Mewar University, Gangrar

Department of Computer Science & Engineering

A. Program Outcomes (POs) for B.Tech. (CSE):

Engineering Graduates will be able to:

PO1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12. Life-long learning: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

B. Course Outcomes (COs) for B.Tech.(CSE):

S. No.	Course Code	Course Title	Course Outcomes
First Semester			
1	BS-101	Engineering Physics-1	The objective of teaching engineering physics is to give an understanding of the basic knowledge and impart quality education in physical sciences to the budding engineers. To strengthen the skills in basic measurements by exposing the students to well-equipped labs and enhance the problem-solving ability through interactive classes.
2	BS-103	Engineering Mathematics-I	An effective knowledge of mathematics for all engineering students is a necessary requirement for the education of qualified engineering graduates capable both of innovation and of adaptation to changing technology. After completing the syllabus, Students can better understand the mathematical terms used to solve the engineering problems under different Conditions.
3	BS-105	Engineering Chemistry-1	It is essential that one has to understand the fundamentals of basic sciences before trying to learn their application in various branches. In framing the curriculum of chemistry, emphasis has been laid on the teaching of a bearing on the topics of various branches of engineering. With this object in view, some important fundamental topics of chemistry have been Included in this Syllabus.
4	ES-101	Engineering Graphics & Drawing	The objective of this course is to accurately and unambiguously capture all the geometric features of a product or a component and convey all the required information that will allow a manufacturer to produce that component.
5	ES-103	Fundamentals of Computers and Programming	To know the components of a Computer System, to understand basic Concepts of Operating System and Computer Networks, to have an overview of different types of operating systems like DOS, UNIX/LINUX Operating System, Windows XP, To have a thorough knowledge of various System Software and Programming languages, To study different kinds of Number system, To know the concepts of Problem Solving, To have a thorough knowledge of C language and its programming.
6	ES-105	Basics of Electrical Engineering	Students will be able to learn the fundamentals of Electrical Engineering in Circuit Analysis, Measurements & electrical machines. This will help students of all disciplines to understand the basics of Electrical Engineering.
7	ELGA-101	English Language and General Awareness-I	The course is specifically focused on laying a firm foundation for English language proficiency by helping students build a strong base in Grammar and vocabulary.

S. No.	Course Code	Course Title	Course Outcomes
Second Semester			
		Engineering Physics-II	The objective of this course is to give an understanding of the basic knowledge and

1	BS-102		impart quality education in physical sciences to the budding strengthen the skills measurements by exposing the students to well-equipped labs and enhance the problem solving interactive classes.
2	BS-104	Engineering Mathematics-II	The aim of the course is to solve the applications based on real industrial problems. Uncertainty is an essential feature of the engineering environment and for this reason the fields of probability and statistics are also included.
3	ES-102	Introduction to Environmental Sciences	This course will help students to develop an understanding of various environmental issues, Need for sustainable development, Solid waste disposal, Degradation of environment, Global warming, The depletion of ozone layer, Loss of biodiversity and various environmental law
4	ES-104	Introduction to CADD	The objective of this course is to introduce the students about howcomputer help in industrial designing, Basics of computer graphics, knowledgeabout AutoCAD software.
5	ES-106	Basics of Electronics Engineering	This course enables the students to understand the concept and behavior of passive electrical components in DC and AC circuits, Structure, Functionality and characteristics of electronic devices and their usage in designing analog and digital circuits. It also describes some advanced applications and how electronic circuits can interact with outside world.
6	ES-108	Basics of Mechanical Engineering	The main objective of the course is to understand and identify the problems related to mechanical engineering, which may come across to the students, Irrespective of any branch of engineering during their career. In present industrial scenario engineers of every field are employed, Therefore the students of every branch must know the basic concepts of mechanical engineering.
7	\ ELGA-102	English Language and General Awareness-II	The course aims at helping the students enhance their quality of English communication by developing an understanding of correct usage of words and phrases. It also helps them frame grammatically as well as logically correct sentences.

