

COMPUTER SCIENCE AND ENGINEERING

Program Outcomes of Computer Science and Engineering:

Students are expected to have developed the following outcomes at the end of the B.Tech (Computer Science and Engineering) program.

1. **PO1-Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **PO2-Problem analysis:** Identity, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using the first principles of mathematics, natural sciences, and engineering sciences.
3. **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 public health and safety, and cultural, societal, and environmental considerations.
4. **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.
5. **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.
6. **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.
7. **PO7-Environment and sustainability:** Understand the impact of professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **PO8-Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **PO9-Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **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.
11. **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.
12. **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.

Programme Educational Objectives (PEOs)

The educational objectives of **Computer Science and Engineering** are:

- ❖ **PEO1:** High-level attainment of key principles and practices of computation, mathematics and basic principles of engineering to ensure that graduates are able to apply their software development skills in design and implementation of practical systems consisting of software and/or hardware components.
- ❖ **PEO2:** Analyze real-life problems and impart science-based engineering education to develop professional skills that will prepare the students for immediate employment in the industry. Graduates will be actively engaged in learning, understanding, design and applying new ideas and technologies as the field evolves along with participation in creative, synthetic and integrative activities of the relevant branch of engineering.
- ❖ **PEO3:** Excellence in professionalism, moral and ethical conduct, understanding of social context and interpersonal skills with adaptable communication to develop a global view among graduates so that they can appreciate diversity in the world and in intellectual pursuits.

Programme-Specific Outcomes (PSOs):

Students should be able to

- ❖ **PSO1:** Apply the fundamentals of mathematics, science and engineering knowledge to understand, analyze and develop computer programs in the areas related to algorithms, multimedia, big data analytics, machine learning, artificial intelligence and networking for efficient design of computer-based systems of varying complexity.
- ❖ **PSO2:** Apply appropriate techniques and modern engineering hardware and software tools for the design and integration of computer system and related technologies, to engage in lifelong learning for the advancement of technology and its adaptation in multi-disciplinary environments.
- ❖ **PSO3:** Implementation of professional engineering solutions for the betterment of society keeping the environmental context in mind, be aware of professional ethics and be able to communicate effectively.

Programme Outcome (PO's) of M.Tech in Computer Science and Engineering:

- ❖ **PO1:** An ability to independently carry out research/investigation and development work to solve practical problems.
- ❖ **PO2:** An ability to write and present a substantial technical report/document.
- ❖ **PO3:** Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program.

Programme Educational Objectives (PEOs) of PG in Computer Science and Engineering

- ❖ **PEO 1:** To develop professionals with strong theoretical fundamentals and practical skills.
 - ❖ **PEO 2:** To enable graduates to acquire research and development competence to sustain in academia, research, and industry.
 - ❖ **PEO 3:** To keep abreast with the latest area & Research in Computer Science and Engineering and its applications in all allied areas, particularly, artificial intelligence and Machine learning.
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