

CIVIL ENGINEERING

Program Outcomes of Civil Engineering:

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

1. **Engineering knowledge:** Graduates can apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to Civil Engineering related problems.
2. **Problem analysis:** An ability to identify, formulate, review research literature, and analyze Civil engineering problems reaching substantiated conclusions using principles of mathematics and engineering sciences.
3. **Design/development of solutions:** An ability to plan, analyze, design, and implement engineering problems and design system components or processes to meet specified needs.
4. **Conduct investigations of complex problems:** An ability to 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. **Modern tool usage:** An ability to 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. **The engineer and society:** An ability to apply contextual knowledge to assess societal, and legal issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** An ability to understand the impact of professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** An ability to apply ethical principles and commit to professional ethics, responsibilities, and norms of the engineering practice.
9. **Individual and team work:** An ability to function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings to accomplish a common goal.
10. **Communication:** An ability to communicate effectively on engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, and make effective presentations
11. **Project management and finance:** Ability to 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. **Life-long learning:** An ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Educational Objectives (PEOs)

The educational objectives of **Civil Engineering** are:

- ❖ **PEO1** To impart science-based engineering education to develop professional skills that will prepare the students for immediate employment in relevant branch of engineering in industry as against the model that just prepares them for post-graduate education.
- ❖ **PEO2** To develop human potential to its fullest extent so that intellectually capable and imaginatively gifted leaders can emerge in range of professions.
- ❖ **PEO3** To develop among students the awareness of and the competence to be savvy users of information technology.
- ❖ **PEO4** To develop among students the ability to work with others, in professional and social settings.
- ❖ **PEO5** To develop a global view among students so that they can appreciate diversity in the world and in intellectual pursuits and the desire and ability to keep learning throughout life.

Program-Specific Outcomes (PSOs)

1. Development of professional skills in the area of Structural Engineering, Water Resources Engineering, Transportation Engineering, Environmental Engineering, Geotechnical Engineering, Geo-informatics & Remote sensing, and Construction techniques & management.
2. Application of relevant aspects of mathematics in engineering analysis and design.
3. Refurbishing of technical communication skills.
4. Application of these principles and practices to problems related to Civil Engineering and other allied technical & industrial fields.

Programme Outcome (PO's) of M.Tech in Transportation Engineering:

- ❖ **PO1:** Demonstrate skill for planning, design, construction, and maintenance of transportation projects.
- ❖ **PO2:** Assessment of environmental and its allied issues to the construction of the transportation projects
- ❖ **PO3:** Demonstrate skills to use modern engineering tools, software and equipment to analyze problems and evolve solutions
- ❖ **PO4:** To enhance communication skills and successfully apply research aptitude among students to R &D activities and consultancy works.

Programme Educational Objectives (PEOs) of PG in Transportation Engineering

The educational objectives of the postgraduate program in Transportation Engineering are:

- ❖ **PEO1:** To have a thorough knowledge of planning, design, construction, maintenance, upgradation, and operation of the highways/Transportation Infrastructure
- ❖ **PEO2:** To develop innovative capability among students using modern equipment and the latest software so as to inculcate in them the ability to participate in creative and integrative activities in their relevant branch.
- ❖ **PEO3:** To create research aptitude among the students in the field of transportation engineering and its interdisciplinary areas.