

Course Outcomes (II Year) 2020-2021 II Sem		
CO.NO	COURSE OUTCOMES	Taxonomy
Specific learning outcomes – Numerical Methods and Probability theory (19A54304)		
C221.1	Use the numerical techniques find solution of algebraic and transcendental Equations.	Apply
C221.2	Determine the interpolating value of the function using Numerical techniques.	Apply
C221.3	Evaluate definite integrals using Newton cotes Formula.	Apply
C221.4	Utilize numerical methods to find numerical solution of ordinary and partial differential equations.	Apply
C221.5	Explain the basic concepts of probability, random variables and solve real time problems using Baye's theorem.	Understand
C221.6	Apply probability distributions like Binomial, Poisson and Normal distributions to solve statistical problems	Apply
Specific Learning Outcomes – Thermodynamics (19A03401)		
C222.1	Explain the concepts of thermodynamic systems, state, properties, processes, work transfer and heat transfer	Understand
C222.2	Estimate the thermodynamic properties of substances at a given state using the tables or equations of state.	Apply
C222.3	Analyze systems using first law and second law of thermodynamics.	Analyze
C222.4	Quantify the performance of power generation systems and heat pumps based on cycles	Apply
C222.5	Estimate the quality of energy transferred through thermodynamic systems.	Analyze
C222.6	Solve problems on performance of air standard cycles using a systematic approach	Apply
Specific Learning Outcomes – Mechanics of Materials (19A03402T)		
C223.1	Measure the strength of different kind of engineering materials based on the magnitudes of induced stress and strain values under the effect of axial and thermal loads.	Understand
C223.2	Analyse the principal stresses and the components of stress on different planes, under the effect of different Loads in biaxial stress element, by using both the analytical and Mohr's circle method.	Apply
C223.3	Estimate the maximum shear force and maximum bending moment induced in different types of beams for different lateral loadings conditions through the graphical representation shear force and bending moment at various lateral sections, additionally the shear stress and bending stress distribution in different cross sections of beams is also determined.	Understand
C223.4	Compute the slope and deflection produced in beam under different lateral loading conditions, along with the strain energy and its allied parameters stored in the beams by applying the Castigliano's theorem.	Apply
C223.5	Calculate the shear strength of the solid and hallow shafts which are subjected to torsional loading in power transmission, besides the stresses and deformations produced in the springs.	Understand
C223.6	Analyze the columns through the estimation of buckling load, by using the Euler's concept of buckling. Calculate different stresses and strains in thin cylinders in the	Apply

	identification of safe design for boiler shells	
Specific Learning Outcomes – Fluid Mechanics and Hydraulic Machinery 19A01407		
C224.1	Describe the importance of various fluid properties which are at rest and in motion.	Understand
C224.2	Apply the general governing equations to estimate flow quantities.	Apply
C224.3	Design the pipe line network based on frictional loss estimate.	Apply
C224.4	Explain the Hydroelectric Power plant with the available water resources and requirement of power.	Understand
C224.5	Evaluate the performance characteristics of hydraulic turbines	Evaluate
C224.6	Evaluate the performance characteristics of Centrifugal Pumps	Evaluate
Specific Learning Outcomes – Internet of Things (19A05406T)		
C225.1	Choose the sensors and actuators for an IoT application	Remember
C225.2	Explain the Select protocols for a specific IoT application	Understand
C225.3	Utilize the cloud platform and APIs for IoT applications	Apply
C225.4	Summarize the Experiment with embedded boards for creating IoT prototypes	Understand
C225.5	Develop a solution for a given IoT application	Apply
C225.6	Apply the IOT concept and establish a startup.	Apply
Specific Learning Outcomes – Kinematics of Machinery (19A03403)		
C226.1	Describe different mechanisms, inversions of different kinematic chains and also to find mobility of mechanisms	Understand
C226.2	Analyze the mechanism of Hooke's joint, steering mechanisms	Analyse
C226.3	Explain the working principle of different straight line motion mechanisms.	Understand
C226.4	Predict velocity and acceleration diagrams of simple plane mechanisms by using relative velocity method and instantaneous centre method.	Apply
C226.5	Explain gears, power transmission through different types of gears including gear profiles and its efficiency.	Understand
C226.6	Illustrate displacement diagram and cam profile for different follower motions.	Apply
Specific Learning Outcomes – Computer Aided Machine Drawing 19A03404		
C227.1	Demonstrate the conventional representations of materials and machine components.	Apply
C227.2	Model riveted, welded and key joints using CAD system.	Apply
C227.3	Create solid models and sectional views of machine components.	Create
C227.4	Generate solid models of machine parts and assemble them.	Create
C227.5	Translate 3D assemblies into 2D drawings.	Apply
C227.6	Create manufacturing drawing with dimensional and geometric tolerances.	Create
Specific Learning Outcomes – Mechanics of Materials Lab (19A03402P)		
C228.1	Determine Young's Modulus of solids under tensile & compressive loads.	Apply
C228.2	Calculate the Young's Modulus of beams under bending loads.	Apply
C228.3	Determine the shear modulus of solids under torsional loads.	Apply
C228.4	Calculate the strength of solids under impact loads.	Apply
C228.5	Evaluate the behavior of helical springs under static loads.	Evaluate
C228.6	Estimate the hardness of solids under gradual loads.	Evaluate

