techniques.
CO5	Apply estimation techniques, schedule project activities and compute pricing

20IT403-Database Management Systems	
COs	**Course Outcome : The students, after the completion of the course, are expected to ….**
CO1	CO1 Implement SQL and effective relational database design concepts.
CO2	. Map ER model to Relational model to perform database design effectively.
CO3	Compare and contrast various indexing strategies in different database systems
CO4	Implement queries using normalization criteria and optimization techniques..
CO5	Analyse how advanced databases differ from traditional databases.

20GE301- Universal Human Values 2: Understanding Harmony	
COs	**Course Outcome : The students, after the completion of the course, are expected to ….**
CO1	Would become more aware of themselves, and their surroundings (family, society, nature);
CO2	Would become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind.
CO3	Would have better critical ability.
CO4	Would become sensitive to their commitment towards what they have understood (humanvalues, human relationship and human society).
CO5	Would be able to apply what they have learnt to their own self in different day-to-day settings in real life, at least a beginning would be made in this direction..

Laboratory

20CS311 - Object Oriented Programming Laboratory	
COs	Course Outcome : The students, after the completion of the course, are expected to ….
CO1	: Develop and implement Java programs for simple applications that make use of classes,packages and interfaces.
CO2	Develop and implement Java programs with collections, exception handling, regular expressions and multithreading.
CO3	Design applications using file processing and event handling

20IT412 –Database Management SystemsLaboratory	
COs	Course Outcome : The students, after the completion of the course, are expected to ….
CO1	Apply typical data definitions and manipulation commands.
CO2	Design applications to test Nested and Join Queries.
CO3	Implement simple applications that use Views
CO4	Implement applications that require a Front-end Tool.
CO5:	Critically analyze the use of Tables, Views, Functions and Procedures.

20CS313 -Aptitude And Coding Skills – I	
COs	Course Outcome : The students, after the completion of the course, are expected to ….
CO1	Develop vocabulary for effective communication and reading skills.
CO2	Build the logical reasoning and quantitative skills
CO3	Develop error correction and debugging skills in programming

5th Semester B.E. CSE

COs	Course Outcome : The students, after the completion of the course, are expected to ….
	20CS313-Algebra and Number Theory
CO1	Introduce the basic notions of groups which will be used to solve group theory related problems.
CO2	Introduce the basic notions of rings, fields which will then be used to solve related problems.
CO3	Introduce and apply the concepts of rings, finite fields and polynomials.
CO4	Understand the basic concepts in number theory.
CO5	Examine the key questions in the Theory of Numbers.
CO6	Give an integrated approach to number theory and abstract algebra, and provide a firm basis for further reading and study in the subject.

COs	Course Outcome : The students, after the completion of the course, are expected to ….
	CS8591-Computer Networks
CO1	Understand the basic layers and its functions in computer networks
CO2	Evaluate the performance of a network
CO3	Understand the basics of how data flows from one node to another
CO4	Analyze and design routing algorithm and protocols for various functions in the network
CO5	Analyze functionalities and protocols at the Transport Layer
CO6	Understand the working of various application layer protocols

EC8691-Microprocessors and Microcontrollers	
COs	**Course Outcome : The students, after the completion of the course, are expected to ….**
CO1	Describe the architecture of 8086, addressing modes and machine language instruction formats.
CO2	Differentiate minimum and maximum modes of 8086 and concepts of I/O Programming
CO3	Describe 8255 modes of operation, interfacing A to D, D to A converters
CO4	Apply the programming techniques in designing simple assembly language programs for solving simple problems by using instruction sets of microcontroller
CO5	Describe the architecture of 8051 microcontroller and its addressing modes
CO6	Design a microcontroller based system

CS8501-Theory of Computation	
COs	**Course Outcome : The students, after the completion of the course, are expected to ….**
CO1	Students should be able to design an automata for any given pattern
CO2	Students should be able to specify regular expression for any string pattern
CO3	Students should be able to write context free grammar for any language
CO4	Students should be able to apply turing machine to propose computation solution
CO5	Students should be able to interpret whether a problem is decidable or not
CO6	Students should be able to interpret NP class problems

