Course Outcomes: Students should be able to

First Year (FE) Mechanical Engineering (Curriculum 2015 Pattern)

Semester-I

Subject	**Engineering Mathematics -I**
Subject Code	**ME 101 (107001)**
Course Outcome (COs)	
ME 101.1	Understand the concepts of matrics that serve as an essential basis for several computational techniques.
ME 101.2	Understand and solve algebraic and transcendental equations.
ME 101.3	Acquire the knowledge of infinite series, Taylor series & Malaren's series, Understand and determine the convergence of series
ME 101.4	Apply the knowledge of series expansions of functions
ME 101.5	Prove the results of partial differentiation. Apply partial differentiation for evaluating and proving the results.
ME 101.6	Apply Jacobian for evaluating and proving the results based on Errors and approximations, Maxima and minima.

Subject	**Engineering Physics**
Subject Code	**ME102 (107002)**
Course Outcome (COs)	
ME102.1	Students are enabled to derive the diffraction grating formula.
ME102.2	Students are capable to Calculate the reverberation time of a room and suggest how to design a room with optimal reverberation time
ME102.3	Students will be able to explain working principle of lasers.
ME102.4	Ability to estimate the charge carrier mobility and density in intrinsic & extrinsic Semiconductor, PN Junction diode
ME102.5	Students are capable to calculate the wavelength of a particle as a function of its momentum.
ME102.6	Ability to explain different methods of growth and synthesis of nana particles and its application in Engineering.

Subject	**Engineering Graphics I**
Subject Code	**ME 103(102006)**
Course Outcome (COs)	
ME 103.1	Students will be able to develop the manual drawing skill, drawing interpretation skill.
ME 103.2	Students will be able to develop the physical realization of the dimension & views of the objects.
ME 103.3	Student will be able to develop imagination of Physical Objects to be represented on paper for Engineering Communication.

Subject	Basic Electrical Engineering
Subject Code	ME 104(103004)
Course Outcome (COs)	
ME104.1	Relation between Voltage and Current
ME104.2	Energy conversions
ME104.3	Direction of Induced emf
ME104.4	Transform of energy
ME104.5	Understanding of a pure parameter
ME104.6	Concept of three phase supply
ME104.7	Response of element is identical with various sources

Subject	Basic Civil & Environmental Engineering
Subject Code	ME 105(101005)
Course Outcome (COs)	
ME105.1	Understand the scientific terminologies related to civil engineering
ME105.2	Familiarize with different components, equipment and technical of civil engineering materials of construction
ME105.3	Describe the structure and function of an ecosystem.
ME105.4	Explains the concept of built environment and its importance
ME105.5	Explain the causes, effects and control measures of various types of pollutions.

Subject	Fundamental of programming language -I
Subject Code	ME 106(110003)
Course Outcome (COs)	
ME106.1	To learn & acquire art of computer programming.
ME106.2	To know about some popular programming language and how to choose a programming language for solving a problem using a computer.
ME106.3	To learn basics of Programming in C

Subject	Workshop Practice
Subject Code	ME 107(102006)
Course Outcome (COs)	
ME107.1	Introduction to different material in engineering practices with respect to their workability, formability & machinability with hand tools & power & to develop skills through hands on experience.

Semester-II

Subject	Engineering Mathematics II
Subject Code	ME 108(107008)
Course Outcome (COs)	

ME108.1	Solve the differential equations by choosing proper method of solution.
ME108.2	Solve the problems on orthogonal trajectories, simple electrical circuits, and heat flow by applying the mehods of Ordinary differential Equations.
ME108.3	Apply the properties of special functions to evaluate integral.
ME108.4	Apply the properties of special functions to evaluate integral. Sketch the curve with full justification.
ME108.5	Demonstrate knowledge and understanding of plane and solid geometry & use geometrical skills to solve simple real-world problems
ME108.6	Evaluate double integral and change the order of the integration. Evaluate area bounded between two curves, mass of Lamina, moment of inertia.

