



COURSE OUTCOMES

II YEAR-I SEM(NECR20)

Course Name: ENGINEERING MECHANICS

20ES1006	ENGINEERING MECHANICS
CO1	Compute the resultant of system of forces in plane and space acting on bodies.(BL-3)
CO2	Solve the mechanics problems associated with friction forces.(BL-3)
CO3	Determine the support-reactions and analyze the internal forces of the members of various Trusses and frames.(BL-4)
CO4	Calculate the location of centroid of composite areas.(BL-4)
CO5	Solve problems related to kinetics.(BL-3)

Course Name: THERMODYNAMICS

20ES1015	THERMODYNAMICS
CO1	Understand the concepts of system, control volume, thermodynamic properties, thermal equilibrium, work and heat. (BL-2)
CO2	Apply the laws of thermodynamics for different workstations.(BL-3)
CO3	Analyze the performance of steam power cycles .(BL-4)
CO4	Describe the available energy and irreversibility .(BL-3)
CO5	Measure the properties of pure substances and gas mixtures.(BL-3)

Course Name: FLUID MECHANICS AND HYDRAULIC MACHINES

20ME2001	FLUID MECHANICS AND HYDRAULIC MACHINES
CO1	Apply the concepts of fluid statics, fluid kinematics and fluid dynamics in solving the problems of fluid flows (BL-3)
CO2	Become conversant with concepts of flow through pipes, pitot tube, venturi meter, orifice meter, flow nozzle and turbine meter and able to describe them.(BL-1)
CO3	Illustrate the concepts of fluid jets on stationary and moving flat, inclined and curved vanes and also hydro power stations (BL-2)
CO4	Make use of the various concepts of water turbines for calculating the efficiencies and unit and specific quantities (BL-3)
CO5	Demonstrate the knowledge of working principles of centrifugal pumps (BL-2)

Course Name: MANUFACTURING PROCESSES

20ME2002	MANUFACTURING PROCESS
CO1	Introduce the basic concepts of casting, pattern preparation and gating system [BL-2]
CO2	Demonstrate different special casting processes and melting systems[BL-2]
CO3	Classify working of various welding processes,weld joint and their characteristics[BL-2]
CO4	Apply the principles of various gas welding and cutting processes[BL-3]
CO5	Outline the manufacturing methods of ceramics and powder metallurgy[BL-2]

Course Name: CAD&M LAB

20ES1514	CAD&M LAB
CO1	Study basic of CAD software and study basic concept of product design (BL-1)
CO2	Use the software package for drafting and modelling and explain representation of curves for real time applications. (BL-2)
CO3	Construct 2D models of Engineering Components (BL-3)
CO4	construct 3D models of Engineering Components (BL-3)

Course Name: FLUID MECHANICS AND HYDRAULIC MACHINES LAB

20ME2501	FLUID MECHANICS AND HYDRAULIC MACHINES LAB
CO1	Acquaint with Calibration of discharge measuring devices such as Venturi meter and Orifice meter.(BL-3)
CO2	Familiarize with measuring minor loss (sudden contraction) and major loss (Frictional factor) of a given pipe to calculate hydraulic Resistance.(BL-3)
CO3	Conduct an experiment to prove Bernoulli's Theorem and to find hydraulic thrust on vanes.(BL-3)
CO4	Gain practical experience in handling various hydraulic machines like Pelton wheel (BL-3)

Course Name: MANUFACTURING PROCESSES LAB

20ME2502	MANUFACTURING PROCESSES LAB
CO1	understand the importance of safety in metal casting technology[BL-2]
CO2	Apply Hands on experience on welding machine to perform welding and cutting operations[BL-3]
CO3	Demonstrate Press Working operations on jobs[BL-2]
CO4	select the proper tools to work on a machine for the type of part required[BL-4]



COURSE OUTCOMES

II YEAR-II SEM(NECR20)

Course Name: KINEMATICS OF MACHINERY

20ME2003	KINEMATICS OF MACHINERY
CO1	Identify different types of mechanisms and inversions of different kinematic chains. (BL-3)
CO2	Identify and enumerate different mechanisms with basic understanding of motion and machine. (BL-3)
CO3	Drawing velocity and acceleration diagrams for different mechanisms. (BL-4)
CO4	Apply the knowledge of gears to Calculate pitch, module, number of teeth, path of contact for meshing gears. (BL-3)
CO5	Selecting gear and gear train depending on application. (BL-4)

Course Name: MECHANICS OF MATERIALS

20ME2004	MECHANICS OF MATERIALS
CO1	Explain the fundamentals of Stress and Elastic Constants.(BL-2)
CO2	Illustrate shear force and bending moment diagrams.(BL-2)
CO3	Explain the methods for calculating the stress in the beams with different sections.(BL-2)
CO4	Find the shear strength of solid and hallow shafts.(BL-1)
CO5	classify different stresses and strains for the thin and thick cylinders (BL-2)