S. No.	Course Code	Course Title	Course Outcomes
Third Semester			
1	CSE-201	Data Structures and Algorithms	The objective of thiscourse is to facilitate the students with the basics of Data structure and different applications. After undergoing this course the students will have the understanding of various data structures either linear or non linear, Their applications, Related algorithms(sorting and searching)
2	CSE-203	Digital and Analog Communication	The objective of this course is to facilitate the student with the basics concept of digital communication and analog communication. After undergoing this course students will have the knowledge of communication system components, Data transmission system, Standards in data communications, Security in data communications, Different modulation technique and medium of communication.
3	CSE-205	Digital Electronics	The objective of the course is to facilitate the student with the basics knowledge of digital components, Different behaviors of gates, Designing using gates and latches & their applications.
4	CSE-207	Programming Methodology and File Structures	The objective of the course is to facilitate the student with the basics methodology of programming and various file structures. After undergoing this course student will be able to understand various programming concepts, Their applications , File structures and their storage and indexing, Hashing

			techniques.
5	CSE-209	Operating System Concepts	To know the components of an operating system, An overview of different types of operating systems, A thorough knowledge of process management, Knowledge of storage management and the concepts of I/O and file systems, To know basics of Unix system and Windows NT and get an overview of distributed system, Multiprocessor operating system and database operating system.
6	HS-201	Essentials of Management and Organizational Behavior	To help the students lay a foundation to an understanding of Management and Organizational behavior which are essential fields of study to make a success of both their professional and personal lives.
7	ELGA-201*	English Language and General Awareness-III	To help the students acquire the ability to develop a well-structured paragraph and also to provide them basic knowledge of issues relating to poverty in India.

S. No.	Course Code	Course Title	Course Outcomes
Fourth Semester			
1	CSE-202	Computer Organization and Architecture	The objective of the course is to facilitate the student with the basics architecture of Computer Organization and mother board. Study the I/O interaction, ALU, CPU and Interpretation
2	CSE-204	Object Oriented Programming in C++	The objective of the course is to facilitate the student with the knowledge of object oriented system development and programming in C++. After undergoing this course students have basic knowledge of encapsulation, Inheritance and Streams and Formatted I/O.
3	CSE-206	Website Design and Applications	The objective of the course is to facilitate the student with the basics knowledge web sites design and application of website. Study the HTML,DHTML and XML language with LAMP, MEAN, .NET & JAVA/JEEE WEB STACK TECHNOLOGY
4	CSE-208	Data base Management System	The objective of the course is to facilitate the student with the basics of Database management system. The scope of the subject is to acquire skills in the field of database design and study DML, DDL etc.
5	CSE-210	Computer Network	The objective of the course is to facilitate the student with the basics knowledge in networking field. Applications of LAN, WAN and MAN. Study the network hardware and application of OSI model.
6	HS-202	Fundamentals of Business & Economics	To provide the students a basic understanding of Business and Economics which are vital constituents of the overall professional environment of an Engineer.
7	ELGA-202*	English Language and General Awareness-IV	To help the students master the art of condensation this is an essential skill in technical communication and, through the General Awareness section, To sensitize the students on Human Development Index.

S. No.	Course Code	Course Title	Course Outcomes
Fifth Semester			
1	CSE-301	Internet technology and Network Programming	The objective of the paper is to facilitate the student with the basics concept of Internet technology and applications in modern age. Learn about the web pages ande-mail, FTP/IP, Network security and some brief introduction to network programming in java.
2	CSE-303	Design and Analysis of Algorithms	To know the components of a design and analysis of algorithm. An overview of different types of algorithms. A thorough knowledge of different tree and searching.
3	CSE-305	Programming Language Concepts	To know the components of a programming language and behavior of programming language. Study the elementary data types and formal syntax and semantic.
4	CSE-307	Microprocessors and Microcontrollers	To know the components of Microprocessor and microcontroller, Applications of micro controller, Study the architecture 8085/8086 and latest microprocessor.
5	CSE-309	Automata Theory	To know the basic components of Automata. Application of

			Turing machine. Method of pushdown automata and context free grammars.
6	CSE-311	Java Programming	To know the basic concept of java programming. Abstract class in java and data types. Application of java in website design
7	ELGA-301*	English Language and General Awareness-V	To facilitate the learning of the principles of writing effective formal and business letters and also to help them develop an understanding of the infrastructure development initiatives in the country

