R.M.K. ENGINEERING COLLEGE

RSM Nagar,Kavaraipettai–601206

Department of Computer Science and Engineering

Course Outcomes – ODD Semester 2025-2026

Semester	Subject Code	Course Code/ Course Name
3	24MA301	Discrete Mathematics
3	24CS301	Computer Organization and Architecture
3	24CS302	Advanced Java Programming (Lab Integrated)
3	24GE301	Universal Human Values 2: Understanding Harmony
3	24CS304	Operating Systems (Lab Integrated)
3	24CS303	Database Management Systems (Lab Integrated)
3	24ME311	Product Development Lab - 1
3	24CS311	Aptitude and Coding Skills I
5	22CS902	Social Network Security (Lab Integrated)
5	22CS501	Computer Networks (Lab Integrated)
5	22AI401	Machine Learning (Lab Integrated)
5	22CS502	Theory of Computation (Lab Integrated)
5	22IT910	Rest Application Development Using Spring Boot and JPA (Lab Integrated
5	22CS511	Advanced Aptitude and Coding Skills I
5	22CS935	Data Exploration and Visualization
5	22CS937	Reinforcement and Ensemble Learning
7	22CS930	Enterprise Cyber Security
7	22CS912	Cloud Security Foundations
7	22CS919	Usability Design of Software Applications
7	22CS701	Cryptography and Cyber Security (Lab Integrated)
7	22CS702	Data Analytics (Lab Integrated)
7	22CS934	Cloud Services Management
7	22CS915	Mobile Architecture and Application Development
7	22AI903	Text and Speech Analytics
7	22CS936	Neural Networks and Deep Learning

3rd Semester–B.E CSE

24MA301- **Discrete Mathematics**	
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 techniques 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.

24CS301- Computer Organization and Architecture	
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 (Lab Integrated)	
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.

24GE301-UNIVERSAL HUMAN VALUES 2:UNDERSTANDING HARMONY	
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.

24CS304 -Operating Systems (Lab Integrated)	
Upon completion of the course, the students will be able to:	
CO1	Demonstrate the basic concepts of operating systems and process.
CO2	Implement process management techniques using inter-process communication.
CO3	Implement the concepts of process synchronization and deadlocks.
CO4	Apply various memory management schemes for the suitable scenario.
CO5	Describe various I/O and file management techniques.
CO6	Develop practical skills in developing system-level programming.

24CS303-DATABASE MANAGEMENT SYSTEMS (Lab Integrated)	
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.

24ME311-Product Development Lab - 1	
Upon completion of the course, the students will be able to:	
CO1	Identify, collect, and interpret relevant scholarly literature in the chosen research area.
CO2	Evaluate existing research to identify gaps and formulate precise research questions.
CO3	Apply brainstorming techniques to generate innovative and diverse research ideas.
CO4	Analyze reviewed literature and research gap to effectively present a research problem with clarity and rationale.
CO5	Develop skills in using evidence to create and present an engaging and critical argument.

24CS311-Aptitude and Coding Skills I	
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.

5th Semester B.E CSE

22CS501- Computer Networks (Lab Integrated)

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.

22CS902 -Social Network Security (Lab Integrated)
Upon completion of the course, the students will be able to:
CO1 Develop security applications of social networks..
CO2 Implement data anonymization techniques
CO3 Analyze and secure social networks
CO4 Handle security challenges in social networks
CO5 Develop security tools for social networks
CO6 Create newer social networking applications

22CS502 - Theory of Computation (Lab Integrated)	
Upon completion of the course, the students will be able to:	
CO1	Explain the key concepts of automata, formal languages, and computational models.
CO2	Differentiate between types of formal languages and their corresponding automata.
CO3	Analyze problems for decidability and understand the complexity.
CO4	Design computation solutions using Turing machines.
CO5	Apply formal proof techniques to demonstrate properties of languages and automata.
CO6	Discuss practical applications of computation theory in computer science.

22AI401-Machine Learning (Lab Integrated)	
At the end of this course, the students will be able to:	
CO1	Explain the basics of Machine Learning and model evaluation.
CO2	Study dimensionality reduction techniques.
CO3	Understand and implement various classification algorithms.
CO4	Understand and implement various unsupervised learning techniques.
CO5	Build Neural Networks and understand the different types of learning.
CO6	Develop simple projects using machine learning concepts.

22IT910 - Rest Application Development Using Spring Boot and JPA (Lab Integrated)	
Upon completion of the course, the students will be able to:	
CO1	Create simple applications using RESTful APIs and effectively manage HTTP methods within the Spring Boot framework.
CO2	Apply database connectivity with JPA, utilizing advanced queries to interact with the database.
CO3	Build applications using Spring Boot and perform CRUD operations efficiently using JPQL.
CO4	Demonstrate the implementation of various relational mappings in JPA, including one-to-one and one-to-many associations
CO6	Develop real-time applications that integrate user interfaces and utilize Spring AOP for method interception and advice handling.
CO6	Apply security measures to REST APIs using Spring Security and JWT to protect sensitive data and ensure secure communication between clients and servers.

22CS511-Advanced Aptitude and Coding Skills I	
At the end of this 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

22CS935 -Data Exploration and Visualization	
Upon completion of the course, the students will be able to:	
CO1	Explain the overview of exploratory data analysis and phases involved in data analytics
CO2	Explore in-depth knowledge in EDA techniques
CO3	Apply the visualization techniques in data
CO4	Describe the methods of time series analysis
CO5	Represent the data in tree and hierarchical formats
CO6	Apply tools is visualization to represent data.

