

Department of Mechanical Engineering

B.E. 3rd Sem

Course: Mathematics- III

Course Code: (3ME01)

At the end of Mathematics-III course the student will be able:

- CO 1: To apply the fundamental concepts of Ordinary Linear Differential Equation by different methods.
- CO 2: To apply Laplace Transformation to special functions & solve second order differential equation with constant coefficients
- CO 3: To solve first, higher order Partial Differential Equations, Lagrange's Equation, Statistics and Probability Distributions.
- CO 4: To apply CR conditions, Cauchy's Integral Theorem, Singularity, expansion of function by using Taylor's and Laurent's Series.
- CO 5: To apply numerical methods to obtain approximate solutions of mathematical problems
- CO 6: To use Gradient of a scalar point function, Divergence and Curl of a vector point function and their physical meaning, Stokes and Divergence theorem.

Course: Manufacturing Process

Course Code: (3ME02)

At the end of Manufacturing Process course the student will be able:

- CO 1: To describe the concept of pattern, pattern materials, pattern making allowances and terminology of sand casting process.
- CO 2: To explain various melting furnaces and other casting processes
- CO 3: To explain the causes and remedies of casting defects, inspection and testing of the casting process.
- CO 4: To describe working principle and application of various deformation processes.
- CO 5: To Explain various joining processes.
- CO 6: To describe the working principle and application of various welding processes and surface treatment processes.

Course: Mechanics of Material

Course Code: (3ME03)

At the end of Mechanics of Material course the student will be able:

- CO 1: To understand the concepts of stress and strain at a point as well as the stress- strain

Relationships for Biaxial and triaxial loading.

- CO 2:** To calculate the deflections, bending moment and shear force for all types of Loadings of simply supported beams cantilevers beam and overhanging beam .
- CO 3:** To determine polar modulus stresses in solid & hollow circular shaft and power Transmitted by shaft, closed coiled helical spring with axial load.
- CO 4:** To calculate the stresses and strains associated with thin-wall spherical and cylindrical shell.
- CO 5:** To determine and illustrate principal stresses, maximum shearing stress, and the Stresses acting on a structural member.
- CO 6:** To analyze and apply deflection criteria to check the stability of beams

Course: Engineering Thermodynamics

Course Code: (3ME04)

At the end of Engineering Thermodynamics course the student will be able:

- CO 1:** Understand the basic concepts of Thermodynamics, thermodynamic systems, work and heat.
- CO 2:** Apply the first law of thermodynamics and application of the first law to non-flow processes.
- CO 3:** To understand the first Law of Thermodynamics, their applicability to steady flow systems and validity in lucid manner.
- CO 4:** Apply the second law of thermodynamics and understand the concept of entropy.
- CO 5:** Understand the properties of steam, work done and heat during various thermodynamic processes with steam as working fluid.
- CO 6:** understand the concept of air standard cycles.

Course: Fluid Mechanics

Course Code: (3ME05)

At the end of Fluid Mechanics course the student will be able:

- CO 1:** To identify the importance of various fluid properties at rest and in motion.
- CO 2:** To derive and apply general governing equations for various fluid flows.
- CO 3:** To understand the concept of boundary layer theory and flow separation.
- CO 4:** To calculate energy losses in pipe flow.
- CO 5:** To evaluate the performance characteristics of hydraulic jets.

B.E. 4th Sem

Course: Material Science

Course Code: (4ME01)

At the end of Material Science course the student will be able:

- CO 1:** To define the fundamental concepts of Engineering Metallurgy and to classify various materials.
- CO 2:** To describe the Iron Carbon Equilibrium diagram and concept of composite materials.
- CO 3:** To explain the effect of alloying elements on the properties of steel and composition of various alloy steels.
- CO 4:** To classify the various kinds of cast irons and nonferrous metals.
- CO 5:** To describe the different heat treatment processes for steel.
- CO 6:** To explain the methods of surface hardening and process of powder metallurgy

Course: Energy Conversion-I

Course Code: (4ME02)

At the end of Energy Conversion-I course the student will be able:

- CO 1:** To study different types of boilers, their mountings, accessories, performance of boilers and different efficiencies.
- CO 2:** To study the various fuel handling and ash handling system in power plant.
- CO 3:** To study various types of condensers and cooling towers and to study various thermodynamic aspects of flow of steam through nozzle and diffuser.
- CO 4:** To study flow of steam through steam turbines and the concept of compounding.
- CO 5:** To describe the working of a nuclear power plant and its components.
- CO 6:** To explain various renewable energy sources like solar, wind, biomass, MHD, Geothermal etc. and their importance for the present energy scenario.

Course: Manufacturing Technology

Course Code: (4ME03)

At the end of Manufacturing Process-II course the student will be able:

- CO 1:** To define the fundamental concepts of metal cutting and nomenclature of cutting tools.
- CO 2:** To classify the various types of lathe machines, and to explain its different mechanisms.
- CO 3:** To describe the various types of drilling, boring, broaching machines and their various operations.

CO 4: To explain the various types of milling machine and the concept of indexing mechanism.

CO 5: To describe various types of abrasives, bonds and the process of surface grinding.

CO 6: To classify the various types of unconventional machining processes and to describe their working principle and application.

Course: Basic Electrical Drives and Control

Course Code: (4ME04)

At the end of Basic Electrical Drives and Control course the student will be able:

CO 1: To select a proper drive system for a particular application based on power rating.

CO 2: To explain the concept, principle of operation and applications of DC and special motors.

CO 3: To describe the construction, types, principle of working and characteristics of AC motor.

CO 4: To explain the various speed control methods of AC and DC motors.

CO 5: To describe the construction, principle and function of various instruments.

CO 6: To classify the various duty cycles for different industrial applications.

Course: Hydraulic and Pneumatic Systems

Course Code: (4ME05)

CO 1: To design and analyze the performance on Peloton, Francis and Kaplan turbines.

CO 2: To design and analyze the performance of Centrifugal Pumps.

CO 3: To analyze working principles of various pumps like axial flow pump, jet pump, hydraulic Ram and fundamentals of computational fluid dynamics.

CO 4: To design and analyze the performance of reciprocating pumps, rotary pumps and its other functioning units.

CO 5: To understand the mechanics of compressible fluid flow.

CO 6: To evaluate hydrostatic system, hydrokinetic system and their applications in real life engineering problems.