LORDS INSTITUTE OF ENGINEERING & TECHNOLOGY

Hyderabad-500091, TS.

Department of Mechanical Engineering

COURSE OUTCOMES (COS)

Course Outcomes: C211-Effective Technical Communication in English Year: III- Sem A.Y: 2020-21

C211.1	Acquire and apply technical communication professionally
C211.2	Correspond technically through various methods and style of technical writing
C211.3	Gain and apply different technical writing skills of report writing
C211.4	Obtain efficient skills in creating and designing technical manuals
C211.5	Utilize and apply various styles of information transfer

Course Outcomes: C212 – Finance and Accounting Year: III- Sem A.Y: 2020-21

C212.1	Understand the basic concepts of financial accounting, cost accounting and management accounting
C212.2	Understand Accounting Standards and their Importance in Global Accounting Environment, to prepare, understand, interpret and analyze financial statements
C212.3	Understand the procurement of Finance in Financial Markets for Strengtheningcountries economy
C212.4	Understand Capital budgeting techniques
C212.5	Understand the different types of Ratios like Liquidity, Turn over, Profitability, Leverage and Structural Ratios
C212.6	Acquire knowledge on Finance and Accounting

Course Outcomes: C213– Mathematics-III Year: III- Sem A.Y: 2020-21

C213.1	Understand engineering problems through Mathematics
C213.2	Get logical thinking and creativity
C213.3	Learn the concepts of Sequence and series
C213.4	Get the knowledge of function of single variable, curvature, evolutes and envelopes and different series
C213.5	Get familiar with function of several variables, partial differentiation, concept and calculation of Maxima and Minima.
C213.6	Learn the concepts of integration, evaluation of double and triple integration and its applications. knowledge of Vector calculation, gradient, curl and divergence and integration concept over vectors.

Course Outcomes: C214 – Engineering Mechanics Year: III- Sem A.Y: 2020-21

C214.1	Draw the free body diagram and determine the resultant and or moments
C214.2	Determine the centroid and second moment of area of different geometric sections
C214.3	Apply the laws of mechanics to determine the efficiency of simple machines with consideration of friction
C214.4	Analyze statically determinate planar frames
C214.5	Analyze the motion and calculate trajectory characteristics
C214.6	Apply Newton's laws and elastic collisions and motion of rigid bodies

Course Outcomes: C215 –Basic Electronics **Year: III- Sem** **A.Y: 2020-21**

C215.1	Obtain the V - I characteristics of diode and analyze various diode applications like rectifiers and regulators.
C215.2	Analyze the construction & working of active devices like BJT & FET in various modes.
C215.3	Recognize the type of feedback and analyze its effect on amplifier characteristics and calculate the frequency of oscillation for different types ofoscillator circuits.
C215.4	Analyze and design different circuits using Ideal Op Amps; Design simple digital circuits using logic gates.
C215.5	Understand the principle of operation & applications of electronic devices, transducers.
C215.6	Analyze different data acquisition systems and to remember data converters.

Course Outcomes: C216 –Metallurgy and Material Science **Year: III- Sem** **A.Y: 2020-21**

C216.1	Understand the concept of different crystal structures along with its defects
C216.2	Evaluate the different stages of S-N curve
C216.3	Understand and apply different types of different stages of iron-iron carbide diagram
C216.4	Analyze different heat treatment processes
C216.5	Understand the concept of properties, composition and types of cast iron as well asof steel.
C216.6	At the end of this course students will be able to analyze practical applications of metals, materials along with their composition structure and its importance in the fieldof mechanical engineering in practical life

Course outcomes: C217 –Thermodynamics **Year: III- Sem** **A.Y: 2020-21**

C217.1	Understand the basic concepts of thermodynamics like system, properties, equilibrium, pressure, specific volume, temperature, quasi static processes andapply for solving thermodynamic problems.
C217.2	State the zeroth law of thermodynamics and apply for temperature measurement, temperature scales and ideal gas equations.
C217.3	State and apply the first law of thermodynamics for closed and open systems undergoing different thermodynamic processes.
C217.4	Understand the second law of thermodynamics and apply them to refrigerators, heat engines, heat pumps compressors and nozzles etc.
C217.5	Describe the properties of pure substances, gases and their mixtures, and applythe property relations to thermodynamic problems.
C217.6	Understand and Analyze the Power Cycle, Vapour Cycles and RefrigerationCycle

