



LORDS INSTITUTE OF ENGINEERING & TECHNOLOGY

(UGC Autonomous)

Approved by AICTE | Affiliated to Osmania University | Estd.2003.

Department of Mechanical Engineering

Course Outcomes

A.Y: 2024-25

Semester: III (A)

Student will be able to

Course Name: C5 Mathematics – III (U23MA302)

CO. No.	Description
C31.1	Solve field problems in engineering involving first order PDEs.
C31.2	Solve field problems in engineering involving higher order PDEs.
C31.3	Apply the concepts of probability, distributions and its moments, kurtosis and skewness
C31.4	Determine the coefficient of correlation, regression and obtain the knowledge of sampling theory with context to test of hypothesis
C31.5	Analyze and check the validity of statement using testing of hypothesis for various parameters and goodness of fit.

Course Name: C32 Fundamentals of Electrical Engineering (U23EE308)

CO. No.	Description
C32.1	Analyze DC electrical circuits and measure the parameters of electrical energy.
C32.2	Analyze AC electrical circuits and measure the parameters of electrical energy.
C32.3	Comprehend the working principles of Electrical DC Machines and Transformers
C32.4	Comprehend the working principles of Electrical AC machines.
C32.5	Identify various electrical switchgear components and installations.

Course Name: C33 Metallurgy and Material science (U23ME301)

CO. No.	Description
C33.1	Know the fundamental science and engineering principles relevant to material.
C33.2	Suggest appropriate physical metallurgical methods (phase diagrams)..
C33.3	The type of heat treatment operation to be given to any metal in order to improve desired Mechanical properties.
C33.4	Basic ability to plan an extraction process for given ore.
C33.5	Analyse the applications of conventional metals and alloys and suggest the appropriate methods for prevention of failures

Course Name: C34 Mechanics of Solids (U23ME302)

CO. No.	Description
C34.1	Understand the basic concepts of stresses and strain their relations for different sections and identify the behavior of the solid bodies, composite bars, and thermal stresses and strain energy, subjected to various types of loading.
C34.2	Apply the concepts of S.F and B.M for drawings of S.F and B.M diagrams for different beams with different loads and locate the maximum B.M and point of contra flexure and deflection.
C34.3	Analyze Bending stresses and shear stress distribution in different sections of beams.
C34.4	Determine Longitudinal and circumferential stresses of thin cylinder and spheres.
C34.5	Analyze the torsional stresses developed in the shafts and also the behavior of the Columns and Struts under different loading.

Course Name: C35 Thermodynamics (U23ME303)

CO. No.	Description
C35.1	Correlate the study of thermodynamics with the fundamental conceptual terminologies and distinguish the different forms of energy.
C35.2	Analyze the Laws of Thermodynamics and correlate them for real life problem solving.
C35.3	Read data from the chart of Mollier diagram and its applications.
C35.4	Assess the importance of entropy and recognize the various curves of phase transformation.
C35.5	Identify the various air standard cycles, gas cycles and gas laws toward solving practical applications.

Course Name: C36 Metallurgy and Material Testing Lab (U23ME3L1)

CO. No.	Description
C36.1	Prepare specimen for metallographic observation
C36.2	Analyze and identify low, medium and high carbon steels, different types of cast irons, non-ferrous alloys, from the study of their microstructure
C36.3	Contrast the importance of grain size in evaluating the desired mechanical properties.
C36.4	Inspect the mechanical properties of engineering materials such as Hardness, toughness, Stiffness, Elastic and plastic deformation.
C36.5	Analyze and identify microstructures and their mechanical properties after different heat treatment processes.

Course Name: C37 Machine Drawing and Modelling Lab (U23ME3L2)

CO. No.	Description
C37.1	Draw isometric views of various mechanical components.
C37.2	Draw Orthogonal projections and sectional views of various mechanical component
C37.3	Draw free hand sketches of various mechanical components
C37.4	Understand the shape and structure of different types of joints, screws, keys and Couplings.
C37.5	Sufficiently knowledgeable to use both the software and drafter to produce assembly views of various mechanical components from part drawings.

