



Course Objectives and Course Outcomes

Odd Semester

Class: SE

Subject: MEC301	Subject: Applied Mathematics-III	Credits:04
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Course Objective:

At the end of course, student should be able to:

1	Describe sound foundation in the mathematical fundamentals necessary to formulate, solve and analyze engineering problems.
2	Apply mathematical fundamentals necessary to formulate, solve and analyze engineering problems.
3	Use the basic principles of Laplace Transform, Fourier Series, Complex variables.
4	Analyze properties of complex analysis and mapping and bilinear transformation.
5	Use partial differential equation such as vibration of string heat flow etc.
6	Apply theorem of complex integration and study of correlation and curve fitting.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Demonstrate the ability of using Laplace Transform in solving the Ordinary Differential Equations and Partial Differential Equations.
2	Demonstrate the ability of using Fourier Series in solving the Ordinary Differential Equations and Partial Differential Equations.
3	Solve initial and boundary value problems involving ordinary differential equations.
4	Identify the analytic function, harmonic function, orthogonal trajectories.
5	Apply bilinear transformations and conformal mappings.
6	Identify the applicability of theorems and evaluate the contour integrals.

Subject:MEC302	Subject: Thermodynamics	Credits:04
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Course Objective:

At the end of course, student should be able to:

1	Describe basic laws and types of Systems.
2	Apply the concepts of Energy in general and Heat and Work in particular.
3	Use the fundamentals of quantification and grade of energy.
4	Apply the effect of energy transfer on properties of substances in the form of charts and diagrams.
5	Describe application of the concepts of thermodynamics in vapour power, gas power cycles.
6	Explain the effect of energy transfer on properties of substances in the form of charts and diagrams.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Demonstrate application of the laws of thermodynamics to wide range of systems.
2	Write steady flow energy equation for various flow and non-flow thermodynamic systems.
3	Compute heat and work interactions in thermodynamics systems.
4	Demonstrate the interrelations between thermodynamic functions to solve practical problems.
5	Use steam table and mollier chart to compute thermodynamics interactions.
6	Compute efficiencies of heat engines, power cycles etc.

Subject:MEC303	Subject: Strength of Materials	Credits:04
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Course Objective:

At the end of course, student should be able to:

1	Classify types of stresses, strain and deformation induced in the mechanical components due to external loads.
2	Examine various SFD and BMD for different types of loads and support conditions.
3	Explain distribution of various stresses in the mechanical elements or bodies of finite dimensions that deform under loads.
4	Analyze strain energy, resilience, proof resilience in mechanical elements.
5	Locate different types of deflection in beams and their method.
6	Develop the effects of component dimensions, materials and shapes on stresses and

	deformations.
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Course Outcomes:

At the end of course, students will attain an ability to:

1	Demonstrate fundamental knowledge about various types of loading and stresses induced.
2	Draw the SFD and BMD for different types of loads and support conditions.
3	Analyze the stresses induced in basic mechanical components.
4	Estimate the strain energy in mechanical elements.
5	Analyze the deflection in beams.
6	Analyze buckling and bending phenomenon in columns, struts and beams.

Subject:MEC304	Subject: Production Processes	Credits:04
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Course Objective:

At the end of course, student should be able to:

1	Describe basic production processes.
2	select appropriate production processes for a specific application.
3	Use of machine tools.
4	Explain production processes of polymer components.
5	Explain production processes of Ceramic components.
6	Compare Chip Formation in different Production processes.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Demonstrate understanding of casting process.
2	Illustrate principles of forming processes.
3	Demonstrate applications of various types of welding processes.
4	Differentiate chip forming processes such as turning, milling, drilling, etc.
5	Illustrate the concept of producing polymer components and ceramic components.
6	Distinguish between the conventional and modern machine tools.

