



# R.M.K. ENGINEERING COLLEGE

(An Autonomous Institution)



R.S.M Nagar, Kavaraipettai, Gummidipoondi Taluk, Thiruvallur District, Tamil Nadu- 601206

Affiliated to Anna University, Chennai / Approved by AICTE, New Delhi/Accredited by NAAC with A+ Grade

An ISO 21001:2018 Certified Institution / All the Eligible UG Programs are accredited by NBA, New Delhi

## Department of Computer Science and Design

### Course Outcomes

#### ODD Semester 2025-2026

Sl. No.	Semester	Theory/ Practical	Course Code / Course Name
1	3	Theory	Discrete Mathematics
2	3	Theory	Universal HumanValues 2: Understanding Harmony
3	3	Theory	Computer Organization and Architecture
4	3	Theory with Practical	Advanced Java Programming (Lab Integrated)
5	3	Theory with Practical	Database Management Systems (Lab Integrated)
6	3	Theory with Practical	Design Thinking (Lab Integrated)
7	3	Practical	Product Development Lab – 1
8	3	Practical	Aptitude and Coding Skills I
9	3	Practical	Internship / Seminar*
10	3	-	Indian Constitution(Non Credit)

Sl. No.	Semester	Theory/ Practical	Course Code / Course Name
1	5	Theory	Open Elective I – Introduction to Generative AI
2	5	Theory	Professional Elective II Augmented and Virtual Reality
3	5	Theory	Professional Elective III C# and .Net Programming
4	5	Theory	Computer Graphics and Multimedia
5	5	Theory with Practical	Product Centric Agile Development
6	5	Theory with Practical	Computer Networks
7	5	Theory with Practical	Advanced Aptitude and Coding Skills I
8	5	Practical	Internship*
9	5	-	Indian Constitution (Non Credit)

Sl. No.	Semester	Theory/ Practical/Honour/Minor	Course Code / Course Name
1	7	Theory	Open Elective III – Foundation of Natural Language Processing
2	7	Theory	Open Elective IV – Embedded Systems
3	7	Theory	Automata theory and Compiler Design
4	7	Theory with Practical	Mobile Application Development
5	7	Theory with Practical	Professional Elective VI- Cloud Foundations
6	7	-	Professional Readiness for Innovation, Employability and Entrepreneurship
7	7	-	Essence of Indian Knowledge Tradition (Non Credit)
8	7	Honours	Computer Vision
9	7	Minors	Robotic Operating System

## ODD Semester 2025-2026

### 3rd Semester – B.E. Computer Science and Design

#### 24MA301-Discrete Mathematics

**Cos Course Outcome: Upon completion of the course, the students will be able to:**

**CO1:** Examine the validity of the arguments

**CO2:** Apply various proof techniques and principles using analytic and combinatorial methods

**CO3:** Develop the recurrence relation for the sequence.

**CO4:** Implement graph theory technique to solve real time problems.

**CO5:** Apply the concepts of groups, rings and fields in solving algebraic problems.

**CO6:** Solve problems in lattices and Boolean algebra.

#### 24GE301- Universal HumanValues 2: Understanding Harmony

**Cos Course Outcome: Upon completion of the course, the students will be able to:**

**CO1:** Develop self-awareness and a deeper understanding of their surroundings, including family, society, and nature.

**CO2:** Identify and resolve inner conflicts based on natural acceptance.

**CO3:** Become more responsible towards life, and handle problems with sustainable solutions by considering human relationships and natural harmony.

**CO4:** Enhance their critical thinking and analyzing skills.

**CO5:** Develop a stronger commitment towards human values, relationships, and societal well-being.

**CO6:** Apply what they have learnt in different day-to-day settings in real life, and take the initial steps towards integrating these values into daily life.

#### 24CS301- Computer Organization and Architecture

**Cos Course Outcome: Upon completion of the course, the students will be able to:**

**CO1:** Infer the basic principles and operations of digital computers.

**CO2:** Analyze the performance of computers by identifying factors that contribute to performance.

**CO3:** Apply arithmetic algorithms for various operations..

**CO4:** Design hardware to solve computationally intensive problems.

**CO5:** Compare various I/O methods and analyze memory management techniques.

**CO6:** Demonstrate the concept of parallelism in hardware and software.

### 24CS302- Advanced Java Programming

**Cos Course Outcome: Upon completion of the course, the students will be able to:**

**CO1:** Implement various data structures by utilizing core Java features and libraries.

**CO2:** Demonstrate proficiency in handling Java I/O operations, including file manipulation for efficient data storage and retrieval.

