Vision and Mission of the Institute, Department, POs, PSOs & PEOs of the Department

DEPARTMENT OF CIVIL ENGINEERING

Vision of the Institute

To be a leading educational institute that offers quality technical education and social consciousness to produce competent engineers for the well-being of society.

Mission of the Institute

- To become a premier institute transforming aspiring engineers through quality, skill-based technical education.
- To foster a social mindset by means of community involvement programs.
- To develop competent engineers with an ability to meet intellectual and career challenges.

Vision of the Department

- To be a department of excellence that produces engineers with high technical competencies to meet the current and future challenges in civil engineering.

Mission of the Department

- To produce graduates of high caliber, technical skills and ethical values to serve the society and nation.
- To promote innovative and original thinking in the minds of budding engineers to face future challenges.
- To provide knowledge base and consultancy services to the society.

Program Outcomes (POs) (UG)

Civil engineering graduates will be able to:

1.Apply knowledge of mathematics, natural science, computing, engineering fundamentals and an engineering specialization as specified in WK1 to WK4 respectively to develop the solution of complex engineering problems.

2.Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions with consideration for sustainable development. (WK1 to WK4).

3.Design creative solutions for complex engineering problems and design/develop systems/components/processes to meet identified needs with consideration for the public health and safety, whole-life cost, net zero carbon, culture, society and environment as required. (WK5).

4.Conduct investigations of complex engineering problems using research-based knowledge including design of experiments, modelling, analysis & interpretation of data to provide valid conclusions. (WK8).

5. Create, select and apply appropriate techniques, resources and modern engineering & IT tools, including prediction and modelling recognizing their limitations to solve complex engineering problems. (WK2 and WK6).

6.Analyze and evaluate societal and environmental aspects while solving complex engineering problems for its impact on sustainability with reference to economy, health, safety, legal framework, culture and environment. (WK1, WK5, and WK7).

7.Apply ethical principles and commit to professional ethics, human values, diversity and inclusion; adhere to national & international laws. (WK9).

8.Function effectively as an individual, and as a member or leader in diverse/multi-disciplinary teams.

9.Communicate effectively and inclusively within the engineering community and society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations considering cultural, language, and learning differences.

10.Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects and in multidisciplinary environments.

11.Recognize the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change. (WK8)

Program Educational Objectives (PEOs) (UG)

The objectives of the Civil engineering undergraduate program are:

PEO1: Core Competency and Professional Excellence

Graduates will establish themselves as successful Civil Engineering professionals by applying their technical knowledge, problem-solving abilities, and ethical values in planning, designing, and executing infrastructure projects that meet societal needs.

PEO2: Higher Education and Lifelong Learning

Graduates will pursue advanced education, research, or professional development to stay current with emerging trends, technologies, and practices in Civil Engineering and related interdisciplinary fields.

PEO3: Leadership and Social Responsibility

Graduates will demonstrate leadership, teamwork, effective communication, and a commitment to sustainable development by engaging in projects that contribute to environmental conservation and the betterment of society.

Program Specific Outcomes (PSOs) (UG)

At the end of this program, graduate will be able to:

PSO 1: Application of Core Civil Engineering Principles

Graduates will be able to apply fundamental concepts of structural analysis, geotechnical engineering, transportation systems, water resources engineering, and environmental engineering to design and develop sustainable and efficient civil infrastructure.

PSO 2: Proficiency in Modern Tools and Techniques

Graduates will be proficient in using modern tools & Software's for planning, analysis, design, and execution of Civil Engineering projects in compliance with safety, environmental, and ethical standards.

PSO 3: Problem Solving and Project Execution Skills

Graduates will demonstrate the ability to identify, analyze, and solve real-world Civil Engineering problems and effectively manage construction projects, incorporating principles of design thinking, innovations, and lifelong learning.

Program Outcomes (POs) (PG)

Students are expected to know and be able to:

1. Apply in-depth knowledge to evaluate and analyse complex engineering problems **critically**.
2. Find feasible and optimal **solutions** of complex engineering problems by considering societal and environmental factors.
3. Extract information to unfamiliar problems through **researching** the literature, apply suitable research methodology, techniques and tools for the development of projects, its finance and management.
4. Adapt the usage of **modern tools**, software and to keep in touch with current technologies and inculcate investigative culture, to complex engineering activities with an understanding of limitations.
5. Develop research attitude and **multidisciplinary** approach to demonstrate a capacity for self-management and teamwork to achieve common goals.

Program Educational Objectives (PEOs) (PG)

The objectives of the civil engineering postgraduate program are:

1. To prepare graduates who will achieve peer-recognition; as an individual or in a team; through demonstration of **good analytical, design and implementation skills**

2. To prepare graduates to become **effective collaborators and innovators** and lead or participate in efforts to address social, technical and business challenges.

Program Specific Outcomes (PSOs) (PG)

Students are expected to know and be able to:

1. Understand, analyse and design earthquake and fire-resistant structures
2. Understand and apply various retrofitting techniques for structures damaged by seismic activities.