Subject: MEC305	Subject: Material Technology	Credits: 04
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Course Objective:

At the end of course, student should be able to:

1	Describe basic engineering materials, their structure-property-performance.
2	Explain strengthening processes including heat treatment processes in order to enhance properties.
3	Selection of new materials and their applications.
4	Compare Heat treatment processes and its applications.
5	Use of alloying elements.
6	Discuss advanced materials.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Identify various crystal imperfections, deformation mechanisms, and strengthening mechanisms.
2	Demonstrate understanding of various failure mechanisms of materials.
3	Interpret Iron-Iron carbide phase diagram, and different phases in microstructures of materials at different conditions.
4	Select appropriate heat treatment process for specific applications.
5	Identify effect of alloying elements on properties of steels.
6	Illustrate basics of composite materials, Nano- materials and smart materials.

Subject: MEL301	Subject: Computer Aided Machine Drawing	Credits: 04
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Course Objective:

At the end of course, student should be able to:

1	Explain conversion of an object into a drawing.
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2	Label conventional representation of various machining and mechanical details as per IS.
3	Reproduce 2-D and 3-D drafting.
4	Use conversion of Assembly drawing.
5	Use conversion of Detailed drawing.
6	Illustrated drawing of objects with actual measurement.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Visualize and prepare detail drawing of a given object.
2	Read and interpret the drawing.
3	Draw details and assembly of different mechanical systems.
4	Convert detailed drawing into assembly drawing using modelling software.
5	Convert assembly drawing into detailed drawing using modelling software.
6	Prepare detailed drawing of any given physical object/machine element with actual measurements.



Class: TE

Subject code:MEC501	Subject Name : Internal Combustion Engines	Credits:04
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Course Objective:

At the end of course, student should be able to:

1	Describe working of S.I. and C.I. engines and its important systems
2	Use various methods for measurement of engine performance
3	Express insight into the harmful effects of engine pollutants and its control
4	Define latest technological developments in engine technology
5	Classify Engine Lubrication, cooling and supercharging systems
6	Use alternate fuels for ICE.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Demonstrate the working of different systems and processes of S.I. engines
2	Demonstrate the working of different systems and processes of C.I. engines
3	Illustrate the working of lubrication, cooling and supercharging systems.
4	Analyze engine performance.
5	Illustrate emission norms and emission control.
6	Comprehend the different technological advances in engines and alternate fuels.

Subject code:MEC502	Subject Name: Mechanical Measurement and Control	Credits:04
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Course Objective:

At the end of course, student should be able to:

1	Describe knowledge of architecture of the measurement system.
2	Use working principle of mechanical measurement system.

3	Illustrate concept of mathematical modelling of the control system.
4	Classify different types of errors.
5	Determine various types of control systems and their differentiation.
6	Solve Control system considering its stability.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Classify various types of static characteristics and types of errors occurring in the system.
2	Classify and select proper measuring instrument for linear and angular displacement.
3	Classify and select proper measuring instrument for pressure and temperature measurement.
4	Design mathematical model of system/process for standard input responses.
5	Analyze error and differentiate various types of control systems and time domain specifications.
6	Analyze the problems associated with stability.

Subject code:MEC503	Subject Name : Heat Transfer	Credits:04
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Course Objective:

At the end of course, student should be able to:

1	Describe basic heat transfer concepts applicable for steady state and transient conditions.
2	Illustrate mathematical modelling and designing concepts of heat exchangers.
3	Use concept of mathematical modelling of heat transfer.
4	Solve mathematical model for different types of modes of heat transfer.
5	Analyze mechanism of boiling and condensation.
6	Apply working and applications of heat exchangers.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Identify the three modes of heat transfer (conduction, convection and radiation).
2	Illustrate basic modes of heat transfer.
3	Develop mathematical model for each mode of heat transfer.
4	Develop mathematical model for transient heat transfer.
5	Demonstrate and explain mechanism of boiling and condensation.