**CO3:** Apply and Analyze the Stream API for functional programming and data processing.

**CO4:** Implement advanced object serialization for complex data structures.

**CO5:** Utilize regular expressions for text parsing and string manipulation.

**CO6:** Build applications using advanced Java programming techniques.

### 24CS303- Database Management Systems

**Cos Course Outcome: Upon completion of the course, the students will be able to:**

**CO1:** Map ER model to Relational model to perform database design effectively.

**CO2:** Implement SQL and effective relational database design concepts.

**CO3:** Apply relational algebra, calculus and normalization techniques in database design.

**CO4:** Understand the concepts of transaction processing, concurrency control, recovery procedure and data storage techniques.

**CO5:** Evaluate and implement transaction processing, concurrency control mechanisms, and recovery procedures to maintain data integrity.

**CO6:** Analyze and optimize database queries and understand the features and applications of advanced and distributed database systems, including NoSQL.

### 24CD301- Design Thinking( Lab Integrated)

**Cos Course Outcome: Upon completion of the course, the students will be able to:**

**CO1:** Understand the phases of design thinking process.

**CO2:** Conduct an immersion activity to create an empathy map.

**CO3:** Define the key problems of the personas created.

**CO4:** Apply the ideation phase steps to present the prototype ideas.

**CO5:** Create a prototype with value propositions and test the prototype

**CO6:** Investigate techniques to identify new directions in design thinking.

### Laboratory

### 24ME311- PRODUCT DEVELOPMENT LAB – 1

**Cos Course Outcome: Upon completion of the course, the students will be able to:**

**CO1 :** Understand the concept of manufacturing processes.

**CO2 :** Describe the working of the machine element.

**CO3 :** Discuss the various applications of engineering materials

**CO4** : Summarize the basics of core engineering concepts

**CO5** : Describe the process for converting ideas into products

### 24CS311 - APTITUDE AND CODING SKILLS – I

**Cos Course Outcome: Upon completion of the course, the students will be able to:**

**CO1:** Develop vocabulary for effective communication skills.

**CO2:** Build the logical reasoning enhance critical thinking.

**CO3:** Develop error correction and debugging skills in programming.

**CO4:** Apply programming skills to develop programs efficiently.

**CO5:** Solve problems using quantitative skills

**CO6:** Develop effective reading and listening skills.

### INDIAN CONSTITUTION

**Cos Course Outcome: Upon completion of the course, the students will be able to:**

**CO1:** Interpret the knowledge on Indian Constitution.

**CO2:** Demonstrate the knowledge gained through fundamental rights concept.

**CO3:** Relate the concept of Lok Sabha and Rajya Sabha.

**CO4:** Illustrate the concept of Legislative Assembly and Legislative Council.

**CO5:** Analyze the concept of Local Self Government.

## ODD Semester 2025-2026

### 5th Semester – B.E. Computer Science and Design

#### OPEN ELECTIVE-I 22 AI005 – INTRODUCTION TO GENERATIVE AI

**Cos Course Outcome: Upon completion of the course, the students will be able to:**

**CO1:** Elaborate the basic concepts of Generative AI.

**CO2:** Build Generative AI systems to generate images.

**CO3:** Apply the concepts used in Generative AI models.

**CO4:** Use various Generative AI models.

**CO5:** Compare and use the various Large Language Models.

**CO6:** Analyse the basics of Prompt Engineering

#### PROFESSIONAL ELECTIVE II 22CD918 -AUGMENTED AND VIRTUAL REALITY

**Cos Course Outcome: Upon completion of the course, the students will be able to:**

**CO1:** Understand Augmented Reality

**CO2:** Explore different input and output devices used in Virtual Reality System.

**CO3:** Model the VR system

**CO4:** Analyze about Google Toolkit's and Scene Graph.

**CO5:** Apply virtual reality in a variety of sectors.

**CO6:** Assess the effectiveness of VR in improving training outcomes and operational readiness.

### **PROFESSIONAL ELECTIVE III 22CD934- C# AND .NET PROGRAMMING**

**Cos Course Outcome: Upon completion of the course, the students will be able to:**

**CO1:** Implement Class and object concepts using C# Language in the .NET Framework.

**CO2:** Develop distributed applications using .NET Framework.

**CO3:** Develop application using advanced C# features.

**CO4:** Understand window-based application, WCF and WWF.

**CO5:** Learn assembly management, XAML handling and error resolution

**CO6:** Create mobile applications using .NET compact Framework

### **22CD501- COMPUTER GRAPHICS AND MULTIMEDIA**

**Cos Course Outcome: Upon completion of the course, the students will be able to:**

**CO1:** Implement 2D transformations and algorithms for generating primitives and attributes.

**CO2:** Solve problems in 3D transformations and viewing.

**CO3:** Analyze the process of open source Vulkan API.

**CO4:** Examine rendering techniques and use advanced based rendering.

**CO5:** Apply lighting and shading models to enhance graphical scenes.

**CO6:** Understand the multimedia systems and animation.

### **22CD502- PRODUCT CENTRIC AGILE DEVELOPMENT**

**Cos Course Outcome: Upon completion of the course, the students will be able to:**

**CO1:** Analyse agile development methods in software development practices.

**CO2:** Obtain knowledge on Product Centric Value Delivery.

**CO3:** Implement Agile metrics and its ways of working.

**CO4:** Apply Product Centric Agile Development to develop web services.

**CO5:** Examine DevOps concepts and tools for Web Development.

**CO6:** Develop effective collaboration and communication skills essential for working

within agile teams.