Subject	**Engineering Chemistry**
Subject Code	**ME 109(107009)**
Course Outcome (COs)	
ME 109.1	Technology involved in improving quality of water for its industrial use.
ME 109.2	Basicconcepts of electro analytical techniques that facilitate rapid and reliable measurements.
ME 109.3	Chemical structure of polymers and its effect on their various properties when used as engineering materials. To lay foundation for application the applications of polymers for specific applications and as composite materials.
ME 109.4	Study of fossil fuel and derived fuels with its properties and applications.
ME 109.5	An insight into carbon and hydrogen compounds with aspects of modern chemistry.
ME 109.6	The principles of chemical and electrochemical reactions causing corrosion and methods used for minimizing the corrosion.

Subject	**Basic Mechanical Engineering**
Subject Code	**ME 110(102013)**
Course Outcome (COs)	
ME110.1	This Course will help the students to acquire knowledge of mechanical engineering.
ME110.2	Describe the scope of mechanical engineering with multidisciplinary industries.
ME110.3	Understand & identify common machine element with their functions & power transmission deviMEs.
ME110.4	Learn conventional machine tools & understand the concept of design in mechanical engineering.
ME 110.5	Impart knowledge of basic concept of thermodynamics applied to industrial applications.
ME 110.6	Understand lying principles of energy conversion system & power plant.

Subject	**Engineering Mechanics**
Subject Code	**ME 111(101011)**
Course Outcome (COs)	

ME111.1	Apply fundamental knowledge of mathematics, science, and engineering.
ME111.2	Design and conduct mechanics experiments.
ME111.3	Analyze and interpret experimental and computational mechanics data
ME111.4	Design a system, component or process to meet desired needs by synergistically combining mechanics of materials, fluid mechanics, and dynamics, when necessary.
ME111.5	Identify, formulate, and solve engineering problems involving mechanics of rigid bodies.
ME111.6	Effectively function as a member of multi-disciplinary technical team and engage in life-long learning.

Subject	**Basic Electronics Engineering**
Subject Code	**ME 112(104012)**
Course Outcome (COs)	
ME 112.1	Get knowledge ofsome basic electronic components and circuits
ME 112.2	Understand basics of diodes and transistor circuits
ME 112.3	Understand working of some IC based circuits
ME 112.4	Analyze the logic gates and their usage in digital circuits
ME 112.5	Expose the students to working ofsome power electronics devices, transducers and application of transducers
ME 112.6	Understand the basic aspect of electronic communication systems

Subject	**Fundamental of programming language -II**
Subject Code	**ME 113(110010)**
Course Outcome (COs)	
ME113.1	To learn & acquire art of computer programming.
ME113.2	To know aboutsome popular programming language and how to choose a programming language for solving a problem using a computer.
ME113.3	To learn basics of Programming in C , Advanced Programming.

Subject	**Engineering Graphics II**
Subject Code	**ME 114(102006)**
Course Outcome (COs)	
ME114.1	Students will be able to develop the computerized drawing skill, drawing interpretation skill.
ME114.2	Students will be able to develop the physical realization of the dicension & views of the objects.
ME114.3	Student will be able to develop imagination of Physical Objects to be represented on software.

Course Outcomes: Students should be able to

Second Year Mechanical Engineering (SE) (Curriculum 2015 Pattern)

Semester-I

Subject	**Thermodynamics**
Subject Code	ME204(202043)
Course Outcome (COs)	
ME 204.1	Apply various laws of thermodynamics to various processes and real systems.
ME 204.2	Apply the concept of Entropy, Calculate heat, work and other important thermodynamic properties for various ideal gas processes.
ME 204.3	Estimate performance of various Thermodynamic gas power cycles and gas refrigeration cycle and availability in each case.
ME 204.4	Estimate the condition of steam and performance of vapour power cycle and vapour compression cycle.
ME 204.5	Estimate Stoichiometric air required for combustion, performance of steam generators and natural draught requirements in boiler plants.
ME 204.6	Use Psychromertic charts and estimate various essential properties related to Psychrometry and processes