6	Analyze different heat exchangers and quantify their performance.
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Subject: MEC504	Subject: Dynamics of Machinery	Credits:04
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Course Objective:

At the end of course, student should be able to:

1	Describe working principles and applications of Governors / Gyroscope.
2	Illustrate static and dynamic force analysis in the mechanisms.
3	Explain basics of mechanical vibrations.
4	Apply the balancing of mechanical systems.
5	Solve vibration response of mechanical systems.
6	Analyze vibration isolation of mechanical systems.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Demonstrate working Principles of different types of governors and Gyroscopic effects on the mechanical systems.
2	Illustrate basic of static and dynamic forces.
3	Determine natural frequency of element/system.
4	Determine vibration response of mechanical elements / systems.
5	Design vibration isolation system for a specific application.
6	Demonstrate basic concepts of balancing of forces and couples.

Subject code: MEDLO5012	Subject : Machining Sciences and Tool Design	Credits:04
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Course Objective:

At the end of course, student should be able to:

1	Describe the basic concepts of machining science like mechanics of machining, tool wear, tool life and surface roughness.
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2	Classify various single and multipoint cutting tools designing processes.
3	Analyze economics of machining process.
4	Selection of tool material for machining application.
5	Apply inter-relationship between cutting parameters and machining performance.
6	Illustrate machining operations and coolant operations.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Calculate the values of various forces involved in the machining operations.
2	Design various single and multipoint cutting tools.
3	Analyze heat generation in machining operation and coolant operations.
4	Illustrate the properties of various cutting tool materials and hence select an appropriate tool material for particular machining application.
5	Demonstrate the inter-relationship between cutting parameters and machining performance measures like power requirement, cutting time, tool life and surface finish.
6	Analyze economics of machining operations.

Subject: MEL506	Subject: Business Communication & Ethics	Credits:04
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Course Objective:

At the end of course, student should be able to:

1	Define professional and ethical attitude at the workplace.
2	Apply effective communication and interpersonal skills.
3	Show multidisciplinary approach towards all life tasks.
4	Describe analytical and logical skills for problem-solving.
5	Use resumes writing.
6	Discuss group discussion skills.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Design a technical document using precise language, suitable vocabulary and apt style.
2	Develop the life skills/ interpersonal skills to progress professionally by building stronger Relationships.

3	Demonstrate awareness of contemporary issues knowledge of professional and ethical Responsibilities.
4	Apply the traits of a suitable candidate for a job/higher education, upon being trained in the techniques of holding a group discussion, facing interviews and writing resume/SOP.
5	Deliver formal presentations effectively implementing the verbal and non-verbal skills.
6	Develop overall professional skills



Class: BE

Subject code:MEC701	Subject Name: Machine Design – II	Credits:04
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Course Objective:

At the end of course, student should be able to:

1	Describe functional and strength design principles of important machine elements.
2	Analyze selection of standard elements such as rolling element bearings, belts etc.
3	Apply gear design.
4	Analyze design and applications of belts and flywheel.
5	Design cam and follower mechanisms.
6	Draw clutches and brakes.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Select appropriate gears for power transmission on the basis of given load and speed.
2	Design gears based on the given conditions.
3	Select bearings for a given applications from the manufacturers catalogue.
4	Select and/or design belts and flywheel for given applications.
5	Design cam and follower mechanisms.
6	Design clutches and brakes.

Subject code: MEC702	Subject Name : CAD/CAM/CAE	Credits:04
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Course Objective:

At the end of course, student should be able to:

1	Describe new and exciting field of Intelligent CAD/CAM/CAE with particular focus on engineering product design and manufacturing.
2	Use holistic view of initial competency in engineering design by modern computational methods.
3	Design New API for CAD.
4	Classify rapid prototyping and tooling concepts.
5	Analyze of complex engineering component.
6	Apply professional skills.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Identify proper computer graphics techniques for geometric modelling.
2	Transform, manipulate objects & store and manage data.
3	CAM Toolpath Creation and NC- G code output.
4	Use rapid prototyping and tooling concepts in any real life applications.
5	Identify the tools for Analysis of a complex engineering component.
6	Develop professional skills needed for industry.