Course outcomes: C218 – Metallurgy and Material Testing Lab **Year: III- Sem** **A.Y: 2020-21**

C218.1	Study of Microstructure Metallurgical Microscope, Iron-Iron Carbide diagram, Procedure forspecimen preparation and of low carbon steel, medium carbon steel,high carbon steel.
C218.2	Prepare and study microstructure of copper, Brass and Bronze, cast iron..
C218.3	Prepare and study microstructure of white cast iron, and to find, harden ability on Jominy End quench Test.
C218.4	Perform Tension, shear test and torsion on a given specimen.
C218.5	Determine the Toughness of the material using CHARPY and IZOD Test and finding Brinnell and Rockwell hardness.
C218.6	Estimate the elastic constants through compression test on springs anddeflection test on beams and Compare the structures and hardness of Unhardened and Hardened specimen through microscopic examinations.

Course outcomes: C219 – Machine Drawing and Modelling Lab Year: III- Sem A.Y: 2020-21

C219.1	Understand and suitable application of dimensioning, drawing sheet format,angle of projection, type of projection such as orthogonal, isometric, etc., &sectional views.
C219.2	Make free hand sketches of various mechanical components.
C219.3	Obtain the knowledge of conventional representation of materials, common machine elements and parts such as screws, nuts, bolts, keys, gears, webs, ribsetc.
C219.4	Understand and evaluate different types of joints such as cotter joint, rivetedjoints, welded joints & couplings and make their drawings.
C219.5	Extract data from the drawing such as type of projection (first angle / second angle, etc.,), type of view (front / top / side), dimensions, etc., and utilize themfor conversion from isometric to orthographic & vice versa and from part drawing to assembly drawing & vice versa.
C219.6	Evaluate and develop assembly drawings using part drawings and to analyze the functions of different parts in assembly, in future machine drawing standards can be used for safe design of assemblies.

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COURSE OUTCOMES (COS)

Course outcomes: C311 – Dynamics of Machinery **Year: III-I Sem A.Y: 2020-21**

C311.1	Analyze the gyroscopic effect on aero-plane, ships, two-wheeler vehicles & four-wheeler vehicles, and can be able to do the static & dynamic force analyses of planar mechanisms.
C311.2	Construct the turning moment diagram for IC engines, and can be able toanalyze the engine forces, and can be able to design a flywheel.
C311.3	Analyze the power loss in bearing due to friction and can be able to analyzepower transmitted by clutch, and understand the operation of dynamometers.
C311.4	Understand the function of governors, and can be able to analyze sensitiveness, stability etc. of the governor.
C311.5	Evaluate the frequency of vibration, and can be able to determine the criticalspeed of shaft.
C311.6	Balance rotating & reciprocating masses.

Course outcomes: C312 – Design of Machine Members – I **Year: III-I Sem A.Y: 2020-21**

C312.1	Understand fundamentals of design including material selection and axialretainment of rotating and the knowledge about the principles of design, component behavior subjected to various types of complex loads, and criteria of failure to satisfy the applications
C312.2	Understand the principles involved in evaluating the shape and dimensions of a component, when components are subjected to fluctuating, alternating and reversible fatigue loading, and methods to reduce the stress concentration in different shape components.
C312.3	Design the different machine components such as Riveted and Welded joints, and to analyze the different ways in which riveted and welded joints can fail, and to describe how to design the safe joints to withstand the different types of loading for specific applications.
C312.4	Demonstrate the design, development and use of knuckle joint, spigot cotter joint, gib and cotter joint, strap end of a connecting rod and different keyways in engineeringapplications
C312.5	Apply the basic knowledge of shafts and different shafts couplings to get the different complex kind of work done by forming and connecting them with other machine components to fulfill the various industrial, agricultural and daily needs of the society

Course outcomes: C313 – Metrology and Machine Tools **Year: III-I Sem A.Y: 2020-21**

C313.1	Identifying the technical terms, working principles of machines and explaining theoperations performed on the machines
C313.2	Identifying the methods and comparing the machining operations like milling, drilling,grinding, broaching etc. and finding their measurements after machining operations.
C313.3	Calculating the machining timings, machining operations that are performed
C313.4	Defining the technical terms like Fits, Limits, Error and Explaining theworking of GO & NO-GO Gauges working
C313.5	Explaining the concepts of Surface Roughness Measurements, Roughness Errors, and explaining

	the working of Talysur measurement equipment
C313.6	Understanding the different Measuring equipment's in the Machine Tools and performing some Calculations on the working material or samples.

