



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



Department of Artificial Intelligence and Data Science

Course Outcomes
ODD Semester 2025-26

Sl. No.	Semester	Theory/ Practical	Course Code	Course Name
1.	3	Theory	24GE301	Universal Human Values 2: Understanding Harmony
2.	3	Theory	24MA301	Discrete Mathematics
3.	3	Theory	24CS301	Computer Organization and Architecture
4.	3	Theory + Lab	24AI301	Artificial Intelligence and Decision Making
5.	3	Theory + Lab	24CS303	Database Management Systems
6.	3	Theory + Lab	24CS302	Advanced Java Programming
7.	3	Practical	24ME311	Product Development Lab – 1
8.	3	Practical	24CS311	Aptitude and Coding Skills I
9.	5	Theory	22CS006	Open Elective I – Introduction to Computer Networks
10.	5	Theory	22AI905	Professional Elective II – Stream Processing and Analytics
11.	5	Theory	22CS911	Professional Elective III – Data Engineering in Cloud
12.	5	Theory + Lab	22AI501	Deep Learning
13.	5	Theory + Lab	22AI502	Data Exploration, Feature Engineering and Visualization
14.	5	Practical	22CS511	Advanced Aptitude and Coding Skills I
15.	5	Practical	22AI512	Internship and Career Readiness Course
16.	5	Theory	22AI924	Medical Image Analytics
17.	5	Theory	22EC907	Sensors and Actuator Devices
18.	7	Theory	22CS603	Professional Ethics
19.	7	Theory	22CS005	Open Elective III – UI/UX Design
20.	7	Theory	22EC012	Open Elective IV – Industrial IoT Applications
21.	7	Theory	22CS910	Professional Elective VI – DevOps
22.	7	Theory + Lab	22AI701	Frameworks for Data Analytics
23.	7	Theory + Lab	22AI702	Natural Language Processing
24.	7	Practical	22AI711	MLOps
25.	7	Theory	22AI932	Smart and Interactive Healthcare Technologies
26.	7	Theory	22EC978	Robot Operating System

ODD Semester 2024-25

3rd Semester – B.Tech. Artificial Intelligence and Data Science

24GE301 - UNIVERSAL HUMAN VALUES 2: UNDERSTANDING HARMONY	
COs	
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.

22MA301- DISCRETE MATHEMATICS	
COs	
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 ORGANIZAION AND ARCHITECTURE	
COs	
CO1	Explain the basic principles and operations of digital computers.
CO2	Analyse the performance of computers by identifying factors that contribute to performance.
CO3	Compare various I/O methods and understand memory management principles.
CO4	Explain data flow in arithmetic algorithms.
CO5	Demonstrating the concept of parallelism in hardware and software.
CO6	Design hardware to solve computationally intensive problems.

24AI301 – ARTIFICIAL INTELLIGENCE AND DECISION MAKING	
COs	
CO1	Implement various search strategies
CO2	Apply search strategies in problem solving and game playing using heuristic function
CO3	Implement logical agents and first-order logic problems
CO4	Apply problem-solving strategies with knowledge representation mechanism for solving hard problems
CO5	Represent uncertain knowledge and build a decision network using a real-world scenario
CO6	Implement AI algorithms to solve real-world problems

24CS303 – DATABASE MANAGEMENT SYSTEMS	
COs	
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.

24CS302 – ADVANCED JAVA PROGRAMMING	
COs	
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.

Laboratory

24ME311 - PRODUCT DEVELOPMENT LAB - 1	
COs	
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
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24CS311 - APTITUDE AND CODING SKILLS I	
COs	
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.Tech. Artificial Intelligence and Data Science

22CS006 – OPEN ELECTIVE I – INTRODUCTION TO COMPUTER NETWORKS	
COs	
CO1	Understand the fundamental concepts of computer networks.
CO2	Apply the various routing protocols to solve real-world problems.
CO3	Understand the layered architecture.
CO4	Apply the simulation tools to implement various protocols used in the various layers.
CO5	Analyze the various application layer protocols.
CO6	Apply the mathematical knowledge to do performance analysis of various routing protocols.

22AI905 – PROFESSIONAL ELECTIVE II – STREAM PROCESSING AND ANALYTICS	
COs	
CO1	Outline the framework for real time stream processing
CO2	Illustrate various algorithms for data streaming
CO3	Identify frequent item sets by mining from data streams
CO4	Introduce approaches to evaluate stream learning algorithms.
CO5	Use tools for distributed data flow management
CO6	Design solutions to stream processing problems

22CS911 – PROFESSIONAL ELECTIVE III – DATA ENGINEERING IN CLOUD	
COs	
CO1	Understand data engineering, pipelines & access data in the cloud
CO2	Build secure & scalable data pipelines using AWS services
CO3	Choose the right data storage & secure your data pipelines
CO4	Process big data for machine learning with cloud tools
CO5	Analyze & visualize data and automate data pipelines

CO6	Apply best practices in data governance, compliance, and ethics throughout the data engineering process, ensuring responsible handling and usage of data
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22AI501 – DEEP LEARNING	
COs	
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.