Subject	**Manufacturing Process-I**
Subject Code	ME 202(202041)
Course Outcome (COs)	
ME202.1	Understand and analyze foundry practices like pattern making, mold making, Core making and Inspection of defects.
ME202.2	Understand and analyze Hot and Cold Working, Rolling, Forging, Extrusion and
ME202.3	Understand different plastic molding processes, Extrusion of Plastic and Thermoforming
ME202.4	Understand different Welding and joining processes and its defects
ME202.5	Understand, Design and Analyze different sheet metal working processes
ME202.6	Understand the constructional details and Working of Centre Lathe

Subject	**Engineering Mathamatics-III**
Subject Code	ME201(207002)
Course Outcome (COs)	
ME 201.1	Solve higher order linear differential equations and apply to modeling and analyzing mass spring systems.
ME 201.2	Apply Laplace transform and Fourier transform techniques to solve differential equations involved in Vibration theory, Heat transfer and related engineering

	applications.
ME 201.3	Apply statistical methods like correlation, regression analysis in analyzing, interpreting experimental data and probability theory in testing and quality control.
ME 201.4	Perform vector differentiation and integration, analyze the vector fields and apply to fluid flow problems.
ME 201.5	Solve various partial differential equations such as wave equation, one and two dimensional heat flow equations.

Subject	**Material Science**
Subject Code	ME205(202044)
Course Outcome (COs)	
ME 205.1	Understand the basic concepts and properties of Material.
ME 205.2	Understand about material fundamental and processing.
ME 205.3	Select proper metal, alloys, nonmetal and powder metallurgical component for specific requirement
ME 205.4	Detect the defects in crystal and its effect on crystal properties.
ME 205.5	Evaluate the different properties of material by studying different test
ME 205.6	Recognize how metals can be strengthened by cold-working and hot working

Subject	**Computer Aided Machine Drawing**
Subject Code	ME203(202042)
Course Outcome (COs)	
ME 203.1	Understand the importance of CAD in the light of allied technologies such as CAM, CAE, FEA, CFD, PLM
ME 203.2	Understand the significance of parametric technology and its application in 2D sketching.
ME 203.3	Understand the significance of parametric feature-based modeling and its application in 3D machine components modeling.
ME 203.4	Ability to create 3D assemblies that represent static or dynamic Mechanical Systems.
ME 203.5	Ability to ensure manufacturability and proper assembly of components and assemblies.
ME 203.6	Ability to communicate between Design and Manufacturing using 2D drawings.

Subject	**Strength of Materials**
Subject Code	ME206(202051)
Course Outcome (COs)	
ME206.1	Apply knowledge of mathematics, science for engineering applications

ME206.2	Design and conduct experiments, as well as to analyze and interpret data
ME206.3	Design a component to meet desired needs within realistic constraints of health and Safety.
ME206.4	Identify, formulate, and solve engineering problems
ME 206.5	Practice professional and ethical responsibility
ME 206.6	Use the techniques, skills, and modern engineering tools necessary for engineering practice

Subject	**Audit course**
Subject Code	ME207(202055)
Course Outcome (COs)	
ME207.1	Understood human values, their significance and role in life.
ME207.2	Promote self-reflection and critical inquiry that foster critical thinking of one's value and the values of others.
ME207.3	Practice respect for human rights and democratic principles.
ME207.4	Familiarized with various living and non-living organisms and their interaction with environment
ME207.5	Understood the basics regarding the leadership and to become a conscious professional.
Semester-II	

Subject	**Fluid Mechanics**
Subject Code	ME208(202045)
Course Outcome (COs)	
ME208.1	Use of various properties in solving the problems in fluids
ME208.2	Use of Bernoulli's equation for solutions in fluids
ME208.3	Determination of forces drag and lift on immersed bodies

Subject	**Soft Skills**
Subject Code	ME209(202047)
Course Outcome (COs)	
ME209.1	Improved communication, interaction and presentation of ideas.
ME209.2	Right attitudinal and behaviouralchange
ME209.3	Developed right-attitudinal and behavioral change

Subject	**Theory of Machines-I**
Subject Code	ME210(202048)
Course Outcome (COs)	
ME210.1	Identify mechanisms in real life applications.
ME210.2	Perform kinematic analysis of simple mechanisms.
ME210.3	Perform static and dynamic force analysis of slider crank mechanism.
ME210.4	Determine moment of inertia of rigid bodies experimentally.
ME210.5	Analyze velocity and acceleration of mechanisms by vector and graphical methods.

