SWARNANDHRA COLLEGE OF ENGINEERING & TECHNOLOGY

(AUTONOMOUS)

DEPARTMENT OF MECHINAICAL ENGINEERING

III SEM COURSE OUTCOMES (R20)

SUBJECT NAME	COURSE OUT COMES
Fluid Mechanics And Hydraulic Mechinery	**CO1**. Define the fundamental properties of fluids and apply the concepts of fluid statics. [**K1**] **CO2**. Apply the principles of fluid kinematics and boundary layer concepts for fluid flow problems**.[K3]** **CO3**. Analyze the fluid flow through pipes. **[K4]** **CO4**. Understand the concept of hydrodynamic force of jets on stationary and moving flat, inclined and curved vanes and explain the working and performance of various types of turbines. **[K2]** **CO5**. Explain working principles of hydraulic pumps**. [K2]**
Mechanics Of Solids	**CO1**.Calculate stresses and strains in structural members subjected to various types of loadings**. [K3]** **CO2**: Sketch the Shear force and bending moment diagrams of beams subject to combination of loads. **[K3]** **CO3**: Determine and Sketch the stress distribution in section of the beam subjected to bending and Shear loads**. [K3]** **CO4**: Determine the Shear stresses and Modulus of rigidity, Slope and Deflection in shafts**.[K3]** **CO5**: Evaluate stresses in thin and thick cylinders**. [K4]**
Production Technology	**CO1**Explain various metal casting processes**.[K2]** **CO2**. Illustrate melting furnace working principle and solidification processes. **[K2]** **CO3**. Explain various welding techniques, soldering and brazing. **[K2]** **CO4**. Summarize various hot working and cold working methods of metals. **[K2]** **CO5**. Explain plastics processes and Rapid Prototyping. . **[K2]**
Engineering Thermodynamics	**CO1**. Explain basic principles and Zeroth law of thermodynamics. [**K2**] **CO2**. Apply first law of thermodynamics for different thermodynamic systems. [**K3**] **CO3**. Explain second law of thermodynamics and general thermodynamic property relations**. [K2]** **CO4**. Describe the thermodynamic concepts of pure substances and identify their properties. [**K2**] **CO5**. Calculate the Thermal Efficiency and Mean Effective Pressures of Air standard Cycles.[**k3**]
Vector Calculus And Laplase Transforms	**CO1:** Apply del to scalar and vector point functions **[K3]** Illustrate the physical interpretation of Gradient, Divergence and Curl **[K3]** **CO2:** Find the work done in moving a particle along the path over a force field **[K3]** Evaluate the rate of fluid flow along and across curves **[K3]** Apply Green's, Stoke's and Divergence theorems in evaluation of double and triple integrals **[K3]** **CO3:** Examine the properties of Laplace transforms **[K3]** Apply the Laplace transforms for different types of functions**[K3]** **CO4:** Apply the Inverse Laplace transforms for different types of functions**[K3]** **CO5:** Define continuity, differentiability and analyticity for complex functions**[K1]** Apply Cauchy Riemann equations to complex functions in order to determine whether a given continuous function is analytic **[K3]**

