



DEPARTMENT OF MECHANICAL ENGINEERING

III SEMESTER - BE COURSE OUTCOMES FOR A.Y :2022-2023

S.NO	CODE	COURSE NAME	CO NO.	COURSE OUTCOMES	Taxonomy Level
1	6PC301ME	Thermodynamics	CO1	Define Thermodynamics concept of Zeroth law of thermodynamics, Temperature Scales and Thermodynamics Equilibrium, partial pressures and partial volumes.	Remember
			CO2	Evaluate Heat and work interactions and calculate work done during flow processes.	Evaluate
			CO3	Determine of entropy change during various thermodynamic processes.	Evaluate
			CO4	Make use of steam Tables and Mollier diagram for properties of steam.	Apply
			CO5	Determine efficiency of power cycles.	Evaluate
			CO6	Solve the problems on heat engine, heat pump and refrigerator.	Apply
2	6PC302 ME	Strength of Materials	CO1	Understand the basic principles of stress and strain and their relationship with material properties.	Understand
			CO2	Analyze the behaviour of structural members under combined loading conditions and the use of Mohr's circle for stress analysis.	Analyze
			CO3	Able to draw shear force and bending moment diagrams for different types of loads and beam configurations and calculate the maximum bending stress in a beam and its location.	Apply
			CO4	CO4: Analyze the shear stresses in circular and non-circular shafts under Torsional loading	Analyze
			CO5	Calculate the deflection of beams using different methods, such as integration, Macaulay's method	Apply
			CO6	Design springs and cylindrical structures to meet specified strength and deformation requirements	Create
3	6PC303 ME	Metallurgy and Material Science	CO1	Explain the structure of materials at various levels and testing their mechanical properties.	Understand
			CO2	Describe fatigue, creep failure and experimentally determine fatigue, creep strength, also list different types of fracture.	Understand
			CO3	Explain phase diagrams and identify various phases, composition by analyzing the phase diagrams.	Analyze
			CO4	Classify different types of plain carbon steels, cast irons and explain their applications.	Analyze
			CO5	Explain various heat treatment techniques, effects of the alloying elements on the properties of steel and select various alloying elements for a particular engineering application.	Apply
			CO6	Explain the properties, of non-ferrous metals, ceramics, polymers, composites and choose a particular material for an application.	Apply
4	6ES301 CS	Programming For Problem Solving	CO1	Formulate simple algorithms for arithmetic and logical problem; Translate the algorithms to programs.	Understand
			CO2	Test and execute the programs and correct syntax and logical errors.	Apply
			CO3	Implement conditional branching, iteration and recursion.	Evaluate
			CO4	Decompose a problem into functions and synthesize a complete program using divide and conquer approach Use arrays, pointers, structures and file management to solve real world problems.	Analyz
			CO5	Construct recursive programs and use structures to formulate algorithms and programs.	Create
			CO6	Apply programming to solve problems using pointer and understand linked list and file handling programs.	Understand Apply

