

CONSOLIDATED LIST OF COURSE OUTCOMES

Department of Mechanical Engineering

Sl. No	Course Code & Course Name	Course Outcome Number	Course Outcome
1	MA101 CALCULUS	C101.1	Knowledge about concept and importance of sustainability
		C101.2	Understand about different types of pollution and waste generation, their causes effects and control
		C101.3	Understand environmental management standards and environmental impact assessment
		C101.4	Understand the concept of bio mimicking, green Engineering and green building
		C101.5	Knowledge about various types of conventional and non-conventional energy sources
		C101.6	Understand the role of engineering and technology in sustainable development
2	PH100 - ENGINEERING PHYSICS	C102.1	Compute the quantitative aspects of waves and oscillations in engineering systems.
		C102.2	Apply the interaction of light with matter through interference, diffraction and identify these phenomena in different natural optical processes and optical instruments.
		C102.3	Analyse the behaviour of matter in the atomic and subatomic level through the principles of quantum mechanics to perceive the microscopic processes in electronic devices.
		C102.4	Apply the knowledge of ultrasonics in non-destructive testing and use the principles of acoustics to explain the nature and characterization of acoustic design and to provide a safe and healthy environment
		C102.5	Apply the comprehended knowledge about laser and fibre optic communication systems in various engineering applications
		C102.6	Using the knowledge of acoustics in designing acoustically important Buildings.
3	BE100 - ENGINEERING MECHANICS	C103.1	Solve problems dealing with forces and determine the resultant. Also Identify the forces acting on a body and draw the free body diagram
		C103.2	Solve problems on forces acting on a body in space. Also determine the support reactions of beams subjected to concentrated loads and uniformly distributed loads
		C103.3	Determine the centroid and moment of inertia of composite areas.
		C103.4	Analyse the concept of friction to solve problems of bodies placed on rough surfaces and solve problems on support reactions of beams using principle of virtual work.
		C103.5	Use Newton's second law to solve problems on bodies in motion and apply the concept of instantaneous centre to bodies having combined translation and rotation.
		C103.6	Knowledge on types of Vibration and solve problem using the concept of Simple Harmonic Motion

4	BE10102 - INTRODUCTION TO MECHANICAL ENGINEERING	C104.1	Acquire knowledge on fundamental concepts of thermodynamics and laws of thermodynamics.
		C104.2	Use energy conservation devices from the knowledge of the energy conversion device.
		C104.3	Select and use an appropriate refrigeration and air conditioning systems
		C104.4	Develop and implement basic ideas of the different parts, working of automobile and fundamentals of aerodynamics
		C104.5	Preparation and ability to engage in independent and life-long learning in the context of knowledge on engineering materials.
		C104.6	Select and use the different manufacturing methods
5	BE103 - INTRODUCTION TO SUSTAINABLE ENGINEERING	C105.1	Knowledge about concept and importance of sustainability
		C105.2	Understand about different types of pollution and waste generation, their causes effects and control
		C105.3	Understand environmental management standards and environmental impact assessment
		C105.4	Understand the concept of bio mimicking, green Engineering and green building
		C105.5	Knowledge about various types of conventional and non-conventional energy sources
		C105.6	Understand the role of engineering and technology in sustainable development
6	EC100 - BASICS OF ELECTRONICS ENGINEERING	C106.1	To understand and identify passive components
		C106.2	Student can identify active components and can design, setup simple circuits using diodes
		C106.3	To understand the basics of BJT and detailed study of its characteristics
		C106.4	To understand and detailed study of JFET&MOSFET
		C106.5	To understand the working of rectifier
		C106.6	Voltage and currents can be measured and monitored using electronic measuring instruments
7	PH110 - ENGINEERING PHYSICS LAB	C107.1	Develop analytical/experimental skills and impart prerequisite hands-on experience for engineering laboratories
		C107.2	Understand the need for precise measurement practices for data recording
		C107.3	Understand the principle, concept, working and applications of relevant technologies and comparison of results with theoretical calculations
		C107.4	Analyse the techniques and skills associated with modern scientific tools such as lasers and fibre optics
		C107.5	Develop basic communication skills through working in groups in performing the laboratory experiments and by interpreting the results
		C107.6	To apply the concepts of laser technology in various devices

8	ME110 - MECHANICAL ENGINEERING WORKSHOP	C108.1	Knowledge achieved to explain the various manufacturing process in the basic mechanical engineering workshop sections- smithy, carpentry, assembling, welding etc.
		C108.2	Identify the various hand tools used in the basic mechanical engineering workshop sections-smithy, carpentry, assembling, welding etc.
		C108.3	Able to choose different measuring devices according to the work.
		C108.4	Ability to name and summarize the operations of various machine tools like lathe, milling, drilling and shaping machines.
		C108.5	Knowledge achieved to disassemble and assemble the machines like IC engines.
		C108.6	Skill achieved to construct models by using basic mechanical workshop sections like welding, moulding, smithy, carpentry etc.
9	EC110 - ELECTRONICS ENGINEERING WORKSHOP	C109.1	Graduates will be able to recognize the appropriate methods to solve electronics and communication problems.
		C109.2	Graduates will be able to acquire basic training and skills to solve basic electronics problems.
		C109.3	Graduates will be able to apply the equations and formulas to solve related practical value problems.
		C109.4	Graduates will be able to calculate the problems in Diodes, biasing of transistor, amplifiers, oscillators and regulator circuits.
		C109.5	Graduates will be able to evaluate communication systems like RADAR, GPS, Entertainment Electronics
		C109.6	Graduates will be able to measure current voltage values using equipment and to analyse a waveform
10	MA102 - DIFFERENTIAL EQUATIONS	C110.1	Graduates will be able acquire basic knowledge of homogeneous differential equations and methods of solving them.
		C110.2	Graduates will be able acquire basic knowledge of non-homogeneous differential equations and methods of solving them.
		C110.3	Graduates will be able to apply Fourier series for analysing periodic functions in terms of their frequency components.
		C110.4	Graduates will be able form and solve using partial differential equations
		C110.5	Graduates will be able to Identify, analyse and subsequently solve the distribution of heat problems whose behaviour can be described by differential equations.
		C110.6	Graduates will be able to Identify, analyse and subsequently solve the waves whose behaviour can be described by differential equations.