22CS937 - Reinforcement and Ensemble Learning	
Upon completion of the course, the students will be able to:	
CO1	Analyze the basics and history of reinforcement learning using examples like Multi-arm Bandits
CO2	Use tabular methods for solving Markov Decision Processes.
CO3	Evaluate function approximation methods for on-policy prediction.
CO4	Design and compare ensemble methods like boosting and bagging
CO5	Analyze and combine advanced ensemble methods for pruning and clustering
CO6	Apply ethical principles and communicate effectively in presenting learning methods

7th Semester B.E CSE

22CS930-Enterprise Cyber Security	
Upon completion of the course, the students will be able to:	
CO1	Understanding the core concepts and importance of cybersecurity in organizational settings.
CO2	Acquire the knowledge common network attacks and deploy appropriate security measures.
CO3	Implement encryption and secure communication protocols for data integrity and confidentiality.
CO4	Deploy and manage Intrusion Detection and Prevention Systems for threat detection.
CO5	Identify and mitigate common web application vulnerabilities.
CO6	Conduct penetration tests to evaluate the security posture of web applications.

22CS912 - Cloud Security Foundations
Upon completion of the course, the students will be able to:

CO1	Learn essential cloud security principles and identity management fundamentals.
CO2	Design and implement secure cloud infrastructure components for effective resource protection.
CO3	Explore methods for securing application data stored in the cloud, including encryption techniques and data protection features.
CO4	Gain proficiency in implementing logging and monitoring practices to detect and respond to security events efficiently in cloud environments.
CO5	Acquire skills to identify and manage security incidents in the cloud, utilizing appropriate tools and techniques for incident detection, analysis, and resolution.
CO6	Proficiently ensure the protection of cloud environments by applying strong security measures across all aspects, ensuring resilience and compliance.

22CS919 - Usability Design of Software Applications	
Upon completion of the course, the students will be able to:	
CO1	Sensitize the students to the fundamentals of User Centred Design and User Experience their relevance and contribution to businesses.
CO2	Familiarize them to the facets of User Experience (UX) Design, particularly as applied to the digital artefacts.
CO3	Appreciation of user research, solution conceptualization and validation as interwoven activities in the design and development lifecycle.
CO4	Acquire the ability to constructively engage with the Design professionals they would work with in the future..
CO5	Analyse and identify the methods to offer a better UI experience for the applications Gain expertise in redesigning an existing Application or website for better user experience.
CO6	Develop the capability to integrate user feedback and usability testing results into iterative design processes, ensuring continuous improvement and alignment with user needs.

22CS701-Cryptography and Cyber Security (Lab Integrated)	
Upon completion of the course, the students will be able to:	
CO1	Understand cryptographical concepts.
CO2	Implement various cryptographic algorithms
CO3	Evaluate and apply network security protocols, to secure communications over networks
CO4	Identify common security threats and vulnerabilities and assess their impact on network security
CO5	Implement access control mechanisms and authentication techniques to protect information systems.
CO6	Develop and propose security policies and best practices for securing networks and information systems

22CS702- Data Analytics (Lab Integrated)	
Upon completion of the course, the students will be able to:	
CO1	Explain the fundamentals of big data and data analytics and illustrate it
CO2	Discuss the Hadoop framework
CO3	Develop applications using exploratory data analysis and data manipulation tools
CO4	Analyse and interpret streaming data
CO5	Illustrate various applications of data analytics
CO6	Build applications for various domain.

22CS934- Cloud Services Management	
Upon completion of the course, the students will be able to:	
CO1	Exhibit cloud-design skills to build and automate business solutions using cloud technologies.
CO2	Possess Strong theoretical foundation leading to excellence and excitement towards adoption of cloud-based services
CO3	Solve the real world problems using Cloud services and technologies
CO4	Develop and deploy services on the cloud and set up a cloud environment
CO5	Explain security challenges in the cloud environment
CO6	Demonstrate proficiency in integrating cloud technologies and services to address diverse business challenges effectively.

22CS915- Mobile Architecture and Application Development	
Upon completion of the course, the students will be able to:	
CO1	Identify various concepts of mobile architecture.
CO2	Create, test and debug Android application by setting up Android development
CO3	Develop iOS application with performance metrics
CO4	Develop hybrid applications with basic event handling.
CO5	Implement cross platform applications with basic GUI and event handling.
CO6	Deploy applications to the Android Market place for distribution.

22AI903- Text and Speech Analytics	
Upon completion of the course, the students will be able to:	
CO1	Apply the fundamental techniques in text processing for various NLP tasks.
CO2	Implement advanced language models and improve text classification accuracy.
CO3	Designing text processing systems using state-of-the-art techniques.
CO4	Design, implement, and evaluate ASR and TTS systems.
CO5	Apply advanced speech recognition methodologies in practical applications.
CO6	Use information Retrieval Techniques to build and evaluate text processing systems.

22CS936- Neural Networks and Deep Learning	
Upon completion of the course, the students will be able to:	
CO1	Demonstrate the basics of deep neural networks to solve real world problems.
CO2	Implement deep learning models.
CO3	Elaborate CNN and RNN architectures of deep neural networks.
CO4	Use autoencoders in neural networks.
CO5	Illustrate the various deep generative models.
CO6	Apply deep generative models to solve real world problems.