S. No.	Course Code	Course Title	Course Outcomes
Sixth Semester			
1	CSE-302	Multimedia technologies	To expose students to the concepts and issues of multimedia data acquisition, Communication and presentation technologies. The objective of the course is to facilitate the student with the idea of how multimedia content is processed the issues in transportation and the use of compression techniques needed wireless free space communications
2	CSE-304	Artificial intelligence and Robotics	To expose students to the concepts and issues of Artificial intelligence. The objective of the course is to facilitate the student with the idea of how AI and robots work and role of human interaction with basics of PROLOG and LISP language.
3	CSE-306	Compiler design	To expose students to the concepts and issues of compiler design in computer science. Application of Compiler tools, Concepts of languages and grammar.
4	CSE-308	Software Engineering	To expose students to the concepts and issues of software engineering and application of software design. The objective of the course is to facilitate the student with the idea of SDLC cycle models, Requirement analysis, Software project planning, Software design, Software reliability and testing.
5	CSE-310	Advanced Computer Architecture	To expose students to the concepts and issues of advanced computer architecture and application of design. The objective of the course is to facilitate the student with the idea of pipelining computer and array processor.
6	CSE-312	Computer Graphics and Image Processing	To expose students to the concepts and issues of computer graphics, Its basics, Graphic algorithms, Digital image fundamentals, Techniques for digital image processing, Compression techniques non-lossy as well as lossy, Morphology.
7	CSE-320	Seminar	The main objective is to know the current and future trends in computer science & engineering by delivering an independent seminar on any of the topics by each and every students.
8	ELGA-302*	English Language and General Awareness-VI	To help the students understand the nuances of technical writing that would enable them to communicate effectively and efficiently at their workplace, And, Through the General Awareness section, An overview of economic planning in India.

S. No.	Course Code	Course Title	Course Outcomes
Seventh Semester			
1	CSE-421	Departmental Elective-I MOBILE COMPUTING	The objective of the course is to facilitate the student with the basics problem in Wireless network. The scope of the course is to acquire skills in fields of Mobile Technology and apply its application
2	CSE-422	Departmental Elective-II CRYPTOGRAPHY & SECURITY IN NETWORK	The objective of the course is to facilitate the student with the understanding of various cryptographic techniques for secure data transfer. The prerequisites are to have basic understanding of network security, Probability and stochastic processes.
3	CSE-423	Departmental Elective-III E-COMMERCE	The objective of the course is to study e-commerce, Its advantages and disadvantages, Internet marketing, Legal issues, Ethical issues, Information systems, Macro forces and internal commerce.
4	CSE-424	Departmental Elective-IV	The objective of the paper is to study Fuzzy sets and application. Introduce neuro fuzzy system and Different modeling system.

		FUZZY SET THEORY AND APPLICATIONS	
5	OE-431	Open Elective-I REMOTE SENSING AND GIS	To equip students with the basic knowledge remote sensing data/ geographical information system and their usefulness in various civil engineering applications
6	OE-432	Open Elective-II NUMERICAL ANALYSIS AND OPTIMIZATION TECHNIQUES	The aim of the paper is to present a creation, analyzing, and implementation algorithms for obtaining numerical solutions to problems of calculus and selection of a best element (with regard to some criteria) from some set of available alternatives.

S. No.	Course Code	Course Title	Course Outcomes
Eighth Semester			
1	CSE-421/422	Industrial Training/Project	The main objectives are to provide comprehensive learning platform to students where they can enhance their employ ability skills and become job ready along with real corporate exposure and to enhance students' knowledge in one particular technology. And others aim are to Increase self-confidence of students and helps in finding their own proficiency, to cultivate student's leadership ability and responsibility to perform or execute the given task and To provide learners hands on practice within a real job situation.
2	CSE-450	Comprehensive Academic and General ProficiencyViva-Voce	the main objective of this course is to prepare the students to face interview both at the academic and the industrial sector.