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R19 V SEM COURSE OUTCOMES

SUBJECT NAME	COURSE OUT COMES
Design of Machine Elements	**CO1:** Describe the design process, material selection, stress concentrations under various loading [K2] **CO2:** Design the machine elements like shaft, couplings and keys. [K4] **CO3:** Design the temporary joints such as cotter joints, knuckle joints, and screw joints. [K4] **CO4:** Design the permanent joints such as riveted joints, welded joints. [K4] **CO5:** Design and analyse mechanical springs for the given loading conditions. [K4]
Machine Tools	**CO1** Describe the metal cutting theory and analyse importance of process parameters for machining. (K2) **CO2:** Explain the working principles of different types of lathe and various operations performed.[K2] **CO3:** Explain working principle of shaping, slotting, planning, drilling and boring machines and various operations performed.[K2] **CO4:** Explain the working principle of milling, methods of indexing and accessories of milling machine. (K2) **CO5:** Describe the different types of finishing process and describe the function of jigs and fixtures. (K2)
Thermal Engineering	**CO1:** Differentiate the air standard cycles and actual cycles with reference to engine performance [K2] **CO2**: Explain the working of I. C. Engines and its components [K2] **CO3**: Distinguish and discuss the effect of engine variables on combustion phenomenon in S.I and C.I. engines.[K2] **CO4**: Evaluate the performance of I. C. Engines. [K4] **CO5:** Describe the working and analyze the performance of reciprocating and rotary air compressors. [K3]
Machine Drawing	**CO1**. Draw different types of mechanical components.[K2] **CO2.** Draw and represent standard dimensions of different mechanical fasteners and Couplings. [K2] **CO3.** Draw different types of Joints.[K2] **CO4**. Draw the assembled view and sectional view of machine components with all the dimensions. [K3]
Production Planning & Control	**CO1**. Explain the objectives and functions of production planning and control. [K2] **CO2**. Solve the various forecasting problems in production planning. [K3] **CO3**. Calculate the required quantities of materials by using ABC, VED and EOQ models. [K3] **CO4**. Determine the new facility location and layout problems and explain the recent trends. [K3] **CO5**. Apply scheduling techniques to solve the scheduling problems. [K3] **CO5:** Design and analyse mechanical springs for the given loading conditions. [K4]
Tool Design	**CO1:** Explain the design requirements of single point and multi-point cutting tools. [K2] **CO2:** Describe the importance of cutting tools and work holding device in design. [K2] **CO3:** Explain jigs, illustrate the function of jigs for several operations and simple design of jigs. [K2] **CO4:** Illustrate the design principles of fixtures and describe the application of fixtures for machine tools and NC Machine. [K3] **CO5:** Explain the fundamentals of die cutting operations and design of simple progressive and sets. [K2]

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R16 VII SEM COURSE OUTCOMES

SUBJECT NAME	COURSE OUT COMES
Operation Research	**CO1: Apply** linear programming techniques to solve industrial optimization problems. . [K3] **CO2: solve** transportation and assignment problems using operation research techniques. . [K3] **CO3: Solve** sequencing problems using operation research techniques. . [K3] **CO4: Solve** replacement problems for optimization. . [K3] **CO5: Analyze** game theory and apply them for optimization. **CO6: Analyze** queuing theory and apply it for optimization and also analyze inventory models for various
Finite Element Methods	**CO1**: Explain the basic concept and application of FEM and compare with other method [K2] **CO2**: Solve one dimensional problem using potential energy approach [K3] **CO3**: Calculate the displacement, stress and reactions in trusses and beans [K4] **CO4:** Solve two dimensional problems using CST and higher order elements and apply numerical integration for higher order element problem analysis [K3] **CO5**: Apply finite element analysis to solve steady state heat transfer problems [K3] **CO6**: Determine the natural frequencies and mode shapes for bar and beams [K4]
Cad/Cam	**CO1:** Explain the hardware and software of CAD systems. [K2] **CO2:** Apply mathematical principles in solving problems such as curve representation and surface representation. [K3] **CO3:** Define NC and CNC systems and write the basic programs using both G-Codes, M-Codes and APT.[K1] **CO4:** Summarize the principles of Group Technology and Apply them in grouping parts as well as Explain CAPP.[K2][K4] **CO5:** Explain about Computer Aided Quality Control and various inspection methods.[K2] **CO6:** Explain about Computer Integrated Manufacturing, and also benefits of CIM.[K2]
Automobile Engineering	**CO1:** Identify the components of automobile, types of drives and engine specifications. [K2] **CO2:** Describe the working of different elements of automobile transmission system. [K2] **CO3:** Describe the steering geometry, steering mechanisms and steering gears of an automobile. [K2] **CO4:** Describe and compare different suspension and braking systems of an automobile. [K2, K4] **CO5:** Describe the starting system and electrical accessories of electrical system of an automobile. [K2] **CO6:** Describe the engine lubrication system and use of safety systems of an automobile.[K2, K3]
Oops Through Java	**CO1:** Difference between procedural oriented programming and object oriented programming (OOP)paradigms, Java features, Apply OOP Concepts[K3] **CO2:** Define java control statements and String Class. [K2] **CO3:** Apply the concept of Inheritance and polymorphism. [K3] **CO4:** Explain the Packages and Interfaces. [K2] **CO5:** Define Exception handling and Applets. [K1] **CO6:** Implement the concepts of Multithreading. [K2]