



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



**Department of Artificial Intelligence and Data Science**

**Course Outcomes**  
**ODD Semester 2026 - 27**

| 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            | 24AI502     | Generative AI                                    |
| 10.     | 5        | Theory            | 24AI951     | Professional Elective I - Cloud Foundations      |
| 11.     | 5        | Theory            | 24AI503     | Computer Networks and Security                   |
| 12.     | 5        | Theory + Lab      | 24AI501     | Deep Learning                                    |
| 13.     | 5        | Theory + Lab      | 24AI929     | Professional Elective II - Large Language Models |
| 14.     | 5        | Practical         | 24CS511     | Advanced Aptitude and Coding Skills I            |
| 15.     | 5        | Theory            | 24ME511     | Product Development Lab - 3                      |
| 16.     | 7        | Theory            | 22CE701     | Professional Ethics                              |
| 17.     | 7        | Theory            | 22CS005     | Open Elective III - UI/UX Design                 |
| 18.     | 7        | Theory            | 22EC012     | Open Elective IV - Industrial IoT Applications   |
| 19.     | 7        | Theory            | 22AI909     | Professional Elective VI - Computer Vision       |
| 20.     | 7        | Theory + Lab      | 22AI703     | Agentic AI                                       |
| 21.     | 7        | Theory + Lab      | 22AI704     | Large Language Models                            |

**ODD Semester 2026-27**

**3<sup>rd</sup> Semester – B.Tech. Artificial Intelligence and Data Science**

| <b>24GE301 - UNIVERSAL HUMAN VALUES 2: UNDERSTANDING HARMONY</b> |                                                                                                                                             |
|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| <b>COs</b>                                                       |                                                                                                                                             |
| <b>CO1</b>                                                       | Develop self-awareness and a deeper understanding of their surroundings, including family, society, and nature                              |
| <b>CO2</b>                                                       | Identify and resolve inner conflicts based on natural acceptance.                                                                           |
| <b>CO3</b>                                                       | Become more responsible towards life, and handle problems with sustainable solutions by considering human relationships and natural harmony |

|            |                                                                                                                                                         |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CO4</b> | Enhance their critical thinking and analyzing skills.                                                                                                   |
| <b>CO5</b> | Develop a stronger commitment towards human values, relationships, and societal well-being.                                                             |
| <b>CO6</b> | 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. |

| <b>24MA301 - DISCRETE MATHEMATICS</b> |                                                                                         |
|---------------------------------------|-----------------------------------------------------------------------------------------|
| <b>COs</b>                            |                                                                                         |
| <b>CO1</b>                            | Examine the validity of the arguments                                                   |
| <b>CO2</b>                            | Apply various proof techniques and principles using analytic and combinatorial methods. |
| <b>CO3</b>                            | Develop the recurrence relation for the sequence                                        |
| <b>CO4</b>                            | Implement graph theory techniques to solve real time problems                           |
| <b>CO5</b>                            | Apply the concepts of groups, rings, and fields in solving algebraic problems           |
| <b>CO6</b>                            | Solve problems in Lattices and Boolean algebra                                          |

| <b>24CS301 - COMPUTER ORGANIZATION AND ARCHITECTURE</b> |                                                                                             |
|---------------------------------------------------------|---------------------------------------------------------------------------------------------|
| <b>COs</b>                                              |                                                                                             |
| <b>CO1</b>                                              | Infer the basic principles and operations of digital computers.                             |
| <b>CO2</b>                                              | Analyze the performance of computers by identifying factors that contribute to performance. |
| <b>CO3</b>                                              | Apply arithmetic algorithms for various operations.                                         |
| <b>CO4</b>                                              | Design hardware to solve computationally intensive problems.                                |
| <b>CO5</b>                                              | Compare various I/O methods and analyze memory management techniques.                       |
| <b>CO6</b>                                              | Demonstrate the concept of parallelism in hardware and software                             |

