ESWAR COLLEGE OF ENGINEERING

(Approved by AICTE, & Affiliated to JNTUK, A.P.)

KESANUPALLI (V), NARASARAOPETA-522549, AP

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Department of Mechanical Engineering

Course Outcomes

A.Y:2024-2025

Regulation R20

Year/Sem: II B.Tech I SEM

Course Name:	**VECTOR CALCULUS FOURIER TRANSFORMS and PDE (M-III)**
Course Code:ME2101	**Course Outcomes**
ME2101.1	Interpret the physical meaning of different operators such as gradient, curland divergence
ME2101.2	Estimate the work done against a field ,circulation and fluxusing vector calculus
ME2101.3	Apply the Laplace transform for solving differential equations
ME2101.4	Find or compute the Fourier series of periodic signals
ME2101.5	Know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveforms (L3)
ME2101.6	identifysolutionmethodsforpartialdifferentialequationsthatmodelphysicalprocesses(L3)

Course Name:	MECHANICS OF SOLIDS
Course Code:ME2102	**Course Outcomes**
ME2102.1	Model & Analyze the behavior of basic structural members subjected to various loading and support conditions based on principles of equilibrium.
ME2102.2	Understand the apply the concept of stress and strain to analyze and design structural members and machine parts under axial, shear and bending loads, moment and torsional moment.
ME2102.3	Students will learn all the methods to analyze beams, columns, frames for normal, shear, and torsion stresses and to solve deflection problems in preparation for the design of such structural components.
ME2102.4	Students are able to analyse beams and draw correct and complete shear and bending moment diagrams for beams.
ME2102.5	Students attain a deeper understanding of the loads, stresses, and strains acting on a structure and their relations in the elastic behavior
ME2102.6	Design and analysis of Industrial components like pressure vessels.

Course Name:	Fluid Mechanics& Hydraulic Machines
Course Code:ME2103	**Course Outcomes**
ME2103.1	The basic concepts of fluid properties.
ME2103.2	The mechanics of fluids in static and dynamic conditions

ME2103.3	Boundary layer theory, flow separation
ME2103.4	Boundary layer theory dimensional analysis
ME2103.5	Hydrodynamic forces of jet on vanes in different positions.
ME2103.6	Working Principles and performance evaluation of hydraulic pump and turbines.

Course Name:	PRODUCTION TECHNOLOGY
Course Code:ME2104	**Course Outcomes**
ME2104.1	Design patterns, Gating, runner and riser systems
ME2104.2	Select a suitable casting process based on the component
ME2104.3	Learn various arc and solid state welding processes and select a suitable process based on the application and requirements
ME2104.4	Understand various bulk deformation processes
ME2104.5	Understand various sheet metal forming and processing of plastics
ME2104.6	Know the different types of manufacturing processes

Course Name:	Kinematics of Machinery
Course Code:ME2105	**Course Outcomes**
ME2105.1	Contrive a mechanism for a given plane motion with single degree of freedom
ME2105.2	Suggest and analyze a mechanism for a given straight line motion
ME2105.3	Suggest and analyze a mechanism for a given automobile steering motion
ME2105.4	Analyze the motion(velocity and acceleration) of a plane mechanism
ME2105.5	Suggestandanalyzemechanismsforaprescribedintermittentmotionlikeopeningand closing of IC engine valves etc
ME2105.6	Select a power transmission system for a given application and analyze motion of different transmission systems

Course Name:	**COMPUTER AIDED ENGINEERING DRAWING PRACTICE**
Course Code: ME2106	**Course outcomes:**
ME2106.1	To understand the basic principles and conventions of engineering drawing
ME2106.2	To use drawing as a communication mode
ME2106.3	To generate pictorial views using CAD software
ME2106.4	To understand the development of surfaces

ME2106.5	To visualize engineering components
ME2106.6	Knowledge on recent tools

Course Name:	FLUID MECHANICS & HYDRAULIC MACHINES LAB
Course Code:ME2107	**Course Outcomes**
ME2107.1	To gain practical exposure on the performance evaluation methods of Turbine flow meter
ME2107.2	To gain practical exposure on the performance evaluation methods of Venturi meter
ME2107.3	To gain practical exposure on the performance evaluation methods of Pelton wheel
ME2107.4	To gain practical exposure on the performance evaluation methods of Francis turbine
ME2107.5	To gain practical exposure on the performance evaluation methods of Reciprocating pump
ME2107.6	To gain practical exposure on the performance evaluation methods of Centrifugal pump

Course Name:	PRODUCTION TECHNOLOGY LAB
Course Code:ME2108	**Course Outcomes**
ME2108.1	Design and manufacture simple patterns
ME2108.2	Understanding the properties of moulding sands
ME2108.3	Understand the concept of mould preparation
ME2108.4	Fabricate joints using arc welding.
ME2108.5	Practice on sheet metal operations
ME2108.6	Fabricate joints using Resistant welding.

