



Sl. No.	Subject Code	Course Code	Course Outcomes
1	18MAT11 Calculus And Linear Algebra	C101.1	Apply the knowledge of calculus to solve problems related to polar curves and it's application in determining the bentness of a curve.
		C101.2	Learn the motion of partial differentiation to calculate the rate of change of multivariate functions, composite functions and Jacobians.
		C101.3	Apply the concept of change of order of integration and variables to evaluate multiple integrals and their usage in computing the area and volumes.
		C101.4	Solve first order linear/nonlinear differential equation analytically using standard methods.
		C101.5	Make use of Matrix theory for system of linear equations and compute Eigen values and Eigen vectors required for Matrix diagonalization process.

Sl. No.	Subject Code	Course Code	Course Outcomes
2	18PHY12 Engineering Physics	C102.1	Understand various types of oscillations and the implications, the role of Shockwaves in various fields and recognize the elastic properties of materials for engineering applications
		C102.2	Realize the interrelation between time varying electric field and magnetic field, the transverse nature of the EM waves and the acrolein optical fibre communication
		C102.3	Compute Eigen values, Eigen function, momentum of atomic and subatomic particles using Time independent 1-D Schrodinger's wave equations.
		C102.4	Apprehend theoretical background of laser, construction and working of different types of laser and its applications in different fields
		C102.5	Under various electrical and thermal properties like conductors, semiconductors and dielectrics using different theoretical models

Sl. No.	Subject Code	Course Code	Course Outcomes
3	18ELE13 Basic Electrical Engineering	C103.1	Analyse A.C and D.C Circuit
		C103.2	Explain the principle of operation and construction of single phase transformers.
		C103.3	Explain the principle of operation and construction of DC Machines and Synchronous Machines.
		C103.4	Explain the principle of operation and construction of 3 phase Induction Motors.
		C103.5	Discuss the concept of electrical wiring, circuit protecting devices and earthing.

Sl. No.	Subject Code	Course Code	Course Outcomes
4	18CIV14 Elements Of Civil Engineering And Mechanics	C104.1	Mention the applications of various fields of Civil Engineering.
		C104.2	Compute the resultant of given force system subjected to various loads.
		C104.3	Comprehend the action of Forces, Moments and other loads on systems of rigid bodies and compute the reactive forces that develop as a result of the external loads
		C104.4	Locate the Centroid and compute the Moment of Inertia of regular and built-up sections.
		C104.5	Express the relationship between the motion of bodies and analyse the bodies in motion.

Sl.No.	Subject Code	Course Code	Course Outcomes
5	18EGDL15 Engineering graphics	C105.1	Prepare Engineering drawings as per BIS conventions mentioned in the relevant codes
		C105.2	Produce computer generated drawings using CAD software.
		C105.3	Use the knowledge of orthographic projections to represent Engineering information / concepts and present the same in the form of drawings
		C105.4	Convert Pictorial and isometric views of simple objects to orthographic views.

Sl. No.	Subject Code	Course Code	Course Outcomes
6	18PHYL16 Engineering Physics Lab	C106.1	Identify the common electrical components and measuring instruments used for conducting experiments in the electrical laboratory.
		C106.2	Compare Power factor of Lamps.
		C106.3	Determine impedance of electrical circuit and power consumed in 3-phase load.
		C106.4	Determine earth resistance and understand two way and three way of control of lamps

Sl. No.	Subject Code	Course Code	Course Outcomes
7	18ELEL17 Basic Electrical Engineering Lab	C107.1	Identify the common electrical components and measuring instruments used for conducting experiments in the electrical laboratory.
		C107.2	Compare Power factor of Lamps.
		C107.3	Determine impedance of electrical circuit and power consumed in 3-phase load.
		C107.4	Determine earth resistance and understand two way and three way of control of lamps

Sl. No.	Subject Code	Course Code	Course Outcomes
8	18EGH18 Technical English	C108.1	Understand and apply the Fundamentals of Communication Skills in their communication skills.
		C108.2	Identify the nuances of phonetics, intonation and enhance pronunciation skills
		C108.3	To impart basic English grammar and essentials of language skills as per present requirement.
		C108.4	Understand and use all types of English vocabulary and language proficiency.
		C108.5	Adopt the Techniques of Information Transfer through presentation.

