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:2018-2019

Year/Sem: II B.Tech I SEM

Course Name:	**METALLURGY & MATERIALS SCIENCE**
Course Code: ME2101	**Course outcomes:**
ME2101.1	Understand the crystalline structure of different metals and study the stability of phases in different alloy systems
ME2101.2	Study the behaviour of ferrous and non- ferrous metals and alloys and their application in different domains
ME2101.3	Able to understand the effect of heat treatment
ME2101.4	Understand the effect of addition of alloying elements on properties of ferrous metals
ME2101.5	Grasp the methods of making the metal powders and the applications of powder metallurgy
ME2101..6	Comprehend the properties and applications of ceramics, composites and other advanced methods

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:	**THERMODYNAMICS**
Course Code: ME2103	**Course outcomes:**
ME2103.1	Ability to understand the basic concepts of thermodynamic such as temperature, pressure, system, properties, process, state, cycles and equilibrium
ME2103.2	Ability to conduct experiments regarding the measurement and calibration of temperatures and pressures in groups.

ME2103.3	Ability to identify the properties of substances on property diagrams and obtain the data from property tables.
ME2103.4	Ability to define energy transfer through mass, heat and work for closed and control volume systems
ME2103.5	Ability to apply the first Law of Thermodynamics on closed and control volume systems
ME2103.6	Ability to apply Second Law of Thermodynamics and entropy concepts in analysing the thermal efficiencies of heat engines such as Carnot and Rankine cycles and the coefficients of performance for refrigerators.

Course Name:	**MANAGERIAL ECONOMICS & FINANCIAL ANALYSIS**
Course Code: ME2104	**Course outcomes:**
ME2104.1	knowledge of estimating the Demand and demand elasticities for a product
ME2104.2	understanding of the Input-Output-Cost relationships and estimation of the least cost combination of inputs.
ME2104.3	understand the nature of different markets and Price Output determination under various market conditions and also to have the knowledge of different Business Units
ME2104.4	able to prepare Financial Statements and the usage of various Accounting tools for Analysis
ME2104.5	able to to evaluate various investment project proposals with the help of capital budgeting techniques for decision making.
ME2104.6	Evaluate and interpret the financial statements to make informed decisions

Course Name:	**FLUID MECHANICS & HYDRAULIC MACHINES**
Course Code: ME2105	**Course outcomes:**
ME2105.1	The basic concepts of fluid properties.
ME2105.2	The mechanics of fluids in static and dynamic conditions
ME2105.3	Boundary layer theory, flow separation
ME2105.4	Boundary layer theory dimensional analysis
ME2105.5	Hydrodynamic forces of jet on vanes in different positions.
ME2105.6	Working Principles and performance evaluation of hydraulic pump and turbines.

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:	**ELECTRICAL & ELECTRONICS ENGINEERING LAB**
Course Code: ME2107L	**Course outcomes:**
ME2107L.1	Able to find out the efficiency of dc shunt machine without actual loading of the machine.
ME2107L.2	Able to estimate the efficiency and regulation for different load conditions and power factors of single phase transformer with OC and SC test.
ME2107L.3	Able to analyse the performance characteristics and to determine efficiency of DC shunt motor &3-phase induction motor.
ME2107L.4	Able to pre-determine the regulation of an alternator by synchronous impedance method.
ME2107L.5	Able to control the speed of dc shunt motor using speed control methods.
ME2107L.6	Able to find out the characteristics of PN junction diode & transistor and to determine the ripple factor of half wave & full wave rectifiers.

Course Name:	**MECHANICS OF SOLIDS & METALLURGY LAB**
Course Code: ME2108L	**Course outcomes:**
ME2108L.1	To observe and understand the microstructure of Mild steel.
ME2108L.2	To observe and understand the microstructure of Medium carbon steel.
ME2108L.3	To observe and understand the microstructure of High carbon steel
ME2108L.4	To study the microstructure of Cast Irons and Nonferrous alloys
ME2108L.5	To evaluate the hardness of various materials using
ME2108L.6	To determine the hardenability of steels by Jominy End Quench test.