Subject	**Engineering Metallergy**
Subject Code	ME211(202049)
Course Outcome (COs)	
ME211.1	describe how metals and alloys formed and how the properties change due to microstructure
ME211.2	apply core concepts in Engineering Metallurgy to solve engineering problems.
ME211.3	conduct experiments, as well as to analyze and interpret data
ME211.4	select materials for design and construction.
ME211.5	possess the skills and techniques necessary for modern materials engineering practice
ME211.6	recognize how metals can be strengthened by alloying, cold-working, and heat treatment

Subject	**Applied Thermodynamics**
Subject Code	ME 212 (202050)
Course Outcome (COs)	
ME212.1	Classify various types of Engines, Compare Air standard, Fuel Air and Actual cycles and make out various losses in real cycles.
ME212.2	Understand Theory of Carburetion, Modern Carburetor, Stages of Combustion in S. I. Engines and Theory of Detonation, Pre-ignition and factors affecting detonation.
ME212.3	Understand Fuel Supply system, Types of Injectors and Injection Pumps, Stages of Combustion in CI Engines, Theory of Detonation in CI Engines and Comparison of SI and CI Combustion and Knocking and Factors affecting, Criteria for good combustion chamber and types.
ME212.4	Carry out Testing of I. C. Engines and analyze its performance.
ME212.5	Describe construction and working of various I. C. Engine systems (Cooling, Lubrication, Ignition, Governing, and Starting) also various harmful gases emitted from exhaust and different devices to control pollution and emission norms for pollution control.

ME212.6	Describe construction, working of various types of reciprocating and rotary compressors with performance calculations of positive displacement compressors.

Subject	**Electrical and Electronics Engineering**
Subject Code	ME 213(203152)
Course Outcome (COs)	
ME213.12	Develop the capability to identify and select suitable DC motor / induction motor / special purpose motor and its speed control method for given industrial application.
ME213.2	Program Arduino IDE using conditional statements
ME213.3	Interfacing sensors with Arduino IDE

Subject	**Machine Shop – I**
Subject Code	ME214(203153)
Course Outcome (COs)	
ME214.1	Recognize different tools and tackles used in engineering application.
ME214.2	Describe various manufacturing processes and perform operation on simple machine tools.

Course Outcomes: Students should be able to
Third Year Mechanical Engineering (TE) (Curriculum 2015 Pattern)
Semester-I

Subject	**Design of Machine Elements-I**
Subject Code	ME 301 (302041)
Course Outcome (COs)	
ME 301.1	Ability to identify and understand failure modes for mechanical elements and design of machine elements based on strength.
ME 301.2	Ability to design Shafts, Keys and Coupling for industrial applications.
ME 301.3	Ability to design machine elements subjected to fluctuating loads.
ME 301.4	Ability to design Power Screws for various applications.
ME 301.5	Ability to design fasteners and welded joints subjected to different loading conditions.
ME 301.6	Ability to design various Springs for strength and stiffness.

Subject	**Heat Transfer**
Subject Code	ME 302 (302042)
Course Outcome (COs)	
ME 302.1	Analyze the various modes of heat transfer and implement the basic heat conduction equations for steady one dimensional thermal system.
ME 302.2	Implement the general heat conduction equation to thermal systems with and without internal heat generation and transient heat conduction.
ME 302.3	Analyze the heat transfer rate in natural and forced convection and evaluate through experimentation investigation.
ME 302.4	Interpret heat transfer by radiation between objects with simple geometries.
ME 302.5	Analyze the heat transfer equipment and investigate the performance.