Specific Learning Outcomes – Biology For Engineers (19A99302)		
C229.1	Explain about cells and their structure and function. Different types of cells and basics for classification of living Organisms.	Understand
C229.2	Explain about biomolecules, their structure and function and their role in the living organisms. How biomolecules are useful in Industry.	Understand
C229.3	Briefly about human physiology.	Understand
C229.4	Explain about genetic material, DNA, genes and RNA how they replicate, pass and preserve vital information in living Organisms.	Understand
C229.5	Explain about genes, how they replicate, pass and preserve vital information in living Organisms.	Understand
C229.6	Know about application of biological Principles in different technologies for the production of medicines and Pharmaceutical molecules through transgenic microbes, plants and animals.	Understand

Course Outcomes (III Year) 2020-2021 II Sem		
CO.NO	COURSE OUTCOMES	Taxonomy
Specific Learning Outcomes – Operations Research (15A03601)		
C321.1	Formulate the mathematical models and obtain optimum solution using graphical method and simplex method.	Apply
C321.2	Solve the Linear Programming Problem by Big-M, Two- Phase Techniques and in duality method.	Apply
C321.3	Determine the Optimal solution in Transportation Problems and Assignment Problems.	Apply
C321.4	Choose the best strategy for successfully face the competition and identifying the suitable Queuing Model.	Apply
C321.5	Solve the n-jobs-2-machines,3-machines and estimate the project completion time by PERT & CPM Techniques.	Apply
C321.6	Solve complex problems by Dynamic Programming Techniques and explain various types of maintenance, economic replacement policies.	Apply
Specific Learning Outcomes – Design of Machine Members-II (15A03602)		
C322.1	Design curved beam machine elements like crane hooks, C-clamps, machine frames.	Apply
C322.2	Describe various concepts of design of power transmission elements.	Understand
C322.3	Design helical springs for two wheel vehicle and laminated springs for trucks.	Apply
C322.4	Design various types of rolling contact bearings and sliding contact bearings.	Apply
C322.5	Design spur and helical gears for different input conditions.	Apply
C322.6	Analyze the forces acting and the failure criteria to be adopted for various I C engine parts.	Analyse

Specific Learning Outcomes – Heat Transfer (15A03603)		
C323.1	Quantify the rate of heat transfer through simple geometries under steady and unsteady state conditions.	Apply
C323.2	Estimate the rate of heat transfer from finned surfaces and the time of cooling or heating in transient heat conductions.	Apply
C323.3	Compute the heat transfer coefficients for internal and external flows under free and forced convective conditions.	Apply
C323.4	Predict the heat transfer coefficients for boiling and condensation heat transfer.	Apply
C323.5	a heat exchanger using LMTD or NTU- ϵ methods.	Apply
C323.6	Calculate the radiation heat exchange between the surfaces and interpret the significance of radiation shields.	Apply
Specific Learning Outcomes – Finite Element Method (15A03604)		
C324.1	Explain the approaches for solving FEM problems in different fields.	Understand
C324.2	Formulate FEM model for bars and trusses to develop stiffness matrices and load vectors.	Apply
C324.3	Predict stresses in beams and frames using FEM.	Apply
C324.4	Write interpolation functions to higher order areoparametric elements.	Apply
C324.5	Solve the stress in Axis symmetric triangular elements and apply finite element applications in solid mechanics.	Apply
C324.6	Solve the 2D heat transfer and fluid mechanics problems using FEM.	Apply
Specific Learning Outcomes – Metal Forming Process (15A03605)		
C325.1	Describe the concept of yield criteria applicable to different material deformation processes.	Understand
C325.2	Analyze effect of parameters influencing metal forming and compare hot working and cold working with applications.	Analyze
C325.3	Explain characteristics of bulk metal forming processes and sheet metal work.	Understand
C325.4	List out the different types of defects, causes and remedial measures in metal forming processes.	Understand
C325.5	Analyze the variables influencing the manufacture of wires and rods	Analyze
C325.6	Explain the various techniques used in additive manufacturing.	Understand
Specific Learning Outcomes – Non Conventional Energy Resources (15A03606)		
C326.1	Explain the significance of renewable energy sources in the context of Indian	Understand