11	CY100 - ENGINEERING CHEMISTRY	C111.1	Understand various spectroscopic techniques like UV-Visible, IR, NMR and its applications.
		C111.2	Apply the basic concepts of electrochemistry and corrosion to explore its possible applications in various engineering fields.
		C111.3	Basic knowledge of Thermal analytical techniques and conductivity measurements. Basic knowledge of chromatographic techniques.
		C111.4	Have a scope in the area of material science. Have knowledge of synthesizing nano materials and their application in industry, carbon nano tube technology in every industry now a days.
		C111.5	Have knowledge of chemical properties of fuels. Know the properties of lubricants.
		C111.6	Study various types of water treatment methods to develop skills for treating wastewater.
12	BE110 - ENGINEERING GRAPHICS	C112.1	Draw the projection of points and lines located in different quadrants
		C112.2	Prepare Multiview orthographic projections of objects by visualizing them in different positions
		C112.3	Draw sectional views and develop surfaces of a given object
		C112.4	Prepare pictorial drawings using the principles of isometric and perspective projections to visualise objects in 3 dimensions.
		C112.5	Convert 3D views to orthographic views and vice versa
		C112.6	Obtain Multiview projections and solid models of objects using CAD tools
13	BE102 - DESIGN & ENGINEERING	C113.1	Graduates will be able to classify and experiment different stages in design with their significance
		C113.2	Aware of the product oriented and user-oriented aspects that make the design a success.
		C113.3	The students will be able to identify & initiate different creative designs.
		C113.4	Enable the students to analyse the prototype models needed for development of project
		C113.5	Graduates will be able to Select the design requirements for designing various products.
		C113.6	The students can evaluate the product based on intellectual property rights
14	CE100 - BASICS OF CIVIL ENGINEERING	C114.1	The students will be able to illustrate the fundamental aspects of Civil engineering
		C114.2	The students will be able to plan and set out a building
		C114.3	Students will be able to explain the concepts of surveying for making horizontal and vertical measurements.
		C114.4	They will able to illustrate the uses of various building materials and explain the method of construction of different components of a building.
		C114.5	Students will be able to illustrate the uses of various building elements.
		C114.6	Students will be able to discuss about various services in a building.

15	EE100 - BASICS OF ELECTRICAL ENGINEERING	C115.1	Students will be able to acquire fundamental knowledge of Electrical circuits and solve circuit related problems.
		C115.2	Students will be able to recall and state ideas about magnetic circuits.
		C115.3	Students will be able to explain the fundamentals of AC circuits.
		C115.4	Students will be able to analyse three phase systems.
		C115.5	Students will be able to compare and contrast various types of resonance circuits
		C115.6	Students will be able to identify and differentiate between various methods of Power measurement
16	CY110 - ENGINEERING CHEMISTRY LAB	C116.1	Understand and practice different techniques of quantitative chemical analysis to generate experimental skills and apply these skills to various analyses
		C116.2	Develop skills relevant to synthesize organic polymers and acquire the practical skill to use TLC for the identification of drugs
		C116.3	Develop the ability to understand and explain the use of modern spectroscopic techniques for analysing and interpreting the IR spectra and NMR spectra of some organic compounds
		C116.4	Acquire the ability to understand, explain and use instrumental techniques for chemical analysis
		C116.5	Learn to design and carry out scientific experiments and accurately record & analyse results of such experiments
		C116.6	Function as a member of a team, communicate effectively and engage in further learning. Also understand how chemistry addresses social, economic and environmental problems and why it is an integral part of curriculum
17	CE110 - CIVIL ENGINEERING WORKSHOP	C117.1	Student should be able to set out a building using tape
		C117.2	Student should be able to set out a building using cross staff
		C117.3	Student should be able to determine area and mass moment of inertia
		C117.4	To construct one and a half and two brick walls using English bond
		C117.5	Student should be able to calculate the area and volume of various features of a building
		C117.6	Student should be able to determine the compressive strength of brick and cement mortar cubes using compression testing machine
18	EE110 - ELECTRICAL ENGINEERING WORKSHOP	C118.1	Students will be able to recognize supply arrangements and their limitations, standard voltages and their tolerances, safety aspects of electrical systems and importance of protective measures in wiring systems.
		C118.2	Students will identify the types of wires, cables and other accessories used in wiring.
		C118.3	Students should be able to wire up and predict estimate of simple lighting circuits for domestic buildings and distinguish between light and power circuits
		C118.4	Students will be able to measure electrical circuit parameters like current, voltage and power in a circuit.
		C118.5	Students will be able to explain the usage of Multimeters and LCR Q meters
		C118.6	Creating awareness of energy conservation in electrical systems.