22AI502 – DATA EXPLORATION, FEATURE ENGINEERING AND VISUALIZATION	
COs	
CO1	Outline exploratory data analysis and the phases involved in data analysis.
CO2	Demonstrate various statistical techniques for data analysis.
CO3	Present the basics of feature engineering on different types of data.
CO4	Perform data analysis and apply visualization techniques.
CO5	Apply the methods of time series analysis.
CO6	Develop dashboards using different datasets by applying data engineering and feature extraction techniques.

Laboratory

22CS511 – ADVANCED APTITUDE AND CODING SKILLS I	
COs	
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.

22AI512 – INTERNSHIP AND CAREER READINESS COURSE	
COs	
CO1	Apply the basics of Data Warehouse concepts
CO2	Apply ETL Tools for Data processing
CO3	Write queries using SQL and NoSQL
CO4	Apply the features of python
CO5	Elaborate the fundamentals of Cloud and various services
CO6	Demonstrate the basic algorithms in AI, ML and summarize the basics of Prompt Engineering

22AI924 – MEDICAL IMAGE ANALYSIS

COs	
CO1	Demonstrate a comprehensive understanding of various medical imaging modalities
CO2	Apply machine learning and deep learning techniques
CO3	Develop solutions by preprocessing medical images, implementing machine learning and deep learning algorithms.
CO4	Understand the ethical considerations and regulatory requirements associated with deploying machine intelligence models in healthcare settings
CO5	Elaborate on recent advances and research trends in machine intelligence for medical image analysis
CO6	Illustrate the applications of ML and DL in medical image analysis

22EC907 – SENSORS AND ACTUATOR DEVICES

COs	
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 appropriate actuators for IoT.

7th Semester – B.Tech. Artificial Intelligence and Data Science**22CS603 – PROFESSIONAL ETHICS**

COs	
CO1	Summarize the importance of human values in work place
CO2	Discuss the senses of engineering ethics, moral dilemmas, moral autonomy and uses of ethical theories
CO3	Describe the role of engineers as responsible experimenters and necessity of codes of ethics in engineering.
CO4	Explain safety, risk, responsibilities and rights in the society
CO5	Analyze the global issues related to environmental ethics, computer ethics, weapons development and the role of engineers as expert witnesses and advisors.
CO6	Apply ethics in society and discuss the ethical issues related to engineering

22CS005 – OPEN ELECTIVE III – UI/UX DESIGN

COs	
CO1	Create visually appealing and functional interfaces that enhance user interaction.
CO2	Ensure products are intuitive, accessible, and meet user needs.
CO3	Build and test design concepts to optimize user experience.
CO4	Evaluate and refine designs based on user feedback.

CO5	Structure content effectively for intuitive navigation.
CO6	Design engaging interactions that improve usability.

22EC012 – OPEN ELECTIVE IV – INDUSTRIAL IoT APPLICATIONS	
COs	
CO1	Describe IoT, IIoT
CO2	Understand various IoT Layers and their relative importance
CO3	Interpret the requirements of IIoT sensors and understand the role of actuators.
CO4	Study various IoT platforms and security.
CO5	Realize the importance of Data Analytics in IoT.
CO6	Design various applications using IIoT in manufacturing sector.

22CS910 – PROFESSIONAL ELECTIVE VI - DEVOPS	
COs	
CO1	Understand the core principles and philosophies of DevOps
CO2	Implement version control systems for code management and collaboration
CO3	Automate software delivery pipelines using CI/CD tools
CO4	Utilize containerization technologies for packaging and deploying applications
CO5	Configure infrastructure as code (IaC) for repeatable deployments
CO6	Monitor and maintain applications in a production environment

22AI701 – FRAMEWORKS FOR DATA ANALYTICS	
COs	
CO1	Apply the fundamentals of Big Data analytics and framework to store and process the big data
CO2	Demonstrate the Hadoop framework Hadoop Distributed File System and MapReduce
CO3	Apply MongoDB for data manipulations
CO4	Apply data analysis using Hadoop ecosystem
CO5	Implement MapReduce programming model and to process the big data along with Hadoop technologies
CO6	Illustrate advanced frameworks and tools for more efficient big data access and processing

22AI702 – NATURAL LANGUAGE PROCESSING	
COs	
CO1	Elaborate the fundamentals of natural language processing
CO2	Perform word level analysis in NLP
CO3	Implement 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

Laboratory

22AI711 - MLOPS	
COs	
CO1	Design and implement a Machine Learning Project
CO2	Apply data engineering and ML model engineering and develop a model
CO3	Apply model testing and validation
CO4	Build and Deploy a ML model using CI/CD pipeline

22AI932 - SMART AND INTERACTIVE HEALTHCARE TECHNOLOGIES	
COs	
CO1	Illustrate the need and challenges of personalized healthcare
CO2	Apply basic aspects of telehealth and telemedicine
CO3	Demonstrate M-Health evolution, regulation and applications
CO4	Elaborate the use of virtual reality and games in healthcare
CO5	Elaborate the importance of IoT in healthcare through its applications
CO6	Apply smart and interactive technologies for healthcare applications

22EC978 – ROBOT OPERATING SYSTEM	
COs	
CO1	Understand the robotics design and implementation.
CO2	Comprehend, classify and analyze the behavior of different types of sensors and actuators.
CO3	Understand the ROS fundamentals
CO4	Gain the knowledge about the types of actuators: electrical, pneumatic, and hydraulic, performance criteria and selection.
CO5	Design robotic applications using ROS.
CO6	Design Robots with Localization.