M.E. COMPUTER SCIENCE AND ENGINEERING

SEM	COURSE	COURSE OUTCOMES	BLOOMS TAXONOMY
SEM I	**MA4151 Applied Probability And Statistics For Computer Science Engineers**	**CO1:** apply the concepts of Linear Algebra to solve practical problems.	K3
		CO2: use the ideas of probability and random variables in solving engineering problems.	K3
		CO3: be familiar with some of the commonly encountered two dimension random variables and be equipped for a possible extension to multivariate analysis.	K3
		CO4: use statistical tests in testing hypothesis on data.	K3
		CO5: develop critical thinking based on empirical evidence and the scientific approach to knowledge development.	K6
	RM4151 Research Methodology And IPR	**CO1:** Formulate and Design research problem	K6
		CO2: Understand and Comprehend the Data Collection Methods	K2
		CO3: Perform Data analysis and acquire Insights	K2
		CO4: Understand IPR and follow research ethics	K2
		CO5: Understand and Practice Drafting and filing a Patent in research and development	K2
	CP4151 Advanced Data Structures and Algorithms	**CO1:** Design data structures and algorithms to solve computing problems.	K6
		CO2: Choose and implement efficient data structures and apply them to solve problems.	K3
		CO3: Design algorithms using graph structure and various string-matching algorithms to solve real-life problems.	K6
		CO4: Design one's own algorithm for an unknown problem.	K6
		CO5: Apply suitable design strategy for problem solving.	K3
	CP4152 Database Practices	**CO1:**Convert the ER-model to relational tables, populate relational databases and formulate SQL queries on data.	K5
		CO2: Understand and write well-formed XML documents	K2
		CO3: Be able to apply methods and techniques for distributed query processing.	K3
		CO4: Design and Implement secure database systems.	K6
		CO5: Use the data control, definition, and manipulation languages of the NoSQL databases	K3

	CP4153 Network Technologies	**CO1:** Explain basic networking concepts	K1
		CO2: Compare different wireless networking protocols	K2
		CO3: Describe the developments in each generation of mobile data networks	K1
		CO4: Explain and develop SDN based applications	K1
		CO5: Explain the concepts of network function virtualization	K1
	CP4154 Principles of Programming Languages	**CO1:** Describe syntax and semantics of programming languages	K1
		CO2: Explain data, data types, and basic statements of programming languages	K1
		CO3: Design and implement subprogram constructs	K6
		CO4: Apply object-oriented, concurrency, and event handling programming constructs	K3
		CO5: Develop programs in Scheme, ML, and Prolog and Understand and adopt new programming language	K6
	CP4161 Advanced Data Structures and Algorithms Laboratory	**CO1:** Design and implement basic and advanced data structures extensively	K6
		CO2: Design algorithms using graph structures 22	K6
		CO3: Design and develop efficient algorithms with minimum complexity using design techniques	K6
		CO4: Develop programs using various algorithms.	K6
		CO5: Choose appropriate data structures and algorithms, understand the ADT/libraries, and use it to design algorithms for a specific problem	K2
SEM II	**CP4291 Internet of Things**	**CO1:** Understand the various concept of the IoT and their technologies	K2
		CO2: Develop the IoT application using different hardware platforms	K6
		CO3: Implement the various IoT Protocols	K3
		CO4: Understand the basic principles of cloud computing	K2
		CO5: Develop and deploy the IoT application into cloud environment	K6
	CP4292 Multicore Architecture and Programming	**CO1:** Describe multicore architectures and identify their characteristics and challenges.	K1
		CO2: Identify the issues in programming Parallel Processors.	K1
		CO3: Write programs using OpenMP and MPI.	K6

		CO4: Design parallel programming solutions to common problems.	K6
		CO5: Compare and contrast programming for serial processors and programming for parallel processors.	K2
	CP4252 Machine Learning	**CO1:** Understand and outline problems for each type of machine learning	K2
		CO2: Design a Decision tree and Random forest for an application	K6
		CO3: Implement Probabilistic Discriminative and Generative algorithms for an application and analyze the results.	K3
		CO4: Use a tool to implement typical Clustering algorithms for different types of applications.	K3
		CO5: Design and implement an HMM for a Sequence Model type of application and identify applications suitable for different types of Machine Learning with suitable justification.	K6
	SE4151 Advanced Software Engineering	**CO1:**Identify appropriate process models based on the Project requirements	K1
		CO2: Understand the importance of having a good Software Architecture.	K2
		CO3: Understand the five important dimensions of dependability, namely, availability, reliability, safety, security, and resilience.	K2
		CO4: Understand the basic notions of a web service, web service standards, and service-oriented architecture;	K2
		CO5: Be familiar with various levels of Software testing	K3
	MP4092 Human Computer Interaction	**CO1:** Understand the basics of human computer interactions via usability engineering and cognitive modeling.	K2
		CO2: Understand the basic design paradigms, complex interaction styles.	K2
		CO3. Understand the models and theories for user interaction	K2
		CO4: Examine the evaluation of interaction designs and implementations.	K3
		CO5: Elaborate the above issues for web and mobile applications.	K2
	BD4251 Big Data Mining and Analytics	**CO1:** Design algorithms by employing Map Reduce technique for solving Big Data problems.	K6
		CO2: Design algorithms for Big Data by deciding on the apt Features set .	K6

		CO3: Design algorithms for handling petabytes of datasets	K6
		CO4: Design algorithms and propose solutions for Big Data by optimizing main memory consumption	K6
		CO5: Design solutions for problems in Big Data by suggesting appropriate clustering techniques.	K6
	CP4212 Software Engineering Laboratory	**CO1:** Can produce the requirements and use cases the client wants for the software being Produced.	K5
		CO2: Participate in drawing up the project plan. The plan will include at least extent and work assessments of the project, the schedule, available resources, and risk management can model and specify the requirements of mid-range software and their architecture.	K3
		CO3: create and specify such a software design based on the requirement specification that the software can be implemented based on the design.	K6
		CO4: Can assess the extent and costs of a project with the help of several different assessment methods.	K5
SEM III	**CP4391 Security Practices**	**CO1:** Understand the core fundamentals of system security	K2
		CO2: Apply the security concepts to wired and wireless networks	K3
		CO3: Implement and Manage the security essentials in IT Sector	K3
		CO4: Explain the concepts of Cyber Security and Cyber forensics	K1
		CO5: Be aware of Privacy and Storage security Issues.	K4
	IF4093 GPU Computing	**CO1:** Describe GPU Architecture	K1
		CO2: Write programs using CUDA, identify issues and debug them	K6
		CO3: Implement efficient algorithms in GPUs for common application kernels, such as matrix multiplication	K3
		CO4: Write simple programs using OpenCL	K6
		CO5: Identify efficient parallel programming patterns to solve problems	K1
	CP4071 Bioinformatics	**CO1:** Understand the different Data formats	K2
		CO2: Develop machine learning algorithms.	K6
		CO3: Develop models for biological data.	K6
		CO4: Apply pattern matching techniques to bioinformatics data – protein data genomic data.	K3

		CO5: Apply micro array technology for genomic expression study.	K3
	DS4015 Big Data Analytics	**CO1:**understand the basics of big data analytics	K2
		CO2: Ability to use Hadoop, Map Reduce Framework.	K3
		CO3: Ability to identify the areas for applying big data analytics for increasing the business outcome.	K1
		CO4:gain knowledge on R language	K1
		CO5: Contextually integrate and correlate large amounts of information to gain faster insights.	K2