19	MA201 - LINEAR ALGEBRA & COMPLEX ANALYSIS	C201.1	Graduates will be able to identify the analytic functions and harmonic functions.
		C201.2	Graduates will be able to understand the conformal mappings and to find regions that are mapped under certain Transformations
		C201.3	Graduates will be able to evaluate the complex integrals.
		C201.4	Graduates will be able to evaluate the complex integrals as an applications of residue theorems
		C201.5	Graduates will be able to understand the concept of vector space, to solve the system of linear equations
		C201.6	Graduates will be able to and to evaluate the Eigen value, Eigen vectors of a matrix and diagonalize a matrix.
20	ME201 - MECHANICS OF SOLIDS	C202.1	To understand basic concepts of stress and strain in solids and apply this knowledge during the analysis of thermal stresses and statically indeterminate structures
		C202.2	Students will be able to demonstrate the ability to select appropriate shaft size by applying the principles of torsion
		C202.3	Students will be able to depict and analyse the shear force and bending moment develops in a beam while solving complex problems.
		C202.4	Student will be able to determine the bending stress and shear stress in beams and can select the appropriate geometry for the requirement
		C202.5	Student will be able to develop the governing differential equation for the elastic curve, and apply different techniques for finding out the deflection at required points
		C202.6	Student will be able to calculate the buckling load for columns with different end conditions.
21	ME203 - MECHANICS OF FLUIDS	C203.1	Ability to calculate pressure variations in accelerating fluids using Euler's and Bernoulli's equations.
		C203.2	Become conversant with the concepts of flow measurements and flow through pipes and be able to describe them.
		C203.3	Apply the momentum equations to fluid flow problems based on an analysis of the various system specifications (i.e., Viscid, inviscid, rotational, irrotational, steady,
		C203.4	Apply the energy equations to fluid flow problems based on an analysis of the various system specifications (i.e., Viscid, inviscid, rotational, irrotational, steady,
		C203.5	Evaluate head loss in pipes and conduits and recommend suitable engineering criteria for fluid flow, power transmission, etc..
		C203.6	Use dimensional analysis to design physical or numerical experiments applying dynamic similarity.

22	ME205 - THERMODYNAMICS	C204.1	To understand the basic concepts of thermodynamics. Define energy transfer through heat and work for closed and open systems.
		C204.2	To understand and apply the first law of thermodynamics for closed and open system and to analyse simple problems.
		C204.3	Understand and apply the second law of thermodynamics and entropy concepts for the analysis of thermal systems.
		C204.4	To Understand the concept of pure substance and identify the properties of pure substance on property diagrams. Understand the concepts of available and unavailable energy in thermal systems.
		C204.5	To Understand the concept of mixture of ideal gases and other real gas equations.
		C204.6	To Understand the property relationship of thermodynamic fluids; also, to understand the concepts of thermochemistry and various parameters involved in combustion.
23	ME210 - METALLURGY AND MATERIALS ENGINEERING	C205.1	Students will be able to identify the crystal structures of metallic materials.
		C205.2	Students will be able to identify the crystal structures of metallic materials.
		C205.3	Students will be able to apply the microstructure with properties, processing and performance of metals
		C205.4	Students will be able to analyse the failure of metals with structural change
		C205.5	Students will be able to recommend materials for design and construction
		C205.6	Students will be able to apply core concepts in materials science to solve engineering problems
24	HS200 - BUSINESS ECONOMICS	C206.1	Knowledge about concept and importance of sustainability
		C206.2	Understand about different types of pollution and waste generation, their causes effects and control
		C206.3	Understand environmental management standards and environmental impact assessment
		C206.4	Understand the concept of bio mimicking, green Engineering and green building
		C206.5	Knowledge about various types of conventional and non-conventional energy sources
		C206.6	Understand the role of engineering and technology in sustainable development
25	ME231 - COMPUTER AIDED MACHINE DRAWING LAB	C207.1	Students able to express the concept of CAD/CAM/CIM and Other terminologies used in the development and manufacturing of a product.
		C207.2	Students able to demonstrate different methods for geometric modelling in CAD.
		C207.3	Students able to evaluate the types of curves used in creating a geometry.
		C207.4	Students able to demonstrate different solid modelling representations used in CAD.
		C207.5	Students able to formulate stiffness matrix to analyse structural and thermal problems
		C207.6	Students analyse structural finite element problems by getting knowledge about various finite element methods.

