

LORDS INSTITUTE OF ENGINEERING & TECHNOLOGY

Hyderabad-500091, TS.

Department of Mechanical Engineering

COURSE OUTCOMES (COS)

Course Name: C221 Engineering Mechanic-II **Year: II-II Sem** **A.Y: 2021-22**

C221.1	Apply the law of motion to study the kinematics of rigid body in motion.
C221.2	Apply the principles of kinetics and its application to solve the problems of dynamics.
C221.3	Solve the problems involving translation of particle & rigid bodies by applying principles of kinetics.
C221.4	Analyze the rotation motion of rigid bodies by applying the principles of kinematics and kinetics of rotation.
C221.5	Apply the laws of motion, kinematic and kinetic parameters of rigid body motion to analyze plane motion of rigid bodies.
C221.6	Formulate mathematical models of problems in vibrations.

Course Name: C222 Fluid Mechanics **Year: II-II Sem** **A.Y: 2021-22**

C222.1	Explain different principles in fluid properties, and hydrostatic forces.
C222.2	Interpret the basic laws of kinematics and dynamics fluid flow.
C222.3	Acquire knowledge about measurement of fluid flow such as manometer, pressure gauge, transducers, pitot-tube, anemometer, venture meter orifice meter, rota meter, weirs and notches.
C222.4	Interpret and apply moody's chart for flow through ducts.
C222.5	Compare and contrast boundary layer and non-boundary layer.
C222.6	Summarize compressible fluid flow and compare it with incompressible fluid flow.

Course Name: C223 Energy Sciences and Engineering **Year: II-II Sem** **A.Y: 2021-22**

C223.1	Understand the renewable and non-renewable sources of energy.
C223.2	Gain knowledge of power generation using steam turbine and gas turbine power plants and nuclear power plants.
C223.3	Understand the working principles of Renewable Energy systems.
C223.4	Design and develop waste heat recovery systems.
C223.5	Relate energy economics, standards and future challenges.

Course Name: C224 Mechanics of Materials **Year: II-II Sem** **A.Y: 2021-22**

C224.1	Understand the basic concepts of stress, strain, compound stresses and 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.
C224.2	Understand and 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.
C224.3	Determine Longitudinal and circumferential stresses of thin cylinder and spheres.
C224.4	Analyze Bending stresses in different sections of beams and shear stress for rectangular section.
C224.5	Understand and analyze the torsional stresses developed in the shafts and determine the stresses developed in helical springs when subjected to various axial loads.
C224.6	Determine the deflection at any point of the beams when it carries different loads.

Course Name: C225 Applied Thermodynamics**Year: II-II Sem A.Y: 2021-22**

C225.1	Gain knowledge of Reciprocating Air Compressor Ideal and actual P-V diagrams. Find the efficiency of single and multi-stage compressor.
C225.2	Comprehend the functions of major components of IC engines such as Spark Ignition and Compression ignition engines and perform the analysis of heat balance.
C225.3	Distinguish between combustion phenomena in S.I. and C.I. Engines.
C225.4	Acquire knowledge of steam turbine power plants, boilers, nozzles, condensers, steam turbines, gas turbines, jet propulsive engines and rocket engines
C225.5	Interpret and apply tables and charts for solving problems related nozzles, condensers and performance test of steam turbines, gas turbines, aircraft engines and rocket engines

Course Name: C226 Kinematics of Machinery**Year: II-II Sem A.Y: 2021-22**

C226.1	Demonstrate the basic components and layout of linkages in the assembly of a system / machine & mobility of planar mechanism for finding D.O.F of mechanism & know the applications of mechanisms.
C226.2	Develop the steering gearing mechanism & Hooke's joint & can be able to determine correct steering angle, and can be able to analyze the shafts velocities in Hooke's joint
C226.3	Perform synthesis of different mechanism by graphical methods.
C226.4	Analyze and categories the applications of friction in an engineering/tribological context, which includes energy transfer, energy lost, and how much amount of heat will be generated
C226.5	Draw the displacement diagram and cam profile diagram for follower executing different types of motions and various configurations of followers
C226.6	Demonstrate the basic concepts of toothed gearing and kinematics of gear trains and the effects of friction in motion transmission and in machine components.