	requirement.	
C326.2	Explain the principle of measuring the solar radiation and Sun shine.	Understand
C326.3	Explain the working of various solar collectors.	Understand
C326.4	Demonstrates the methods of solar energy storage.	Understand
C326.5	Describe the principles of conversion of Bio-mass and geothermal energy for power generation.	Understand
C326.6	Explain the methods of direct energy conversion systems.	Understand
Specific Learning Outcomes – Heat Transfer Laboratory (15A03609)		
C327.1	Estimate the Heat Transfer coefficient for conductive mode of Heat Transfer.	Apply
C327.2	Estimate the Heat Transfer coefficient for convective mode of Heat Transfer.	Apply
C327.3	Evaluate the emission characteristics of grey bodies.	Evaluate
C327.4	Determine the Stefan Boltzmann constant for radiation Heat Transfer.	Apply
C327.5	Estimate the performance characteristics of heat exchangers.	Analyze
C327.6	Predict the heat transfer coefficient for drop wise and film wise condensation.	Apply
Specific Learning Outcomes – Computer Aided Engineering Laboratory (15A03610)		
C328.1	Demonstrate the knowledge on various simulation software's.	Understand
C328.2	Analyze the structural components of various bars and beams.	Analyze
C328.3	Illustrate the thermal analysis of 2D components and composite wall.	Analyze
C328.4	Illustrate the couple field analysis of 2D components and composite wall.	Analyze
C328.5	Solve the fluid flow problems by using computational fluid dynamics.	Apply
C328.6	Evaluate the various research problems in all the fields of engineering by using FEA.	Evaluate

Course Outcomes (IV Year) 2020-2021 II Sem		
CO.NO	COURSE OUTCOME	TAXONOMY
Specific Learning Outcomes-Industrial Engineering(15A03801)		
C421.1	Define management functions and organizational structures	Understand
C421.2	Use the knowledge of management tools to assess the quality of technical organizations	Understand
C421.3	Evaluate productivity improvement based on work study techniques	Evaluate
C421.4	Manage the inventory controlling in an organization using appropriate	Apply

	inventory techniques	
C421.5	Evaluate the effectiveness of a production process based on sampling plan	Evaluate
C421.6	Apply TQM circles for continuous improvement of industrial process	Apply
Specific Learning Outcomes-Power Plant Engineering (15A03804)		
C422.1	Explain the working of various components of power plant	Understand
C422.2	Quantify the efficiencies of steam power cycles	Apply
C422.3	Discuss the working principles of gas turbine and diesel engine power plants	Understand
C422.4	Explain the working of hydro electric and nuclear power plants	Understand
C422.5	Identify the different nonconventional energy sources and their utilization	Understand
C422.6	Explain the impact of power plant effluents on the environment	Understand
Specific Learning Outcomes-Comprehensive Viva Voce (15A03807)		
C423.1	Recite the fundamentals of engineering mathematics, applied physics and engineering chemistry	Understand
C423.2	Understand and comprehend any given problem related to the mechanical engineering field	Understand
C423.3	Describe the characteristics of engineering materials, manufacturing and optimization	Apply
C423.4	Understand the design of mechanical engineering systems	Understand
C423.5	Explain the governing laws of Thermodynamics, Heat transfer and Refrigeration & Air conditioning principles to develop thermo fluid systems	Apply
C423.6	Analyze the advanced manufacturing systems and robotics	Apply
Specific Learning Outcomes-Technical Seminar (15A03808)		
C424.1	Define the various existing technological developments currently in use	Understand
C424.2	Select the specialized topic of the existing or proposed technology	Analyze
C424.3	Summarize the information gathered from various resources	Understand
C424.4	Prepare a technical report on the selected specialized topic	Create
C424.5	Explain the topic using appropriate presentation tools	Understand
C424.6	Show the inert personal, Professional and work with team skills	Apply
Specific Learning Outcomes-Project Work (15A03809)		
C425.1	Prepare the abstract represents the outline of the project	Understand
C425.2	Understand the literature collected in relevant to the project	Understand
C425.3	Design the required components of the prototype as per the specifications	Apply
C425.4	Develop a prototype of the project with the distribution of tasks among the team	Apply
C425.5	Analyze the movements and functioning of the developed module	Analyze
C425.6	Prepare the project report as per guidelines and the present before the panel of experts	Understand