26	CE230 - MATERIAL TESTING LAB	C208.1	To determine the Modulus of Elasticity of steel and wood using UTM
		C208.2	To verify Clerk- Maxwell's Reciprocal Theorem and hence determine the Modulus of elasticity of steel.
		C208.3	To determine the Modulus of rigidity of steel using torsion test, spring test and torsion pendulum
		C208.4	To analyse the toughness of a specimen using Impact testing machine
		C208.5	To test the hardness of a material by Rockwell, Brinell and Vickers Hardness test
		C208.6	To determine the ultimate shear stress of steel using UTM
27	MA202 - PROBABILITY DISTRIBUTIONS, TRANSFORMS AND NUMERICAL METHODS	C209.1	Graduates have a concept of discrete probability density functions
		C209.2	Graduates have a concept of continuous probability density functions
		C209.3	Graduates get an idea about the Laplace transforms and will be able to apply them in their engineering branches
		C209.4	Graduates will get an idea about the Fourier transforms and will be able to apply them in their engineering branches
		C209.5	Graduates will have a concept of numerical methods for iteration and interpolation and their applications in solving Engineering problems
		C209.6	Graduates will have a concept of numerical methods to solve system of linear equations and numerical integration, and their applications in solving Engineering problems
28	ME202 - ADVANCED MECHANICS OF SOLIDS	C210.1	Graduates will be able to solve elasticity problems in solids using concepts of stress and strain.
		C210.2	Graduates will be solving plane stress and plane strain problems
		C210.3	Able to compute hoop stress and radial stress generated for thick cylinders and rotating discs under pressure
		C210.4	Able to solve general bending problems in unsymmetrical beams
		C210.5	Graduates will acquire basic knowledge on applying energy methods in structural mechanics problems
		C210.6	Graduates will acquire basic knowledge to solve torsional problems of non-circular shafts
29	ME204 - THERMAL ENGINEERING	C211.1	Acquire knowledge of boilers, its working, understand & analyse different steam power cycles and steam nozzles.
		C211.2	Understand working of steam turbines and apply the principles to find solutions to engineering problems regarding the devices
		C211.3	Understand working of various internal combustion engines and understand its underlying thermodynamic cycles
		C211.4	To understand the performance testing of IC engines and evaluate various performance parameters and gain knowledge about IC engine combustion
		C211.5	Gain knowledge of about of air pollution from IC engine, its remedies and understand combustion and design of combustion chambers in IC engines.
		C211.6	To understand and analyse the gas turbine cycle and its modifications and gain knowledge about combustion in gas turbines

30	ME206 - FLUID MACHINERY	C212.1	Students will be able to define the principles and working of Hydraulic Machines
		C212.2	Students will be able to estimate the hydrodynamic forces on various types of vanes and to calculate the performance of various hydraulic machines.
		C212.3	Students will be able to design an appropriate pump/turbine with reference to given application/situation. Carry out calculations involved in design of pump/turbine
		C212.4	Students will be able to understand the relation between various performance parameters and to interpret characteristic curves of a given pump/turbine/compressor
		C212.5	Students will be able to define the principles and working of various type of compressors
		C212.6	Student will be able to study the principles of centrifugal and axial flow compressors
31	ME220 - MANUFACTURING TECHNOLOGY	C213.1	Students will be able to select appropriate manufacturing techniques to produce engineering components.
		C213.2	Students will be able to understand the principles and procedures behind different manufacturing methods and will be able to choose an appropriate method.
		C213.3	Students will have the ability to apply a manufacturing process to develop a product after selecting a proper location method as per a mechanical design
		C213.4	Students will be able to analyse various process parameters involved in a manufacturing process.
		C213.5	Student will be able to predict and identify possible defects and can device methods to produce defect free products.
		C213.6	Students will be able to analyse various process parameters involved in an advanced manufacturing process.
32	HS210 - LIFE SKILLS	C214.1	Knowledge about concept and importance of sustainability
		C214.2	Understand about different types of pollution and waste generation, their causes effects and control
		C214.3	Understand environmental management standards and environmental impact assessment
		C214.4	Understand the concept of bio mimicking, green Engineering and green building
		C214.5	Knowledge about various types of conventional and non-conventional energy sources
		C214.6	Understand the role of engineering and technology in sustainable development
33	ME232 THERMAL ENGINEERING LAB	C215.1	To gain knowledge about the working of different engines and its components.
		C215.2	To conduct appropriate tests on IC engines and reciprocating compressors and determine various performance characteristics
		C215.3	To test fuels and lubricants to determine their properties.
		C215.4	To prepare the heat balance chart of an engine
		C215.5	To evaluate the effect of cooling water flow rate on the performance characteristics of an engine.
		C215.6	To evaluate the effect of engine speed on the performance characteristics of an engine.