### 22CS501- COMPUTER NETWORKS

**Cos Course Outcome: Upon completion of the course, the students will be able to:**

**CO1:** Explain the fundamental concepts of computer networking and network architecture

**CO2:** Analyze the performance of various network protocols used in data transmission.

**CO3:** Design basic network architectures including LAN and WAN using appropriate hardware and software

**CO4:** Develop skills to diagnose common network issues using tools.

**CO5:** Analyze the various application layer protocols.

**CO6:** Implement protocols used for finding shortest route for data transmission

### Laboratory

### 22CS511 - ADVANCED APTITUDE AND CODING SKILLS - I

**Cos Course Outcome: Upon completion of the course, the students will be able to:**

**CO1:** Develop advanced vocabulary for effective communication skills.

**CO2:** Build an enhanced level of logical reasoning and quantitative skills.

**CO3:** Develop error correction and debugging skills in programming.

**CO4:** Apply advanced data structures and algorithms in problem solving.

**CO5:** Develop coding solutions for real-world problems

**CO6:** Develop advanced vocabulary for effective reading skills

### INDIAN CONSTITUTION

**Cos Course Outcome: Upon completion of the course, the students will be able to:**

**CO1:** Interpret the knowledge on Indian Constitution.

**CO2:** Demonstrate the knowledge gained through fundamental rights concept.

**CO3:** Relate the concept of Lok Sabha and Rajya Sabha.

**CO4:** Illustrate the concept of Legislative Assembly and Legislative Council.

**CO5:** Analyze the concept of Local Self Government.

### Honours Degree in Creative Media Design

### 22CD906- STREAMING MEDIA TOOLS AND TECHNOLOGIES

**COs Course Outcome : The students, after the completion of the course, are expected to....**

**CO1:** Understand the basics of Audio and Video Streaming.

**CO2:** Develop Streaming media Applications.

**CO3:** Apply concepts of Streaming Technologies on applications.

**CO4:** Hands on experience on streaming tools.

**CO5:** Analyze streaming services.

**CO6:** Implement SaaS website development integrating live streaming platforms.

### **Minor Degree in Internet of things**

#### **22EC907- SENSORS AND ACTUATOR DEVICES**

**COs Course Outcome : The students, after the completion of the course, are expected to....**

**CO1:** Build schematic for IoT solutions with sensors.

**CO2:** Design and develop IoT based sensor systems.

**CO3:** Select the appropriate sensors for various industrial applications.

**CO4:** Evaluate the wireless sensor technologies for IoT.

**CO5:** Design and develop an IoT Prototype project.

**CO6:** Identify the IoT networking components with respect to sensors.

### **ODD Semester 2025-2026**

#### **7th Semester – B.E. Computer Science and Design**

#### **Open Elective III -22AI006-FOUNDATIONS OF NATURAL LANGUAGE PROCESSING**

**COs Course Outcome : The students, after the completion of the course, are expected to....**

**CO1:** Elaborate the fundamentals of Natural Language Processing.

**CO2:** Perform word level analysis in NLP.

**CO3:** Illustrate different ML models for NLP.

**CO4:** Analyze the syntax and semantics using various methods.

**CO5:** Analyze text at the word level.

**CO6:** Apply NLP to solve real-world problems.

#### **Open Elective IV -22EC002- EMBEDDED SYSTEMS**

**COs Course Outcome : The students, after the completion of the course, are expected to....**

**CO1:** Elaborate the build process of embedded systems.

**CO2:** Summarize the concepts of embedded system development life cycle.

**CO3:** Interpret the various embedded networking protocols and I/O interfacing.

**CO4:** Describe RTOS, multiprocessing, and multitasking.

**CO5:** Illustrate the different scheduling algorithms used for embedded systems.

**CO6:** Implement embedded system design methods to a specific application.