Subject code: MEC703	Subject Name: Production Planning and Control.	Credits:04
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Course Objective:

At the end of course, student should be able to:

1	Describe exposure to Production Planning & Control (PPC) and its significance in Manufacturing Industries.
2	Illustrate the ongoing & futuristic trends in the control of inventory.
3	Define need and benefits of planning functions related to products and processes.
4	Express production scheduling and sequencing so as to optimise resources.
5	Analyze line balancing in various production systems.
6	Use techniques of manufacturing planning and control.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Illustrate production planning functions and manage manufacturing functions in a better way.
2	Develop competency in scheduling and sequencing of manufacturing operations.
3	Forecast the demand of the product and prepare an aggregate plan.
4	Develop the skills of Inventory Management and cost effectiveness.
5	Create a logical approach to Line Balancing in various production systems.
6	Implement techniques of manufacturing planning and control.

Subject code: MEDLO7032	Subject Name: AUTOMOBILE ENGINEERING	Credits:04
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Course Objective:

At the end of course, student should be able to:

1	Describe important mechanical systems of an automobile
2	Illustrate insight into the electrical systems of an automobile.
3	Use latest technological developments in automotive technology
4	Classify storage, charging and starting systems.
5	Describe body and chassis of an automobile.
6	Use advances in automobile engineering.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Illustrate the types and working of clutch and transmission system.
2	Demonstrate the working of different types of final drives, steering gears and braking systems.
3	Illustrate the constructional features of wheels, tires and suspension systems.
4	Demonstrate the understanding of types of storage, charging and starting systems.
5	Identify the type of body and chassis of an automobile.
6	Comprehend the different technological advances in automobile.

Subject code: ILO7013	Subject Name: Management Information System	Credits:04
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Course Objective:

At the end of course, student should be able to:

1	Describe blend of Management and Technical field.
2	Discuss the roles played by information technology in today's business and define various technology architectures on which information systems are built
3	Identify the basic steps in systems development
4	Define and analyze typical functional information systems and identify how they meet the needs of the firm to deliver efficiency and competitive advantage
5	Apply knowledge management.
6	Use databases to improve business performance.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Explain how information systems Transform Business
2	Identify the impact information systems have on an organization
3	Describe IT infrastructure and its components and its current trends
4	Understand the principal tools and technologies for accessing information from databases to improve business performance and decision making
5	Identify the types of systems used for enterprise-wide knowledge management and how they provide value for businesses
6	Implementation of management information systems



Course Objectives and Course Outcomes

Even Semester

Class: SE

Subject:MEC401	Subject: Applied Mathematics IV	Credits:04
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Course Objective:

At the end of course, student should be able to:

1	Describe an ability to relate engineering problems to mathematical context
2	Apply a solid foundation in mathematical fundamentals required to solve engineering problem
3	Use basic principles of Vector analyses, complex integration, probability, test of hypothesis and correlation between data.
4	Analyze properties of Vector analyses, complex integration, probability, test of hypothesis and correlation between data.
5	Use Vector analyses to Solve Engineering Problems.
6	Apply theorem of complex integration and study of correlation and curve fitting.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Solve the system of linear equations using matrix algebra with its specific rules.
2	Demonstrate basics of vector calculus.
3	Apply the concept of probability distribution and sampling theory to engineering problems.
4	Apply principles of vector calculus to the analysis of engineering problems.
5	Identify, formulate and solve engineering problems.
6	Illustrate basic theory of correlations and regression.

Subject: MEC402	Subject: Fluid Mechanics	Credits:04
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Course Objective:

At the end of course, student should be able to:

1	Describe fluid statics and fluid dynamics
2	Application of mass, momentum and energy equations in fluid flow.
3	Learn various flow measurement techniques.
4	Describe different types of flows.
5	Apply equations of pipe flows.
6	Solve Boundary Layer problems.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Define properties of fluids and classification of fluids.
2	Evaluate hydrostatic forces on various surfaces and predict stability of floating bodies.
3	Formulate and solve equations of the control volume for fluid flow systems.
4	Apply Bernoulli's equation to various flow measuring devices.
5	Calculate resistance to flow of incompressible fluids through closed conduits and over surfaces.
6	Apply fundamentals of compressible fluid flows to relevant systems.

