

AMRUTVAHINI COLLEGE OF ENGINEERING, SANGAMNER
Department of Mechanical Engineering
Course Outcome (CO)
S.E 2019 PATTERN

Sr. No	Course Title	Code	Subject Code	Course objectives
1	Solid Mechanics	C201	202041	Acquire basic knowledge of stress, strain due to various types of loading.
				Draw Shear Force and Bending Moment Diagram for transverse loading.
				Determine Bending, Shear stress, Slope and Deflection on Beam.
				Solve problems of Torsional shear stress for shaft and Buckling for the column.
				Apply the concept of Principal Stresses and Theories of Failure.
				Utilize the concepts of Solid Mechanics on application based combined mode of loading.
2	Solid Modeling and Drafting	C202	202042	UNDERSTAND basic concepts of CAD system, need and scope in Product Lifecycle Management
				UTILIZE knowledge of curves and surfacing features and methods to create complex solid geometry
				CONSTRUCT solid models, assemblies using various modeling techniques & PERFORM mass property analysis, including creating and using a coordinate system
				APPLY geometric transformations to simple 2D geometries
				USE CAD model data for various CAD based engineering applications viz. production drawings, 3D printing, FEA, CFD, MBD, CAE, CAM, etc.
				USE PMI & MBD approach for communication
3	Engineering Thermodynamics	C203	202043	DESCRIBE the basics of thermodynamics with heat and work interactions.
				APPLY laws of thermodynamics to steady flow and non-flow processes.
				APPLY entropy, available and non-available energy for an Open and Closed System,
				DETERMINE the properties of steam and their effect on performance of vapour power cycle.

				ANALYSE the fuel combustion process and products of combustion.
				SELECT various instrumentations required for safe and efficient operation of steam generator.
4	Engineering Materials and Metallurgy	C204	202044	COMPARE crystal structures and ASSESS different lattice parameters.
				CORRELATE crystal structures and imperfections in crystals with mechanical behaviour of material.
				DIFFERENTIATE and DETERMINE mechanical properties using destructive and non-destructive testing of materials.
				IDENTIFY & ESTIMATE different parameters of the system.
				ANALYSE effect of alloying element & heat treatment on properties of ferrous & nonferrous alloy.
				SELECT appropriate materials for various applications.
5	Electrical and Electronics Engineering	C205	203156	APPLY programming concepts to UNDERSTAND role of Microprocessor and Microcontroller in embedded systems
				DEVELOP interfacing of different types of sensors and other hardware devices with Atmega328 based Arduino Board
				UNDERSTAND the operation of DC motor, its speed control methods and braking
				DISTINGUISH between types of three phase induction motor and its characteristic features
				EXPLAIN about emerging technology of Electric Vehicle (EV) and its modular subsystems
				CHOOSE energy storage devices and electrical drives for EVs
6	Geometric Dimensioning & Tolerancing Lab	C206	202045	SELECT appropriate IS and ASME standards for drawing
				Understand about Surface Finish and Welding Symbols
				READ & ANALYSE variety of industrial drawings
				APPLY geometric and dimensional tolerance, surface finish symbols in drawing
				EVALUATE dimensional tolerance based on type of fit, etc.
				SELECT an appropriate manufacturing process

				using DFM, DFA, etc.
7	Audit Course - III	C207	202046	Identify Enterpreneural Traits
				Identify the business Opportunities.
				Develop Comprehensive Business plans
				Prepare plans to manage Enterprise Effectively
8	Engineering Mathematics - III	C208	207002	Solve higher order linear differential equations and its applications to model and analyze mass spring systems
				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
				Apply Statistical methods like correlation, regression in analyzing and interpreting experimental data applicable to reliability engineering
				Apply probability theory in testing and quality control.
				Perform Vector differentiation & integration, analyze the vector fields and APPLY to fluid flow problems
				Solve Partial differential equations such as wave equation, one and two dimensional heat flow equations
9	Kinematics of Machinery	C209	202047	Identify the type of links, type of joints, type of kinematic pairs used in simple mechanism; analyse the mechanism for mobility
				Analyse velocity and acceleration in mechanisms by analytical method
				Analyse velocity and acceleration in mechanisms by graphical method
				Synthesis a four bar mechanism with analytical and graphical methods
				Apply fundamentals of gear theory as a prerequisite for gear design
Construct cam profile for given follower motion				
10	Applied Thermodynamics	C210	202048	Determine COP of refrigeration system and Analyze psychrometric processes.
				Discuss basics of engine terminology, air standard, fuel-air and actual cycles.

				<p>Study of carburetion, fuel injection system and identify factors affecting the combustion performance of SI and CI engines.</p> <p>Determine performance parameters of IC Engines and study emission control.</p> <p>Explain working of various IC Engine systems and use of alternative fuels.</p> <p>Calculate performance of single and multi stage reciprocating compressors and discuss rotary positive displacement compressors.</p>
11	Fluid Mechanics	C211	202049	<p>Understand basic properties of fluids.</p> <p>Learn fluid statics and dynamics</p> <p>Study basics of flow visualization</p> <p>Understand Bernoulli's theorem and its applications</p> <p>Understand losses in flow, drag and lift forces</p> <p>Learn to establish relation between flow parameters.</p>
12	Manufacturing Processes	C212	202050	<p>SELECT appropriate moulding, core making and melting practice and estimate pouring time, solidification rate and DESIGN riser size and location for sand casting process</p> <p>UNDERSTAND mechanism of metal forming techniques and CALCULATE load required for flat rolling</p> <p>DEMONSTRATE press working operations and APPLY the basic principles to DESIGN dies and tools for forming and shearing operations</p> <p>CLASSIFY and EXPLAIN different welding processes and EVALUATE welding characteristics</p> <p>DIFFERENTIATE thermoplastics and thermosetting and EXPLAIN polymer processing techniques</p> <p>UNDERSTAND the principle of manufacturing of fibre-reinforced composites and metal matrix composites</p>
13	Machine Shop	C213	202051	<p>PERFORM welding using TIG/ MIG/ Resistance/Gas welding technique</p> <p>MAKE Fibre-reinforced Composites by hand lay-up process or spray lay-up techniques</p> <p>PERFORM cylindrical/surface grinding operation and CALCULATE its machining time</p> <p>DETERMINE number of indexing movements</p>

				required and acquire skills to PRODUCE a spur gear on a horizontal milling machine
				PREPARE industry visit report
				UNDERSTAND procedure of plastic processing
14	Project Based Learning - II	C214	202052	Identify the real-world problems by applying fundamental knowledge of the various disciplines.
				Formulate the aims and objectives by studying a rigorous literature survey and problem statement.
				Apply the concepts of Mathematics, science and engineering fundamentals to solve real life problems by proposing sustainable solution.
				Demonstrate the learning through effective documentation, communication and presentation skills.
				Contribute to society through proposed solutions by strictly following professional ethics and safety measures.
				Develop the ability of leadership, team work and lifelong learning environments.
15	Audit Course - IV	C215	202053	Summarize the business ethics, levels, and myths to make better decisions.
				Learn the principles of ethics to make a society peaceful, harmonious, and a better place to live by guiding the behavior of people.
				Integrate the ethics of production, marketing, human resource management
				Narrate the ethics of media reporting and the ethics of healthcare services applicable to designing advertising for a product