34	ME230 FLUID MECHANICS & MACHINES LAB	C216.1	Students will be able to select an appropriate pump/turbine with reference to given application/situation
		C216.2	Students will be able to estimate the optimum efficiency of a given pump/turbine under different load and (or) speed conditions
		C216.3	Students will be able to apply the fundamental principles of fluid mechanics in calculations involving basic flow measuring devices in both closed and open channel flows
		C216.4	Students will be able to analyse the trends depicted by characteristic curves obtained from the experiments
		C216.5	Students will be able to predict the stability of a floating vessel following the principles of metacentric height and radius of gyration
35	ME301 - MECHANICS OF MACHINERY	C301.1	Knowledge in different types of mechanisms and their inversions. How to calculate their degrees of freedom.
		C301.2	Knowledge to conduct velocity and acceleration analysis of mechanisms.
		C301.3	Knowledge to develop a cam for a specified follower motion.
		C301.4	Knowledge in gear terminologies.
		C301.5	Knowledge to calculate velocity of gears in a gear train.
		C301.6	Conduct synthesis of mechanism, and to design a mechanism for a specified output motion.
36	ME303 - MACHINE TOOLS & DIGITAL MANUFACTURING	C302.1	Evaluate the mechanism of orthogonal and oblique cutting and analyse the cutting forces developed.
		C302.2	Select appropriate process parameters in a machine tool while machining a job.
		C302.3	Understand and apply operational principles of machine tools.
		C302.4	Select different machining operation operations
		C302.5	Select different super finishing operations
		C302.6	Understand and apply the principles of digital manufacturing.
37	ME305 - COMPUTER PROGRAMMING & NUMERICAL METHODS	C303.1	Students able to express the concept of CAD/CAM/CIM and Other terminologies used in the development and manufacturing of a product.
		C303.2	Students able to demonstrate different methods for geometric modelling in CAD.
		C303.3	Students able to evaluate the types of curves used in creating a geometry.
		C303.4	Students able to demonstrate different solid modelling representations used in CAD.
		C303.5	Students able to formulate stiffness matrix to analyse structural and thermal problems
		C303.6	Students analyse structural finite element problems by getting knowledge about various finite element methods.

38	EE311 - ELECTRICAL DRIVES & CONTROL FOR AUTOMATION	C304.1	Students will be able to explain the principle of electrical machines and their applications
		C304.2	Students will be able to apply the principle of electrical drives & be able to understand the dynamics of electrical drive systems.
		C304.3	Students will be able to select a drive for a particular application based on power rating & to select a drive based on mechanical characteristics for a particular drive application.
		C304.4	Students will be able to identify solid state drive for speed control of various special electrical machines.
		C304.5	Students will be able to design speed control of induction motor drives in an energy efficient manner using power electronics & be able to learn the control system for synchronous motor drives
		C304.6	Discuss the controllers used for automation
39	HS300 - PRINCIPLES OF MANAGEMENT	C305.1	To recall and identify the relevance of management concepts
		C305.2	To describe, discuss and relate management techniques adopted within an organization
		C305.3	To apply management techniques for meeting current and future management challenges faced by the organization
		C305.4	To compare the management theories and models critically and to inspect and question its validity in the real world
		C305.5	To assess and modify different theories of management so as to relate it to current management challenges
		C305.6	To apply principles of management in order to execute the role as a manager
40	ME367 - NON-DESTRUCTIVE TESTING	C306A.1	To introduce the basic principles, techniques, equipment, applications and limitations of NDT
		C306A.2	To study NDT methods such as Visual, Penetrant Testing, Magnetic Particle Testing, Ultrasonic Testing, Radiography, Eddy Current.
		C306A.3	The students will be able to differentiate various defect types and select the appropriate NDT methods for the specimen.
		C306A.4	To enable selection of appropriate NDT methods.
		C306A.5	To identify advantages and limitations of non-destructive testing methods
		C306A.6	To make aware the developments and future trends in NDT
41	ME373 - HUMAN RELATIONS MANAGEMENT	C306B.1	Summarizes human behaviour in individual and group levels.
		C306B.2	Cognize the human relations in organizations and collective bargaining.
		C306B.3	Be able to manage employer-employee relations and conflicts.
		C306B.4	Familiarize the importance of T&D and Performance Management in an organisation
		C306B.5	Analyse the practice of Talent management and Compensation Management
		C306B.6	Apply HRM in maintaining good Employee relations

42	ME341 - DESIGN PROJECT	C307.1	The students will be able to think innovatively on the development of components, products in the engineering field
		C307.2	The students will be able to think innovatively on the development of components, processes or technologies in the engineering field
		C307.3	The students will be able to analyse the problem requirements and arrive workable design solutions
		C307.4	The students will be able to understand the engineering aspects of design with reference to simple products to assess its impact on the society, health, environment and safety
		C307.5	The students will be able to understand the engineering aspects of process or technologies with reference to simple products to assess its impact on the society, health, environment and
		C307.6	The students will be able to develop design that add value to products and solve technical problems
43	EE335 - ELECTRICAL AND ELECTRONICS LAB	C308.1	Students will be able to Perform load test on DC shunt, series motors, single phase transformers, 3/1 phase induction motors and analyse its performance characteristics.
		C308.2	Students will be able to perform the load test on shunt generator and predetermine the performance of DC machine when working as motor/generator
		C308.3	Students can determine the efficiency and voltage regulation of a single-phase transformer performing oc/sc test
		C308.4	Students can determine the open circuit characteristics of self-excited generators
		C308.5	Students will get awareness in applying rectifier circuits and CE configuration of BJT
		C308.6	Acquire knowledge on working of semiconductor devices
44	ME331 - MANUFACTURING TECHNOLOGY LAB I	C309.1	To develop skills in doing literature survey, technical presentation and report preparation.
		C309.2	To enable project identification and execution of preliminary works on final semester project
		C309.3	Conduct experiments to determine thermal conductivity of materials
		C309.4	Determine heat transfer coefficient, LMTD etc..
		C309.5	Do calibration of thermometers and pressure gauges
		C309.6	Demonstrate the effect of unbalance resulting from rotary motions