### **22AI602 - Automata Theory and Compiler Design**

**COs Course Outcome : The students, after the completion of the course, are expected to....**

**CO1:** Construct deterministic and non-deterministic finite automata

**CO2:** Design context free grammars for formal languages using regular expressions

**CO3:** Use PDA and Turing Machines for recognizing context-free languages.

**CO4:** Design a lexical analyzer

**CO5:** Design a syntax analyzer.

**CO6:** Design a simple code generator and apply different code optimizations

### **22CD701 - MOBILE APPLICATION DEVELOPMENT (LAB INTEGRATED)**

**COs Course Outcome : The students, after the completion of the course, are expected to....**

**CO1:** Understand the basics of mobile application development frameworks and tools, able to develop a UI for mobile application

**CO2:** Implement mobile applications that manage memory dynamically.

**CO3:** Design and develop generic, multimodal user interfaces.

**CO4:** Build applications based on mobile OS like Android, iOS.

**CO5:** Deploy mobile applications, incorporating security measures to protect against hacking and vulnerabilities.

**CO6:** Develop layer animation and event handling and location-based services.

### **Professional Elective VI- 22CS907 – CLOUD FOUNDATIONS (LAB INTEGRATED)**

**COs Course Outcome : The students, after the completion of the course, are expected to....**

**CO1:** Describe the different ways a user can interact with Cloud.

**CO2:** Discover the different compute options in Cloud and implement a variety of structured and unstructured storage model.

**CO3:** Discuss the different application managed service options in the cloud and outline how security in the cloud is administered in Cloud.

**CO4:** Demonstrate how to build secure networks in the cloud and identify cloud automation and management tools

**CO5:** Discover a variety of managed big data services in the cloud.

**CO6:** Use Cloud services to build applications.

### **Laboratory**

#### **22IT711- PROFESSIONAL READINESS FOR INNOVATION, EMPLOYABILITY AND ENTREPRENEURSHIP**

**COs Course Outcome : The students, after the completion of the course, are expected to....**

**CO1** Upskill in emerging technologies and apply to real industry-level use cases

**CO2** Understand agile development process

**CO3** Develop career readiness competencies, Team Skills / Leadership qualities

**CO4** Develop Time management, Project management skills and Communication Skills

**CO5** Use Critical Thinking for Innovative Problem Solving

**CO6** Develop entrepreneurship skills to independently work on products

### **Honour Degree in Artificial Intelligence**

#### **22AI909 – COMPUTER VISION**

**COs Course Outcome : The students, after the completion of the course, are expected to....**

**CO1** Analyze and apply basic image processing techniques in practical applications

**CO2** Compare the concepts related to feature detection, matching and detection.

**CO3** Implement feature-based alignment and motion estimation in real-world applications

**CO4** Create and Apply 3D Reconstruction techniques in diverse applications.

**CO5** Perform image-based rendering and recognition.

**CO6** Implement efficient solutions to image processing and computer vision problems

## Minor Degree in Internet of Things

### 20EC978-ROBOT OPERATING SYSTEM

<b>COs</b>	<b>Course Outcome : The students, after the completion of the course, are expected to....</b>
<b>CO1</b>	Understand the robotics design and implementation
<b>CO2</b>	Comprehend, classify and analyze the behavior of different types of sensors and actuators.
<b>CO3</b>	Understand the ROS fundamentals
<b>CO4</b>	Gain the knowledge about the types of actuators: electrical, pneumatic, and hydraulic performance criteria and selection.
<b>CO5</b>	Design robotic applications using ROS.
<b>CO6</b>	Design Robots with Localization.