ESWAR COLLEGE OF ENGINEERING

(Approved by AICTE, & Affiliated to JNTUK, A.P.)
KESANUPALLI (V), NARASARAOPETA-522549, AP
www.eswarcollegeofengg.org, email:eswarcollegeofengg@gmail.com

DEPARTMENT OF MECHANICAL ENGINEERING

Course Outcomes

A.Y:2022-2023

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: ME2109L	**Course Outcomes**
ME2109L.1	Understand the concept of Traditional knowledge and its importance
ME2109L.2	Know the need and importance of protecting traditional knowledge
ME2109L.3	Know the various enactments related to the protection of traditional knowledge
ME2109L.4	Understand the concepts of Intellectual property to protect the traditional knowledge
ME2109L.5	traditional knowledge in different sector
ME2109L.6	basic principle of third process reasoning and inference sustainability is at the course of Indian traditional knowledge system

II YEAR II SEM

Course Name:	**MATERIAL SCIENCE AND METALLURGY**
Course Code: ME2201	**Course Outcomes**
ME2201.1	Understand the crystalline structure of different metals and study the stability of phases in different alloy systems
ME2201.2	Study the behaviour of ferrous and non- ferrous metals and alloys and their application in different domains
ME2201.3	Able to understand the effect of heat treatment
ME2201.4	Understand the effect of addition of alloying elements on properties of ferrous metals
ME2201.5	Grasp the methods of making the metal powders and the applications of powder metallurgy
ME2201.6	Comprehend the properties and applications of ceramics, composites and other advanced methods

Course Name:	**Complex Variables and Statistical Methods**
Course Code: ME2202	Course Outcomes
ME2202.1	apply Cauchy-Riemann equations to complex functions in order to determine whether a given continuous function is analytic

ME2202.2	find the differentiation and integration of complex functions used in engineering problems
ME2202.3	make use of the Cauchy residue theorem to evaluate certain integrals
ME2202.4	apply discrete and continuous probability distributions
ME2202.5	design the components of a classical hypothesis test
ME2202.6	infer the statistical inferential methods based on small and large sampling tests

Course Name:	**DYNAMICS OF MACHINERY**
Course Code: ME2203	Course Outcomes
ME2203.1	To compute the frictional losses and transmission in clutches, brakes and dynamometers
ME2203.2	To determine the effect of gyroscopic couple in motor vehicles, ships and aeroplanes
ME2203.3	To analyze the forces in four bar and slider crank mechanisms and design a fly wheel
ME2203.4	To determine the rotary unbalanced mass in reciprocating equipment
ME2203.5	To determine the unbalanced forces and couples in reciprocating and radial engines
ME2203.6	To determine the natural frequencies of discrete systems undergoing longitudinal, torsional and transverse vibrations.

Course Name:	**THERMAL ENGINEERING-I**
Course Code: ME2204	Course Outcomes
ME2204.1	Derive the actual cycle from fuel-air cycle and air-standard cycle for all practical applications
ME2204.2	Explain working principle and various components ofIC engine
ME2204.3	Explain combustion phenomenon ofCI and SI engines and their impact on engine variables
ME2204.4	Analyze the performance of an IC engine based on the performance parameters
ME2204.5	Explain the cycles and systems of a gas turbine and determine the efficiency of gas turbine.
ME2204.6	Explain the applications and working principle of rockets and jet propulsion.

ourse Name:	**INDUSTRIALENGINEERINGANDMANAGEMENT**
Course	Course Outcomes

Code: ME2205	
ME2205.1	Design and conduct experiments, analyse, interpret data and synthesize valid conclusions
ME2205.2	Design a system, component, or process, and synthesize solutions to achieve desired needs
ME2205.3	Use the techniques, skills, and modern engineering tools necessary for engineering practice with appropriate
ME2205.4	considerations for public health and safety, cultural, societal, and environmental constraints
ME2205.5	Function effectively within multi-disciplinary teams and understand the fundamental precepts of effective project management
ME2205.6	Explain and implement various job evaluation methods. Evaluate the overall cost of production for a product.

Course Name:	**MECHANICS OF SOLIDS & METALLURGY LAB**
Course Code:ME2206	**Course Outcomes**
ME2206.1	To observe and understand the microstructure of Mild steel.
ME2206.2	To observe and understand the microstructure of Medium carbon steel.
ME2206.3	To observe and understand the microstructure of High carbon steel
ME2206.4	To study the microstructure of Cast Irons and Nonferrous alloys
ME2206.5	To evaluate the hardness of various materials using
ME2206.6	To determine the hardenability of steels by Jominy End Quench test.