II B.TECH II SEM

Course Name:	**KINEMATICS OF MACHINERY**
Course Code: ME2201	**Course outcomes:**
ME2201.1	Discuss the concepts of machining processes.
ME2201.2	Apply the principles of lathe, shaping, slotting and planning machines
ME2201.3	Apply the principles of drilling processes
ME2201.4	Apply the principles of milling and boring processes
ME2201.5	Analyze the concepts of finishing processes and the system of limits and fits
ME2201.6	Learn the concepts of surface roughness and optical measuring instruments.

Course Name:	**THERMAL ENGINEERING – I**
Course Code: ME2202	**Course outcomes:**
ME2202	Derive the actual cycle from fuel-air cycle and air-standard cycle for all practical applications
ME2202	Explain working principle and various components ofIC engine
ME2202	Explain combustion phenomenon of CI and SI engines and their impact on engine variables
ME2202	Analyze the performance of an IC engine based on the performance parameters
ME2202	Explain the cycles and systems of a gas turbine and determine the efficiency of gas turbine.
ME2202	Explain the applications and working principle of rocket sandjet propulsion.

Course Name:	**PRODUCTION TECHNOLOGY**
Course Code: ME2203	**Course outcomes:**
ME2203.1	Design patterns, Gating, runner and riser systems
ME2203.2	Select a suitable casting process based on the component
ME2203.3	Learn various arc and solid state welding processes and select a suitable process based on the application and requirements
ME2203.4	Understand various bulk deformation processes
ME2203.5	Understand various sheet metal forming and processing of plastics
ME2203.6	Know the different types of manufacturing processes

Course Name:	**DESIGN OF MACHINE MEMBERS – I**
Course Code: ME2204	**Course outcomes:**
ME2204.1	Apply the design procedure to engineering problems, including the consideration of technical and manufacturing constraints.
ME2204.2	Select suitable materials and significance of tolerances and fits in critical design applications
ME2204.3	Utilize design data hand book and design the elements for strength, stiffness and fatigue.
ME2204.4	Identify the loads, the machine members subjected and calculate static and dynamic stresses to ensure safe design.
ME2204.5	Gain knowledge about the strength of machine elements.
ME2204.6	Judge about materials and their properties along with manufacturing considerations

Course Name:	**MACHINE DRAWING**
Course Code:	**Course outcomes:**
ME2205.1	Identify the national and international standards pertaining to machine drawing
ME2205.2	Apply limits and tolerances to assemblies and choose appropriate fits
ME2205.3	Recognize machining and surface finish symbols
ME2205.4	Explain the functional and manufacturing datum
ME2205.5	Illustrate various machine components through drawings.
ME2205.6	knowledge of fastening arrangements such as welding, riveting the different styles of attachment for shaft.

Course Name:	**INDUSTRIAL ENGINEERING AND MANAGEMENT**
Course Code: ME2206	**Course outcomes:**
ME2206.1	Design and conduct experiments, analyse, interpret data and synthesize valid conclusions
ME2206.2	Design a system, component, or process, and synthesize solutions to achieve desired needs
ME2206.3	Use the techniques, skills, and modern engineering tools necessary for engineering practice with appropriate
ME2206.4	considerations for public health and safety, cultural, societal, and environmental constraints
ME2206.5	Function effectively within multi-disciplinary teams and understand the fundamental precepts of effective project management
ME2206.6	Explain and implement various job evaluation methods. Evaluate the overall cost of production for a product.

Course Name:	**FLUID MECHANICS & HYDRAULIC MACHINES LAB**
Course Code: ME2207L	**Course outcomes:**
ME2207L.1	To gain practical exposure on the performance evaluation methods of Turbine flow meter
ME2207L.2	To gain practical exposure on the performance evaluation methods of Venturi meter
ME2207L.3	To gain practical exposure on the performance evaluation methods of Pelton wheel
ME2207L.4	To gain practical exposure on the performance evaluation methods of Francis turbine
ME2207L.5	To gain practical exposure on the performance evaluation methods of Reciprocating pump
ME2207L.6	To gain practical exposure on the performance evaluation methods of Centrifugal pump

Course Name:	**PRODUCTION TECHNOLOGY LAB**
Course Code: ME2208L	**Course outcomes:**
ME2208L.1	Design and manufacture simple patterns
ME2208L.2	Understanding the properties of moulding sands
ME2208L.3	Understand the concept of mould preparation
ME2208L.4	Fabricate joints using arc welding.
ME2208L.5	Practice on sheet metal operations
ME2208L.6	Fabricate joints using Resistant welding.