C. Program Outcomes (POs) for M. Tech (Computer Science & Engineering)

The main outcomes of the M.Tech (CSE) program are given here. At the end of the program a student is expected to have:

1. An understanding of the theoretical foundations and the limits of computing.
2. An ability to adapt existing models, techniques, algorithms, data structures, etc. for efficiently solving problems.
3. An ability to design, develop and evaluate new computer based systems for novel applications which meet the desired needs of industry and society.
4. Understanding and ability to use advanced computing techniques and tools.
5. An ability to undertake original research at the cutting edge of computer science & its related areas.
6. An ability to function effectively individually or as a part of a team to accomplish a stated goal.
7. An understanding of professional and ethical responsibility.
8. An ability to communicate effectively with a wide range of audience.
9. An ability to learn independently and engage in life¬long learning.
10. An understanding of the impact of IT related solutions in an economic, societal and environment context

D. Course Outcomes (COs) for M. Tech (Computer Science & Engineering)

S. No.	Course Code	Course Title	Course Outcomes
First Semester			
1	CSE-411	Advanced Data Structures and Algorithms	the students will be able to : design and analyze programming problem statements. choose appropriate data structures and algorithms, understand the ADT/libraries, and use it to design algorithms for a specific problem. understand the necessary mathematical abstraction to solve problems. come up with analysis of efficiency and proofs of correctness comprehend and select algorithm design approaches in a problem specific manner.
2	CSE-412	Computer Networks	To master the terminology and concepts of the OSI reference model and the TCP-IP reference model. To master the concepts of protocols, network interfaces, and design /performance issues in local area networks and wide area networks, To be familiar with wireless networking concepts, To be familiar with contemporary issues in networking technologies, To be familiar with network tools and network programming
3	CSE-413	Advanced Software Engineering	understand and adhere to professional ethical standards in the system development and modification process, especially by accepting responsibility for the consequences of design decisions and design implementations the ability to build and configure major operating system components the ability to analyze and implement solutions to complex problems involving computers and networks the ability to work effectively in teams a solid understanding to the methods of modern software engineering
4	CSE-414	Security in Computing	students will: have internalized the fundamental notions of threat, vulnerability, attack and countermeasure. be able to identify the security goals of an information system, point out contradictory goals and suggest compromises. have a theoretical understanding of the principles underlying cryptography and cryptanalysis and have a technical understanding of the main cryptographic concepts and technologies available today, including symmetric and asymmetric encryption, hashing, and digital signatures. understand the purpose of security protocols and be witness to the difficulties of their verification. understand how malicious code functions (e.g., viruses), what the vulnerabilities that make propagation possible (e.g., buffer overflows), and what methods and practices are available for mitigation (e.g., the Common Criteria). explain the main authorization mechanisms in an operating system and discuss recent developments including trusted computing and digital rights management. understand the threats and vulnerabilities that are specific of a networked environment, and explain countermeasures including firewalls and intrusion detection systems. have an understanding for the vulnerabilities brought about by modern web-based application and services, and discuss countermeasures. have an appreciation for the concerns of privacy and some of the approaches to fend them off.

			understand and model the economics of cybersecurity. understand and abide by the legal framework that govern computer and information systems. balance their knowledge of attack and defense mechanisms against the ethical and social norms of society, and act responsably.be able to communicate clearly and effectively ideas, concepts and intentions within the field of computer security, namely be able to describe technical concepts clearly, so as to be readily understood by their peers. be able to give an individual presentation on a technical subject to audience of peers within the discipline of Computer Security. form a cogent, logical argument asserting and reiterating all technical concepts that lie within the bounds of the taught curriculum or their research within that curriculum. be able to assess and critique references to computer security appearing in newspapers and magazine articles, in movies and in documentaries.
5	CSE-511/512/513	Elective–I mobile adhoc and sensor network	Students will be able to describe an adhoc network and analyze various technologies associated with it. Students will be able to analyze various transport layer and analyze various protocols associated with it. Students will apply this knowledge to analyze adhoc & sensor based networks and compute various parameters associated with it..
6			