Sl. No.	Subject Code	Course Code	Course Outcomes
9	18MAT21 Advanced Calculus And Numerical Methods	C109.1	Solve first order linear/nonlinear differential equations analytically using standard methods.
		C109.2	Explain various physical models through higher order differential equations and solve such linear ordinary differential equations.
		C109.3	Understand a variety of partial differential equations and solution by exact methods/method of separation of variables.
		C109.4	Describe the applications of infinite series and obtain series solution of ordinary differential equations.
		C109.5	Apply the knowledge of numerical methods in the models of various physical and engineering phenomena.

Sl.No.	Subject Code	Course Code	Course Outcomes
10	18CHE22 Engineering Chemistry	C110.1	Use of free energy in equilibria, rationalize bulk properties and processes using thermodynamic consideration, electrochemical energy systems
		C110.2	Causes and effects of corrosion of metals and control of corrosion. Modification of surface properties of metals to develop resistance to corrosion, wear, tear, impact etc by electroplating and electroless plating.
		C110.3	Production and consumption of energy for industrialization of country and living standards of people. Electrochemical and concentration cells. Classical, Modern batteries and fuel cells. Utilization of solar energy for different useful forms of energy.
		C110.4	Environmental pollution, waste management and water chemistry.
		C110.5	Different techniques of instrumental methods of analysis. Fundamentals principles of nanomaterials.

Sl. No.	Subject Code	Course Code	Course Outcomes
11	18CPS23 Problem Solving Through C Programming	C111.1	Illustrate simple algorithms from the different domains such as mathematics, physics, etc.
		C111.2	Construct a programming solution to the given problem using C
		C111.3	Identify and correct the syntax and logical errors in C programs.
		C111.4	Modularize the given problem using functions and structures.

		C111.5	Introduction to printers and structures
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Sl. No.	Subject Code	Course Code	Course Outcomes
12	18ELN24 Basic Electronics	C112.1	Describe the operation of diodes, BJT, FET and Operational Amplifiers.
		C112.2	Design and explain the construction of rectifiers, regulators, amplifiers and oscillators.
		C112.3	Describe general operating principles of Scars and it's application.
		C112.4	Explain the working and design of Fixed voltage IC regulator using 7805 and A stable oscillator using Timer IC 555.
		C112.5	Explain the different number system and their conversions and construct simple combinational and sequential logic circuits using Flip-Flops.
		C112.6	Describe the basic principle of operation of communication system and mobile phones

Sl. No.	Subject Code	Course Code	Course Outcomes
13	18EME25 Elements of Mechanical Engineering	C113.1	Identify different sources of energy and their conversion process.
		C113.2	Explain the working principle of hydraulic turbines, pumps, IC engines and refrigeration.
		C113.3	Recognize various metal joining processes and power transmission elements.
		C113.4	Understand the properties of common engineering materials and their applications in engineering industry.
		C113.5	Discuss the working of conventional machine tools, machining processes, tools and accessories

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14	18CHEL26 Engineering Chemistry Lab	C114.1	Handling different types of instruments for analysis of materials using small quantities of materials involved for quick and accurate results
		C114.2	Carrying out different types of titrations for

		C114.3	Analyse and interpret data of the experiments.
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Sl. No.	Subject Code	Course Code	Course Outcomes
15	18CPL27 C Programming Lab	C115.1	Write algorithms, flowcharts and program for simple problems.
		C115.2	Correct syntax and logical errors to execute a program.
		C115.3	Write iterative and wherever possible recursive programs.
		C115.4	Demonstrate use of functions, arrays, strings.
		C115.5	Introduction to pointers and structures

Sl. No.	Subject Code	Course Code	Course Outcomes
16	18EGH28-II Technical English	C116.1	Understand and apply the Fundamentals of Communication Skills in their communication skills.
		C116.2	Identify the nuances of phonetics, intonation and enhance pronunciation skills
		C116.3	To impart basic English grammar and essentials of language skills as per present requirement.
		C116.4	Understand and use all types of English vocabulary and language proficiency.
		C116.5	Adopt the Techniques of Information Transfer through presentation.