CS859- Object Oriented Analysis and Design	
COs	**Course Outcome : The students, after the completion of the course, are expected to ….**
CO1	Explain OOAD concepts and various UML diagrams.
CO2	Illustrate about domain models and conceptual classes
CO3	Explain Dynamic and implementation UML diagram.
CO4	Select an appropriate design pattern
CO5	Develop Code from Design,Compare and contrast various testing techniques
CO6	Demonstrate various designing Techniques

EC8681-Microprocessors and Microcontrollers Laboratory	
COs	**Course Outcome : The students, after the completion of the course, are expected to ….**
CO1	Write ALP Programmes for fixed and Floating Point and Arithmetic operations.
CO2	Interface different I/Os with processor.
CO3	Generate waveforms using Microprocessors.
CO4	Execute Programs in 8051.
CO5	Explain the difference between simulator and Emulator.

OCE552-Geographic Information System	
COs	**Course Outcome : The students, after the completion of the course, are expected to ….**
CO1	Outline the basic idea about fundamentals of GIS.
CO2	Understand the types of spatial data models.
CO3	Discuss about the data input and topology.
CO4	Understand the data management functions and data output.
CO6	Outline the application of GIS.
CO6	Apply the GIS tools to develop real time applications.

CS8582-Object Oriented Analysis and Design Laboratory	
COs	**Course Outcome : The students, after the completion of the course, are expected to ….**
CO1	Perform OO analysis and design for a given problem specification.
CO2	Identify and map basic software requirements in UML mapping.
CO3	Improve the software quality using design patterns and to explain the rationale behind applying specific design patterns.
CO4	Test the compliance of the software with the SRS.

CS8581-Networks Laboratory	
COs	**Course Outcome : The students, after the completion of the course, are expected to ….**
CO1	Implement various protocols using TCP and UDP.
CO2	Compare the performance of different transport layer protocols.
CO3	Use simulation tools to analyze the performance of various network protocols.
CO4	Analyze various routing algorithms.
CO5	Implement error correction codes.

7th Semester B.E. CSE

MG8591-Principles of Management	
COs	**Course Outcome : The students, after the completion of the course, are expected to ….**
CO1	Describe the historical evolution of management theories for business organizations
CO2	Demonstrate the use of planning tools for strategic management.
CO3	Identify the most appropriate organizational structure.
CO4	Discuss HR strategies for planning, recruiting and training employees.
CO5	Explain the theories of motivation and leadership to manage a group.
CO6	Summarize the controlling methods and tools to increase productivity of the Organization.

CS8792-Cryptography and Network Security	
COs	Course Outcome : The students, after the completion of the course, are expected to ….
CO1	Understand the fundamentals of networks security, security architecture, threats and vulnerabilities
CO2	Apply the different cryptographic operations of symmetric cryptographic algorithms
CO3	Apply the different cryptographic operations of public key cryptography
CO4	Apply the various Authentication schemes to simulate different applications.
CO5	Understand various Security practices
CO6	Understand System security standards

CS8791-Cloud Computing	
COs	Course Outcome : The students, after the completion of the course, are expected to ….
CO1	Describe the principles of Parallel and Distributed Computing and evolution of cloud computing from existing technologies
CO2	Implement different types of Virtualization technologies and Service Oriented Architecture systems
CO3	Elucidate the concepts of NIST Cloud Computing architecture and its design challenges
CO4	Analyse the issues in Resource provisioning and Securizty governance in clouds
CO5	Choose among various cloud technologies for implementing applications
CO6	Install and use current cloud technologies

OME752-Supply Chain Management	
COs	Course Outcome : The students, after the completion of the course, are expected to ….
CO1	Understand fundamental supply chain management concepts.
CO2	Understand the design factors and various design options of distribution networks in industries
CO3	Understand the framework of supply chain networks and functions
CO4	Understand the foundational role of logistics as it relates to transportation and warehousing.
CO5	Understand the various sourcing decisions in supply chain
CO6	Understand the supply chain management in IT industries

