

Programme Outcome (POs)

Engineering Graduates will be able to:

PO1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3. 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.

PO4. 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.

PO5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6. 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.

PO7. 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.

PO8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10. 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.

PO11. 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.

PO12. 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.

Programme Specific Outcomes (PSOs)

PSO1. Apply the knowledge gained in Mechanical Engineering for design and development and manufacture of engineering systems.

PSO2. Apply the knowledge acquired to investigate research-oriented problems in mechanical engineering with due consideration for environmental and social impacts.

PSO3. Use the engineering analysis and data management tools for effective management of multidisciplinary projects.

Program Educational Objectives (PEOs) of B.Tech Mechanical Engineering

PEO1: Engineers will practice the profession of engineering using a systems perspective and analyze, design, develop, optimize & implement engineering solution and work productively as engineering, including supportive and leadership roles on multidisciplinary teams.

PEO2: Continue their education in leading graduate programs in engineering & interdisciplinary areas to emerge as researchers, experts, educators & entrepreneurs and recognize the need for, an ability to engage in continuing professional development and life-long learning.

PEO3: Engineers, guided by the principles of sustainable development and global interconnectedness, will understand how engineering projects and affect society and the environment.

PEO4: Promote Design, Research and implementation of products and services in the field of Engineering through strong Communication and Entrepreneurial skills.

PEO5: Re-learn and innovate in ever-changing global economic and technological environments of the 21st century.

Mechanical Engineering

Course Outcomes:

Course code: ME 301

Course Title: THERMODYNAMICS

1. After completing this course, the students will be able to apply energy balance to systems and control volumes, in situations involving heat and work interactions.
2. Students can evaluate changes in thermodynamic properties of substances.
3. The student will be able to evaluate the performance of energy conversion devices.
4. The students will be able to differentiate between high grade and low grade energies.

Course Code: ME302

Course Title: FLUID MECHANICS

After learning the course the students should be able to: Understand the basic concept of fluid mechanics.

1. Understand statics, dynamics and various approaches to fluid mechanics.
2. Understand fundamentals of flow through pipes.
3. Understand basics of compressible flow.
4. Correlate fundamentals of fluid mechanics with various mechanical systems.

Course code: ME 303

Course Title: STRENGTH OF MATERIALS

1. After completing this course, the students should be able to recognize various type of load applied on machine components of simple geometry and understand the nature of internal stresses that will develop within the components.
2. The students will be able to evaluate the strains and deformation that will result due to the elastic stresses develop within the material for simple type of loading.

Course code: MT 301

Course Title: MATERIAL ENGINEERING

At the end of this course, the students would be able to :

1. Select different materials other than conventional metals and alloys for specific engineering applications.
2. To solve the materials problems associated with the weight reduction through the appropriate choice of metals, polymers, ceramics and composites.
3. Selection criterion for polymers and composites for various engineering applications.
- 4.

Course code: ME 402

Course Title: THEORY OF MACHINE

1. After completing this course, the students can design various types of linkage mechanism for obtaining specific motion and analyze them for optimal functioning.
- 2.

Course code: ME 402

Course Title: APPLIED THERMODYNAMICS

1. 1 After completing this course the students will get a good understanding of various practical power cycles and heat pump cycles.
2. They will be able to analyze energy conversion in various thermal devices such as combustors, air coolers, nozzles, diffusers, steam turbines and reciprocating compressors.
3. They will be able to understand phenomena occurring in high speed compressible flows.

Course code: PE 401

Course Title: MANUFACTURING PROCESSES I

1. Upon completion of this course, students will be able to understand the different conventional and unconventional manufacturing methods employed for making different products
- Objectives.

Course code: ME501
Course Title: HEAT TRANSFER

1. After completing the course, the students will be able to formulate and analyze a heat transfer problem involving any of the three modes of heat transfer.
2. The students will be able to obtain exact solutions for the temperature variation using analytical methods where possible or employ approximate methods or empirical correlations to evaluate the rate of heat transfer.
3. The students will be able to design devices such as heat exchangers and also estimate the insulation needed to reduce heat losses where necessary.

