Department of <u>Mechanical Engineering</u>
Course Outcomes [CO'S]

CLASS: SECOND YEAR

SUBJECT/CODE: MATHEMATICS III [207002]

1. Solve higher order linear differential equations and apply to modeling and analyzing mass spring systems.

2. Apply Laplace transform and Fourier transform techniques to solve differential equations involved in Vibration theory, Heat transfer and related engineering applications.

3. Apply statistical methods like correlation, regression analysis in analyzing, interpreting experimental data and probability theory in testing and quality control.

4. Perform vector differentiation and integration, analyze the vector fields and apply to fluid flow problems.

5. Solve various partial differential equations such as wave equation, one and two dimensional heat flow equations.

SUBJECT/CODE: MANUFACTURING PROCESS-I [202041]

1. Understand and analyze foundry practices like pattern making, mold making, Core making and Inspection of defects.

2. Understand and analyze Hot and Cold Working, Rolling, Forging, Extrusion and Drawing Processes.

3. Understand different plastic molding processes, Extrusion of Plastic and Thermoforming.

4. Understand different Welding and joining processes and its defects.

5. Understand Design and Analyze different sheet metal working processes.

6. Understand the constructional details and Working of Centre Lathe.

SUBJECT/CODE: COMPUTER AIDED MACHINE DRAWING [202042]

1. Understand the importance of CAD in the light of allied technologies such as CAM, CAE, FEA, CFD, and PLM.

2. Understand the significance of parametric technology and its application in 2D sketching.

3. Understand the significance of parametric feature-based modeling and its application in 3D machine components modeling.

4. Ability to create 3D assemblies that represent static or dynamic Mechanical Systems.

5. Ability to ensure manufacturability and proper assembly of components and assemblies.

6. Ability to communicate between Design and Manufacturing using 2D drawings.

SUBJECT/CODE: THERMODYNAMICS [202043]

1. Apply various laws of thermodynamics to various processes and real systems.

2. Apply the concept of Entropy, Calculate heat, work and other important thermodynamic properties for various ideal gas processes.

3. Estimate performance of various Thermodynamic gas power cycles and gas refrigeration cycle and availability in each case.

4. Estimate the condition of steam and performance of vapour power cycle and vapour compression cycle.

5. Estimate Stoichiometric air required for combustion, performance of steam generators and natural draught requirements in boiler plants.

6. Use Psychromertic charts and estimate various essential properties related to Psychrometry and processes.

SUBJECT/CODE: MATERIAL SCIENCE [202044]

1. Understand the basic concepts and properties of Material.

2. Understand about material fundamental and processing.

3. Select proper metal, alloys, and nonmetal and powder metallurgical component for specific requirement.

4. Detect the defects in crystal and its effect on crystal properties.

5. Evaluate the different properties of material by studying different test.

6. Recognize how metals can be strengthened by cold-working and hot working.

SUBJECT/CODE: FLUID MECHANICS [202045]

1. Use of various properties in solving the problems in fluids.

2. Use of Bernoulli's equation for solutions in fluids.

3. Determination of forces drag and lift on immersed bodies.

SUBJECT/CODE: THEORY OF MACHINES – I [202048]

1. Identify mechanisms in real life applications.

2. Perform kinematic analysis of simple mechanisms.

3. Perform static and dynamic force analysis of slider crank mechanism.

4. Determine moment of inertia of rigid bodies experimentally.

5. Analyze velocity and acceleration of mechanisms by vector and graphical methods.

SUBJECT/CODE: ENGINEERING METALLURGY [202049]

1. Describe how metals and alloys formed and how the properties change due to microstructure.

2. Apply core concepts in Engineering Metallurgy to solve engineering problems.

3. Conduct experiments, as well as to analyze and interpret data.

4. Select materials for design and construction.

5. Possess the skills and techniques necessary for modern materials engineering practice.

6. Recognize how metals can be strengthened by alloying, cold-working, and heat treatment.

SUBJECT/CODE: APPLIED THERMODYNAMICS [202050]

1. Classify various types of Engines, Compare Air standard, Fuel Air and Actual cycles and make out various losses in real cycles.

2. Understand Theory of Carburetion, Modern Carburetor, Stages of Combustion in S. I. Engines and Theory of Detonation, Pre-ignition and factors affecting detonation.

3. Understand Fuel Supply system, Types of Injectors and Injection Pumps, Stages of Combustion in CI Engines, Theory of Detonation in CI Engines and Comparison of SI and CI Combustion and Knocking and Factors affecting, Criteria for good combustion chamber and types.

4. Carry out Testing of I. C. Engines and analyze its performance.

5. Describe construction and working of various I. C. Engine systems (Cooling, Lubrication, Ignition, Governing, and Starting) also various harmful gases emitted from exhaust and different devices to control pollution and emission norms for pollution control.

6. Describe construction, working of various types of reciprocating and rotary compressors with performance calculations of positive displacement compressors.

SUBJECT/CODE: STRENGTH OF MATERIALS [202051]

1. Apply knowledge of mathematics, science for engineering applications.

2. Design and conduct experiments, as well as to analyze and interpret data.

3. Design a component to meet desired needs within realistic constraints of health and safety.

4. Identify, formulate, and solve engineering problems.

5. Practice professional and ethical responsibility.

6. Use the techniques, skills, and modern engineering tools necessary for engineering practice.

SUBJECT/CODE: ELECTRICAL AND ELECTRONICS ENGINEERING [203152]

1.Develop the capability to identify and select suitable DC motor / induction motor / special purpose motor and its speed control method for given industrial application.

2. Program Arduino IDE using conditional statements.

3. Interfacing sensors with Arduino IDE.

SUBJECT/CODE: SOFT SKILL [202047]

1. Improved communication, interaction and presentation of ideas.

2. Right attitudinal and behavioral change.

3. Developed right-attitudinal and behavioral change.