

DEPARTMENT OF MECHANICAL ENGINEERING

Program Educational Objectives (UG)

The objectives of the Mechanical Engineering **undergraduate program** are:

1. To prepare students with sound knowledge in mathematical, scientific and engineering fundamentals so as to enable them to have successful career in Mechanical Engineering (*Pre-preparation*).
2. To prepare students to adopt to emerging technologies in Mechanical Engineering (*Core Competence*).
3. To enable students to deploy their knowledge and skills in multidisciplinary fields (*Breadth*).
4. To inculcate professional attributes and ethics to work in team (*Professionalism*).

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Program Outcomes (POs):

Engineering Graduates will be able to:

1. Apply the **knowledge** of mathematics, science, and mechanical engineering fundamentals to the solution of complex engineering problems.
2. Identify, formulate, review research literature, and **analyze complex engineering problems** reaching substantiated conclusions using first principles of mathematics, natural and mechanical engineering sciences.
3. **Design and develop solutions** for complex mechanical engineering problems and design system components or processes to meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems** using 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. **Create, select, and apply** appropriate techniques, resources, and modern mechanical **engineering tools** such as CAD, CAM and CAE including prediction and modeling to complex mechanical engineering activities with an understanding of the limitations.
6. **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 mechanical engineering practice.
7. Understand the **impact of the mechanical engineering solutions** in **societal and environmental contexts**.
8. **Apply ethical principles** and commit to professional ethics and responsibilities and norms of the mechanical engineering practice.
9. **Function effectively as an individual**, and as a **member** or leader in diverse teams, and in multidisciplinary settings.
10. **Communicate effectively** on mechanical engineering activities with the engineering community and with society at large.
11. Demonstrate knowledge and **understanding of 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. 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.

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Program Specific Outcomes (PSOs):

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

1. **Apply and interpret** the acquired Mechanical Engineering knowledge for the **advancement** of society, by imparting technological inputs and managerial skills to become Technocrats and Entrepreneurs.
2. **Develop and implement new ideas** on product design and development with the help of modern mechanical engineering tools, while ensuring best manufacturing practices.

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Program Educational Objectives (PG)

The objectives of the Mechanical 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. Graduates will have become **effective collaborators and innovators**, leading or participating in efforts to address social, technical and business challenges.

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Program Outcomes (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.

Department of Mechanical Engineering

Program Specific Outcomes (PG)

Students are expected to know and be able to:

1. **Understand, analyse and provide solution** to problems in the field of design, optimization and vibration.
2. **Use** relevant research methodology, techniques and tools for solution to complex engineering problems.