S. No.	Course Code	Course Title	Course Outcomes
Second Semester			
1	CSE-421	Software Architecture	Argue the importance and role of software architecture in large-scale software systems. Design and motivate software architecture for large-scale software systems. Recognise major software architectural styles, design patterns, and frameworks. Describe a software architecture using various documentation approaches and architectural description languages. Generate architectural alternatives for a problem and selection among them. Use well-understood paradigms for designing new systems. Identify and assess the quality attributes of a system at the architectural level. Motivate the architectural concerns for designing and evaluating a system's architecture. Discuss and evaluate the current trends and technologies such as model-driven and service-oriented architectures. Evaluate the coming attractions in software architecture research and practice
2	CSE-422 X	Advanced Database Systems	students should be able to: explain and evaluate the fundamental theories and requirements that influence the design of modern database systems assess and apply database functions and packages suitable for enterprise database development and database management critically evaluate alternative designs and architectures for databases and data warehouses discuss and evaluate methods of storing, managing and interrogating complex data explain and critically evaluate database solutions for data exchange analyse the background processes involved in queries and transactions, and explain how these impact on database operation and design
3	CSE-423	Mobile Computing	the student will be able to demonstrate: A working understanding of the characteristics and limitations of mobile hardware devices including their user-interface modalities The ability to develop applications that are

			mobile-device specific and demonstrate current practice in mobile computing contexts. A comprehension and appreciation of the design and development of context-aware solutions for mobile devices. An awareness of professional and ethical issues, in particular those relating to security and privacy of user data and user behavior.
4	CSE-424	Data Mining and Data Warehousing	The candidate will get knowledge of: Data preprocessing and data quality. Modeling and design of data warehouses. Algorithms for data mining.
5	CSE-521/522/523	Elective–II Soft Computing	To understand the fundamental theory and concepts of neural networks, neuro-modeling, several neural network paradigms and its applications. To understand the concepts of fuzzy sets, knowledge representation using fuzzy rules, approximate reasoning, fuzzy inference systems, and fuzzy logic control and other machine intelligence applications of fuzzy logic. To understand the basics of an evolutionary computing paradigm known as genetic algorithms and its application to engineering optimization problems.

S. No.	Course Code	Course Title	Course Outcomes
Third Semester			
1	CSE-431	Distributed Computing System	To demonstrate knowledge of the basic elements and concepts related to distributed system technologies; To demonstrate knowledge of the core architectural aspects of distributed systems; To design and implement distributed applications; To demonstrate knowledge of details the main underlying components of distributed systems (such as RPC, file systems); To use and apply important methods in distributed systems to support scalability and fault tolerance; To demonstrate experience in building large-scale distributed applications.
2	CSE-432	High Performance Computer Architecture	Understand the architecture of modern CPU's and how this architecture influences the way programs should be written. Optimize all aspects in the processes of programming: from compilation, starting and running program by OS, executing (parallel) instructions by CPU, to writing output to disk. Write numerical software, that exploits the memory hierarchy of aCPU, to obtain a code with close to optimal performance. Analyze an existing program for OpenMP and MPI parallelization possibilities. Evaluate the possibilities of accelerators to speed up computational work.
3	CSE-433	Seminar	The main objective is to know the current and future trends in computer science &engineering by delivering an independent seminar on any of the topics by each and every students.
4	CSE-434	Minor Project	After successful completion of this course student will be able to: acquire practical knowledge within the chosen area of technology for project development identify, analyze, formulate and handle programming projects with a comprehensive and systematic approach contribute as an individual or in a team in development of technical projects develop effective communication skills for presentation of project related activities
5	CSE-xxx	Research Methodology	assess critically the following methods: literature study, case study, structured surveys, interviews, focus groups, participatory approaches, narrative analysis,

			cost-benefit analysis, scenario methodology and technology foresight. Critically assess research methods pertinent to technology innovation research.

S. No.	Course Code	Course Title	Course Outcomes
Fourth Semester			
1	CSE-441	Dissertation	Students should expect to achieve the following outcomes: Recognize the importance of planning and preparation required to undertake a research project. Develop a thorough understanding of the chosen subject area. Demonstrate the ability to collate and critically assess/interpret data. Develop an ability to effectively communicate knowledge in a scientific manner. Provide recommendations based on research findings.