5	6BS303 HS	Numerical Methods and Partial Differential Equations	CO1	Find the solution of algebraic and transcendental equations using numerical methods	Apply
			CO2	Apply numerical techniques to solve ordinary differential equations and definite integrals	Understand
			CO3	Apply numerical methods to interpolate values and fit different curves from given data.	Evaluate
			CO4	Find solution of first order linear and non linear partial differential equations..	Create
			CO5	Apply the solutions of partial differential equations to physical problems.	Analyse
6	6HS303 HS	Human Values and Professional Ethics	CO1	Understand the significance of value inputs in a classroom and start applying them in their life and profession	Understand
			CO2	Assess their own ethical values and the social context of problems	Evaluate
			CO3	Distinguish between values and skills, happiness and accumulation of physical facilities, the Self and the Body, Intention and Competence of	Analyse
			CO4	Understand the role of a human being in ensuring harmony in society and nature.	Understand
			CO5	Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they	Analyse
7	6PC 351 ME	Metallurgy & Material Testing Lab	CO1	Apply the procedure for preparing the sample for metallographic observation.	Apply
			CO2	Identify different materials by examining the phases in their microstructure.	Apply
			CO3	Analyze the effects of various heat treatment by studying the grain structure	Analyze
			CO4	Determine the tensile, compressive and impact strength for various materials	Evaluate
			CO5	Measure hardness, shear strength and check their suitability for a given design requirement.	Evaluate
			CO6	Determine the shear force, bending moment and Youngs modulus of different beams under various loading conditions.	Evaluate
8	6PC 352 ME	Computer Aided Machine Drawing	CO1	Develop the skills in drafting various machine components using AutoCad software.	Understand
			CO2	Interpret the conventions & symbols used in technical drawings into their physical meanings & vice versa	Understand
			CO3	Construct orthographic views of simple machine components.	Apply
			CO4	Demonstrate the working knowledge in solidworks to model, assemble and generate orthographic views.	Understand
			CO5	Develop 3D models, assemble and generate drawings of components using Solidworks.	Evaluate
			CO6	Observe 3D interactive CAD models and determine the steps used in modelling them.	Evaluate
9	6ES351 CS	Pogramming For Problem Solving Lab	CO1		
			CO2		
			CO3		
			CO4		
			CO5		
10	6MC351 ME	Solid Edge Certification Course	CO1	After going through this course, the students will be able to	
			CO2	Model 3D mechanical parts using synchronous and ordered modelling techniques in solid edge.	
			CO3	Assemble, find interference & analyse motion of complex machinery using solid edge.	
			CO4	Modify geometries imported in neutral formats like IGES, STEP & Parasolid as per requirements.	
			CO5	Carry out simulations to analyse & optimise parts & assemblies using solid edge.	
			CO6	Understand development of production drawings & tools to produce rendered images of products.	



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V SEMESTER - BE COURSE OUTCOMES FOR A.Y :2022-2023

S.NO	CODE	COURSE NAME	CO NO.	COURSE OUTCOMES	Taxonomy Level
1	PC408 ME	Hydraulic Machines	CO1	Classify and Explain the Hydraulic Machines, impact of jet on different vanes.	Understand
			CO2	Interpret the knowledge of reciprocating pumps analyze its performance.	Apply
			CO3	Design, estimate the unit quantities and specific parameter of centrifugal pumps.	Evaluate
			CO4	Design & analyze performance characteristics of Pelton wheel. Kaplan turbine and Francis turbine.	Analyze
			CO5	Interpret and Explain Industrial Hydraulics and Hydraulic systems.	Understand
			CO6	Demonstrate physical significance of Hydraulic turbines and surge tanks, draft tubes.	Understand
2	PC409 ME	Design of Machine Elements	CO1	Evaluate and Determine the stresses using. concepts of Theories of failure, and to select proper material for machine components.	Evaluate
			CO2	Evaluate the Failure stress of machine components using fatigue theories of failure.	Evaluate
			CO3	Evaluate size of the machine components for torque transmission, bending and axial loads.	Evaluate
			CO4	Analyze the fasteners required for a given application and predicting its efficiency.	Analyze
			CO5	Analyze type of joints, power screws.	Analyze
			CO6	Differential and compound screws and predicting its efficiency.	Analyze
3	PC410 ME	Dynamics of Machines	CO1	CO1: Understand the gyroscopic effects in ships, aero planes and road vehicles.	Understand
			CO2	CO2: Analyze and design centrifugal governors & Flywheels.	Analyze
			CO3	CO3: Analyze balancing problems in rotating machinery.	Analyze
			CO4	CO4: Analyze balancing problems in reciprocating machinery.	Analyze
			CO5	CO5: Understand free and forced vibrations of single degree freedom systems.	Understand
			CO6	CO6: Understand Torsional vibrations of single degree freedom systems.	Understand