Course Name:	**MACHINE DRAWING**
Course Code:	**Course outcomes:**
ME2207.1	Identify the national and international standards pertaining to machine drawing
ME2207.2	Apply limits and tolerances to assemblies and choose appropriate fits
ME2207.3	Recognize machining and surface finish symbols
ME2207.4	Explain the functional and manufacturing datum
ME2207.5	Illustrate various machine components through drawings.
ME2207.6	knowledge of fastening arrangements such as welding, riveting the different styles of attachment for shaft.

Course Name:	**THEORY OF MACHINES LAB**

Course Code: ME3108L	**Course outcomes:**
ME3108L.1	Explain and discus inversions of four bar, single slider and double slider chain. Steering Mechanisms- Davis and Ackerman;
ME3108L.2	Explain and demonstrate cam and followers arrangements available in laboratory and plot displacement v/s angle of rotation curve for these.
ME3108L.3	Determine co-efficient of friction of different materials using two roller oscillating arrangement and differentiate among.
ME3108L.4	Describe, discuss and differentiate various types of dynamometers, Brakes, Clutches and Gear boxes with their applications
ME3108L.5	Explain the principle and verify the practical vs. theoretical torque relation for gyroscope and its applications.
ME3108L.6	. Explain static and dynamic balancing

Course Name:	**PYTHON PROGRAMMING LAB**
Course Code:	**Course Outcomes**
CSAI2102L.1	Solve the different methods for linear
CSAI2102L.2	Non-linear and differential equations.
CSAI2102L.3	Learn the PYTHON Programming language
CSAI2102L.4	Familiar with the strings in PYTHON.
CSAI2102L.5	Familiar with the matrices in PYTHON
CSAI2102L.6	Write the Program scripts and functions in PYTHON to solve the methods

III B.TECH ISEM

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.

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.

ESWAR COLLEGE OF ENGINEERING

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

KESANUPALLI (V), NARASARAOPETA-522549, AP

www.eswarcollegeofengg.org, email:eswarcollegeofengg@gmail.com

III B.TECH II SEM

Course Name:	**HEAT TRANSFER**
Course Code: ME3201	**Course Outcomes**
ME3201.1	Apply knowledge about mechanism and modes of heat transfer.
ME3201.2	Understand the concepts of conduction and convective heat transfer.
ME3201.3	Learn about forced and free convection.
ME3201.4	Analyze the concepts of heat transfer with phase change and condensation along with heat exchangers.
ME3201.5	interpret the knowledge about radiation mode of heat transfer.
ME3201.6	Solving problems on one dimensional heat transfer

Course Name:	**DESIGN OF MACHINE MEMBERS-II**
Course Code: ME3202	**Course Outcomes**
ME3202.1	Apply knowledge about the design of bearings.
ME3202.2	Explain the concepts in designing various engine parts.
ME3202.3	Utilize the knowledge to design curved beams and power screws.
ME3202.4	Justify power transmission systems and to design pulleys
ME3202.5	Apply the concepts in designing various machine tool elements.
ME3202.6	Justify power transmission systems and to design gear drives

Course Name:	**INTRODUCTION TO ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING**
Course Code: ME3203	**Course Outcomes**
ME3203.1	Discuss basic concepts of artificial intelligence, neural networks and genetic algorithms.
ME3203.2	Apply the principles of knowledge representation and reasoning.
ME3203.3	Learn about bayesian machine learning.
ME3203.4	Utilize various machine learning techniques.
ME3203.5	Apply the machine learning analytics and deep learning techniques.
ME3203.6	Learn about computational learning and machine learning.

Course Name:	**AUTOMOBILE ENGINEERING**

Course Code: ME3204A	**Course Outcomes**
ME3204A.1	Discuss various components of four wheeler automobile.
ME3204A.2	Apply the knowledge of different parts of transmission system.
ME3204A.3	Judge about steering and suspension systems.
ME3204A.4	Justify the braking system used in automobiles.
ME3204A.5	Analyze the concepts about engine specifications and service, safety and electronic system used in automobiles
ME3204A.6	Justify the electrical system used in automobiles.

Course Name:	**ADVANCED MATERIALS**
Course Code: ME3205C	**Course Outcomes**
ME3205C.1	Justify the knowledge about metals and alloys and their utility in different environments.
ME3205C.2	Judge about polymers and ceramics and their applications.
ME3205C.3	Analyze composite materials along with reinforcements and their applications.
ME3205C.4	Analyze composite materials applications.
ME3205C.5	Utilize shape memory alloys and functionally graded materials for different applications.
ME3205C.6	Justify about the nanomaterials and their applications.

