

DEPARTMENT OF MECHANICAL ENGINEERING

Vision

To be the centre for excellence and centre of learning for innovation, incubation and research in the domain of product design, thermal engineering and manufacturing technology thereby path finder for professionalism, entrepreneurship and new knowledge contributing to the common masses.

Mission

To educate and train undergraduate and post graduate students in Mechanical Engineering by inculcating the values for discipline, quality and transparency and profession development in the job and self-employment emphasis industry based practices.

Program Education Objectives (PEO's)

PEO1: To prepare technocrats that can satisfy the need of mechanical and allied industries.

PEO2: To develop critical thinking, problem solving skills, research aptitude and career and professionalism among the students.

PEO3: To improve and expand technical and professional skills of students through effective teaching-learning and industry interaction.

Programme Outcomes

PO1	Engineering Knowledge: Apply knowledge of mathematics, natural science, computing, engineering fundamentals and an engineering specialization to develop to the solution of complex engineering problems.
PO2	Problem Analysis: Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions with consideration for sustainable development.
PO3	Design/Development of Solutions: 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.
PO4	Conduct Investigations of Complex Problems: Conduct investigations of complex engineering problems using research-based knowledge including design of experiments, modelling, analysis & interpretation of data to provide valid conclusions.
PO5	Engineering Tool Usage: Create, select and apply appropriate techniques, resources and modern engineering & IT tools, including prediction and modelling recognizing their limitations to solve complex engineering problems.
PO6	The Engineer and The World: 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.
PO7	Ethics: Apply ethical principles and commit to professional ethics, human values, diversity and inclusion; adhere to national & international laws.
PO8	Individual and Collaborative Team work: Function effectively as an individual, and as a member or leader in diverse/multi-disciplinary teams.
PO9	Communication: 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.
PO10	Project Management and Finance: 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.

PO11	Life-Long Learning: 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.
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Program Specific Outcomes(PSO's)

PSO1	Ability to design, analysis and problem solving skills using basic principle of mechanical engineering.
PSO2	Ability to impart technical and professional skills through industry institute interaction.
PSO3	Develop practical skills for the benefits of society.

Course Outcomes

Second Year (S.Y.B.Tech) Subjects Course Outcomes (Autonomous 2024 course)

Semester – III

After completion of course student will be able to,

Subject Code	Engineering Thermodynamics (101301)
C201.1	Describe the fundamental concepts of thermodynamics with energy interactions in thermodynamic systems
C201.2	Apply the Laws of thermodynamics to processes and cycles.
C201.3	Determine changes in thermodynamic properties of substances.
C201.4	Examine the properties of steam and their effect on the performance of vapour power cycle.
C201.5	Analyze the fuel combustion process and determine boiler performance.

After completion of course student will be able to,

Subject Code	Solid Mechanics (101302)
C202.1	Calculate stress and strain developed on determinate and indeterminate members.

C202.2	Determine Shear force and bending moment and draw SFD & BMD for various types of transverse loading.
C202.3	Compute the bending stresses, shear stresses and Torsional stresses on a beam.
C202.4	Calculate slope and deflection on beam
C202.5	Determine stresses on a 2-D element by applying the concept of principal stresses; analyze failure of members using different theories of failure.

After completion of course student will be able to,

Subject Code	Material Science and Metallurgy (101303)
C203.1	Determine Miller indices and identify imperfections in crystal and non-ferrous materials.
C203.2	Determine mechanical properties using destructive and non-destructive testing of materials.
C203.3	Interpret iron carbon diagram.
C203.4	Apply the knowledge of heat treatment to study various phases of materials.
C203.5	Discuss the effects of alloying elements on ferrous.

After completion of course student will be able to,

Subject Code	Multi-Disciplinary Minor Course-1 (170304/170404) Engineering Mathematics – III (170304A)
C204.1	Solve higher order linear differential equations using appropriate techniques.
C204.2	Apply Laplace transform and Z-Transform to solve differential equations, difference equations.
C204.3	Apply vector calculus concepts to analyze problems and solve system of linear equations by using numerical methods.
C204.4	Analyze discrete and continuous random variables using Binomial, Poisson and Normal distributions.
C204.5	Analyze data through hypothesis tests like Chi-square and t-tests

After completion of course student will be able to,

Subject Code	Open Elective Course-1 IPR and Ethics (171305A)
C205A.1	Understand the basics of intellectual property rights.
C205A.2	Learn the patent filing process.
C205A.3	Understand the copyright/trademark/industrial design and filing process.
C205A.4	Understand the importance of ethics in their personal and professional life.
C205A.5	Learn the workplace responsibilities and rights as an engineer in the industry.

After completion of course student will be able to,

Subject Code	Open Elective Course-1 Renewable Energy (171305B)
C205B.1	Describe the basics of renewable energy
C205B.2	Explain the constructional details and working of hydro-electric power plant
C205B.3	Describe the fundamentals and technology to harness solar energy
C205B.4	Explain the wind energy conversion system
C205B.5	Discuss the bio-energy conversion pathways