



Vishwabharati Academy's

COLLEGE OF ENGINEERING

Sarola Baddi, Jamkhed Road, AHMEDNAGAR-414201

DEPARTMENT OF MECHANICAL SANDWICH ENGINEERING

COURSE OUTCOMES (CO's)

Semester III

202041: Solid Mechanics

- CO1. DEFINE various types of stresses and strain developed on determinate and indeterminate members.
- CO2. DRAW Shear force and bending moment diagram for various types of transverse loading and support.
- CO3. COMPUTE the slope & deflection, bending stresses and shear stresses on a beam.
- CO4. CALCULATE torsional shear stress in shaft and buckling on the column.
- CO5. APPLY the concept of principal stresses and theories of failure to determine stresses on a 2-D element.
- CO6. UTILIZE the concepts of SFD & BMD, torsion and principal stresses to solve combined loading application based problems

202042: Solid Modeling and Drafting

- CO1. UNDERSTAND basic concepts of CAD system, scope in Product Lifecycle Management
- CO2. UTILIZE knowledge of curves & surfacing features to create complex solid geometry
- CO3. CONSTRUCT solid models, assemblies using various modeling techniques & PERFORM mass property analysis, including creating and using a coordinate system
- CO4. APPLY geometric transformations to simple 2D geometries
- CO5. USE CAD model data for various CAD based engineering applications viz. production drawings, 3D printing, FEA, CFD, MBD, CAE, CAM, etc.
- CO6. USE PMI & MBD approach for communication

202043: Engineering Thermodynamics

- CO1. DESCRIBE the basics of thermodynamics with heat and work interactions.
- CO2. APPLY laws of thermodynamics to steady flow and non-flow processes.
- CO3. APPLY entropy, available and non-available energy for an Open and Closed System,
- CO4. DETERMINE the properties of steam and their effect on performance of vapor power cycle.
- CO5. ANALYSE the fuel combustion process and products of combustion.
- CO6. SELECT various instrumentations required for safe and efficient operation of steam generator.

202044: Engineering Materials and Metallurgy

- CO1. COMPARE crystal structures and ASSESS different lattice parameters.
- CO2. CORRELATE crystal structures and imperfections in crystals with mechanical behavior of materials.
- CO3. DIFFERENTIATE and DETERMINE mechanical properties using destructive and non-destructive testing of materials.
- CO4. IDENTIFY & ESTIMATE different parameters of the system viz., phases, variables, component, grains, grain boundary, and degree of freedom. etc.
- CO5. ANALYSE effect of alloying element & heat treatment on properties of ferrous & nonferrous alloy.
- CO6. SELECT appropriate materials for various applications.

203156: Electrical and Electronics Engineering

- CO1. APPLY programming concepts to UNDERSTAND role of Microprocessor and Microcontroller in embedded systems
- CO2. DEVELOP interfacing of different types of sensors and other hardware devices with Atmega328 based Adriano Board
- CO3. UNDERSTAND the operation of DC motor, its speed control methods and braking
- CO4. DISTINGUISH between types of three phase induction motor and its characteristic features
- CO5. EXPLAIN about emerging technology of Electric Vehicle (EV) and its modular subsystems
- CO6. CHOOSE energy storage devices and electrical drives for EVs

202045: Geometric Dimensioning and Tolerancing Lab

- CO1. SELECT appropriate IS and ASME standards for drawing
- CO2. READ & ANALYSE variety of industrial drawings
- CO3. APPLY geometric and dimensional tolerance, surface finish symbols in drawing
- CO4. EVALUATE dimensional tolerance based on type of fit, etc.
- CO5. SELECT an appropriate manufacturing process using DFM, DFA, etc.