4	PC411 ME	Metrology and Instrumentation	CO1	Explain the concepts of limits , fits and tolerances and their applications,gauges (plug, ring & snap), end bars, linear & angular measurements byVernier, Micrometers, Sine bar, Autocollimators.	
			CO2	Explain the concepts of comparators along with their types, Optical projectors,and Microscopes for measuring flatness, roundness & coordinate geometrics.	
			CO3	Explains the importance of surface roughness & its measurement, gear toothconcepts with measurement, & testing of machine tools like lathe, drill & milling.	
			CO4	Illustrate the basic measuring system, static and dynamic characteristics of instruments.	
			CO5	Explain the concepts and various working principles of measure pressure,different transducers for measurement of displacement, strain and torsion .	
			CO6	Explain the concept of various pressure measuring and temperature measuring instrumentation	
5	PC412 ME	Heat Transfer	CO1	Describe heat conduction problems in rectangular, cylindrical and spherical coordinates.	Understand
			CO2	Analyze heat transfer through the fins and familiarize with the time dependent heat transfer.	Analyze
			CO3	Estimate the convective heat transfer coefficient in Free and Forced convection.	Evaluate
			CO4	Determine the radiation heat transfer by calculating the emissivities and shape factors.	Evaluate
			CO5	Determine the LMTD and NTU in heat exchangers	Evaluate
			CO6	Explain the mechanisms involved in boiling and condensation.	Understand
6	PE512 ME	Automobile Enneering	CO1	Explain the different parts and constructional details of the automobile engines.	Understand
			CO2	Discuss the working of various systems like engine lubricating system and cooling system, types of ignition system and different batteries used in automobile.	Understand
			CO3	Explain the working principle of steering and suspension systems and constructional details of wheels and tyres of automobile.	Understand
			CO4	Establish the constructional and working principle of braking system and its importance in Automobile engines.	Apply
			CO5	Discuss the transmissions of power from the engine to wheels through the clutch plates and differential gear box.	Understand
			CO6	Discuss the environmental implications of automobile emissions and strong base for understanding future developments in the automobile industry.	Understand

7	PE513 ME	Industrial Engineering	CO1	CO1:Apply the knowledge of scientific management in industrial environment.	Apply
			CO2	CO2:Demonstrate the importance of production. planning & control in manufacturing industry	Understand
			CO3	CO3:Estimate the appropriate inventory control models and financial management practice are applied in industries.	Evaluate
			CO4	CO4:Analyses the quality control charts and sampling plan in production unit.	Analyse
			CO5	CO5:Apply the concept of decision making theory and uncertainty risk in work place.	Apply
			CO6	CO6:Develop industrial engineering concepts in industrial environment.	Create
8	PC455 ME	TE Lab -2	CO1	Analyze the effective thermal resistance in composite slabs and thermal conductivity of metal bar.	Analyze
			CO2	Evaluate heat transfer coefficient in Free & Forced convection.	Evaluate
			CO3	Evaluate the effectiveness and efficiency of parallel flow and counter flow heat exchanger.	Evaluate
			CO4	Analyze the COP of the Refrigeration test Rig and pressure distribution of specimen in wind tunnel.	Analyze
			CO5	Analyze the overall efficiency of axial flow fan & Centrifugal blower.	Analyze
			CO6	Evaluate the surface emissivity of a test plate & Stefan Boltzmann constant.	Evaluate
9	PC456 ME	Dynamics of Machines Lab	CO1	Analyze the performance and draw the characteristic curves for different types of governors.	Analyze
			CO2	Evaluate the effect of gyroscopic couple at different speeds.	Evaluate
			CO3	Evaluate kinematic and dynamic behavior of different types of cams.	Evaluate
			CO4	Evaluate static and dynamic balancing of rotating masses.	Evaluate
			CO5	Analyze natural frequencies of various beams with different constraints.	Analyze
			CO6	Determine the critical speed for shafts of various diameter.	Evaluate
10	PC457 ME	Fluid Mechanics and Hydraulic Machinery Lab	CO1	Determine the impact of jet on different types of vanes	Evaluate
			CO2	Determine the efficiencies of various pumps and draw the characteristic curves.	Evaluate
			CO3	Determine the efficiencies of various turbines and draw the characteristic curves.	Evaluate
			CO4	Evaluate the coefficient of discharge of various flow meters and draw the characteristic curves.	Evaluate
			CO5	Explain the principle of Hydraulic Circuit	Understand
			CO6	Explain Pneumatic Circuits by studying the models.	Understand