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

| <b>24CS303 - DATABASE MANAGEMENT SYSTEMS</b> |                                                                          |
|----------------------------------------------|--------------------------------------------------------------------------|
| <b>COs</b>                                   |                                                                          |
| <b>CO1</b>                                   | Map ER model to Relational model to perform database design effectively. |
| <b>CO2</b>                                   | Implement SQL and effective relational database design concepts.         |

|            |                                                                                                                                                   |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CO3</b> | Apply relational algebra, calculus and normalization techniques in database design.                                                               |
| <b>CO4</b> | Understand the concepts of transaction processing, concurrency control, recovery procedure and data storage techniques.                           |
| <b>CO5</b> | Evaluate and implement transaction processing, concurrency control mechanisms, and recovery procedures to maintain data integrity.                |
| <b>CO6</b> | Analyze and optimize database queries and understand the features and applications of advanced and distributed database systems, including NoSQL. |

| <b>24CS302 - ADVANCED JAVA PROGRAMMING</b> |                                                                                                                                |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <b>COs</b>                                 |                                                                                                                                |
| <b>CO1</b>                                 | Implement various data structures by utilizing core Java features and libraries                                                |
| <b>CO2</b>                                 | Demonstrate proficiency in handling Java I/O operations, including file manipulation for efficient data storage and retrieval. |
| <b>CO3</b>                                 | Apply and Analyze the Stream API for functional programming and data processing.                                               |
| <b>CO4</b>                                 | Implement advanced object serialization for complex data structures.                                                           |
| <b>CO5</b>                                 | Utilize regular expressions for text parsing and string manipulation.                                                          |
| <b>CO6</b>                                 | Build applications using advanced Java programming techniques.                                                                 |

### **Laboratory**

| <b>24ME311 - PRODUCT DEVELOPMENT LAB - 1</b> |                                                                                                                   |
|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| <b>COs</b>                                   |                                                                                                                   |
| <b>CO1</b>                                   | Identify, collect, and interpret relevant scholarly literature in the chosen research area.                       |
| <b>CO2</b>                                   | Evaluate existing research to identify gaps and formulate precise research questions.                             |
| <b>CO3</b>                                   | Apply brainstorming techniques to generate innovative and diverse research ideas.                                 |
| <b>CO4</b>                                   | Analyze reviewed literature and research gap to effectively present a research problem with clarity and rationale |
| <b>CO5</b>                                   | Develop skills in using evidence to create and present an engaging and critical argument                          |

| <b>24CS311 - APTITUDE AND CODING SKILLS I</b> |                                                              |
|-----------------------------------------------|--------------------------------------------------------------|
| <b>COs</b>                                    |                                                              |
| <b>CO1</b>                                    | Develop vocabulary for effective communication skills        |
| <b>CO2</b>                                    | Build the logical reasoning enhance critical thinking        |
| <b>CO3</b>                                    | Develop error correction and debugging skills in programming |
| <b>CO4</b>                                    | Apply programming skills to develop programs efficiently     |
| <b>CO5</b>                                    | Solve problems using quantitative skills                     |
| <b>CO6</b>                                    | Develop effective reading and listening skills               |

## 5<sup>th</sup> Semester – B.Tech. Artificial Intelligence and Data Science

| 24AI502 - GENERATIVE AI |                                                                                                       |
|-------------------------|-------------------------------------------------------------------------------------------------------|
| COs                     |                                                                                                       |
| CO1                     | Understand the basic concepts of Generative AI.                                                       |
| CO2                     | Build Generative AI systems to generate outputs of different domains.                                 |
| CO3                     | Deploy Generative AI Models.                                                                          |
| CO4                     | Build Speech Synthesis and Audio Generation systems using Neural Vocoder and Diffusion-based models.  |
| CO5                     | Evaluate Generative AI models using quantitative metrics such as FID, IS, CLIP Score, and BLEU/ROUGE. |
| CO6                     | Apply Generative AI to solve real world applications.                                                 |

| 24AI951 - PROFESSIONAL ELECTIVE I - CLOUD FOUNDATIONS |                                                                                                                                        |
|-------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| COs                                                   |                                                                                                                                        |
| 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 models.                 |
| 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.                                                                                              |