45	ME302 HEAT & MASS TRANSFER	C310.1	To understand and apply Fourier's law of heat conduction for solving problems involving steady state conduction with and without heat generation in simple geometries
		C310.2	To Evaluate heat transfer coefficient for free and forced convection using empirical correlations
		C310.3	To understand the basic principle of lumped parameter analysis in transient conduction and to solve problems on heat transfer through fins.
		C310.4	To understand the classification and performance of heat exchangers and solve problems of performance analysis of heat exchangers.
		C310.5	To Understand the basic laws of radiation and estimate the radiation heat transfer between black body and grey body surfaces
		C310.6	To Understand the concept of diffusion and convective mass transfer and solve problems involving diffusion and convective mass transfer
46	ME304 DYNAMICS OF MACHINERY	C311.1	Solving problems related to static force analysis of planar mechanism both graphically and analytically.
		C311.2	Students can solve problems related to dynamic analysis and analyse forces involved during the power transmission through spur, helical and worm gears.
		C311.3	Students can explain turning moment diagrams of IC engines, can conduct flywheel analysis and are capable of balancing rotating and reciprocating masses.
		C311.4	Students can explain the theory behind gyroscopic couple and to predict the effect of gyroscopic couple in aircraft, ships and automobiles.
		C311.5	Knowledge in the vibration model of a system, concept of free damped and un damped, forced vibration systems and can solve problem related to different damping conditions.
		C311.6	Students are capable of solving problems related to free torsional vibrations in shafts. They also have knowledge in vibration absorbers, dampers and vibration measuring instruments.
47	ME306 ADVANCED MANUFACTURING TECHNOLOGY	C312.1	To introduce the basic principles, techniques, equipment, applications and limitations of NDT
		C312.2	To study NDT methods such as Visual, Penetrant Testing, Magnetic Particle Testing, Ultrasonic Testing, Radiography, Eddy Current.
		C312.3	The students will be able to differentiate various defect types and select the appropriate NDT methods for the specimen.
		C312.4	To enable selection of appropriate NDT methods.
		C312.5	To identify advantages and limitations of non-destructive testing methods
		C312.6	To make aware the developments and future trends in NDT

48	ME308 COMPUTER AIDED DESIGN AND ANALYSIS	C313.1	Students able to express the concept of CAD/CAM/CIM and Other terminologies used in the development and manufacturing of a product.
		C313.2	Students able to demonstrate different methods for geometric modelling in CAD.
		C313.3	Students able to evaluate the types of curves used in creating a geometry.
		C313.4	Students able to demonstrate different solid modelling representations used in CAD.
		C313.5	Students able to formulate stiffness matrix to analyse structural and thermal problems
		C313.6	Students analyse structural finite element problems by getting knowledge about various finite element methods.
49	ME312 METROLOGY AND INSTRUMENTATION	C314.1	Students will be able Understand the principle of linear and angular measuring instruments and will apply the acquired knowledge for the accurate and precise measurement of a given quantity.
		C314.2	Will demonstrate the ability to apply the principle of limits, fits and tolerance while designing and manufacturing the components of their requirement.
		C314.3	Understand fundamentals of various methods for the measurements of screw threads, surface roughness parameters and working of optical measuring instruments and able to apply them in their engineering projects.
		C314.4	Will become familiarized with various advanced measuring devices and machine tool metrology.
		C314.5	Will be able to use various devices for measuring torque, force, strain, stress and temperature.
		C314.6	Demonstrate the ability to analyse the results of various measuring systems and instruments for motion and dimensional measurements and can infer the results to give better conclusions.
50	ME368 MARKETING MANAGEMENT	C315A.1	Identify key marketing concepts, theories and techniques for analysing a variety of marketing situations
		C315A.2	Identify and demonstrate the dynamic nature of the environment in which marketing decisions are taken and appreciate the implications of marketing strategy determination and implementation.
		C315A.3	Apply the introduced conceptual frameworks, theory and techniques to various marketing contexts
		C315A.4	Work in a manner consistent with law, professional standards and protocols as related to marketing, advertising, promotion and ethical considerations
		C315A.5	Identify and integrate appropriate technologies in developing solutions to business opportunities and challenges
		C315A.6	Reiterate the laws of management in Strategic issues for competitiveness in marketing
51	ME376 MAINTENANCE ENGINEERING	C315B.1	To give an idea about global energy scenario and conventional energy sources
		C315B.2	To understand solar, wind and Biomass energy
		C315B.3	To know concepts of other renewable energy sources
		C315B.4	To create awareness on the impacts of energy conversion and importance of sustainable energy
		C315B.5	Understand energy scenario and the environmental effects of energy conversion.
		C315B.6	Become aware of different renewable energy sources and choose sustainable energy