GE 8077-Total Quality Management	
COs	**Course Outcome : The students, after the completion of the course, are expected to ….**
CO1	Understand the quality philosophies and customer focused managerial system
CO2	Summarize the quality management principles
CO3	Apply six sigma concept in manufacturing and service sector
CO4	Determine the tools and techniques for quality improvement.
CO5	Analyze standards and auditing system on implementation of TQM.
CO6	Analyze standards for the operation of EMS.

CS8079-Human Computer Interaction	
COs	**Course Outcome : The students, after the completion of the course, are expected to ….**
CO1	Examine the effective dialog for HCI
CO2	Inspect interactive design process in human computer interaction
CO3	Apply six sigma concept in manufacturing and service sector
CO4	Determine the tools and techniques for quality improvement.
CO5	Analyze standards and auditing system on implementation of TQM.
CO6	Analyze standards for the operation of EMS.

Laboratory

CS8711 - Cloud Computing Laboratory	
COs	**Course Outcome : The students, after the completion of the course, are expected to ….**
CO1	Configure various virtualization tools such as Virtual Box, VMware workstation
CO2	Design and deploy a web application in a PaaS environment
CO3	Learn how to simulate a cloud environment to implement new schedulers
CO4	Install and use a generic cloud environment that can be used as a private cloud.
CO5	Manipulate large data sets in a parallel environment

IT8761 – Security Laboratory	
COs	**Course Outcome : The students, after the completion of the course, are expected to ….**
CO1	Develop code for classical Encryption Techniques to solve the problems
CO2	Build cryptosystems by applying symmetric and public key encryption algorithms
CO3	Construct code for authentication algorithms
CO4	Develop a signature scheme using Digital signature standard
CO5	Demonstrate the network security system using open source tools

Course Outcomes – EVEN Semester 2021-2022

Sl. No.	Semester	Theory/ Practical	Course Code / Course Name
1)	4	Theory	20MA402 - Probability and Queuing Theory
2)	4	Theory	20CS401 - Computer Architecture
3)	4	Theory	20CS402 - Design and Analysis of Algorithms
4)	4	Theory	20CS403 – Internet Programming
5)	4	Theory	20CS404 - Operating Systems
6)	4	Theory	20EC441 - Microprocessors and Interfacing
7)	4	Practical	20CS411 - Internet Programming Laboratory
8)	4	Practical	20CS412 - Operating Systems Laboratory
9)	4	Practical	20CS413- Internship
10)	4	Practical	20CS411- Aptitude and Coding Skills - II
11)	6	Theory	20CS601 - Compiler Design
12)	6	Theory	20CS602 - Cryptography and Network Security
13)	6	Theory	20CS603 - Mobile Computing
14)	6	Theory	20AI502 - Machine Learning
15)	6	Theory	IT8076 - Software Testing
16)	6	Practical	CS8661 -
17)	6	Practical	20CS611 - Mobile Application Development Laboratory
18)	6	Practical	20CS612- Security Laboratory
19)	6	Practical	20CS613 Internship
20)	6	Practical	20CS614-Advanced Aptitude and Coding Skills-II

EVEN Semester 2021-2022

4th Semester – B.E. CSE

20MA402 - Probability and Queuing Theory	
COs	**Course Outcome : The students, after the completion of the course, are expected to ….**
CO1	Find the distribution and measures of Discrete and continuous random variables
CO2	Evaluating the measures of two dimensional Discrete and continuous random variables
CO3	Apply the concept of random processes to characterize a random signal.
CO4	Examine Queueing Models and find the characteristics of Queueing system
CO5	Analyzing series Queues and Queueing networks
CO6	Understanding Correlation and Linear regression of two dimensional Discrete and continuous random variables

20CS401 - Computer Architecture	
COs	**Course Outcome : The students, after the completion of the course, are expected to ….**
CO1	Identify the basic organization of computer system and performance of a computer system.
CO2	Utilize the basic instruction set, operations and addressing modes of MIPS architecture.
CO3	Examine the procedure involved in designing ALU
CO4	Compare and Contrast the non-pipelined and pipelined data path implementation of MIPS
CO5	Inspect Parallel Processing challenges, Hardware Multithreading and Multicore architectures
CO6	Examine the performance of Memory and I/O systems.