III B.TECH I SEM

Course Name:	Dynamics of Machinery
Course Code: ME3101	**Course outcomes:**
ME3101.1	Analyze stabilization of sea vehicles, aircrafts and automobile vehicles
ME3101.2	Compute frictional losses, torque transmission of mechanical systems.
ME3101.3	Analyze dynamic force analysis of slider crank mechanism
ME3101.4	Knowledge and analyse on design of flywheel.
ME3101.5	Understand how to determine the natural frequencies of continuous systems starting from the general equation of displacement.
ME3101.6	Understand balancing of reciprocating and rotary masses.

Course Name:	**METAL CUTTING & MACHINE TOOLS**
Course Code: ME3102	**Course outcomes:**
ME3102.1	Apply cutting mechanics to metal machining based on cutting force and power consumption
ME3102.2	Operate lathe, milling machines, drill press, grinding machines, etc.
ME3102.3	Select cutting tool materials and tool geometries for different metals.
ME3102.4	Select appropriate machining processes and conditions for different metals.
ME3102.5	Learn machining economics & principles of CNC Machines
ME3102.6	Design jigs and Fixtures for simple parts.

Course Name:	**DESIGN OF MACHINE MEMBERS– II**
Course Code: ME3103	**Course outcomes:**
ME3103.1	The student will able to select the suitable bearing based on the application of the loads and predict the life of the bearing
ME3103.2	Design power transmission elements such as gears, belts, chains, pulleys, ropes, levers and power screws.
ME3103.3	Design of IC Engines parts.
ME3103.4	Utilize the knowledge to design power screws.
ME3103.5	Justify power transmission systems and to design pulleys and geardrives.
ME3103.6	Apply the concepts in designing various machine tool elements.

Course Name:	**OPERATIONS RESEARCH**
Course Code: ME3104	**Course outcomes:**
ME3104.1	Apply the basics of operations research and linear programming problems.
ME3104.2	Apply the knowledge in solving problems of transportation, assignment and sequencing.
ME3104.3	Judge there placement and gametheories
ME3104.4	Judge the replacement and game theories and apply the knowledge to solve problems
ME3104.5	Discuss the waiting line models and project management techniques.
ME3104.6	Apply the knowledge in solving problems of dynamic programming and simulation.

Course Name:	**THERMAL ENGINEERING – II**
Course Code: ME3105	**Course outcomes:**
ME3105.1	Explain the basic concepts of thermal engineering and boilers.
ME3105.2	Discuss the concepts of steam nozzles and steam turbines.
ME3105.3	Gain knowledge about the concepts of reaction turbine
ME3105.4	Gain knowledge about the concepts of steam condensers.
ME3105.5	Discuss the concepts of reciprocating and rotary type of compressors.
ME3105.6	Acquire knowledge about the centrifugal and axial flow compressors.

Course Name:	**THEORY OF MACHINES LAB**
Course Code: ME3106L	**Course outcomes:**
ME3106L.1	Explain and discus inversions of four bar, single slider and double slider chain. Steering Mechanisms- Davis and Ackerman;
ME3106L.2	Explain and demonstrate cam and followers arrangements available in laboratory and plot displacement v/s angle of rotation curve for these.
ME3106L.3	Determine co-efficient of friction of different materials using two roller oscillating arrangement and differentiate among.
ME3106L.4	Describe, discuss and differentiate various types of dynamometers, Brakes, Clutches and Gear boxes with their applications
ME3106L.5	Explain the principle and verify the practical vs. theoretical torque relation for gyroscope and its applications.
ME3106L.6	. Explain static and dynamic balancing

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Course Name:	**MACHINE TOOLS LAB**
Course Code:	**Course outcomes:**
ME3107L.1	Demonstrate about general purpose machine tools in the machine shop.
ME3107L.2	Perform various operations on lathe machine.
ME3107L.3	Perceive different operations on drilling machine.
ME3107L.4	Experiment with basic operations on shaping machine.
ME3107L.5	Utilize slotting machine to make keyways.
ME3107L.6	Experiment with the basic operations on milling machine.