Course Name:	DRAFTING AND MODELLING LAB
Course Code: ME2109L	**Course Outcomes**
ME2109L.1	Able to use software like AutoCAD, Invertor/ Pro E/ Unigraphics.
ME2109L.2	Learned basic concept to drawing, edit, dimension, hatching etc. to develop 2D Modelling.
ME2109L.3	Learned basic concept to drawing, edit, dimension, hatching etc. to develop 3D Modelling.
ME2109L.4	Able to make 3D assembling of different machine components
ME2109L.5	Able to make 3D modelling, modification & manipulation along with detailing.
ME2109L.6	Able to prepare surface modelling and sheet metal operations through various

	exercises

Course Name:	**ESSENCE OF INDIAN TRADITIONAL KNOWLEDGE**
Course Code: ME2110	**Course Outcomes**
ME2110.1	Understand the concept of Traditional knowledge and its importance
ME2110.2	Know the need and importance of protecting traditional knowledge
ME2110.3	Know the various enactments related to the protection of traditional knowledge
ME2110.4	Understand the concepts of Intellectual property to protect the traditional knowledge
ME2110.5	traditional knowledge in different sector
ME2110.6	basic principle of third process reasoning and inference sustainability is at the course of Indian traditional knowledge system

Year/Sem: III B.Tech I SEM

Course Name:	Thermal Engineering-II
Course Code: ME3101	**Course Outcomes**
ME3101.1	**Able to** Explain the basic concepts of thermal engineering and boilers.
ME3101.2	**Able to** Discuss the concepts of steam nozzles and steam turbines.
ME3101.3	**Able to** Gain knowledge about the concepts of reaction turbine and steam condensers.
ME3101.4	**Able to** Discuss the concepts of reciprocating and rotary type of compressors.
ME3101.5	**Able to** Acquire knowledge about the centrifugal compressors.
ME3101.6	**Able to** Acquire knowledge about the axial flow compressors.

Course Name:	Design of Machine Members-I
Course Code: ME3102	**Course Outcomes**
ME3102.1	Able to Judge about materials and their properties along with manufacturing considerations.
ME3102.2	Able to Gain knowledge about the strength of machine elements.
ME3102.3	Able to Apply the knowledge in designing the riveted and welded joints, keys,
ME3102.4	Able to Apply the knowledge in designing cotters and knuckle joints.
ME3102.5	Able to Apply the knowledge in designing the shafts and shaft couplings.
ME3102.6	Able to Apply the knowledge in designing the mechanical springs.

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Course Name:	Machining, Machine Tools & Metrology
Course Code: ME3103	**Course Outcomes**
ME3103.1	Able to Discuss the concepts of machining processes.
ME3103.2	Able to Apply the principles of lathe, shaping, slotting and planning machines.
ME3103.3	Able to Apply the principles of drilling process
ME3103.4	Able to Apply the principles of milling and boring processes.
ME3103.5	Able to Analyze the concepts of finishing processes and the system of limits and fits.
ME3103.6	Able to Learn the concepts of surface roughness and optical measuring instruments.

Course Name:	Renewable Energy Sources
Course Code: ME3105D	**Course Outcomes**
ME3105D.1	Knowledge on importance of, solar energy collection and storage.
ME3105D.2	Knowledge on wind energy principles.
ME3105D.3	Analyze about biomass energy concepts.
ME3105D.4	Discuss about biomass energy concepts.
ME3105D.5	Apply the principles of tidal energy.
ME3105D.6	Utilize the concepts of geothermal energy.

Course Name:	Operations Research
Course Code: ME3104B	**Course Outcomes**
ME3104B.1	Apply the basics of operations research and linear programming problems.
ME3104B.2	Apply the knowledge in solving problems of transportation, assignment and sequencing.
ME3104B.3	Judge the replacement and game theories
ME3104B.4	Discuss the waiting line models and project management techniques.
ME3104B.5	apply the knowledge to solve problems on replacement and game theories
ME3104B.6	Apply the knowledge in solving problems of dynamic programming and simulation.

Course Name:	Machine Tools Lab
Course Code: ME3106L	**Course Outcomes**

ME3106L.1	Demonstrate about general purpose machine tools in the machine shop.
ME3106L.2	Perform various operations on lathe machine.
ME3106L.3	Perceive different operations on drilling machine.
ME3106L.4	Experiment with basic operations on shaping machine.
ME3106L.5	Utilize slotting machine to make keyways.
ME3106L.6	Experiment with the basic operations on milling machine.

Course Name:	Thermal Engineering Lab
Course Code: ME3107L	**Course Outcomes**
ME3107L.1	Experiment with two stroke and four stroke compression and spark ignition engines for various characteristics.
ME3107L.2	Perceive flash point, fire point, calorific value of different fuels using various apparatus.
ME3107L.3	Perform engine friction, heat balance test, volumetric efficiency, load test of petrol and diesel engines.
ME3107L.4	Perform speed test, performance test and cooling temperature on petrol and diesel engines.
ME3107L.5	Utilize air compressor for its performance test and to determine efficiency
ME3107L.6	Discuss the principles through assembly and disassembly of 2/3 wheelers, 2/4 stroke engines, tractor, heavy duty engines, boilers and their mountings and accessories.