Course Name: C227 Manufacturing Processes**Year: II-II Sem A.Y: 2021-22**

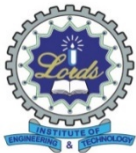
C227.1	Get the basic knowledge of casting process, terminologies, steps and understanding concept of patterns, pattern making, allowances, machineries using for mould preparation and gating design, their types & applying the same while designing and making the patterns, mould , gating & riser
C227.2	Understands special casting processes & plastic processing processes & gets of knowledge of powder metallurgy
C227.3	Gets knowledge of various welding processes, equipment's and understand various techniques involved in welding processes
C227.4	Understand & gets broad knowledge of various gas welding processes, Arc, SMAM, SAW, Atomic hydrogen, electro slag welding & soldering and brazing operations
C227.5	Understand & get knowledge of various solid-state processes like forge, friction etc & resistance welding processes like spot, projection welding processes & welding defects
C227.6	Understand various forming processes like Hot and Cold work process along with rolling, bending, blanking piercing wire drawing process and calculate forces in this process & various sheet metal processes also gets knowledge of various advance forming processes

Course Name: C228 Thermal Engineering Lab -I**Year: II-II Sem****A.Y: 2021-22**

C228.1	Execute volumetric and isothermal efficiencies of two stage reciprocating compressor
C228.2	Draw I.C. Engines Valve / Port Timing Diagrams
C228.3	Conduct Performance and heat balance Test for single cylinder diesel engine
C228.4	Interpret morse test on multi cylinder petrol engine
C228.5	Evaluate I.C. Engines Performance Test multi cylinder petrol and diesel engines
C228.6	Conduct performance test of a diesel engine under different compression ratios

Course Name: C229 Manufacturing Processes Lab**Year: II-II Sem****A.Y: 2021-22**

C229.1	Understand & recognize the principle of casting, and various casting methods used and melting practices followed
C229.2	Find the strengths of various types of sand & their properties
C229.3	Identify the basic principle of welding and distinguish between various welding types and their applications
C229.4	Determine the principles of metal working, various types of metal working technique
C229.5	Recognize the bulk deformation processes of rolling, extrusion, & making piercing and blanking operation by using hydraulic press
C229.6	Identify the various types of plastics and their processing techniques



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Course Name: C321 Machine Design

Year: III-II Sem A.Y: 2021-22

C321.1	Demonstrate the design, development and use of Different types of Springs.
C321.2	Demonstrate the basic knowledge in the designing, choosing the best materials for Spur gear, helical gear, worm gears for different operating temperature, speed and number of operating hours
C321.3	Apply the basic knowledge for selection of materials, lubricating oil to design the of sliding contact bearings for different operating load, temperature and speed
C321.4	Design and distinguish the use of Ball, different roller bearings for axial and radial loads with respect to operating speed.
C321.5	Apply the knowledge of design, selection of material, shape and standard parameters of fins for piston, to withstand the buckling, tension and compressive loads for piston and connecting rod.
C321.6	Analyze and differentiate the of curved beams and straight beams in terms of load distribution across the section of different shaped elements

Course Name: C322 Metrology and Instrumentation

Year: III-II Sem A.Y: 2021-22

C322.1	Understand limits, fits and tolerances and their applications. Linear and angular measurements and design measuring instruments.
C322.2	Understand the principles of comparators and apply and Measurement of Straightness and Flatness Roundness.
C322.3	Evaluate roughness and its measurement of gears, thread profiles.
C322.4	Illustrate basic measuring system, static and dynamic characteristics of instruments and their application.
C322.5	Understand various principles to measure pressure, temperature, displacement.
C322.6	Apply various principles to measure force, torque and vibrations.

Course Name: C323 Finite Element Analysis

Year: III-II Sem A.Y: 2021-22

C323.1	Illustrate the FEA Fundamentals, Formulation and stress strain relations.
C323.2	Analyze and formulate the axial, truss, beam and 2d problems
C323.3	Understand to Interpolate Hermitian shape function of beam element in natural coordinate system
C323.4	Develop stiffness matrix for a plane stress & plane strain conditions on a CST, Axisymmetric elements by interpolating shape functions in natural coordinate system.
C323.5	Formulate finite element model to steady state heat transfer analysis using one- & two-dimensional elements.
C323.6	Formulate mass and stiffness matrices of 1D & beam elements to establish Eigen values & Eigen vectors using Lagrangian and Hamilton principles.

Course Name: C324 Automobile Engineering

Year: III-II Sem A.Y: 2021-22

C324.1	Analyze the working of fuel, ignition, and cooling systems.
C324.2	Understand the working of lubrication and electrical systems.
C324.3	Understand the working of suspension, steering and braking systems.
C324.4	Solve the problems and create new working technology of power transmission.
C324.5	Evaluate the necessity of pollution control and maintenance.
C324.6	Gain knowledge on overall working system in light, medium and heavy vehicles.