Course outcomes: C314 – Business Economics & Financial Analysis Year: III-I Sem A.Y: 2020-21

C314.1	Understand the various Forms of Business and the impact of economic variables on the Business.
C314.2	Defining Demand, Supply, Production,
C314.3	Understand Cost, Market Structure, Pricing aspects are learnt.
C314.4	Calculate Accounts, Journal, Posting to Ledger, Preparation of Trial Balance, Elements of Financial Statements, Preparation of Final Accounts.
C314.5	Understand firm's financial position by analyzing the Financial Statements of aCompany.

Course outcomes: C315 – Thermal Engineering-II Year: III-I Sem A.Y: 2020-21

C315.1	Acquire knowledge about steam turbine power plants, boilers, nozzles, condensers, steam turbines, gas turbines, jet propulsive engines and rocket engines
C315.2	Gain knowledge about Rankine cycles, sterling cycle, joule cycle related to thepower plants. Understand working principles of mounting and accessories. Thermodynamic analysis of cycles
C315.3	Distinguish between vapor power cycles and gas power cycles related to steam power plant, gas power plant and rocket engines
C315.4	Interpret and apply tables and charts for solving problems related nozzles, condensers and performance test of steam turbines, gas turbines and rocket engines
C315.5	Comprehend the functions of major components of steam and gas turbine, condensers rocket engines and perform the analysis of components cylinderand spheres.

Course outcomes: C316 – Operation Research Year: III-I Sem A.Y: 2020-21

C316.1	Annotating the concepts, scope, need and phases of operations research. Preparing the L.P.P and derive optimal solutions to linear programming problems by graphical method, simplex method, Big-M method and two-phasemethod.
C316.2	Preparing the Transportation and Assignment problems and determining optimum solutions for transportation, Assignment and travelling salesman problems.
C316.3	Calculating minimum processing times for sequencing of n-jobs-2/3/m & 2- jobs-n machines and best replacement time for deteriorate items when value of money is counted & not counted.
C316.4	Illustrating a game theory for pure and mixed strategy under competitive environment and preparing an inventory model for EOQ considering single & multiple price breaks.
C316.5	Illustrating the waiting line problems for M/M/1 and M/M/K queuing models and Dynamic Programming problems for shortest path & L.P.P model
C316.6	Assessing the applications of simulation process for queuing & inventory problems.

Course outcomes: C317 – Thermal Engineering Lab Year: III-I Sem A.Y: 2020-21

C317.1	Draw I.C. Engines Valve / Port Timing Diagrams
C317.2	Study of 2 Stroke and 4-Stroke CI Engine performances
C317.3	Evaluate Performance Test on Variable Compression Ratio Engine

C317.4	Execute Volumetric efficiency of Air – Compressor Unit
C317.5	Perform Dis-assembly / Assembly of Engines
C317.6	Understand and Study about Boilers

Course outcomes: C318 – Metrology & Machine Tools Lab Year: III-I Sem A.Y: 2020-21

C318.1	Understanding the Least Count of the Vernier Caliper and Micrometer tofinding the accuracy of any component
C318.2	Creating the values using Slip Gauges blocks and finding out the height of theSlip Gauges Blocks
C318.3	Evaluating the Gear Tooth height and Pitch of the Gears using the Gear ToothVernier Caliper
C318.4	Identifying or Remembering the Pitch of the Screw Thread using Tool Maker'sMicro Scope
C318.5	Analyzing the Screw thread diameter using 2-Wire and 3-Wire equipment
C318.6	Evaluating the bore diameters using Bore Dial Gauges

Course outcomes: C319 – Kinematics & Dynamics Lab Year: III-I Sem A.Y: 2020-21

C319.1	Determine the time period, amplitude and natural frequency of vibratingsystem.
C319.2	Understand the working of governors and can be able to find the effect ofvarying mass on the center of sleeve in Porter & Proell governors.
C319.3	Predict the motion of the follower for given profile of cam.
C319.4	Understand the concept of gyroscopic effect, and can be able to analyze theeffect of gyroscope for different motions.
C319.5	Determine the critical speed of shaft for different n-conditions.
C319.6	Determine pressure distribution in journal bearing at various loads & speed.