Course Name: C38 Fundamentals of Electrical Engineering Lab (U23EE3L4)

CO. No.	Description
C38.1	Get an exposure to common electrical components and their ratings.
C38.2	Comprehend the usage of common electrical measuring instruments.
C38.3	Analyze the Laws and theorems in DC circuit
C38.4	Analyze the voltage and currents in RL, RC and RLC Circuits.
C38.5	Test the basic characteristics of transformers and electrical machines
C38.6	Analyze the performance of DC Motors and DC Generators.

Course Name: C39 PROGRAMMING LANGUAGE-I (U23CS3L4)

CO. No.	Description
C39.1	Develop Python Programs using Library Modules
C39.2	Implement Python Programs
C39.3	Implement python programs using Pandas
C39.4	Develop python programs using Matplotlib Module
C39.5	Write, test, Debug Python Library Modules



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Course Outcomes

A.Y: 2024-25

Year: V(A)

Student will be able to

Course outcomes: C51 – Mechanics of Fluids and Hydraulic Machinery (U21ME501)

CO. No.	Description
C51.1	Identify the various fluid properties and pressure measurement techniques for determining the behavior of the fluids at static and in motion.
C51.2	Explain the type of fluid flow patterns and describe continuity equation, and apply fundamental laws of fluid mechanics and the Bernoulli's principle for analyzing practical applications.
C51.3	Apply appropriate equations and principles to analyze problems and losses in pipe flows.
C51.4	Interpret and apply performance laws to turbomachines (Impact of jet on vanes) of different types.
C51.5	Demonstrate the working principles of various hydraulic turbines and estimate their performances.
C51.6	Estimate performance parameters of a given Centrifugal and Reciprocating pump.

Course outcomes: C52 – Dynamics of Machines (U21ME502)

CO. No.	Description
C52.1	Analyze static and dynamic forces in slider crank and other mechanisms; determine the magnitude of gyroscopic couple and its effect on vehicles in motion
C52.2	Evaluate the performance of various types of governors and design flywheels considering speed and energy fluctuation.
C52.3	Determine frictional torque in clutches and understand the working of brakes and dynamometers.
C52.4	Analyze problems of balancing in rotating and reciprocating machinery.
C52.5	Evaluate the natural frequencies of single and two degree of freedom systems in free and forced vibration mode, also considering the effect of damping

Course outcomes: C53 – Design of Machine Elements-I (U21ME503)

CO. No.	Description
C53.1	Demonstrate the basic design procedure and design of components subjected to combined normal and shear stresses and criteria of failure theory.
C53.2	Design the different shaped machine elements subjected to fatigue loading of simplest normal and stresses and will demonstrate the different methods to reduce the stress concentration.
C53.3	Analyze the different ways in which a shaft can be loaded and the suitable best suited method to design the shaft which can withstand the given complex loads
C53.4	Map out and design the different types of shaft keys and Couplings used in different industrial applications
C53.5	Apply the knowledge of different welded and riveted joints for design and manufacturing of different components of a machine
C53.6	Illustrate the design, development and use of knuckle joint, spigot cotter joint, gib and cotter joint, strap end of a connecting rod and use of different keyways in engineering applications.

Course outcomes: C54 – Disaster preparedness and management (U21CE509)

CO. No.	Description
C54.1	Learn about the basic principles of disaster management and the types of disasters
C54.2	Understand the disaster management cycle and framework.
C54.3	Know about the disaster management systems in India and the applications of the latest technologies in disaster management
C54.4	Understand about the different types of disasters.
C54.5	Know about the past disasters occurred across the globe.

Course outcomes: C55 –Renewable Energy Resources (U21ME507)

CO. No.	Description
C55.1	Summarize the renewable and non-renewable sources of energy
C55.2	Acquire the knowledge of various components, principle of operation and present scenario of different conventional and non-conventional sources.
C55.3	Explain the use of solar energy and the various components used in the energy production with respect to applications
C55.4	Design wind turbine blades and know about applications of wind energy for water pumping and electricity generation
C55.5	Relate the concept of Biomass energy resources and their classification, types of biogas Plants-applications and summarize the knowledge of Ocean energy, tidal energy, and geothermal

Course outcomes: C56 – Mechanics of Fluids and Hydraulic Machinery Lab (U21ME5L1)

CO. No.	Description
C56.1	Practice and experiment on different types of turbines.
C56.2	Analyze the performance of turbines at rated and off design conditions.
C56.3	Investigate through experimentation different types of pump models and estimate their performance.
C56.4	Apply the principle of different flow measuring instruments and their adoptability to the industry.
C56.5	Develop the hydraulic circuits to cater the needs of the industry.