Subject	**Theory of Machines-II**
Subject Code	ME 303 (302043)
Course Outcome (COs)	
ME 303.1	Student will be able to understand fundamentals of gear theory which will be the prerequisite for gear design.
ME 303.2	Student will be able to perform force analysis of Spur, Helical, Bevel, Worm and Worm gear.
ME 303.3	The student to analyze speed and torque in epi-cyclic gear trains which will be the prerequisite for gear box design.
ME 303.4	Student will be able to design cam profile for given follower motions and understand cam Jump phenomenon, advance cam curves.
ME 303.5	The student will synthesize a four bar mechanism with analytical and graphical methods.
ME 303.6	The student will analyze the gyroscopic couple or effect for stabilization of Ship Aeroplane and Four wheeler vehicle & Student will choose appropriate drive for given application (stepped / step-less).

Subject	**Turbo Machines**
Subject Code	ME 309 (302044)
Course Outcome (COs)	
ME 309.1	Apply thermodynamics and kinematics principles to turbo machines.
ME 309.2	Analyze the performance of turbo machines.
ME 309.3	Ability to select turbo machine for given application.
ME 309.4	Predict performance of turbo machine using model analysis.

Subject	**Metrology and Quality Control**
Subject Code	ME 304 (302045)
Course Outcome (COs)	

ME 304.1	Understand the methods of measurement, selection of measuring instruments / standards of measurement, carryout data collection and its analysis.
ME 304.2	Explain tolerance, limits of size, fits, geometric and position tolerances and gauge design.
ME 304.3	Understand and use/apply Quality Control Techniques/ Statistical Tools appropriately.
ME 304.4	Develop an ability of problem solving and decision making by identifying and analyzing the cause for variation and recommend suitable corrective actions for quality improvement.

Subject	**Skill Development**
Subject Code	ME 306 (302046)
Course Outcome (COs)	
ME 306.1	Assemble and disassemble different mechanical system.
ME 306.2	Use different mechanical tools and tackles in machine assembly shop.
ME 306.3	Use theoretical knowledge in practice.
ME 306.4	Identify various components in the mechanical system.

Semester-II

Subject	**Numerical Methods and Optimization**
Subject Code	ME 307(302047)
Course Outcome (COs)	
ME 307.1	Use appropriate Numerical Methods to solve complex mechanical engineering problems.
ME 307.2	Formulate algorithms and programming.
ME 307.3	Use Mathematical Solver.
ME 307.4	Generate Solutions for real life problem using optimization techniques.
ME 307.5	Analyze the research problem.

Subject	**Design of Machine Elements-II**
Subject Code	**ME 308 (302048)**
Course Outcome (COs)	
ME 308.1	To understand and apply principles of gear design to spur gears and industrial spur gear boxes.
ME 308.2	To become proficient in Design of Helical and Bevel Gear.
ME 308.3	To develop capability to analyse Rolling contact bearing and its selection from manufacturer's Catalogue.
ME 308.4	To learn a skill to design worm gear box for various industrial applications.
ME 308.5	To inculcate an ability to design belt drives and selection of belt, rope and chain

	drives.
ME 308.6	To achieve an expertise in design of Sliding contact bearing in industrial applications.

Subject	**Refrigeration and Air Conditioning**
Subject Code	ME 401 (302049)
Course Outcome (COs)	
ME 401.1	Illustrate the fundamental principles and applications of refrigeration and air conditioning system
ME 401.2	Obtain cooling capacity and coefficient of performance by conducting test on vapour compression refrigeration systems
ME 401.3	Present the properties, applications and environmental issues of different refrigerants such as Calculate cooling load for air conditioning systems used for various,Operate and analyze the refrigeration and air conditioning systems.