Course Name:	
Course Code: ME3108L	**Course outcomes:**
ME3108L	Experiment with two stroke and four stroke compression and spark ignition engines for various characteristics
ME3108L	Experiment with two stroke and four stroke compression and spark ignition engines for various characteristics.
ME3108L	Perform engine friction, heat balance test, volumetric efficiency, load test of petrol and diesel engines.
ME3108L	Perform speed test, performance test and cooling temperature on petrol and diesel engines.
ME3108L	Utilize air compressor for its performance test and to determine efficiency.
ME3108L	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:	**IPR & PATENTS**
Course Code:	**Course outcomes:**
ME3109.1	Distinguish and Explain various forms of IPRs.
ME3109.2	Distinguish and Explain various forms of IPRs.
ME3109.3	Apply statutory provisions to protect particular form of IPRs.
ME3109.4	Analyse rights and responsibilities of holder of Patent, Copyright, Trademark, Industrial Designetc.
ME3109.5	Identify procedure to protect different forms of IPRs national and international level
ME3109.6	Develop skill of making search using modern tools and technics.

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III B.TECH II SEM

Course Name:	**GREEN ENGINEERING SYSTEMS**
Course Code: ME3201	**Course outcomes:**
ME3201.1	To describe the concept of metrology
ME3201.2	To explain about metrology instruments and application for various measurements.
ME3201.3	To discuss the concept of computer applications in metrology.
ME3201.4	To acquire the principles of various Inspection, Instruments and Methodology.
ME3201.5	To develop the knowledge in the area of non-contact inspection
ME3201.6	able to design tolerances and fits for selected product quality. They can choose appropriate method

Course Name:	**INSTRUMENTATION & CONTROL SYSTEMS**
Course Code:	**Course outcomes:**
ME3202.1	Identify the different types of mechanical instruments.
ME3202.2	Recognise parts of mechanical instruments
ME3202.3	Interpret the types of measurements that can be made with different mechanical instruments
ME3202.4	Measure with mechanical instruments
ME3202.5	select appropriate device for the measurement of parameters like temperature, pressure, speed, stress, humidity, flow velocity etc.,
ME3202.6	justify its use through characteristics and performance.

Course Name:	**REFRIGERATION & AIR CONDITIONING**
Course Code:	**Course outcomes:**
ME3203.1	Calculate the COP of air refrigeration systems
ME3203.2	Describe various components used in vapour-Compression refrigeration system and Estimate the performance
ME3203.3	Discuss the working principles of vapour absorption, steam jet, thermoelectric and vortex tube refrigeration systems
ME3203.4	Recognize the properties of air, summarize the various Psychometric processes and acquire the knowledge of load estimation
ME3203.5	Evaluate cooling and heating loads in an air conditioning and describe the various components of air conditioning system
ME3203.6	undergoing the refrigerating cycles and evaluate their performance

Course Name:	**HEAT TRANSFER**
Course Code: ME3204	**Course outcomes:**
ME3204.1	Understand the basic modes of heat and mass transfer.
ME3204.2	Apply principles of heat and mass transfer to predict transfer coefficients
ME3204.3	Analyze working of various heat transfer equipment
ME3204.4	Design heat and mass transfer equipment.
ME3204.5	Evaluate no. of stages required for given mass transfer problem.
ME3204.6	Analyze the concepts of heat transfer with phase change and condensation along with heat exchangers.

Course Name:	
Course Code: ME3205F	**Course outcomes:**
ME3205F.1	The student shall understand the principles of solar, wind, biomass, geo thermal green energy systems
ME3205F.2	The student shall understand the working of solar, wind, biomass green energy systems
ME3205F.3	The student shall understand the principles and working of geo thermal, ocean energies and green energy systems
ME3205F.4	The student shall understand the principles and working of geo thermal, ocean energies and green energy systems
ME3205F.5	Knowledge their significance in view of their importance in the current scenario and
ME3205F.6	Knowledge potential future applications