Semester IV

207002: Engineering Mathematics - III

- CO1. SOLVE higher order linear differential equations and its applications to model and analyze mass spring systems.
- CO2. APPLY Integral transform techniques such as Laplace transform and Fourier transform to solve differential equations involved in vibration theory, heat transfer and related mechanical engineering applications.
- CO3. APPLY Statistical methods like correlation, regression in analyzing and interpreting experimental data applicable to reliability engineering and probability theory in testing and quality control.
- CO4. PERFORM Vector differentiation & integration, analyze the vector fields and APPLY to fluid flow problems.
- CO5. SOLVE Partial differential equations such as wave equation, one and two dimensional heat flow equations

202047: Kinematics of Machinery

- CO1. APPLY kinematic analysis to simple mechanisms
- CO2. ANALYZE velocity and acceleration in mechanisms by vector and graphical method
- CO3. SYNTHESIZE a four bar mechanism with analytical and graphical methods
- CO4. APPLY fundamentals of gear theory as a prerequisite for gear design
- CO5. CONSTRUCT cam profile for given follower motion

202061: Thermal Engineering

- CO1. DETERMINE performance of reciprocating air compressor.
- CO2. DETERMINE performance of refrigeration systems.
- CO3. IDENTIFY factors affecting the air conditioning systems.
- CO4. COMPARE various air standard cycles and gas turbine cycles.
- CO5. UNDERSTAND working of various IC Engine systems.
- CO6. CALCULATE performance of an IC Engine.

202062: Fluid Mechanics and Machinery

- CO1. DETERMINE various properties of fluid and APPLY the laws of fluid statics and concepts of buoyancy.
- CO2. IDENTIFY types of fluid flow and terms associated in fluid kinematics and APPLY principles of fluid dynamics.
- CO3. ESTIMATE friction and minor losses in internal flows and CONSTRUCT mathematical correlation considering dimensionless parameters.
- CO4. APPLY momentum principle and DRAW the velocity triangle on various turbines like Pelton wheel for its analysis
- CO5. UNDERSTAND the construction and working of different reaction turbines and DETERMINE performance parameters of different reaction turbines.
- CO6. UNDERSTAND the construction and working of centrifugal Pump and DETERMINE performance parameters of Centrifugal pump.

202063: Manufacturing Engineering

- CO1. SELECT appropriate molding, core making and melting practice and ESTIMATE pouring time, and DESIGN riser size and location for sand casting process.
- CO2. DEMONSTRATE metal forming operations, CLASSIFY applications and CALCULATE load required for flat rolling.
- CO3. CLASSIFY and EXPLAIN different welding processes and EVALUATE welding characteristics.

CO4. IDENTIFY lathe operations, CALCULATE machining time, shear angle, cutting forces in orthogonal cutting and DETERMINE tool life.

CO5. DISTINGUISH drilling and milling operations, CALCULATE machining time, and UNDERSTAND methods of Indexing.

CO6. RECOGNIZE Broaching and grinding operations, CALCULATE of machining time for cylindrical and surface grinding operations.

202051: Machine Shop

CO1. PERFORM welding using TIG/ MIG/ Resistance/Gas welding technique

CO2. MAKE Fiber-reinforced Composites by hand lay-up process or spray lay-up techniques

CO3. PERFORM cylindrical/surface grinding operation and CALCULATE its machining time

CO4. DETERMINE number of indexing movements required and acquire skills to PRODUCE a spur gear on a horizontal milling machine

CO5. PREPARE industry visit report

CO6. UNDERSTAND procedure of plastic processing

202052: Project Based Learning - II

CO1. IDENTIFY the real-world problem (possibly of interdisciplinary nature) through a rigorous literature survey and formulate / set relevant aims and objectives.

CO2. ANALYZE the results and arrive at valid conclusions.

CO3. PROPOSE a suitable solution based on the fundamentals of mechanical engineering by possibly integration of previously acquired knowledge.

CO4. CONTRIBUTE to society through proposed solutions by strictly following professional ethics and safety measures.

CO5. USE of technology in proposed work and demonstrate learning in oral and written form.

CO6. DEVELOP ability to work as an individual and as a team member.

