

# DEPARTMENT OF MECHANICAL ENGINEERING

## B.Tech. (Mechanical Engineering)

### PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

- To prepare students for successful careers as mechanical engineers in organizations that meet the needs of Indian and global/multinational industrial/research establishments.
- To provide a strong foundation in mathematical, scientific and engineering fundamentals in both domain and cross domain spheres, that enables students to visualize, analyze and solve mechanical engineering problems and be innovative and research oriented.
- To train students with a wide spectrum of scientific and engineering courses so that students could comprehend, analyze, design and create products and services that address real life problems, which are efficient and cost effective.
- To inculcate in students a professional and ethical attitude, impart effective communication skills and ability to work in teams with multidisciplinary approach, be part of and interact with professional bodies so as to resolve engineering issues of social relevance.
- To provide students with an academic environment that fosters excellence, leadership, yearning to pursue higher studies and passion for lifelong learning so as to have a successful professional career.

### PROGRAM OUTCOMES (POs)

- **Engineering knowledge:**

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

- **Problem analysis:**

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

- **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.

- **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.

- **Modern tool usage:**

Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

- **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.

- **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.

- **Ethics:**

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

- **Individual and team work:**

Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

- **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.

- **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.

- **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.

## **PROGRAM SPECIFIC OUTCOMES (PSOs)**

- Analyze, design, evaluate and provide solutions to the real life mechanical engineering problems.
- Design and evaluate thermal systems including IC engines, refrigeration, air conditioning, and power generating systems.
- Engage in Planning, including methods design, process plan, process automation, and quality assurance systems to ensure optimization in manufacturing.
- Innovate on product design and development using modern management methods in manufacturing.