Course Name: METAL FORMING PROCESSES

20ME2005	METAL FORMING PROCESSES
CO1	understand the basic concept on one, two and three dimensional stress analysis, theory of plasticity, strain hardening, hot and cold working process [BL-2]
CO2	Define different rolling and forging processes and their defects [BL-1]
CO3	familiarize the fundamentals of extrusion process and their industrial applications[BL-2]
CO4	Identify various press working processes, their advantages and disadvantages. [BL-3]
CO5	Explain the concept of plastic manufacturing process, [BL-2]

Course Name: THERMAL ENGINEERING

20ME2006	THERMAL ENGINEERING
CO1	Understand the working principle of IC engine.(BL-2)
CO2	Explain the combustion of engines based on working principle and Know the combustion chamber – requirements.(BL-2)
CO3	Evaluate the performance of IC engine.(BL-4)
CO4	Explain the efficiency of isothermal process and volumetric efficiency.(BL-2)
CO5	Explain the components of Refrigeration System.(BL-2)

Course Name: COMPUTER AIDED MACHINE DRAWING

20ME2503	COMPUTER AIDED MACHINE DRAWING
CO1	Define various standards, specifications, dimensioning methods followed while preparing Engineering drawings. (BL-1)
CO2	Understand and practice to represent symbols for Foundation bolts and keys in drawings.(BL-2)
CO3	Develop, assemble and sketch assembled views of mechanical systems. (BL-3)
CO4	Develop suitable drawing views to represent part drawings of different machine parts in CAD software. (BL-3)

Course Name: IC ENGINES LAB

20ME2504	IC ENGINES LAB
CO1	Conduct constant speed and variable speed tests on IC engines and interpret their performance.(BL-3)
CO2	Determine the valve timing diagram of SI engine& CI engine. (BL-3)
CO3	Estimate energy distribution by conducting heat balance test on IC engines(BL-5) Apply the concept of Morse test on SI engine.(multi cylinder)
CO4	Experiment on IC engine load variations with Air fuel ratio. (BL-3)

Course Name: MECHANICS OF MATERIALS LAB

20ME2505	MECHANICS OF MATERIALS LAB
CO1	Understand the stress-strain behavior of different materials.(BL-2)
CO2	Explain the hardness of different materials.(BL-2)
CO3	Identify the difference between compression and tension testing.(BL-3)
CO4	Find the Young's modulus of the material by conducting deflection test(BL-1)



COURSE OUTCOMES

III YEAR-I SEM(NECR20)

Course Name: DESIGN OF MACHINE ELEMENTS

20ME2007	DESIGN OF MACHINE ELEMENTS
CO1	To design machine elements subjected to fluctuating loads.(L5)
CO2	To design fasteners and welded joints subjected to different loading conditions.(L5)
CO3	To design Shafts, Keys and Coupling for industrial applications.(L5)
CO4	To achieve an expertise in design of Sliding contact bearing in industrial applications.(L5)
CO5	To understand and apply principles of gear design to spur gears and industrial spur gear boxes.(L2)

Course Name: METAL CUTTING& MACHINE TOOLS

20ME2008	METAL CUTTING& MACHINE TOOLS
CO1	Choose cutting processes and variables. (L3)
CO2	Explain the working principle of lathe machine (L2)
CO3	Identify methods to generate different surfaces types of surfaces. (L3)
CO4	Explain the work holding and tool holding devices. (L2)
CO5	Explain the construction details of Grinding machines. (L2)

Course Name: THERMAL POWER SYSTEMS

20ME2009	THERMAL POWER SYSTEMS
CO1	Understand steam formation, properties, and Rankine cycles for working of thermal power plants.
CO2	Describe the construction and working of low pressure and high pressure boilers, and concept of draught.
CO3	Explain function and importance of nozzle, and working of condensers in thermal power plants
CO4	Understand working of Impulse turbine and calibrate the performance parameters of the turbine.
CO5	Understand working of Reaction turbine and calibrate the performance parameters of the turbine.