Course outcomes: C57 – Dynamics of Machines Lab (U21ME5L2)

CO. No.	Description
C57.1	Estimate the Gyroscopic couple and its effect on a Precessing rotating member.
C57.2	Evaluate performance characteristics of centrifugal governors.
C57.3	Determine the magnitude, location and orientation of a balancing mass required to balance the unbalance rotating system and verify the static and dynamic balancing.
C57.4	Analyze the cam profile for motion characteristics.
C57.5	Determine the time period and natural frequencies of simple and compound pendulum.

Course outcomes: C58 – Java Programming Lab (U21CS5L3)

CO. No.	Description
C58.1	Develop java application using the concept of Inheritance, Interface, packages, access control specifies
C58.2	Implement the concept of Exception Handling I Java Application
C58.3	Read and Write data using different Java I/O stream
C58.4	Create graphical user interfaces and Applets by applying the knowledge of Event Handling
C58.5	Create roust application using Java standard class libraries and retrieve data from database with JDBC

Course outcomes: C59 – Internship (U21ME5P1)

CO. No.	Description
C59.1	Design/develop a small and simple product in hardware or software.
C59.2	Complete the task or realize a pre specified target, with limited scope, rather than taking up acomplex task and leave it.
C59.3	Learn to find alternate viable solutions for a given problem.
C59.4	Evaluate these alternatives with reference to pre specified criteria.
C59.5	Implement the selected solution and document the same.



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Course Outcomes

A.Y:2024-25

Semester: VIII (A)

Student will be able to

Course Name: C71 Finite Element Techniques (U21ME701)

CO. No.	Description
C71.1	Summarize basic equations of elasticity and formulate finite element modelling of one dimensional element using Potential energy approach.
C71.2	Formulate finite element modelling of truss and frame elements along with the concepts of transformation from local to global matrices.
C71.3	Interpolate Hermitian shape function of beam element in natural coordinate system
C71.4	Develop stiffness matrix for a plane stress & plane strain conditions on a CST, Axisymmetric elements by interpolating shape functions in natural coordinate system.
C71.5	Formulate finite element model to steady state heat transfer analysis using one & two dimensional elements.
C71.6	Formulate mass and stiffness matrices of 1D & beam elements to establish Eigen values & Eigen vectors using Lagrangian and Hamilton principles.

Course Name: C72 Metrology and Instrumentation (U21ME702)

CO. No.	Description
C72.1	Compare different types of limits, fits and tolerances and their applications.
C72.2	Interpret Linear and angular measurements using different measuring instruments.
C72.3	Develop the design of limit gauges, evaluate roughness and its measurement.
C72.4	Summarize basic measuring system, static and dynamic characteristics of instruments.
C72.5	Apply various principles to measure pressure, temperature, displacement, force, torque and vibrations.

Course Name: C73 Refrigeration & Air Conditioning (U21ME703)

CO. No.	Description
C73.1	Identify various natural and artificial methods of refrigeration. State the importance of refrigerant selection and the environmental issues related to the use of CFCs.
C73.2	Formulate equations for different types of refrigerants used in vapour compression refrigeration system. Justify the selection of single or multistage system based on operating temperature range.
C73.3	Explain the working principles of vapour absorption, thermoelectric and steam-jet refrigeration systems.
C73.4	Select a suitable refrigerant absorbent mixture for Vapour absorption refrigeration system.
C73.5	Analyze various problems on psychrometric processes, know the construction and application of Psychrometric chart.