Course Name:	**HEAT TRANSFER LAB**
Course Code:	**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:	**METROLOGY & INSTRUMENTATION 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:	**COMPUTATIONAL FLUID DYNAMICS LABORATORY**
Course Code: ME3209L	**Course outcomes:**
ME3209L.1	Recognize the importance of CFD in Heat and Fluid flow.
ME3209L.2	Analyze forced convection heat transfer coefficient over regular bodies like sphere, cylinder.
ME3209L.3	: Estimation of drag coefficient in circular pipe under turbulent flow and bent pipe.
ME3209L.4	: Recognize how to handling moving boundaries and wall effects in motion of fluid.
ME3209L.5	Analyze how to handle power law fluids in CFD.
ME3209L.6	ability to describe various flow features in terms of appropriate fluid mechanical principles and force balances.

Course Name:	**PROFESSIONAL ETHICS & HUMAN VALUES**
Course Code: ME3209	**Course outcomes:**
ME3209.1	Understanding basic purpose of profession, professional ethics and various moral and social issues.
ME3209.2	Awareness of professional rights and responsibilities of a Engineer, safety and risk benefit analysis of a Engineer
ME3209.3	Acquiring knowledge of various roles of Enbgineer In applying ethical principles at various professional levels
ME3209.4	Professional Ethical values and contemporary issues
ME3209.5	Excelling in competitive and challenging environment to contribute to industrial growth.
ME3209.6	a comprehensive understanding of a variety issues that are encountered by every professional in discharging professional duties.

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IV B.TECH I SEM

Course Name:	**AUTOMOBILE ENGINEERING**
Course Code: ME4101	**Course Outcomes**
ME4101.1	Discuss various components of four wheeler automobile
ME4101.2	Apply the knowledge of different parts of transmission system
ME4101.3	Judge about Steering system
ME4101.4	Judge about Suspension system
ME4101.5	Justify the braking system and electrical system used in automobiles
ME4101.6	Analyse the concepts about engine specifications and service, safety and electronic systems used in automobiles

Course Name:	**CAD/CAM**
Course Code: ME4102	**Course Outcomes**
ME4102.1	Describe the mathematical basis in the technique of representation of geometric entities including points, lines, and parametric curves
ME4102.2	Describe the mathematical basis in the technique of representation of surfaces and solid
ME4102.3	Describe the mathematical basis in the technique of representation of geometric entities including technique of transformation of geometric entities using transformation matrix.
ME4102.4	Describe the use of GT and CAPP for the product development.
ME4102.5	Identify the various elements in the Computer Integrated Manufacturing Systems.
ME4102.6	various elements and their activities in the Computer Integrated Manufacturing Systems

Course Name:	**FINITE ELEMENT METHODS**
Course Code:	**Course Outcomes**
ME4103.1	Understand the concepts behind variational methods and weighted residual methods in FEM.
ME4103.2	Identify the application and characteristics of FEA elements such as bars, beams, plane and isoparametric elements, and 3-D element
ME4103.3	Develop element characteristic equation procedure
ME4103.4	generation of global stiffness equation will be applied.
ME4103.5	Able to apply Suitable boundary conditions to a global structural equation, and reduce it to a solvable form
ME4103.6	Able to identify how the finite element method expands beyond the structural domain, for problems involving dynamics, heat transfer, and fluid flow.

Course Name:	**UN CONVENTIONAL MACHINING PROCESSES**
Course Code:	**Course Outcomes**
ME4104.1	CO1: Understand the concepts of modern machining processes. .

ME4104.2	CO2: Learn the principles of ultrasonic machining.
ME4104.3	CO3: Apply the principles and procedure of electro chemical and processes.
ME4104.4	Apply the principles and procedure of chemical machining processes
ME4104.5	CO4: Apply the principles and procedure of thermal metal removal processes
ME4104.6	CO5: Illustrate the principles and procedure of electron beam machining, laser beam machining and plasma machining.