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S.NO	CODE	COURSE NAME	CO NO.	COURSE OUTCOMES	Taxonomy Level
1	PC701 ME	OPERATIONS RESEARCH	CO1	To prepare the students to have the knowledge of Linear Programming Problem in operations Research at the end students would be able to understand the concept and develop the models for different applications.	Apply
			CO2	Make students understand the concept Replacement models at the end students would be able to explain various features and applications of replacement models in real time scenario.	Understand
			CO3	Prepare the students to understand theory of Game in operations research at the end students would be able to explain application of Game theory in decision making for a conflict	Evaluate
			CO4	Prepare the students to have the knowledge of Sequencing model at the end student would be able to develop optimum model for job scheduling.	Apply
			CO5	Prepare students to understand Queuing theory concepts and various optimization techniques at the end students would be able to develop models for waiting line cases.	Apply
2	PC702 ME	Refrigeration and Air Conditioning	CO1	Relate methods of refrigeration and importance of refrigerant selection	
			CO2	Design Air refrigeration and VCR system with methods to improve performance	
			CO3	Compare VAS with VCR system, steam jet refrigeration and Thermoelectric refrigeration	
			CO4	Identify various air conditioning processes on Psychrometric Chart	
			CO5	Design Air Conditioning System with use of psychrometric chart	
			CO6	Explain the types of air conditioning systems, components and applications	
3	PE711 ME	Industrial Engineering	CO1	Apply the knowledge of scientific management in industrial environment.	Apply
			CO2	Demonstrate the importance of production planning & control in manufacturing industry	Understand
			CO3	Estimate the appropriate inventory control models and financial management practice are applied in industries.	Evaluate
			CO4	Analyses the quality control charts and sampling plan in production unit.	Analyse
			CO5	Apply the concept of decision making theory and uncertainty risk in work place.	Apply
			CO6	Develop industrial engineering concepts in industrial environment.	Create

4	PE721 ME	Additive Manufacturing Technology	CO1	Describe the fundamentals of additive manufacturing, classify and explain advantages and disadvantages of AM process.	Understand
			CO2	Describe the operating principles, capabilities and limitations of liquid and solid based additive manufacturing systems.	Understand
			CO3	Explain the operating principles, specifications, advantages and disadvantages of powder based additive manufacturing systems.	Understand
			CO4	Selection of correct CAD data formats and software's and AM software skills in additive manufacturing technology.	Analyze
			CO5	Applying the capabilities of additive manufacturing in different industrial sectors.	Apply
			CO6	Exploring the different applications of AMT and applying it in various fields through AM software's.	Apply
5	OE701 CE	GBT- Green Building Technology	CO1	Define green buildings and sustainable development.	Understand
			CO2	Apply the criteria for site selection as per the green building rating systems.	Understand
			CO3	Explain the typical features of green buildings.	Understand
			CO4	Identify the methods to reduce water consumption in buildings.	Understand
			CO5	Explain how rainwater harvesting can be used to conserve water.	Understand
			CO6	Identify the different types of waste generated in construction.	Understand
6	OE701 EE	Non Conventional Energy Sources	CO1	List and Compare the various forms of non conventional energy resources and analyze the different Fuel cells with applications of fuel cells.	Analyze
			CO2	Explain the solar energy applications and calculations of solar energy .	Analyze
			CO3	Analyzing how wind energy can be tapped from the nature and its calculations.	Analyze
			CO4	Illustrate the concepts of Geothermal ,Wave, Tidal energy & OTEC.	Understand
			CO5	Outline the Biogas & Biomass, its mechanism of production of energy and its applications.	Understand
7	PW702 ME	Project Work - I	CO1	Adapt the attitude of writing reviews on the literature	Create
			CO2	Develop practical & professional skills	Apply
			CO3	Apply the tools and technicals of documentations	Apply
			CO4	Make use of the Team work	Apply
			CO5	Develop to the industrial practice and Research Practices	Apply
			CO6	Develop skill to work with Innovative and entrepreneurial ideas	Apply