20CS402 - Design and Analysis of Algorithms	
COs	**Course Outcome : The students, after the completion of the course, are expected to ….**
CO1	Discuss the fundamental concepts of relational database and SQL
CO2	Use ER model for Relational model mapping to perform database design effectively
CO3	Summarize the properties of transactions and concurrency control mechanisms
CO4	Outline the various storage and optimization techniques
CO5	Compare and contrast various indexing strategies in different database systems
CO6	Explain the different advanced databases

20CS403 – Internet Programming	
COs	**Course Outcome : The students, after the completion of the course, are expected to ….**
CO1	Explain the Analysis of Algorithm Efficiency and Compare the Mathematical analysis for Recursive and Non-recursive algorithms.
CO2	Identify the efficiency of Brute Force And Divide-And-Conquer technique algorithms.
CO3	Identify the efficiency of Dynamic Programming And Greedy Technique algorithms.
CO4	Solve the problems using Iterative Improvement technique.
CO5	Solve the problems using Backtracking and Branch and Bound Technique.
CO6	Outline the limitations of Algorithm power.

20CS404 - Operating Systems	
COs	**Course Outcome : The students, after the completion of the course, are expected to ….**
CO1	Explain the overall view of the computer system and operating system.
CO2	Apply various CPU scheduling algorithms, synchronization primitives and deadlock handling methods
CO3	Compare and contrast various memory management schemes and file system functionalities
CO4	Analyze the performance of the various page replacement algorithms and interpret the file system implementation, sharing and protection mechanisms.
CO5	Analyze the performance of the various disk scheduling algorithms
CO6	Demonstrate administrative tasks on Linux servers and to be familiar with the basics of Mobile OS like iOS and Android

20EC441 - Microprocessors and Interfacing	
COs	**Course Outcome : The students, after the completion of the course, are expected to ….**
CO1	Identify the key activities in managing a software project and recognize different process model
CO2	Explain the concepts of Requirements Engineering and Analysis Modeling.
CO3	Outline the systematic procedures for software design and deployment.
CO4	Compare various testing and maintenance methods
CO5	Interpret the project schedule, estimate project cost and effort required.
CO6	Outline various risk management activities and identifying risks through RMMM Plan.

20CS411 - Internet Programming Laboratory	
COs	Course Outcome : The students, after the completion of the course, are expected to ....
CO1	Use typical data definitions and manipulation commands.
CO2	Design applications to test Nested and Join Queries.
CO3	Implement simple applications that use Views.
CO4	Implement applications that require a Front-end Tool.
CO5	Critically analyze the use of Tables, Views, Functions and Procedures.

20CS412 - Operating Systems Laboratory	
COs	Course Outcome : The students, after the completion of the course, are expected to ....
CO1	Compare the performance of various CPU Scheduling Algorithms.
CO2	Implement Deadlock avoidance and Detection Algorithms.
CO3	Implement Semaphores.
CO4	Create processes and implement IPC.
CO5	Analyze the performance of the various Page Replacement Algorithms.
CO6	Implement File Organization and File Allocation Strategies.