| 24AI503 - COMPUTER NETWORKS AND SECURITY |                                                                                   |
|------------------------------------------|-----------------------------------------------------------------------------------|
| COs                                      |                                                                                   |
| CO1                                      | Explain the fundamental concepts of computer networking and network architecture. |
| CO2                                      | Analyze the performance of various network protocols used in data transmission.   |
| CO3                                      | Analyze and implement the various routing protocols.                              |
| CO4                                      | Develop skills to diagnose common network issues using tools.                     |
| CO5                                      | Analyze the various application layer protocols.                                  |
| CO6                                      | Elaborate the key concepts of cryptography and network security.                  |

| 24AI501 - 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.                   |

| <b>24AI929 - PROFESSIONAL ELECTIVE II - LARGE LANGUAGE MODELS</b> |                                                                                                            |
|-------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| <b>COs</b>                                                        |                                                                                                            |
| <b>CO1</b>                                                        | Explain NLP preprocessing, tokenization, and embedding techniques used in language models.                 |
| <b>CO2</b>                                                        | Explain statistical and neural language modeling techniques used as foundations for Large Language Models. |
| <b>CO3</b>                                                        | Analyze Transformer architecture and implement Large Language Models for text generation tasks.            |
| <b>CO4</b>                                                        | Use and fine-tune pre-trained HuggingFace models for NLP applications.                                     |
| <b>CO5</b>                                                        | Develop LLM-powered systems using Prompt Engineering, RAG, and PEFT techniques.                            |
| <b>CO6</b>                                                        | Evaluate ethical issues such as bias, hallucination, and privacy in Large Language Models                  |

### **Laboratory**

| <b>24CS511 - ADVANCED APTITUDE AND CODING SKILLS I</b> |                                                                    |
|--------------------------------------------------------|--------------------------------------------------------------------|
| <b>COs</b>                                             |                                                                    |
| <b>CO1</b>                                             | Develop vocabulary for effective communication and reading skills. |
| <b>CO2</b>                                             | Build the logical reasoning and quantitative skills.               |
| <b>CO3</b>                                             | Develop error correction and debugging skills in programming.      |

| <b>24ME511 - PRODUCT DEVELOPMENT LAB - 3</b> |                                                                                                                             |
|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <b>COs</b>                                   |                                                                                                                             |
| <b>CO1</b>                                   | Analyze critically the design process and outcomes to identify areas for improvement and future research directions.        |
| <b>CO2</b>                                   | Develop preliminary prototypes or models to demonstrate design concepts and evaluate their effectiveness.                   |
| <b>CO3</b>                                   | Conduct iterative testing and evaluation of designs, incorporating feedback to improve outcomes.                            |
| <b>CO4</b>                                   | Apply industry-standard tools, technologies, and frameworks to execute the design process effectively.                      |
| <b>CO5</b>                                   | Explain design concepts through well-structured oral presentations, reports, and visual aids tailored to diverse audiences. |

## 7<sup>th</sup> Semester – B.Tech. Artificial Intelligence and Data Science

| 22CE701 - 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.                  |

| 22AI909 - PROFESSIONAL ELECTIVE VI - COMPUTER VISION |                                                                                     |
|------------------------------------------------------|-------------------------------------------------------------------------------------|
| COs                                                  |                                                                                     |
| 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.     |

| 22AI703 - AGENTIC AI |                                                                                                  |
|----------------------|--------------------------------------------------------------------------------------------------|
| 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       |

| 22AI704 - LARGE LANGUAGE MODELS |                                                                                                            |
|---------------------------------|------------------------------------------------------------------------------------------------------------|
| COs                             |                                                                                                            |
| CO1                             | Explain NLP preprocessing, tokenization, and embedding techniques used in language models.                 |
| CO2                             | Explain statistical and neural language modeling techniques used as foundations for Large Language Models. |
| CO3                             | Analyze Transformer architecture and implement Large Language Models for text generation tasks.            |
| CO4                             | Use and fine-tune pre-trained HuggingFace models for NLP applications.                                     |
| CO5                             | Develop LLM-powered systems using Prompt Engineering, RAG, and PEFT techniques.                            |
| CO6                             | Evaluate ethical issues such as bias, hallucination, and privacy in Large Language Models                  |