Subject code:MEC403	Subject Name : Industrial Electronics	Credits:04
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Course Objective:

At the end of course, student should be able to:

1	Define power electronic switches and circuits and their applications.
2	familiarize Op amp and digital circuits and their applications.
3	Acquaint with basics of microprocessor and microcontroller.
4	Classify structure, working and characteristics of different types of industrial electric motors .
5	selection of industrial electric motors for a particular application.
6	Design electronic circuits.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Illustrate construction, working principles and applications of power electronic switches.
2	Identify rectifiers and inverters for dc and ac motor speed control.
3	Develop circuits using OPAMP and timer IC555.
4	Identify digital circuits for industrial applications.
5	Illustrate the knowledge of basic functioning of microcontroller.
6	Analyze speed-torque characteristics of electrical machines for speed control.

Subject code:MEC404	Subject Name: Production Process II	Credits:04
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Course Objective:

At the end of course, student should be able to:

1	Describe sheet metal forming as well as mechanical behavior of stress system in metal forming processes.
2	Acquaint to basic principles of design of jigs and fixtures
3	Exposure to Non-traditional machining operations.
4	Acquaint with fundamentals of metal cutting and tool engineering.
5	Explain concepts and use of jigs and fixtures.
6	Compare different manufacturing processes.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Demonstrate understanding of metal cutting principles and mechanism.
2	Identify cutting tool geometry of single point and multipoint cutting tool.
3	Demonstrate various concepts of sheet metal forming operations.
4	Demonstrate concepts and use of jigs and fixtures.
5	Illustrate various non-traditional machining techniques.
6	Illustrate concepts and applications of additive manufacturing.

Subject:MEC405	Subject: Kinematics of Machinery	Credits:04
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Course Objective:

At the end of course, student should be able to:

1	Describe basic concept of kinematics and kinetics of machine elements
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2	Define various basic mechanisms and inversions
3	Describe basics of power transmission
4	Design Cam profiles
5	Apply velocity and acceleration diagram
6	Use Power transmission

Course Outcomes:

At the end of course, students will attain an ability to:

1	Define various components of mechanisms
2	Develop mechanisms to provide specific motion
3	Draw velocity and acceleration diagrams of various mechanisms
4	Draw Cam profile for the specific follower motion
5	Analyse forces in various gears
6	Select appropriate power transmission for specific applications.

Subject: MEL401	Subject: Data Base and Information Retrieval	Credits:02
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Course Objective:

At the end of course, student should be able to:

1	Apply data modelling/database design using the entity-relationship
2	use of Structured Query Language (SQL) and learn SQL syntax
3	Describe Graphical User Interface techniques to retrieve information from database
4	Define needs of database processing and controlling the consequences of concurrent data access
5	Define Data models.
6	Apply visual software

Course Outcomes:

At the end of course, students will attain an ability to:

1	Identify data models and schemes in DBMS
2	Demonstrate the features of database management systems and Relational database
3	Use SQL- the standard language of relational databases
4	Demonstrate understanding of functional dependencies and design of the database
5	Design graphical user Interface for specific application
6	Create visual software entities.