52	ME332 COMPUTER AIDED DESIGN AND ANALYSIS LAB	C316.1	Students are capable of developing 3d models of machine components, complex geometries etc. Using CATIA V6
		C316.2	Students are capable to assembly the parts created to develop the whole mechanism.
		C316.3	Students are capable to generate 2D sketches of the assembled parts and provide dimensions and symbols to generate 2D drawing.
		C316.4	Students can apply their knowledge in importing CAD geometries and to modify and mesh using different meshing methods and local meshing controls as a part of pre-processing of the FE problem in ANSYS workbench
		C316.5	Students have knowledge to conduct simple structural, fluid flow and thermal analysis problems in ANSYS.
53	ME334 MANUFACTURING TECHNOLOGY LAB II	C317.1	Students will be able to select and use different linear and angle measuring devices like vernier callipers, micrometres, bevel protractors, slip gauges etc.
		C317.2	Students will be able to use equipment like Surface Roughness tester, Profile projector, and Tool makers Microscope to find out parameters of gear, thread, tool and surface roughness
		C317.3	Students will be able to do the process of calibration by carrying out experiments on devices like strain gauge, LVDT, and Roughness tester.
		C317.4	Students will be able to understand about CNC machine tool and also to write NC part programming statements to carry out the machining processes using CNC machine tool.
		C317.5	Students will be able to make inferences during different measurement processes
		C317.6	Students will be able to perform, analyse and infer the experiments as a team.
54	ME352 COMPREHENSIVE EXAM	C318.1	The students will be confident in discussing the fundamental aspects of any engineering problem/situation and give answers in dealing with them
		C318.2	Learn to prepare for a competitive examination
		C318.3	Comprehend the questions in Mechanical Engineering field and answer them with confidence
		C318.4	Comprehend the questions related to basic mathematics courses and answer them with confidence
		C318.5	Communicate effectively with faculty in scholarly environments
		C318.6	Analyse the comprehensive knowledge gained in basic courses in the field of Mechanical Engineering

55	ME401 DESIGN OF MACHINE ELEMENTS I	C401.1	Students will able to understand and identify the different procedures to be followed during different phases of design process and understand the basic material properties.
		C401.2	Students will understand different failure theories and basic concepts of deign factors like stress, factor of safety, etc
		C401.3	Students will understand the basics of threaded and bolted joints. They will identify the forces acting on the joint and calculate the maximum stress in the system. They will be able to compare and evaluate the permissible stress on a material and select the material for required force. With the optimum constrains students are able to design threaded and bolts
		C401.4	Students will understand the basics and applications of riveted, cotter, knuckle, gib and welded joints. They will be able to calculate and analyse the load on the system. According to the application, student will be able to choose the type of joint and design the system to satisfy the requirement.
		C401.5	Students will be able to classify different type of springs. They will be able to predict different effects on the spring under different loading conditions. According to application they will be able to calculate the load and analyse the deformation of the spring. By evaluating the load carrying capacity, the student can design the spring to the required system.
		C401.6	Students will be able to explain the different design consideration while designing shaft and couplings. They will be able to calculate the forces acting on the system. Students will be able to analyse and choose suitable design parameters for the system. They will be able to design couplings (shaft, keys, pins etc.) For the specified requirement.
56	ME403 ADVANCED ENERGY ENGINEERING	C402.1	To give an idea about global energy scenario and conventional energy sources
		C402.2	To understand solar, wind and Biomass energy
		C402.3	To know concepts of other renewable energy sources
		C402.4	To create awareness on the impacts of energy conversion and importance of sustainable energy
		C402.5	Understand energy scenario and the environmental effects of energy conversion.
		C402.6	Become aware of different renewable energy sources and choose sustainable energy
57	ME405 REFRIGERATION AND AIR CONDITIONING	C403.1	Understand the principles refrigeration of air-conditioning and basic design considerations
		C403.2	Carry out analysis of refrigeration cycles
		C403.3	Study the types of refrigerants and its environmental effects.
		C403.4	Apply the concepts of indoor environmental comfort.
		C403.5	Perform psychrometric calculations, humidity control and analysis of air-conditioning processes
		C403.6	Know the various applications of Refrigeration and air conditioning

58	ME407 MECHATRONICS	C404.1	Students will able to understand and identify the different procedures to be followed during different phases of design process and understand the basic material properties.
		C404.2	Students will understand different failure theories and basic concepts of deign factors like stress, factor of safety, etc.
		C404.3	Students will understand the basics of threaded and bolted joints. They will identify the forces acting on the joint and calculate the maximum stress in the system. They will be able to compare and evaluate the permissible stress on a material and select the material for required force. With the optimum constrains students are able to design threaded and bolts.
		C404.4	Students will understand the basics and applications of riveted, cotter, knuckle, gib and welded joints. They will be able to calculate and analyse the load on the system. According to the application, student will be able to choose the type of joint and design the system to satisfy the requirement.
		C404.5	Students will be able to classify different type of springs. They will be able to predict different effects on the spring under different loading conditions. According to application they will be able to calculate the load and analyse the deformation of the spring. By evaluating the load carrying capacity, the student can design the spring to the required system
		C404.6	Students will be able to explain the different design consideration while designing shaft and couplings. They will be able to calculate the forces acting on the system. Students will be able to analyse and choose suitable design parameters for the system. They will be able to design couplings (shaft, keys, pins etc.) For the specified requirement
59	ME409 COMPRESSIBLE FLUID FLOW	C405.1	To understand and apply the conservation of mass, momentum and energy to a control volume and to solve compressible flow related engineering problems by evaluating acoustic speed and Mach number.
		C405.2	To apply the knowledge gained in performing preliminary design of supersonic inlets, diffusers and other compressible flow devices by using one dimensional isentropic compressible flow theory.
		C405.3	To apply the principles of mass, momentum and energy balance with gas equations of state to analyse normal shock
		C405.4	To apply the principles of mass, momentum and energy balance with gas equations of state to analyse Fanno flow
		C405.5	To apply the principles of mass, momentum and energy balance with gas equations of state to analyse Rayleigh flow.
		C405.6	To understand various compressible flow field visualization and measurement methods.