Course Name: DESIGN THINKING & PRODUCT INNOVATION LAB

20ME2506	DESIGN THINKING & PRODUCT INNOVATION LAB
CO1	Learn about designing engineering products and solving problems through the product development process. (BTL-1)
CO2	Understand categories of design, stages in the engineering design process, from defining and identifying needs to elaborate design (BTL-2)
CO3	Understand Considerations of ergonomics and aesthetics in the design process, implementing design for manufacturing principles(BTL-2)
CO4	Learn about the concepts of setting limits, fits, and tolerances transducers. (BTL-1)

Course Name: METAL CUTTING& MACHINE TOOLS LAB

20ME2507	METAL CUTTING& MACHINE TOOLS LAB
CO1	Choose cutting processes and variables. (L3)
CO2	Explain the working principle of lathe machine (L2)
CO3	Identify methods to generate different surfaces types of surfaces. (L3)
CO4	Explain the work holding and tool holding devices. (L2)



COURSE OUTCOMES

III YEAR-II SEM(NECR20)

Course Name: COMPUTER INTEGRATED MANUFACTURING

20ME2010	COMPUTER INTEGRATED MANUFACTURING
CO1	Describe the concepts CIM and Computerized elements of CIM system [BL-2].
CO2	Demonstrate Computer Aided Process Planning Logical steps in Computer Aided Process Planning and benefits of CAPP [BL-3]
CO3	Identify CNC programming, and its types manual part programming a mechanical component.[BL-2]
CO4	Describe Group Technology(GT), Part Families and Parts Classification its principles and applications [BL-2]
CO5	Illustrate the Classification of Robots- Robot Control systems [BL-3]

Course Name: DYNAMICS OF MACHINERY

20ME2011	DYNAMICS OF MACHINERY
CO1	Analyze stabilization of sea vehicles, aircrafts and automobile vehicles.
CO2	Understand the operations of governors in automobiles
CO3	Understand balancing of reciprocating and rotary masses
CO4	Analyze the vibration in machine components
CO5	Analyze the vibration in machine components and transmissibility

Course Name: HEAT AND MASS TRANSFER

20ME2012	HEAT AND MASS TRANSFER
CO1	Apply the concepts of different modes of heat transfer. (L3)
CO2	Apply knowledge of conduction heat transfer in the design of insulation of furnaces and pipes. (L3)
CO3	Analyse free and forced convection phenomena in external and internal flows. (L4)
CO4	Design of thermal shields using the concepts of black body and non-black body radiation. (L5)
CO5	Apply the basics of mass transfer for applications in diffusion of gases. (L3)

Course Name: POWER PLANT ENGINEERING

20ME4007-12	POWER PLANT ENGINEERING
CO1	List & understand the sources of energy, power plant economics and environmental aspects. (BL-1)
CO2	Explain the working of the components of different power plants. (BL-2)
CO3	Discuss the working principle, types, layout of diesel power plant & Gas turbines.(BL-2)
CO4	Explain the working principle, layout, auxiliary equipments of hydro electric power plant.(BL- 2)
CO5	Interpret the renewable energy sources, working principle and types of nuclear power plants, working principle and advantages and hazards.(BL-2)

Course Name: INDUSTRIAL ENGINEERING

20ME4013-18	INDUSTRIAL ENGINEERING
CO1	Explain the core ideas in management, administration, and organization.(BTL-1)
CO2	Evaluate the systematic approach of increasing the value of a product.(BTL-6)
CO3	Apply method study to enhance the layout and condition of the workspace. (BTL-3)
CO4	Evaluate the right amount of inventory on hand to satisfy consumer demand.(BTL-1)
CO5	Defined standards for the use of engineering production, purchasing and quality control etc. (BTL-1)

Course Name: HEAT TRANSFER LAB

20ME2509	HEAT TRANSFER LAB
CO1	Determination of coefficient of thermal conductivity. (L2)
CO2	Identify parameters for measurement for calculating heat transfer. (L1)
CO3	To calculate the average heat transfer co-efficient of vertical cylinder under natural Convection. (L3)
CO4	To calculate the effectiveness of a parallel and counter flow heat exchanger. (L4)



COURSE OUTCOMES

IV YEAR-I SEM(NECR20)

Course Name: DESIGN OF TRANSMISSION SYSTEM

20ME2013	DESIGN OF TRANSMISSION SYSTEM
CO1	Design of belts
CO2	Design of gears like spur gears and helical gears
CO3	Design spur gears and helical gears
CO4	Design of gear boxes
CO5	Design clutches and brakes

Course Name: METROLOGY AND INSTRUMENTATION

20ME2014	METROLOGY AND INSTRUMENTATION
CO1	Learn about linear and angular measurements. (BTL-1)
CO2	Understand about limits, fits and tolerances. (BTL-2)
CO3	Understand the surface texture measurement. (BTL-2)
CO4	Learn about the concepts of transducers. (BTL-1)
CO5	Learn about concepts of mechanical measurement. (BTL-1)

Course Name: AUTOMOBILE ENGINEERING

20ME2014	AUTOMOBILE ENGINEERING
CO1	Demonstrate the knowledge on working of various components of an automobile.[BT-2]
CO2	Identify and analyze the various systems and sub systems suitable for an automobile.[BT-2]
CO3	Explain the probable solution in the design of steering systems..[BT-3]
CO4	Analyze the complex issues in suspension and braking system.[BT-4]
CO5	Apply the techniques to estimate pollution from the emissions of automobiles. [BT-3]