Class: TE

Subject code:MEC601	Subject Name : Metrology and Quality Engineering	Credits:04
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Course Objective:

At the end of course, student should be able to:

1	Describe measuring equipment used for linear and angular measurements.
2	Explain different classes of measuring instruments and scope of measurement in industry and research
3	Apply operations of precision measurement, instrument/equipment for measurement
4	Use the fundamentals of quality concepts and statistics in metrology
5	Define statistical methods in quality control
6	Define different sampling techniques

Course Outcomes:

At the end of course, students will attain an ability to:

1	Demonstrate inspection methods and different gauges
2	Illustrate working principle of measuring instruments and calibration methodology
3	Illustrate basic concepts and statistical methods in quality control
4	Demonstrate characteristics of screw threads, gear profile, and tool profile
5	Illustrate the different sampling techniques in quality control
6	Illustrate different nondestructive techniques used for quality evaluation

Subject code:MEC602	Subject Name: MACHINE DESIGN – I	Credits:04
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Course Objective:

At the end of course, student should be able to:

1	Define basic principles of machine design
2	use the concepts of design based on strength & rigidity
3	use of design data books & various codes of practice
4	preparation of working drawings based on designs
5	Design machine elements
6	Solve problems in Design

Course Outcomes:

At the end of course, students will attain an ability to:

1	Demonstrate understanding of various design considerations.
2	Illustrate basic principles of machine design.
3	Design machine elements for static as well as dynamic loading.
4	Design machine elements on the basis of strength/ rigidity concepts.
5	Use design data books in designing various components.
6	Acquire skill in preparing production drawings pertaining to various designs.

Subject code:MEC603	Subject Name : Finite Element Analysis	Credits:04
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Course Objective:

At the end of course, student should be able to:

1	Describe concepts of FEM.
2	apply FEM to engineering problems.
3	use of numerical techniques for solving problems.
4	Develop skills with advanced FEM software.
5	Design FEM models.
6	Use commercial FEA software.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Solve differential equations using weighted residual methods
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2	Develop the finite element equations to model engineering problems governed by second order differential equations
3	Apply the basic finite element formulation techniques to solve engineering problems by using one dimensional elements
4	Apply the basic finite element formulation techniques to solve engineering problems by using two dimensional elements
5	Apply the basic finite element formulation techniques to find natural frequency of single degree of vibration system
6	Use commercial FEA software, to solve problems related to mechanical engineering

Subject code: MEC604	Subject Name: Refrigeration and Air Conditioning	Credits:04
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Course Objective:

At the end of course, student should be able to:

1	Define working and operating principles of Air Refrigeration, Vapour Compression and Vapour Absorption system.
2	Explain components of refrigeration and air conditioning systems
3	Explain controls and applications of refrigeration and air conditioning
4	Classify Air Conditioning Systems
5	Solve different air conditioning systems considering their loads
6	Design air conditioning system.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Demonstrate fundamental principles of refrigeration and air conditioning.
2	Identify and locate various important components of the refrigeration and air conditioning system
3	Illustrate various refrigeration and air conditioning processes using psychometric chart
4	Design Air Conditioning system using cooling load calculations.
5	Estimate air conditioning system parameters
6	Demonstrate understanding of duct design concepts

Subject code: MEDLO6021	Subject Name : Mechatronics	Credits:04
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Course Objective:

At the end of course, student should be able to:

1	Define key elements of Mechatronics system and its integration.
2	Describe concepts of sensors characterization and its interfacing with microcontrollers
3	use concepts of actuators and its interfacing with microcontrollers
4	Compare continuous control logics i.e. P, PI, PD and PID.
5	Apply discrete control logics in PLC systems and its industrial applications.
6	Develop ladder programm.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Identify the suitable sensor and actuator for a mechatronics system .
2	Select suitable logic controls.
3	Analyze continuous control logics for standard input conditions.
4	Develop ladder logic programming.
5	Design hydraulic/pneumatic circuits.
6	Design a mechatronic system.