60	ME463 AUTOMOBILE ENGINEERING	C406A.1	Students will be able to practically identify and explain different automotive systems and subsystems
		C406A.2	Students will be able to understand the principles of transmission, suspension, steering and braking systems of an automobile
		C406A.3	Students will be able to investigate the future developments in the automobile industry
		C406A.4	Students will be able to interpret the various terminologies used in the automotive industry
		C406A.5	Students will be able to analyse the effectiveness of energy storing and dissipating systems in a vehicle.
		C406A.6	Students will be able to evaluate the aerodynamic design parameters of the vehicle and can validate the same
61	ME467 CRYOGENIC ENGINEERING	C406B.1	To introduce the basic principles, techniques, equipment, applications and limitations of NDT
		C406B.2	To study NDT methods such as Visual, Penetrant Testing, Magnetic Particle Testing, Ultrasonic Testing, Radiography, Eddy Current.
		C406B.3	The students will be able to differentiate various defect types and select the appropriate NDT methods for the specimen.
		C406B.4	To enable selection of appropriate NDT methods.
		C406B.5	To identify advantages and limitations of non-destructive testing methods
		C406B.6	To make aware the developments and future trends in NDT
62	ME451 SEMINAR & PROJECT PRELIMINARY	C407.1	To develop skills in doing literature survey, technical presentation and report preparation.
		C407.2	To enable project identification and execution of preliminary works on final semester project
		C407.3	Conduct experiments to determine thermal conductivity of materials
		C407.4	Determine heat transfer coefficient, LMTD etc..
		C407.5	Do calibration of thermometers and pressure gauges
		C407.6	Demonstrate the effect of unbalance resulting from rotary motions
63	ME431 MECHANICAL ENGINEERING LAB	C408.1	Visualise the effect of dynamics on vibrations in single and multi-degree of freedom system
		C408.2	Demonstrate the working principle of governor /gyroscope and demonstrate the effect of forces and moments on their motion
		C408.3	To acquire knowledge and design of different types of clutches and brakes
		C408.4	To understand the basics of bearings, types of bearing, lubrication system and design of bearings.
		C408.5	To understand the concept of gears and the basic procedure in design of spur gear.
		C408.6	To understand the basic procedure in design of Helical gear, Bevel gear, worm and worm wheel.

64	ME402 DESIGN OF MACHINE ELEMENTS II	C409.1	To acquire knowledge and design of flat belt, v belt and chains.
		C409.2	To acquire basic knowledge in Connecting rod and Pressure vessels.
		C409.3	To impart theoretical knowledge about various tools and techniques of Industrial Engineering
		C409.4	To get acquainted with the Inventory management Principles and Techniques.
		C409.5	To create awareness about various safety procedures to be followed in carrying out different types of projects
		C409.6	To equip with the theoretical knowledge on Quality control practices and testing methods.
65	ME404 INDUSTRIAL ENGINEERING	C410.1	Know various tools and techniques in industrial Engineering.
		C410.2	Develop work procedure applying the principles of work study
		C410.3	Formulate replacement and purchase decisions and arrive at conclusions
		C410.4	Develop a systematic plant layout
		C410.5	Analyse the safety and environmental aspects in facilities planning
		C410.6	Understand various material handling systems and classification of material handling equipment
66	ME476 MATERIAL HANDLING & FACILITIES PLANNING	C411A.1	Selection and Maintenance of material handling equipment with safety and ergonomics aspects
		C411A.2	Understand various miscellaneous material handling systems and classifications.
		C411A.3	Will understand the fundamentals of various methods for the measurements of screw threads, surface roughness parameters and the working of optical measuring instruments and will be able to apply them in their engineering projects.
		C411A.4	Will become familiarized with various advanced measuring devices and machine tool metrology.
		C411A.5	Will be able to use various devices for measuring torque, force, strain, stress and temperature.
		C411A.6	Demonstrate the ability to analyse the results of various measuring systems and instruments for motion and dimensional measurements and can infer the results to give better conclusions.
67	CE488 DISASTER MANAGEMENT	C412A.1	Able to explain disaster management theory (cycle, phases, risk, crisis, emergency, disasters, resilience)
		C412A.2	To compare hazards, disasters and associated natural phenomena and their interrelationships, causes and their effects - developing humanitarian Assistance before and after disaster
		C412A.3	To compare anthropogenic hazards, disasters and associated activities and their interrelationships of the subsystems - Green House Effect, Global warming, Causes and their effects and development of humanitarian assistance before and after disaster
		C412A.4	To apply knowledge about existing global frameworks and existing agreements and role of community in successful Disaster Risk Reduction
		C412A.5	To evaluate DM study including data search, analysis and presentation as a case study.
		C412A.6	To create Technological innovations in Disaster Risk Reduction: Advantages and problems

68	ME492 PROJECT	C413.1	To give a platform for the students to apply the theoretical knowledge they gained during the course and conduct analysis and create working models.
		C413.2	To enable the students to use different design platforms for design and analysis of project.
		C413.3	To give a chance to improve communication skills and enable the students to express the theoretical knowledge to defend
		C413.4	To impart theoretical knowledge about wind tunnels and experimental fluid mechanics.
		C413.5	To give the students a feel of working in a team environment and contribute to the success of the project.