Sl. No.	Subject Code	Course Code	Course Outcomes
17	18MAT31 Transform calculus, fourier series and Numerical techniques	C201.1	Apply Laplace transform and inverse Laplace transform in solving linear differential equation with initial conditions arising in engineering problems
		C201.2	Demonstrate Fourier series to study the behavior of periodic functions and their applications
		C201.3	Make use of Fourier transform and Z-transform to illustrate discrete/continuous function.
		C201.4	Solve first and second order ordinary differential equations arising in engineering problems using single step and multistep numerical methods

		C201.5	Determine the externals of functional using calculus of variations and solving geodesics.
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18	18ME32 Mechanics of Materials	C202.1	Determine the stress, strain, elastic constants and strain energy in structural members
		C202.2	Examine the stress, strain under combined loading and apply theories of failure.
		C202.3	Evaluate shear force, bending moment and stresses in beams
		C202.4	Analyze the structural parameters of shafts and columns.

Sl. No.	Subject Code	Course Code	Course Outcomes
19	18ME33 Basic Thermodynamics	C203.1	Determine heat and work interactions in different thermodynamic Processes.
		C203.2	Apply first law of thermodynamics for thermodynamic Systems
		C203.3	Analyze thermodynamic systems based on Second law of thermodynamics & Entropy concepts
		C203.4	Compute available energy in thermodynamic systems and Pure substances utilization.
		C203.5	Analyze the behavior of the ideal and real gases using gas laws

Sl. No.	Subject Code	Course Code	Course Outcomes
20	18ME34 Materials Science	C204.1	Describe the basic structure and mechanical properties and failure of materials.
		C204.2	Illustrate the phase transformation of solidification.
		C204.3	Describe the heat treatment process of metals.
		C204.4	Classify materials and describe properties smart materials

		C204.5	Summarize the processes and application of composite Materials.
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21	18ME35B Metal Casting and Welding	C205.1	Describe the basics & preparation of sand mould.
		C205.2	Illustrate different melting furnaces & methods of casting.
		C205.3	Describe the solidification process & casting of aluminium.
		C205.4	Classify different types of welding processes.
		C205.5	Describe metallurgical aspects in welding process & inspection methods

Sl. No.	Subject Code	Course Code	Course Outcomes
22	18ME36 A Computer Aided Machine Drawing	C206.1	Demonstrate the usage of CAD software for 3D modelling.
		C206.2	Draw section of solids, orthographic views, forms of threads and fasteners.
		C206.3	Draw knuckle joint, cotter joints and couplings.
		C206.4	Analyze individual machine parts, assemble and prepare a drawing.

Sl. No.	Subject Code	Course Code	Course Outcomes
23	18MEL37A Materials Testing Lab	C207.1	Analyze mechanical properties of materials by destructive testing.
		C207.2	Analyze microstructure of materials.
		C207.3	Demonstrate non-destructive testing methods.

Sl. No.	Subject Code	Course Code	Course Outcomes
24	18MEL38B Foundry, Forging and Welding Lab	C208.1	Analyze and determine properties of green sand.
		C208.2	Prepare green sand mould using foundry tools.
		C208.3	Prepare models using basic forging operations.
		C208.4	Prepare Model using Welding operation.

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25	18MAT41 Complex Analysis, Probability and Statistical Methods	C209.1	Use the concepts and construction of analytic function in Cartesian and polar forms.
		C209.2	Utilize conformal transformation and complex integral arising in engineering problems. CO3: Apply discrete and continuous probability distributions in analyzing the probability models
		C209.3	Apply discrete and continuous probability distributions in analyzing the probability models arising in engineering field
		C209.4	Make use of the correlation and regression analysis to fit a suitable mathematical model for the statistical data.
		C209.5	Construct joint probability distributions and demonstrate the validity of testing the hypothesis.

Sl. No.	Subject Code	Course Code	Course Outcomes
26	18ME42 Applied Thermodynamics	C210.1	Apply thermodynamic concepts to analyze the performance of gas power cycles.
		C210.2	Apply thermodynamic concepts to analyze the performance of vapour power cycles.
		C210.3	Understand combustion of fuels and performance of I C engines.
		C210.4	Understand the principles and applications of refrigeration systems.
		C210.5	Apply Thermodynamic concepts to determine performance parameters of refrigeration and air conditioning systems

Sl. No.	Subject Code	Course Code	Course Outcomes
27	18ME43 Fluid Mechanics	C211.1	Calculate the Fluid properties, Stability of floating bodies and hydrostatic forces on surfaces.
		C211.2	Apply the principles of fluid kinematics and dynamics for fluid flow problems
		C211.3	Analyze the fluid flows through bodies.
		C211.4	Analyze the boundary layer concept.
		C211.5	Formulate the relations of fluid properties by using dimensional analysis

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28	18ME44 Kinematics of Machines	C212.1	Describe the working of various types of mechanisms.
		C212.2	Analyse graphically the velocity and acceleration of simple mechanisms
		C212.3	Synthesize simple mechanisms by analyzing the velocity and acceleration analytically
		C212.4	Determine various parameters of spur gear and analyse gear trains.
		C212.5	Draw and analyse the cam profiles for different types of follower motions.