20CS411- Aptitude and Coding Skills - II	
COs	Course Outcome : The students, after the completion of the course, are expected to ....
CO1	Write different types of essays.
CO2	Write winning job applications.
CO3	Read and evaluate texts critically.
CO4	Display critical thinking in various professional contexts

6th Semester – B.E. CSE

CS8651 - Internet Programming

COs	Course Outcome : The students, after the completion of the course, are expected to ….
CO1	Create a basic website using HTML and Cascading Style Sheets
CO2	Design and implement dynamic web page with validation using JavaScript objects and by applying different event handling mechanisms
CO3	Access JSON data files and use the content within JavaScript
CO4	Design and implement server side programs using Servlets, JDBC and JSP
CO5	Design and implement simple web page in PHP, and to present data in XML format
CO6	Design a simple web page using AJAX

CS8691 - Artificial Intelligence

COs	Course Outcome : The students, after the completion of the course, are expected to ….
CO1	Use appropriate search algorithms for any AI problem.
CO2	Represent a problem using first order and predicate logic.
CO3	Provide the apt agent strategy to solve a given problem.
CO4	Design software agents to solve a problem.
CO5	Design applications for NLP that use Artificial Intelligence.

CS8601 - Mobile Computing

COs	Course Outcome : The students, after the completion of the course, are expected to ….
CO1	Understand the basic concepts of mobile computing
CO2	Explain the basics of mobile telecommunication systems
CO3	Illustrate the generations of telecommunication systems in wireless networks
CO4	Demonstrate the functionality of MAC, network layer and Identify a routing protocol for a given Ad hoc network
CO5	Explain the functionality of Transport and Application layers
CO6	Develop a mobile application using android/blackberry/ios/Windows SDK

CS8602 - Compiler Design

COs	Course Outcome : The students, after the completion of the course, are expected to ….
CO1	Design various phases of compiler, a lexical analyzer and use LEX tool.
CO2	Design a syntax analyzer and use YACC tool.
CO3	Discuss intermediate code generation.
CO4	Discuss the various storage allocation strategies and implement a code generator.
CO5	Apply the various optimization techniques.

CS8603 - Distributed Systems	
COs	**Course Outcome : The students, after the completion of the course, are expected to ….**
CO1	Elucidate the foundations and issues of distributed systems.
CO2	Understand the various synchronization issues and global state for distributed systems.
CO3	Comprehend the Mutual Exclusion and Deadlock detection algorithms in distributed systems.
CO4	Show the use of agreement protocols and fault tolerance mechanisms in distributed systems
CO5	Relate the features of peer-to-peer and distributed shared memory systems
CO6	Interpret the real-time distributed system applications

IT8076 - Software Testing	
COs	**Course Outcome : The students, after the completion of the course, are expected to ….**
CO1	Design test cases suitable for a software development for different domains
CO2	Identify suitable tests to be carried out
CO3	Prepare test planning based on the document
CO4	Document test plans and test cases designed
CO5	Use automatic testing tools
CO6	Develop and validate a test plan

Laboratory

CS8661 - Internet Programming Laboratory	
COs	Course Outcome : The students, after the completion of the course, are expected to ....
CO1	Construct Web pages using HTML/XML and style sheets.
CO2	Build dynamic web pages with validation using Java Script objects and by applying different event handling mechanisms.
CO3	Develop dynamic web pages using server side scripting.
CO4	Use PHP programming to develop web applications.
CO5	Construct web applications using AJAX and web services

CS8662 - Mobile Application Development Laboratory	
COs	Course Outcome : The students, after the completion of the course, are expected to ....
CO1	Develop mobile applications using GUI and Layouts.
CO2	Develop mobile applications using Event Listener.
CO3	Develop mobile applications using Databases.
CO4	Develop mobile applications using RSS Feed, Internal/External Storage, SMS, Multithreading and GPS.
CO5	Analyze and discover own mobile app for simple needs.

CS8611 Mini Project	
COs	Course Outcome : The students, after the completion of the course, are expected to ....
CO1	On Completion of the mini project students will be in a position to take up challenging real world problems and find solution using appropriate methodology

HS8581 Professional Communication	
COs	Course Outcome : The students, after the completion of the course, are expected to ....
CO1	Make effective presentations
CO2	Participate confidently in Group Discussions.
CO3	Attend job interviews and be successful in them
CO4	Develop adequate Soft Skills required for the workplace