Course Name: C325 Production and operations management Year: III-II Sem A.Y: 2021-22

C325.1	Understand the concept of production & operation management and plant location and layout
C325.2	Illustrate methods of work study and work measurement in industry.
C325.3	Evaluate various methods of forecasting.
C325.4	Evaluate different forecasting error methods such as MAD, MSE, and MFE & MAPE.
C325.5	Explain the importance of Aggregate planning, MRP-1 and MRP-2.
C325.6	Build the approaches of project management.

Course Name: C326 Disaster Mitigation & Management Year: III-II Sem A.Y: 2021-22

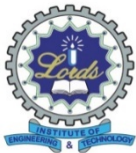
C326.1	Explain the terms and concepts related to Disaster Management.
C326.2	Describe the various categories of disasters and its specific characteristics.
C326.3	Explain the pre disaster, during disaster and post disaster measures and frameworks.
C326.4	Describe the disaster management acts and frameworks specific to India.
C326.5	List and explain various technological applications to aid disaster management.

Course Name: C327 Metrology and Machine Tools Lab Year: III-II Sem A.Y: 2021-22

C327.1	Demonstrate and Evaluate various precision measuring instruments.
C327.2	Familiarize machining and metal cutting operations.
C327.3	Select and apply the knowledge of measuring tools for external, internal and angular measurements for promoting the qualitative production management
C327.4	Practice and classify calibration principles for maintaining the required precision of instruments / tools.
C327.5	Select cutting tool materials and tool geometries along with appropriate cutting conditions for different work materials and grind the cutting tools to the required geometry.
C327.6	Recognize and evaluate the features and applications of various machine tools like Lathe, Milling, Drilling, Grinding, Shaping, Slotting etc.

Course Name: C328 Computer Aided Engineering Lab Year: III-II Sem A.Y: 2021-22

C328.1	Evaluate the Plane Truss and Spatial of various cross section and materials and to determine member forces, member strains and stresses.
C328.2	Determine beam analysis with different sections 2D and 3D.
C328.3	Determine the deformations, the Stresses to study the failure behaviour and SCF.
C328.4	Identify the Plane stress, plane strain and axi-symmetric loading on the inplane members with in plane loading to study the stresses and strains.
C328.5	Define Static Analysis of flat and curved shell due to internal pressure and moments to estimate the strains, stresses and reactions forces and moments with different boundary conditions.
C328.6	Determine Modal analysis of beams, plates and shells for natural frequencies and mode shapes.



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Course Name: C421 Composite Materials

Year: IV-II Sem A.Y: 2021-22

C422.1	Identify and explain the types of composite materials and their characteristic features
C422.2	Classify crystal structures of a wide range of ceramic materials and glasses.
C422.3	Explain how common fibres are produced and how the properties of the fibres are related to the internal structure.
C422.4	Understand and explain the methods employed in composite fabrication
C422.5	Analyze and select matrices for composite materials in different applications.
C422.6	Describe key processing methods for fabricating composites.

Course Name: C422 Production and Operations Management Year: IV-II Sem A.Y: 2021-22

C422.1	Understand the concept of production & operation management and plant location and layout.
C422.2	Illustrate value analysis concept.
C422.3	Understand methods of work study and work measurement in industry.
C422.4	Understand importance of Aggregate planning, MRP and JIT.
C422.5	Evaluate scheduling job and line balancing methods.
C422.6	Evaluate the approaches of project management.

Course Name: C423 Basics of Power Plant Engineering

Year: IV-II Sem A.Y: 2021-22

C423.1	Understand the sources of energy, layout, working of different circuits.
C423.2	Discuss the types, construction and plant layout with auxiliaries.
C423.3	Classify and principles of working of closed and open cycle gas turbines.
C423.4	Classify the hydroelectric power plant, dams and spillways.
C423.5	Analyze the different forms of non-conventional energy sources.
C423.6	Determine the effluents from the power plants and input on environment pollutions.

Course Name: C424 Major Project Phase-II

Year: IV-II Sem A.Y: 2021-22

C424.1	Classify the projects and describe the phases involved in project formulation with feasibility studies and SWOT (strengths, weaknesses, opportunities, and threats) analysis.
C424.2	Devise a projects development cycle and get acquainted with the different appraisals in the process of deciding the worthiness of project.
C424.3	Exhibit and apply the managerial skills and knowledge of financial aspects required during the implementation of project.
C424.4	Identify sources for project finance and select the method of project implementation which is best suited for a particular project.