Course Name:	**HEAT TRANSFER LAB**
Course Code: ME3206L	**Course Outcomes**
ME3206L.1	Determine the heat transfer rate and coefficient.
ME3206L.2	Determine the thermal conductivity, efficiency and effectiveness
ME3206L.3	Determine the emissivity and Stefan Boltzman constant.
ME3206L.4	Determine critical heat flux and investigate Lambert's cosine law
ME3206L.5	Experiment with Virtual labs and analyze conduction, HT coefficient
ME3206L.6	Experiment with Virtual labs and investigate Lambert's laws.

Course Name:	**CAE&CAM LAB**
Course Code: ME3207L	**Course Outcomes**

ME3207L.1	Demonstrate the main stages of Finite Element analysis.
ME3207L.2	Perform modeling and analysis of structural and heat transfer problems.
ME3207L.3	Use CAM software to generate NC code
ME3207L.4	Evaluation of Stress concentration factor in a rectangular plate with central hole
ME3207L.5	Stress distribution in thick a cylinder subjected to internal and/external pressures
ME3207L.6	Machine simple components on CNC machines

Course Name:	**MEASUREMENTS & METROLOGY LAB**
Course Code: ME3208L	**Course Outcomes**
ME3208L.1	To gain knowledge of Calibration experiments with Pressure gauge , Strain gauge
ME3208L.2	To gain knowledge of Calibration experiments with rotameter, Seismic apparatus
ME3208L.3	To gain knowledge of Calibration experiments with Vernier calipers, micrometer, Height gauge and Dial gauges
ME3208L.4	To gain knowledge of Calibration experiments with resistance temperature detector
ME3208L.5	To analyse various machine tools for their alignment
ME3208L.6	To measure angular and taper measurement

Course Name:	**ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING LAB**
Course Code: ME3209L	**Course Outcomes**
ME3209L.1	Students will demonstrate the ability to solve problems collaboratively
ME3209L.2	Students will demonstrate knowledge of artificial intelligence concepts
ME3209L.3	An understanding of fundamental concepts and methods of machine learning, statistical pattern recognition and its applications
ME3209L.4	An ability to analyze and evaluate simple algorithms for pattern classification.
ME3209L.5	An ability to design simple algorithms for pattern classification, code them with Python programming language and test them with benchmark data sets
ME3209L.6	Practically establish, refine and implement strategies to take the idea in to students and faculty fraternity

Course Name:	**RESEARCH METHODOLOGY AND IPR**
Course Code: ME3210	**Course Outcomes**

ME3210.1	Knowledge on Formulate research problem
ME3210.2	Analyze literature review and find research gaps to finalize research objectives.
ME3210.3	Identify the need of ethics in research
ME3210.4	dentify the need of IPR of research projects for economic growth and social benefits.
ME3210.5	Relatethat IPR protection provides an incentive to inventors for further research work and investment in R & D, which leads to creation of new and better products, and in turn brings about economic growth and social benefits.
ME3210.6	Apply basic data analytics techniques: probability distribution, linear regression, ANOVA

IV.B.TECH I SEM

Course Name:	**INDUSTRIAL MANAGEMENT**
Course Code: ME4101	**Course Outcomes**
ME4101.1	Design and conduct experiments, analyse, interpret data and synthesize valid conclusions
ME4101.2	Design a system, component, or process, and synthesize solutions to achieve desired needs
ME4101.3	Use the techniques, skills, and modern engineering tools necessary for engineering practice with appropriate considerations for public health and safety, cultural, societal, and environmental constraints
ME4101.4	Function effectively within multi-disciplinary teams and understand the fundamental precepts of effective project management
ME4101.5	Understand the interactions between engineering, business, technological and environmental spheres in the modern society.
ME4101.6	Understand their role as engineers and their impact to society at the national and global context.

Course Name:	**FINITE ELEMENT METHODS**
Course Code: ME4102	**Course Outcomes**
ME4102.1	Understand the concepts behind variational methods and weighted residual methods in FEM
ME4102.2	Identify the application and characteristics of FEA elements such as bars, beams, plane and isoparametric elements, and 3-D element .
ME4102.3	Develop element characteristic equation procedure and
ME4102.4	Generation of global equations solutions to structural, thermal and dynamic problems.

ME4102.5	Able to apply Suitable boundary conditions to global equations, and reduce it to a solvable form.
ME4102.6	Able to apply the FE procedure to field problems like heat transfer.

Course Name:	**PRODUCTION PLANNING & CONTROL**
Course Code: ME4103C	**Course Outcomes**
ME4103C.1	Apply the systems concept for the design of production and service systems
ME4103C.2	Make forecasts in the manufacturing and service sectors using selected quantitative and qualitative techniques
ME4103C.3	Apply the principles and techniques for planning and control of the production and service systems to optimize/make best use of resources
ME4103C.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.
ME4103C.5	To apply routing procedures and differentiate schedule and loading and interpret scheduling policies and aggregate planning
ME4103C.6	To understand dispatching procedure and applications of computers in production planning and control.