Course code: ME502
Course Title: DESIGN OF MACHINE ELEMENTS

1. Upon completion of this course, students will get an overview of the design methodologies employed for the design of various machine components

Course code: ME503
Course Title: INTERNAL COMBUSTION ENGINES

1. Students who have done this course will have a good idea of the basics of IC engines.
2. They will have good knowledge of different parameters influence the operational characteristics of IC Engines.
3. Students will have good idea about different operational parts of IC Engines.
4. They will have understand the functions of fuel combustion of IC Engines.
5. They will have the good knowledge about designing and modifying the IC engines.

Course code: ME504
Course Title: INDUSTRIAL ROBOTICS

1. Understand the basic components of robots.
2. Differentiate types of robots and robot grippers.
3. Model forward and inverse kinematics of robot manipulators.
4. Analyze forces in links and joints of a robot.
5. Programme a robot to perform tasks in industrial applications.
6. Design intelligent robots using sensors.

Course code: ME505

Course Title: DESIGN FOR MANUFACTURING

1. Understand the design principles of design for manufacturing processes
2. Estimates the cost of dies, molds and machined components based on die life.
3. Understand the design for manual assembly and automated assembly.
4. Design typical assemblies using principles of design for X concepts.
5. Understand the design rules for machining with single point and multi point cutting tools.

Course code: ME509

Course Title: Total Quality Management

1. Understand the importance of quality and its assurance.
2. Analyze quality statements, customer focus and market plan.
3. Evaluate quality based products & methods.
4. Develop tools, methodology for the assurance of quality.
5. Apply & use the tools and techniques of TQM in manufacturing and service sector.

Course code: ME601

Course Title: SOLID MECHANICS

Upon completion of this course, students will be able to:

1. Understand the deformation behavior of solids under different types of loading.
2. Find mathematical solutions for simple geometries under different types of loading.
3. Transform the state of stress from one set of co-ordinate axes to another set of co-ordinate axes.
4. Apply compatibility equation for different system of strain.
5. Find the mathematical solution for axisymmetric problem.
6. Understand the concept of elasticity and plasticity.
- 7.

Course code: ME602

Course Title: AUTOMOBILE ENGINEERING

Upon completion of this course, students will understand the function of each automobile component and also have a clear idea about the overall vehicle performance.

Course code: ME603

Course Title: DESIGN OF TRANSMISSION SYSTEM

Upon completing this course the students will be able to design transmission systems for engines and machines.

Course Code: ME605

Course Title: MECHATRONIC SYSTEMS

3. To understand the structure of microprocessors and their applications in mechanical devices
4. To know the use of various sensors and transducers
5. To understand the principle of automatic control and real time motion control systems, with the help of electrical drives and actuators
6. To know the static and dynamic characteristics of actuators
7. To understand the use of micro-sensors and their applications in various fields.

Course Code: ME 607

Course Title: OPERATIONS RESEARCH

Course Outcomes: After completion of the course, the learners will be able to:

- (1) Capability to recognize the importance and value of Operations Research and mathematical modeling.
- (2) Ability to formulate a managerial decision problem into a mathematical model;
- (3) Recognize Operations Research models and apply them to real-life problems;
- (4) Use various approaches to solve a mathematical model for various practical problems in industry.
- (5) Describe dynamic programming terminology.

Course Code: MEC701
Course Title: Automation in Manufacturing

1. Upon completion of this course, the students will get a comprehensive picture of computer based automation of manufacturing operations.

Course Code: MEP702
Course Title: Refrigeration and Air Conditioning

1. A student who has done the course will have a good understanding of the working principles of refrigeration and air-conditioning systems.

Course Code: MEP705
Course Title: Power Plant Engineering

1. Upon completion of the course, the students can understand the principles of operation for different power plants and their economics.

Course Code: MEO711
Course Title: Energy Systems and Management

Course Outcomes: At the end of the course, the student will be able to:

1. Understand principles of energy management and its influence on environment.
2. Comprehend methods of energy production for improved utilization.
3. Improve the performance of thermal systems using of energy management principles
4. Analyze the methods of energy conservation for air conditioning, heat recovery and thermal energy storage systems.
5. Evaluate energy projects on the basis of economic and financial criteria.

Course Code: MEO716
Course Title: Computer Aided Manufacturing

Out comes: Student will be able to:

1. Understand the current status of CAM systems in industry.
2. Learn the concepts of group technology, automation, FMS and CIM.
3. To write manual part programs using G and M codes for lathe and milling m/c.
4. To write APT part programs milling m/c.