C73.6	Design an air conditioning system based on given inside and outside conditions and evaluate cooling and heating loads in an air-conditioning system.
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Course Name: C75 Startup Management (U21ME703)

CO. No.	Description
C74.1	Understand Indian Industrial Environment, Entrepreneurship and Economic growth, Small and Large Scale Industries, Types and forms of enterprises.
C74.2	Identify the characteristics of entrepreneurs, Emergence of first generation entrepreneurs, Conception and evaluation of ideas and their sources.
C74.3	Practice the principles of project formulation, Analysis of market demand, Financial and profitability analysis and Technical analysis.
C74.4	Understand the concept of Intellectual Property Rights and Patents
C74.5	comparand the aspects of start-ups.

Course Name: C75 Production and Operation Management (U21ME706)

CO. No.	Description
C75.1	Analyse various types of Production Systems, develop suitable layout for a given plant.
C75.2	Develop various methods for work study and apply suitable Recording techniques.
C75.3	Develop suitable quantitative forecasting technique for the given past data.
C75.4	Compare accuracy of models in connection with forecast errors.
C75.5	Interpret Aggregate planning & Mater scheduling, Materials Requirement Planning Processes and develop quantitative models for Material requirement and resources based on time span.
C75.6	Elaborate the usages of PERT/CPM techniques for a given project and develop suitable quantitative model for the project in successful competition by identifying the time constraints for start and end of process activities.

Course Name: C76 – Additive Manufacturing Technology (U21ME710)

CO. No.	Description
C76.1	Explain the fundamental concepts of 3D Printing and process parameters of additive manufacturing processes
C76.2	Select the suitable material and process for fabricating a given product.
C76.3	Describe the working principle and applications of liquid, solid and Powder based 3D Printing Technologies.
C76.4	Compare and contrast additive manufacturing processes with conventional manufacturing methods in terms of rate, quality, flexibility, part complexity and cost.
C76.5	Develop STL file for CAD models with appropriate support structures and orientation.
C76.6	Evaluate the emerging applications of AM across major industries, including medical, dental, aerospace, vehicle structures, and consumer products and gain hands on experience in designing and fabricating AM parts.

Course Name: C77 Metrology and Instrumentation Lab (U21ME7L1)

CO. No.	Description
C77.1	Use measuring and gauging instruments for inspection of precision linear, geometric forms, angular and surface finish measurements.
C77.2	Evaluate tolerances, taper angles, roundness, and roughness for a component
C77.3	Calibrate the precision measuring instruments.
C77.4	Perform calibration of various instruments for measuring pressure, temperature, displacement, speed, vibration etc.
C77.5	Develop the ability to apply the principles in instruments and measuring techniques.
C77.6	Demonstrate work in designing the instrumentation for a particular purpose and Special purpose devices.

Course Name: C78 Technical Seminar-1 (U21ME7P2)

CO. No.	Description
C78.1	Interpretation and Solution of real life engineering problems by applying Knowledge.
C78.2	Conduct literature survey on a current topic based on peer reviewed literature & Identify research gap in the literature
C78.3	Develop presentation slides / report arranging the material coherently
C78.4	Compile the content and prepare comprehensive report.
C78.5	Demonstrate skills required for preparation of a technical report Present seminar and write precise technical reports in a nutshell.
C78.6	Participates effectively in multi-disciplinary and heterogeneous teams exhibiting team work, Inter-personal relationships, conflict management and leadership quality.

Course Name: C79 Aptitude and Reasoning Lab (U21MA7L2)

CO. No.	Description
C79.1	Build proficiency in quantitative reasoning
C79.2	Improve critical thinking skills
C79.3	Enhance analytical skills
C79.4	Demonstrate quantitative aptitude concepts
C79.5	Adapt principles of quantitative aptitude to achieve qualitative results.

Course Name: C710 Internship-2 (U21ME7P1)

CO. No.	Description
C710.1	Design/develop a small and simple product in hardware or software.
C710.2	Complete the task or realize a prespecified target, with limited scope, rather than taking up a complex task and leave it.
C710.3	Find alternate viable solutions for a given problem and evaluate these alternatives with reference to prespecified criteria.
C710.4	Implement the selected solution and document the same.
C710.5	Write a technical report and present it to appropriate audience