Sl. No.	Subject Code	Course Code	Course Outcomes
29	18ME45B Metal Cutting and Forming	C213.1	Demonstrate the relative motion and mechanics required for various machine tools.
		C213.2	Illustrate the mechanics of machining process and effect of various parameters on machining.
		C213.3	Describe the fundamentals of metal forming processes.
		C213.4	Explain different machine tools to produce components having different shapes and sizes.
		C213.5	Describe the concepts of design of sheet metal dies to design different dies for simple sheet metal components.

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30	18ME46B Mechanical Measurements and Metrology	C214.1	Describe metrology, methods, standards, of measurement and measuring instruments.
		C214.2	Analyze system of limits, fits tolerances, gauges and comparators.
		C214.3	Illustrate metrological measurements of screw threads, gear tooth parameters and advanced Metrology instruments.
		C214.4	Differentiate methods of indirect measurements.
		C214.5	Describe measurement of force, pressure, temperature and strain.

Sl. No.	Subject Code	Course Code	Course Outcomes
31	18MEL47B Mechanical Measurements and Metrology Lab	C215.1	Understand Calibration of pressure gauge, thermocouple, LVDT, load cell, micrometre.
		C215.2	Apply concepts of Measurement of angle using Sine Centre/ Sine Bar/ Bevel Protractor, alignment using Autocollimator/ Roller set.
		C215.3	Demonstrate measurements using Optical Projector/Tool maker microscope, Optical flats.
		C215.4	Analyse tool forces using Lathe/Drill tool dynamometer
		C215.5	Analyse Screw thread parameters using 2-Wire or 3-Wire method, gear tooth profile using gear tooth Vernier/Gear tooth micrometre

Sl. No.	Subject Code	Course Code	Course Outcomes
32	18MEL48A Workshop and Machine Shop Practice	C216.1	To read working drawings, understand operational symbols and execute machining operations.
		C216.2	Prepare fitting models according to drawings using hand tools- V-block, marking gauge, files, hack saw, drills etc
		C216.3	Understand integral parts of lathe, shaping and milling machines and various accessories and attachments used.
		C216.4	Select cutting parameters like cutting speed, feed, depth of cut, and tooling for various machining operations.
		C216.5	Perform cylindrical turning operations such as plain turning, taper turning, step turning, thread Cutting, facing, knurling, internal thread cutting, eccentric turning and estimate cutting time.

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33	18ME51 Management and Economics	C301.1	Understand needs, functions, roles, scope and evolution of Management
		C301.2	Understand importance, purpose of Planning and hierarchy of planning and also analyse its types.
		C301.3	Discuss Decision making, Organizing, Staffing, Directing and Controlling.
		C301.4	Select the best economic model from various available alternatives.
		C301.5	Understand various interest rate methods and implement the suitable one.

Sl. No.	Subject Code	Course Code	Course Outcomes
34	18ME52 Design of Machine Elements - I	C302.1	Apply the concepts of selection of materials for given mechanical components.
		C302.2	List the functions and uses of machine elements used in mechanical systems.
		C302.3	Apply codes and standards in the design of machine elements and select an element based on the Manufacturer's catalogue.
		C302.4	Design riveted and welded joints
		C302.5	Design threaded fasteners and power screws

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35	18ME53 Dynamics of Machinery	C303.1	Analyse the mechanisms for static and dynamic equilibrium.
		C303.2	Carry out the balancing of rotating and reciprocating masses
		C303.3	Analyse different types of governors used in real life situation.
		C303.4	Analyse the gyroscopic effects on disks, airplanes, stability of ships, two and four wheelers
		C303.5	Analyze forced vibration of single degree of freedom system and transverse vibration of the shaft