Course Name:	
Course Code:	**Course Outcomes**
ME4105.1	Formulate strategies and tactics that increase productivity and quality to maximize a firm's profitability in a global marketplace
ME4105.2	Define and apply the concepts of productivity and production.
ME4105.3	Assess a firm's operational performance through interpretation of its financial statements
ME4105.4	Apply Operations Management tools and methods to product design and the product life cycle to improve the firm's performance.
ME4105.5	Assess capacity and enhance operating leverage via break-even analysis
ME4105.6	Apply analytical skills and problem-solving tools to resolve the operational issues

Course Name: ME4104C	**POWER PLANT ENGINEERING**
Course Code:	**Course Outcomes**
ME4104C.1	Basic knowledge of Different types of Power Plants, site selection criteria of each one of them
ME4104C.2	Understanding of Thermal Power Plant Operation, turbine governing, different types of high pressure boilers including supercritical and supercharged boilers, Fluidized bed combustion systems

ME4104C.3	Design of chimney in thermal power plants, knowledge of cooling tower operation, numerical on surface condenser design
ME4104C.4	Basic knowledge of Different types of Nuclear power plants including Pressurized water reactor, Boiling water reactor, gas cooled reactor, liquid metal fast breeder reactor
ME4104C.5	Understanding of Power Plant Economics, Energy Storage including compressed air energy and pumped hydro etc
ME4104C.6	Discussing environmental and safety aspects of power plant operation

Course Name:	**FINITE ELEMENT SIMULATION LAB**
Course Code: ME4106L	**Course Outcomes**
ME4106L.1	Understand the concepts behind formulation methods in FEM
ME4106L.2	Identify the application and characteristics of FEA elements such as bars, beams, plane and iso-parametric elements.
ME4106L.3	able to appreciate the utility of the tools like ANSYS or FLUENT in solving real time problems and day to day problems.
ME4106L.4	Use of these tools for any engineering and real time applications
ME4106L.5	Acquire knowledge on utilizing these tools for a better project in their curriculum
ME4106L.6	Acquire knowledge on industry problems with confidence

IV B.TECH II SEM

Course Name:	
Course Code: ME4201	**Course Outcomes**
ME4201.1	Demonstrate appropriate level of understanding on principles of additive manufacturing processes.
ME4201.2	Choose appropriate materials for additive manufacturing processes
ME4201.3	Apply suitable CAD tools and CAD interface for additive manufacturing process
ME4201.4	Develop physical prototypes by identifying suitable process with optimum process parameters
ME4201.5	Demonstrate the knowledge of Additive Manufacturing and Rapid Prototyping technologies
ME4201.6	able to Discuss fundamentals of Reverse Engineering

Course Name:	**NON DESTRUCTIVE EVALUATION**
Course Code:	**Course Outcomes**
ME4202.1	Comprehensive, theory based understanding of the techniques and methods of radio graphic technique
ME4202.2	Comprehensive, theory based understanding of the techniques and methods of Ultrasonic test
ME4202.3	Comprehensive, theory based understanding of the techniques and methods of Liquid Penetrant Test
ME4202.4	Comprehensive, theory based understanding of the techniques and methods of Eddy Current Test
ME4202.5	Comprehensive, theory based understanding of the techniques and methods of Eddy Current Test &Infrared And Thermal Testing
ME4202.6	Apply methods knowledge of non destructive testing to evaluate products of railways, automobiles, aircrafts, chemical industries etc.

Course Name:	**ADVANCED MATERIALS**
Course Code: ME4204	**Course Outcomes**
ME4204.1	Explain various composite materials with their constituents, advantages, limitations and applications
ME4204.2	Describe various manufacturing methods of polymer matrix composites materials.
ME4204.3	Derive stress strain relationships for orthotropic materials and analyze orthotropic lamina.
ME4204.4	Able to analyze orthotropic lamina.

ME4204.5	Explain various functionally graded materials with their properties, preparation and applications
ME4204.6	Explain different smart materials with their application

Course Name:	**GREEN ENERGY SYSTEMS**
Course Code:	**Course Outcomes**
ME4203.1	Explain the importance of solar energy collection and storage.
ME4203.2	Apply the principles of wind energy and biomass energy.
ME4203.3	Analyze knowledge on geothermal and ocean energy
ME4203.4	Learn about energy efficient systems
ME4203.5	Discuss the concepts of green manufacturing systems
ME4203.6	Realise the importance of green technologies in sustainable growth of Industry and society