Class: BE

Subject code: MEC801	Subject Name: Design of Mechanical Systems	Credits: 04
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Course Objective:

At the end of course, student should be able to:

1	Describe the concept of system and methodology of system design
2	system design of various systems such as snatch block, belt conveyors, engine system, pumps and machine tool gearbox
3	Define morphology of design and methodology
4	Design EOT
5	Apply design concept to develop belt conveyor
6	Design pumps

Course Outcomes:

At the end of course, students will attain an ability to:

1	Apply the concept of system design.
2	Design material handling systems such as hoisting mechanism of EOT crane,
3	Design belt conveyor systems
4	Design engine components such as cylinder, piston, connecting rod and crankshaft
5	Design pumps for the given applications
6	Prepare layout of machine tool gear box and select number of teeth on each gear

Subject code: MEC802	Subject Name: Industrial Engineering and Management	Credits:04
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Course Objective:

At the end of course, student should be able to:

1	Describe concept of integration of various resources and the significance of optimizing them in manufacturing and allied Industries
2	Apply various productivity enhancement techniques
3	Define value analysis and relevance
4	Describe different concepts involved in method study and understanding of work content in different situations.
5	Illustrate concepts of Agile manufacturing
6	Illustrate concepts of Lean manufacturing and Flexible manufacturing

Course Outcomes:

At the end of course, students will attain an ability to:

1	Illustrate the need for optimization of resources and its significance.
2	Develop ability in integrating knowledge of design along with other aspects of value addition in the conceptualization and manufacturing stage of various products.
3	Demonstrate the concept of value analysis and its relevance.
4	Manage and implement different concepts involved in method study and understanding of work content in different situations.
5	Describe different aspects of work system design and facilities design pertinent to manufacturing industries.
6	Illustrate concepts of Agile manufacturing, Lean manufacturing and Flexible manufacturing

Subject code: MEC803	Subject Name: Power Engineering	Credits:04
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Course Objective:

At the end of course, student should be able to:

1	Describe boilers, boiler mountings and accessories
2	Explain utilization of thermal and hydraulic energy
3	Describe gas turbine and its applications
4	Solve boiler efficiency
5	Analyze working cycles
6	Describe Pumps and their working

Course Outcomes:

At the end of course, students will attain an ability to:

1	Compute heat interactions in combustion of reactive mixtures
2	Differentiate boilers, boiler mountings and accessories
3	Calculate boiler efficiency and assess boiler performance
4	Demonstrate working cycles of gas turbines
5	Draw velocity triangles of impulse/reaction turbines and calculate performance parameters/efficiency
6	Demonstrate basic working of pumps

Subject code: MEDLO8041	Subject Name: Power Plant Engineering	Credits:04
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Course Objective:

At the end of course, student should be able to:

1	Define basic working principles of different power plants
2	Analyze power plant economics
3	Compare different types of power plants
4	Design different types of power plants
5	Discuss types of reactors
6	Selection of power plants

Course Outcomes:

At the end of course, students will attain an ability to:

1	Comprehend various equipment/systems utilized in power plants
2	Demonstrate site selection methodology, construction and operation of Hydro Electric Power Plants
3	Discuss working, site selection, advantages, disadvantages of steam power plants
4	Discuss operation of Combined Cycle Power Plants
5	Discuss types of reactors, waste disposal issues in nuclear power plants
6	Illustrate power plant economics

Subject code: ILO8024	Subject Name: Human Resource Management	Credits:04
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Course Objective:

At the end of course, student should be able to:

1	Define basic concepts, techniques and practices of the human resource management.
2	Use opportunity of learning Human resource management (HRM) processes, related with the functions, and challenges in the emerging perspective of today's organizations
3	Describe the students about the latest developments, trends & different aspects of HRM
4	Apply inter-personal & inter-group behavioral skills in an organizational setting required for future stable engineers, leaders and managers
5	Use trends in HRM
6	Analyze inter personal and intergroup environment.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Understand the concepts, aspects, techniques and practices of the human resource management.
2	Understand the Human resource management (HRM) processes, functions, changes and challenges in today's emerging organizational perspective.
3	Gain knowledge about the latest developments and trends in HRM.
4	Apply the knowledge of behavioral skills learnt and integrate it with in inter personal and intergroup environment emerging as future stable engineers and managers.
5	Apply HRM skills.
6	Analyze personal and professional skills.