Sl. No.	Subject Code	Course Code	Course Outcomes
36	18ME54 Turbo Machines	C304.1	Model studies and thermodynamics analysis of turbomachines.
		C304.2	Analyse the energy transfer in Turbo machine with degree of reaction and utilisation factor.
		C304.3	Classify, analyse and understand various type of steam turbine.
		C304.4	Classify, analyse and understand various type of hydraulic turbine.
		C304.5	Understand the concept of radial power absorbing machine and the problems involved during its operation

Sl. No.	Subject Code	Course Code	Course Outcomes
37	18ME55 Fluid Power Engineering	C305.1	Describe structural components and working of hydraulic systems.
		C305.2	Distinguish different types of pumps and actuators and Determine performance parameters.
		C305.3	Apply the design of hydraulic circuit using control components for given applications.
		C305.4	Describe pneumatic power system and its components.
		C305.5	Apply the design of pneumatic control circuit.

Sl. No.	Subject Code	Course Code	Course Outcomes
38	18ME56 Operations Management	C306.1	Able to describe Production Management Functions and Interpret Decision making Process.
		C306.2	Able to explain the forecasting process.
		C306.3	Able to recognize the Capacity and location Planning.
		C306.4	Able to explain the Aggregate Planning and Master Scheduling.
		C306.5	Able to identify the Material Requirement Planning and Supply Chain Management

Sl.No.	Subject Code	Course Code	Course Outcomes
39	18MEL57 Fluid Mechanics & Machinery Lab	C307.1	Perform experiments to determine the coefficient of discharge of flow measuring devices.
		C307.2	Conduct experiments on hydraulic turbines and pumps to draw characteristics.
		C307.3	Test basic performance parameters of hydraulic turbines and pumps and execute the knowledge in real life situations
		C307.4	Determine the energy flow pattern through the hydraulic turbines and pumps.
		C307.5	Exhibit his competency towards preventive maintenance of hydraulic machines.

Sl. No.	Subject Code	Course Code	Course Outcomes
40	18MEL58 Energy Conversion Lab	C308.1	Perform experiments to determine the properties of fuels and oils.
		C308.2	Conduct experiments on engines and draw characteristics.
		C308.3	Test basic performance parameters of I.C. Engine and implement the knowledge in industry.
		C308.4	Identify exhaust emission, factors affecting them and exhibit his competency towards preventive maintenance of IC engines.

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41	18CIV59 Environmental Studies	C309.1	Understand the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale
		C309.2	Develop critical thinking and/or observation skills, and apply them to the analysis of a problem or question related to the environment.
		C309.3	Demonstrate ecology knowledge of a complex relationship between biotic and a biotic component

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42	18ME61 Finite Element Methods	C310.1	Identify the application and characteristics of FEA elements such as bars, beams, plane and iso- parametric elements.
		C310.2	Develop element characteristic equation and generation of global equation.
		C310.3	Formulate and solve Axi-symmetric and heat transfer problems.
		C310.4	Apply suitable boundary conditions to a global equation for bars, trusses, beams, circular shafts, Heat transfer, fluid flow, axi-symmetric and dynamic problems

Sl. No.	Subject Code	Course Code	Course Outcomes
43	18ME62 Design of Machine Elements II	C311.1	Design springs, clutches and brakes.
		C311.2	Design belts and wire ropes for power transmission.
		C311.3	Design different types of gears.
		C311.4	Design and analyze bearings for engineering applications.

Sl. No.	Subject Code	Course Code	Course Outcomes
44	18ME63 Heat Transfer	C312.1	Understand the modes of heat transfer and apply the basic laws to formulate engineering systems
		C312.2	Understand and apply the basic laws of heat transfer to extended surface, composite material and unsteady state heat transfer problems.
		C312.3	Analyze heat conduction through numerical methods and apply the fundamental principle to solve radiation heat transfer problems.
		C312.4	Analyze heat transfer due to free and forced convective heat transfer.
		C312.5	Understand the design and performance analysis of heat exchangers and their practical applications, Condensation and Boiling phenomena

Sl. No.	Subject Code	Course Code	Course Outcomes
45	18ME641 Non-Traditional Machining	C313.1	Understand the compare traditional and non-traditional machining process and recognize the need for Non- traditional machining process
		C313.2	Understand the constructional features, performance parameters, process characteristics, applications, advantages and limitations of USM, AJM and WJM
		C313.3	Identify the need of Chemical and electro-chemical machining process along with the constructional features, process parameters, process characteristics, applications, advantages and limitations
		C313.4	Understand the constructional feature of the equipment, process parameters, process characteristics, applications, advantages and limitations EDM & PAM.
		C313.5	Understand the LBM equipment, LBM parameters, and characteristics. EBM equipment and mechanism of metal removal, applications, advantages and limitations LBM & EBM.