Course Name:	Advanced Communication Skills Lab
Course Code: ME3108L	**Course Outcomes**
ME3108L.1	help students acquire behavioural skills for their personal and professional life
ME3108L.2	respond appropriately in different socio-cultural and professional contexts
ME3108L.3	Acquire vocabulary and use it contextually
ME3108L.4	Listen and speak effectively
ME3108L.5	Develop proficiency in academic reading and writing
ME3108L.6	Increase possibilities of job prospects

Course Name:	Professional Ethics and Human Values
Course Code: ME3110	**Course Outcomes**
ME3110.1	Judge the concepts of human values.
ME3110.2	Justify knowledge about the principles of engineering ethics.
ME3110.3	Interpret engineering as social experimentation.
ME3110.4	Realize engineers' responsibility for safety and risk.
ME3110.5	Learn about the engineers' rights and responsibilities.
ME3110.6	understand engineers' responsibility for safety and risk.

Year/Sem: IV B.Tech I SEM

Course Name:	**UN CONVENTIONAL MACHINING PROCESSES**
Course Code:	**Course Outcomes**
ME4101.1	CO1: Understand the concepts of modern machining processes. .
ME4101.2	CO2: Learn the principles of ultrasonic machining.
ME4101.3	CO3: Apply the principles and procedure of electro chemical and processes.
ME4101.4	Apply the principles and procedure of chemical machining processes
ME4101.5	CO4: Apply the principles and procedure of thermal metal removal processes
ME4101.6	CO5: Illustrate the principles and procedure of electron beam machining, laser beam machining and plasma machining.

Course Name:	**PRODUCTION PLANNING & CONTROL**
Course Code: ME4102	**Course Outcomes**
ME4102.1	Apply the systems concept for the design of production and service systems
ME4102.2	Make forecasts in the manufacturing and service sectors using selected quantitative and qualitative techniques
ME4102.3	Apply the principles and techniques for planning and control of the production and service systems to optimize/make best use of resources
ME4102.4	Understand the importance and function of inventory and to be able to apply selected techniques for its control and management under dependent and independent demand circumstances.
ME4102.5	To apply routing procedures and differentiate schedule and loading and interpret scheduling policies and aggregate planning
ME4102.6	To understand dispatching procedure and applications of computers in production planning and control.

Course Name:	**NON DESTRUCTIVE EVALUATION**

Course Code:	**Course Outcomes**
ME4103.1	Comprehensive, theory based understanding of the techniques and methods of radio graphic technique
ME4103.2	Comprehensive, theory based understanding of the techniques and methods of Ultrasonic test
ME4103.3	Comprehensive, theory based understanding of the techniques and methods of Liquid Penetrant Test
ME4103.4	Comprehensive, theory based understanding of the techniques and methods of Eddy Current Test
ME4103.5	Comprehensive, theory based understanding of the techniques and methods of Eddy Current Test &Infrared And Thermal Testing
ME4103.6	Apply methods knowledge of non destructive testing to evaluate products of railways, automobiles, aircrafts, chemical industries etc.

Course Name:	DISASTER MANAGEMENT
Course Code:	**Course Outcomes**
ME4104.1	the students will be able to:Affirm the usefulness of integrating management principles in disaster mitigation work
ME4104.2	the students will be able to: Distinguish between the different approaches needed to manage pre- during and post- disaster periods
ME4104.3	the students will be able to Develop an awareness of the chronological phases of natural disaster response and refugee relief operations.
ME4104.4	the students will be able to: Relate to risk transfer
ME4104.5	the students will be able to: Distinguish between the different approaches needed to manage pre- during and post- disaster periods
ME4104.6	Understand the tools of post-disaster management.

Course Name:	AUTOMOBILE SAFETY
Course Code: ME4105	**Course Outcomes**
ME4105.1	the student will be able to Understand the design of the automobile body for safety and different safety standards
ME4105.2	the student will be able to Design the automobile body with respect to safety and fatigue aspects
ME4105.3	the student will be able to Understand active and passive safety systems
ME4105.4	the student will be able to Familiarize with different comfort and convenience systems
ME4105.5	the student will be able to impart the knowledge of the safety concepts
ME4105.6	the student will be able to comfort and convenience system, driver assistance system and other requirements of automotive safety.

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Course Name:	**MECHATRONICS LAB**
Course Code: ME4106L	**Course Outcomes**
ME4106L.1	Understand the Characteristics of LVDT
ME4106L.2	Measure load, displacement and temperature using analogue and digital sensors.
ME4106L.3	Develop PLC programs for control of traffic lights & water level
ME4106L.4	Develop PLC programs for control of lifts and conveyor belts.
ME4106L.5	Simulate and analyze PID controllers for a physical system using MATLAB.
ME4106L.6	Develop pneumatic and hydraulic circuits using Automaton studio.