Subject	**Mechatronics**
Subject Code	ME 310 (302050)
Course Outcome (COs)	
ME 310.1	Identification of key elements of mechatronics system and its representation in terms of block diagram
ME 310.2	Understanding the concept of signal processing and use of interfacing systems such as ADC,DAC, digital I/O
ME 310.3	Interfacing of Sensors, Actuators using appropriate DAQ micro-controller
ME 310.4	Time and Frequency domain analysis of system model (for control application)
ME 310.5	PID control implementation on real time systems
ME 310.6	Development of PLC ladder programming and implementation of real life system

Subject	**Manufacturing Process-II**
Subject Code	ME 311 (302051)
Course Outcome (COs)	
ME 311.1	Student should be able to apply the knowledge of various manufacturing processes.
ME 311.2	Student should be able to identify various process parameters and their effect on processes.
ME 311.3	Student should be able to figure out application of modern machining.
ME 311.4	Students should get the knowledge of Jigs and Fixtures for variety of operations.

Subject	**Machine Shop-II**

Subject Code	ME 312 (302052)
Course Outcome (COs)	
ME 312.1	Ability to develop knowledge about the working and programming techniques for various machines and tools

Subject	**Seminar**
Subject Code	ME 313 (302053)
Course Outcome (COs)	
ME 313.1	Establish motivation for any topic of interest and develop a thought process for technical presentation.
ME 313.2	Organize a detailed literature survey and build a document with respect to technical publications.
ME 313.3	Analysis and comprehension of proof-of-concept and related data.
ME 313.4	Effective presentation and improve soft skills.
ME 313.5	Make use of new and recent technology (e.g. Latex) for creating technical reports

Subject	**Audit Course**
Subject Code	ME 207 (302054)
Course Outcome (COs)	
ME 207.1	To create and sustain a community of learning in which students acquire knowledge in fire, safety and hazard management and learn to apply it professionally with due consideration for ethical, human life & property safety issues.
ME 207.2	To pursue research and development in fire safety engineering, hazard management and disseminate its findings.
ME 207.3	To meet the challenges of today and tomorrow in the most effective, efficient and contemporary educational manner.
ME 207.4	To help in building national capabilities in fire safety engineering, disaster management, hazard management, industrial safety education through practical training to ensure a fire safe nation.

Course Outcomes: Students should be able to
Final Year Mechanical Engineering (BE) (Curriculum 2012 Pattern)
Semester-I

Subject	**Refrigeration and Air Conditioning**
Subject Code	ME401 (4020401)
Course Outcome (COs)	
ME401.1	Illustrate the fundamental principles and applications of refrigeration and air conditioning system

ME401.2	Obtain cooling capacity and coefficient of performance by conducting test on vapor compression refrigeration systems
ME401.3	Present the properties, applications and environmental issues of different refrigerants
ME401.4	Calculate cooling load for air conditioning systems used for various applications
ME 401.5	Operate and analyze the refrigeration and air conditioning systems.

Subject	**CAD/ CAM Automation**
Subject Code	ME402 (402042)
Course Outcome (COs)	
ME 402.1	Analyze and design real world components
ME 402.2	Suggest whether the given solid is safe for the load applied
ME 402.3	Select suitable manufacturing method for complex components.

Subject	**Dynamics of Machinery**
Subject Code	ME 403(402048)
Course Outcome (COs)	
ME403.1	Solutions to balancing problems of machines
ME403.2	Ability to understand the fundamentals of vibration and Noise.
ME403.3	Ability to develop analytical competency in solving vibration problems.
ME403.4	Ability to understand measurement and control of vibration and noise.
ME403.5	Ability to calculate natural frequencies, Eigen values & Eigen vectors.
ME403.6	Ability to measure vibrations, vibration characteristics and understand various methods for vibration control for real life problem.