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46	18CV651 Remote Sensing and GIS	C314.1	Collect data and delineate various elements from the satellite imagery using their spectral signature.
		C314.2	Analyze different features of ground information to create raster or vector data.
		C314.3	Perform digital classification and create different the matic maps for solving specific problems
		C314.4	Make decision based on the GIS analysis on thematic maps.

Sl. No.	Subject Code	Course Code	Course Outcomes
47	18MEL66 Computer Aided Modelling andAnalysis Lab	C315.1	Use the modern tools to formulate the problem, create geometry, discretize, apply boundary conditions to solve problems of bars, truss, beams, and plate to find stresses with different-loading conditions.
		C315.2	Demonstrate the ability to obtain deflection of beams subjected to point, uniformly distributed and varying loads and use the available results to draw shear force and bending moment diagrams.
		C315.3	Analyze and solve 1D and 2D heat transfer conduction and convection problems with different Boundary conditions
		C315.4	Carry out dynamic analysis and finding natural frequencies of beams, plates, and bars for various boundary conditions and also carry out dynamic analysis with forcing functions.

Sl. No.	Subject Code	Course Code	Course Outcomes
48	18MEL67 Heat Transfer Lab	C316.1	Determine the thermal conductivity of a metal rod and overall heat transfer coefficient of composite slabs.
		C316.2	Determine convective heat transfer coefficient for free and forced convection and correlate with theoretical values
		C316.3	Evaluate temperature distribution characteristics of steady and transient heat conduction through solid cylinder experimentally
		C316.4	Determine surface emissivity of a test plate and Stefan Boltzmann constant
		C316.5	Estimate performance of a refrigerator and effectiveness of a fin and Double pipe heat exchanger

Sl. No.	Subject Code	Course Code	Course Outcomes
49	18ME71 Control Engineering	C401.1	Identify the type of control and control actions.
		C401.2	Develop the mathematical model of the physical systems.
		C401.3	Estimate the response and error in response of first and second order systems subjected standard input signals.
		C401.4	Represent the complex physical system using block diagram and signal flow graph and obtain transfer function.
		C401.5	Analyse a linear feedback control system for stability using Hurwitz criterion, Routh's criterion and root Locus technique in complex domain

Sl. No.	Subject Code	Course Code	Course Outcomes
50	18ME72 Computer Aided Design and Manufacturing	C402.1	Define Automation, CIM, CAD, CAM and explain the differences between these concepts. Solve simple problems of transformations of entities on computer screen
		C402.2	Explain the basics of automated manufacturing industries through mathematical models and analyze different types of automated flow lines
		C402.3	Analyse the automated flow lines to reduce time and enhance productivity.
		C402.4	Explain the use of different computer applications in manufacturing, and able to prepare part programs for simple jobs on CNC machine tools and robot programming
		C402.5	Visualize and appreciate the modern trends in Manufacturing like additive manufacturing, Industry 4.0 and applications of Internet of Things leading to Smart Manufacturing.

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51	18ME735 Operations Research	C403.1	Understand the objectives, phases, models, used in operation research
		C403.2	Solve linear programming problems using simplex method, Big M method 2- phase method
		C403.3	Solve linear programming problems using duality theory and post optimality analysis
		C403.4	Solve problems on transportation, assignment problems and game theory.
		C403.5	Understand the nature of metaheuristics, simulated annealing and genetic algorithms, tabu search method

Sl. No.	Subject Code	Course Code	Course Outcomes
52	18ME741 Additive Manufacturing	C404.1	Demonstrate the knowledge of the broad range of AM processes, devices, capabilities and materials that are available.
		C404.2	Understand the various software tools, processes and techniques that enable advanced/additive manufacturing
		C404.3	Apply the concepts of additive manufacturing to design and create components that satisfy product development/prototyping requirements, using advanced/additive manufacturing devices and processes.
		C404.4	Understand characterization techniques in additive manufacturing.
		C404.5	Understand the latest trends and business opportunities in additive manufacturing.