Course outcomes: C3110– Intellectual Property Rights Year: III-I Sem A.Y: 2020-21

C3110.1	Distinguish and explain various forms of IPRs.
C3110.2	Identify criteria to fit one's own intellectual work in particular form of IPRs.
C3110.3	Analyse rights and responsibilities of holder of Patent, Copyright, Trademark, Industrial Design etc.
C3110.4	Identify procedure to protect different forms of IPRs national and international level.
C3110.5	Develop skill of making search using modern tools and technics

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COURSE OUTCOMES (COS)

Course Name: C411 CAD/CAM **Year: IV-I Sem** **A.Y: 2020-21**

C411.1	Demonstrate design process, automation and the benefits of CAD.
C411.2	Recognize the existing geometric modeling and develop a geometricmodeling for a new component in design process.
C411.3	Write a CNC manual part program and understand the difference betweenmanual part program and computer assisted part program.
C411.4	Implement Group Technology concept in modern manufacturing methods.
C411.5	Recognize the Flexible Manufacturing Layouts and understand the CIMsystem.

Course Name: C412 Instrumentation and Control System **Year: IV-I Sem** **A.Y: 2020-21**

C412.1	Understand the basic characteristics of instruments and study error measurements. Study the working of various transducers used in displacementmeasurement.
C412.2	Study the working principle of temperature and pressure measuringinstruments.
C412.3	Enable the student to measure level, flow, speed, acceleration and vibrationby using various instruments.
C412.4	Understand the concept of strain gauge for various measurement applicationsand study the working of Humidity, Force, Torque and power measuring instruments.
C412.5	Enable the students to understand basic elements of a control system and application of Various control systems for temperature, speed and position.

Course Name: C413 Power Plant Engineering **Year: IV-I Sem** **A.Y: 2020-21**

C413.1	Understand the sources of energy, layout, working of different circuits
C413.2	Understand the types, construction and plant layout with auxiliaries.
C413.3	Classify the hydroelectric power plant, dams and spillways.
C413.4	Analyze the different forms of non-conventional energy sources
C413.5	Determine the effluents from the power plants and input on environmentpollutions.

Course Name: C414 CNC Technology **Year: IV-I Sem** **A.Y: 2020 -21**

C414.1	Understand the fundamentals of CNC machine and design consideration ofCNC machine tools
C414.2	Identify different types of tooling system and apply that for the codes used inCNC part programming
C414.3	Analyze the computer aided programming understand CAD/CAM software
C414.4	Understand the different types of controlling mechanisms
C414.5	Understand the concept of micro controllers and programming logic control

Course Name: C415 Additive Manufacturing Technology **Year: IV-I Sem A.Y: 2020-21**

C415.1	Interpret the prototyping fundamentals and RP Processes.
C415.2	Recognize liquid-based RP Systems
C415.3	Recognize different types of Powder based RP System and Rapid Tooling.
C415.4	Identify STL formats, STL files and its problem
C415.5	Describe the differences and application of AMT.

Course Name: C416 CAD/CAM Lab **Year: IV-I Sem A.Y: 2020-21**

C416.1	Recognize the development of part drawings for various components.
C416.2	Determine the stresses and estimation of natural frequencies.
C416.3	Do analysis on heat transfer of plane and axi-symmetric components.
C416.4	Analyze the development of manufacturing defects and tool managementsystems.
C416.5	Produce detailed production drawings using commercially available draftingsoftware

Course Name: C417 Instrumentation and Control Systems Lab **Year: IV-I Sem A.Y: 2020-21**

C417.1	Identify the measurement of temperature and pressures.
C417.2	Recognize various types of transducers used in displacement measurements.temperature measurements
C417.3	Apply the concept of strain gauge using cantilever beam setup.
C417.4	Distinguish the concept of measurement of flow, speed and acceleration.
C417.5	Illustration of SCADA software for pressure and temperature measurement.

Course Name: C418 Industry Oriented Mini Project **Year: IV-I Sem A.Y: 2020-21**

C418.1	Use knowledge within the chosen area of technology for project development.
C418.2	Identify, discuss and justify the technical aspects of the chosen project with a comprehensive and systematic approach.
C418.3	Reproduce, improve and refine technical aspects for engineering projects.
C418.4	Work as an individual or in a team in development of technical projects.
C418.5	Communicate and report effectively project related activities and findings.

Course Name: C419 Seminar **Year: IV-I Sem A.Y: 2020-21**

C419.1	Engaged in the integral activities of reading, discussion and composition around a particular topic.
C419.2	Develop presentation skills.
C419.3	Apply confidence to face the interviews.
C419.4	Investigate the advancements in the particular topic.
C419.5	Distinguish opinions from researched claims.