Course Name:	**NANO TECHNOLOGY**
Course Code: ME4105	**Course Outcomes**
ME4105.1	Understand principles and mechanisms of various synthesis and processing techniques
ME4105.2	Demonstrate the knowledge to synthesize different nanomaterial choosing suitable method
ME4105.3	Design desired nanostructure with controlled size and desired morphology and property.
ME4105.4	Able to Identify the essential concepts used in nanotechnology.
ME4105.5	Identify the materials, properties, syntheses and fabrication, characterization and applications in various fields.
ME4105.6	Analyze the data obtained from different techniques

Course Name:	**AUTOMATION IN MANUFACTURING**
Course Code: ME4106	**Course Outcomes**
ME4106	Able to Solve the line balancing problems in the various flow line systems with and without use buffer storage.
ME4106	Understand the different automated material handling, storage and retrieval systems and automated inspection systems.
ME4106	Use of Adaptive Control principles and implement the same online inspection and control.
ME4106	The types and strategies and various components in Automated Systems.
ME4106	Understand the automated flow lines, line balancing, material storage and retrieval and inspection.
ME4106	Knowledge on Automated Material Handling And Storage Systems

Course Name:	**SIMULATION LAB**
Course Code: ME4107L	**Course Outcomes**
ME4107L.1	The student will be able to appreciate the utility of the tools like ANSYS or FLUENT in solving real time problems and day to day problems.
ME4107L.2	Use of these tools for any engineering and real time applications.
ME4107L.3	Acquire knowledge on utilizing these tools for a better project in their curriculum as well as they will be prepared to handle industry problems with confidence

	when it matters to use these tools in their employment.
ME4107L.4	Experiment with harmonic analysis, HT analysis and buckling analysis.
ME4107L.5	Create part programmes using FANUC controller.
ME4107L.6	Apply G-codes for automated tool path using CAM software.

IV B.TECH II SEM

Course Name:	**PRODUCTON PLANNING AND CONTROL**
Course Code:	**Course Outcomes**
ME4201.1	Tounderstandthedifferenttypesofproductionsystemsandtheinternalorganizationof production planning and control.
ME4201.2	To estimate forecasts in the manufacturing and service sectors using selected quantitative and qualitative techniques.
ME4201.3	To understands the importance and function of inventory and to be able to apply for its control
ME4201.4	To understands the importance and function of inventory and to be able to apply for its management
ME4201.5	To apply routing procedures and differentiate schedule and loading and interpret scheduling policies and aggregate planning
ME4201.6	To understand dispatching procedure and applications of computers in production planning and control.

Course Name:	**GREEN ENGINEERING SYSTEMS**
Course Code: ME4202	**Course Outcomes**
ME4202.1	The student shall understand the principles of solar, wind, biomass, geo thermal green energy systems
ME4202.2	The student shall understand the working of solar, wind, biomass green energy systems
ME4202.3	The student shall understand the principles and working of geo thermal, ocean energies and green energy systems
ME4202.4	The student shall understand the principles and working of geo thermal, ocean energies and green energy systems
ME4202.5	Knowledge their significance in view of their importance in the current scenario and
ME4202.6	Knowledge potential future applications

Course Name:	**POWER PLANT ENGINEERING**
Course Code: ME4203	**Course Outcomes**
ME4203.1	Basic knowledge of Different types of Power Plants, site selection criteria of each one of them
ME4203.2	Understanding of Thermal Power Plant Operation, turbine governing, different types of high pressure boilers including supercritical and supercharged boilers, Fluidized bed combustion systems

ME4203.3	Design of chimney in thermal power plants, knowledge of cooling tower operation, numerical on surface condenser design
ME4203.4	Basic knowledge of Different types of Nuclear power plants including Pressurized water reactor, Boiling water reactor, gas cooled reactor, liquid metal fast breeder reactor
ME4203.5	Understanding of Power Plant Economics, Energy Storage including compressed air energy and pumped hydro etc
ME4203.6	Discussing environmental and safety aspects of power plant operation

Course Name:	**QUALITY AND RELIABILITY ENGINEERING**
Course Code: ME4204	**Course Outcomes**
ME4204.1	1. Attain the basic techniques of quality improvement, fundamental knowledge of statistics and probability
ME4204.2	Use control charts to analyze for improving the process quality.
ME4204.3	Describe different sampling plans
ME4204.4	Acquire basic knowledge of total quality management
ME4204.5	Understand the concepts of reliability and maintainability
ME4204.6	approaches and techniques to assess and improve process and/or product quality and reliability