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53	18CV751 Environmental Protection and Management	C405.1	Appreciate the elements of Corporate Environmental Management systems complying to international environmental management system standards.
		C405.2	Lead pollution prevention assessment team and implement waste minimization options.
		C405.3	Develop, Implement, maintain and Audit Environmental Management systems for Organizations.

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54	18MEL76 Computer Integrated Manufacturing labManufacturing Lab	C406.1	Demonstrate the Simulation software's in Manufacturing
		C406.2	Simulate Turning Operations using CNC software
		C406.3	Simulate Milling operations using CNC software
		C406.4	Demonstrate flexible manufacturing and Robots

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55	18MEL77 Design Lab	C407.1	Analyse the vibration characteristics in a single degree of freedom vibrating systems
		C407.2	Analyse the rotating elements for balancing, critical speed of shaft.
		C407.3	Compute the fringe constant of photo elastic material for different loading conditions.
		C407.4	Analyse the characteristics of governors
		C407.5	Evaluate the stresses for combined loading in straight and curved beam using strain gauges

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56	18MEP78 Project Work Phase - 1	C408.1	Comprehend a complex engineering problem while considering technical, ethical, and social issues.
		C408.2	Identify the limitations of existing solutions with the focus on design techniques and environmental factors.
		C408.3	Implement the technical solution by adopting modern tools and techniques, while analyzing the technical feasibility and cost effectiveness.
		C408.4	Ability to work and communicate effectively as an individual and in a team in designing, developing, testing and documenting the solution.
		C408.5	Validate the system in terms of applications in user's environment while improving personal

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57	Internship	C409.1	Identifying the Industries/organizations that give training in interested field of Industrial and Production engineering
		C409.2	Developing the knowledge in cutting-edge technologies by undergoing the Training in the industries/organizations
		C409.3	Demonstrating the leadership qualities in problem solving of the field using the gained knowledge
		C409.4	Preparing to work in group while undergoing internship
		C409.5	Writing and presenting the report of internship

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58	18ME81 Energy Engineering	C410.1	Understand the construction and working of steam generators and their accessories.
		C410.2	Identify renewable energy sources and their utilization.
		C410.3	Understand principles of energy conversion from alternate sources including wind, geothermal ocean, biomass, nuclear, hydel and tidal

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59	18ME824 Automobile Engineering	C411.1	To identify the different parts of an automobile and it's working
		C411.2	To understand the working of transmission and braking systems
		C411.3	To comprehend the working of steering and suspension systems
		C411.4	To learn various types of fuels and injection systems
		C411.5	To know the cause of automobile emissions, its effects on environment and methods to reduce the emissions.

Sl.No.	Subject Code	Course Code	Course Outcomes
60	18MEP83 Project Work Phase - 2	C412.1	Present the project and be able to defend it.
		C412.2	Make links across different areas of knowledge and to generate, develop and evaluate ideas and information so as to apply these skills to the project task.
		C412.3	Communicate effectively and to present ideas clearly and coherently in both the written and oral forms.
		C412.4	Demonstrating the practice of Life-long learning to upgrade to the future technology
		C412.5	Learn on their own, reflect on their learning and take appropriate actions to improve it.

Sl. No.	Subject Code	Course Code	Course Outcomes
61	18MES84 Technical Seminar	C413.1	Attain, use and develop knowledge in the field of engineering and other disciplines through independent learning and collaborative study.
		C413.2	Identify, understand and discuss current, real-time issues.
		C413.3	Improve oral and written communication skills.
		C413.4	Explore an appreciation of the self in relation to its larger diverse social and academic contexts.
		C413.5	Apply principles of ethics and respect in interaction with others.

Sl. No.	Subject Code	Course Code	Course Outcomes
62	18MEI85 Internship	C414.1	Identifying the Industries/organizations that give training in interested field of Industrial and Production engineering
		C414.2	Developing the knowledge in cutting-edge technologies by undergoing the Training in the industries/organizations
		C414.3	Demonstrating the leadership qualities in problem solving of the field using the gained knowledge
		C414.4	Preparing to work in group while undergoing internship
		C414.5	Writing and presenting the report of internship