Subject	**Energy Audit Management (Elective-III)**
Subject Code	**ME404A (402044A)**
Course Outcome (COs)	
ME 404A.1	Carry out Energy Audit of there residence / society / college where they are studying.
ME 404A.2	Carry out electrical tariff calculation and accurately predict the electricity bill required for the installation.
ME 404A.3	Suggest various methods to reduce energy consumption of the equipment / office / premises

Subject	**OPERATION RESEARCH (Elective – II)**
Subject Code	**ME 405C (402045 C)**
Course Outcome (COs)	
ME 405C.1	Illustrate the need to optimally utilize the resources in various types of industries.
ME 405C.2	Apply and analyze mathematical optimization functions to various applications.
ME 405C.3	Demonstrate cost effective strategies in various applications in industry.

Subject	**Project –I**
Subject Code	ME 406(402046)
Course Outcome (COs)	
ME 406.1	Identify, formulate and solve problems related to mechanical engineering.
ME 406.2	Work in a group as a part of multidisciplinary team with professional responsibility
ME406.3	Design a system, component or process to meet desired needs within realistic constraints.
ME406.4	Review literature and finalize problem statement.
ME406.5	Plan activity schedule and implementation in a given time span.
ME406.6	Prepare and present technical report.
ME406.7	Apply modern design and analysis tools.

Semester-II	
Subject	**Power Plant Engineering**
Subject Code	ME407 (402047)
Course Outcome (COs)	
ME 407.1	Ability to have adequacy with Design, erection and development of energy conversion plants.
ME407.2	Optimization of Energy Conversion plant with respect to the available resources.
ME407.3	Scope of alternative erection of optimized, suitable plant at the location depending upon geographical conditions.

Subject	**Mechanical System Design**
Subject Code	408(402048)
Course Outcome (COs)	
ME408.1	The student will understand the difference between component level design and system level design.
ME408.2	Ability to design various mechanical systems like pressure vessels, machine tool gear boxes, material handling systems, etc. for the specifications stated/formulated.

ME408.3	Ability to learn optimum design principles and apply it to mechanical components
ME408.4	Ability to to handle system level projects from concept to product.

Subject	**Industrial Engineering(Elective- III)**
Subject Code	ME406C(402049 C)
Course Outcome (COs)	
ME409C .1	Apply the Industrial Engineering concept in the industrial environment
ME409C.2	Manage and implement different concepts involved in methods study and understanding of work content in different situations.
ME409C.3	Undertake project work based on the course content
ME409C.4	Describe different aspects of work system design and facilities design pertinent to manufacturing industries
ME409C.5	Identify various cost accounting and financial management practices widely applied in industries
ME409C.6	Develop capability in integrating knowledge of design along with other aspects of value addition in the conceptualization and manufacturing stage of various products.

Subject	**Finite Element Analysis(Elective- IV)**
Subject Code	402050(B)
Course Outcome (COs)	
ME 410B.1	Derive and use 1-D and 2-D element stiffness matrices and load vectors from various methods to solve for displacements and stresses.
ME 410B.2	Apply mechanics of materials and machine design topics to provide preliminary results used for testing the reasonableness of finite element results.
ME 410B.3	Explain the inner workings of a finite element code for linear stress, displacement, temperature and modal analysis.
ME 410B.4	Interpret the results of finite element analyses and make an assessment of the results in terms of modeling (physics assumptions) errors, discretization (mesh density and refinement toward convergence) errors, and numerical (round-off) errors.

Subject	**DPBC(Elective- IV)**
Subject Code	ME 410C (402050 C)
Course Outcome (COs)	
ME 410 C.1	Select suitable Pump, Blower, fan or compressor for a given application.
ME 410 C.2	Design Pump, Blower, fan or compressor for a given application

Subject	**Project – II**
Subject Code	ME 411 (402051)
Course Outcome (COs)	
ME 411.1	Identify, formulate and solve problems related to mechanical engineering.
ME411.2	Work in a group as a part of multidisciplinary team with professional responsibility
ME411.3	Design a system, component or process to meet desired needs within realistic constraints.
ME411.4	Review literature and finalize problem statement.
ME411.5	Plan activity schedule and implementation in a given time span.
ME411.6	Prepare and present technical report.
ME411.7	Apply modern design and analysis tools.