



Sandip Institute of Technology and Research Centre

At & Po – Mahirawani, Trimbak Road, Tal & Dist .– Nashik

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website : www.sandipfoundation.org, e-mail : principal@sitrc.org

(Approved by-AICTE, New Delhi, & Govt. of Maharashtra and Permanently Affiliated to Savitribai Phule Pune University (Formerly Pune University), Pune.

Accredited with “A” grade by NAAC With CGPA Score of 3.11



Department of Automation & Robotics

List of Course Outcomes (COs)

Course Outcomes (COs)		
SE 2019 Pat.	202041	Solid Mechanics
	CO No.	Course Outcomes
	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.
SE 2019 Pat.	202042	Solid Modeling and Drafting
	CO No.	Course Outcomes
	CO1	UNDERSTAND basic concepts of CAD system, need and scope in Product Lifecycle Management
	CO2	UTILIZE knowledge of curves and surfacing features and methods 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

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202044	Engineering Materials and Metallurgy
CO No.	Course Outcomes
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.
202521	Electrical Technology
CO No.	Course Outcomes
CO1	Explain the construction, working and applications of DC machines
CO2	Understand the construction, equivalent circuit and applications of transformers
CO3	Explain the construction, operation, types and applications of induction motors
CO4	Understand the construction, working principle, applications and sizing of special motors
CO5	Explain the structure of electric power systems and EHV transmission systems
CO6	Understand the modeling of physical systems and transfer function of various components

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202522	Industrial Electronics
CO No.	Course Outcomes
CO1	To explain the different applications of Programmable Logic Controllers
CO2	To Identify different types of Devices to which PLC input and output modules are connected
CO3	To create ladder diagrams from process control descriptions
CO4	To use HMI Systems & PLC Networking
CO5	To use different types PLC functions, Data Handling Function
CO6	To classify different applications of Programmable Logic Control
202045	Geometric Dimensioning and Tolerancing Lab
CO No.	Course Outcomes
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.

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207002	Engineering Mathematics - III
CO No.	Course Outcomes
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 fluidflow problems.
CO5	SOLVE Partial differential equations such as wave equation, one and two dimensional heat flow equations.
202047	Kinematics of Machinery
CO No.	Course Outcomes
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

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Course Outcomes (COs)	
202523	Fluid & Thermal Engineering
CO No.	Course Outcomes
CO1	COMPARE various fluid properties in engineering applications
CO2	APPLY Bernoulli's equation to fluid flow problems
CO3	INTERPRETE and UNDERSTAND issues related to fluid flow losses in hydraulic circuits
CO4	SELECT appropriate control valve in automation circuits
CO5	EXPLAIN working air compressors and USE of compressed air in pneumatic circuits
CO6	UNDRSTAND sources of heat and remedies of heat removal in electronic circuits
202524	Principles of Robotics
CO No.	Course Outcomes
CO1	UNDERSTAND basic concepts of robotics
CO2	SELECT appropriate drive for Robotic applications.
CO3	To COMPARE and SELECT robot and end effectors as per application
CO4	To SELECT proper sensors for robot as per application requirement
CO5	To know about the basic mathematical modeling of robot
CO6	know about the fundamentals of robot programming and applications

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202050	Manufacturing Processes
CO No.	Course Outcomes
CO1	SELECT appropriate molding, core making and melting practice and estimate pouring time, solidification rate and DESIGN riser size and location for sand casting process
CO2	UNDERSTAND mechanism of metal forming techniques and CALCULATE load required for flat rolling
CO3	DEMONSTRATE press working operations and APPLY the basic principles to DESIGN dies and tools for forming and shearing operations
CO4	CLASSIFY and EXPLAIN different welding processes and EVALUATE welding characteristics
CO5	DIFFERENTIATE thermoplastics and thermosetting and EXPLAIN polymer processing techniques
CO6	UNDERSTAND the principle of manufacturing of fiber-reinforced composites and metal matrix composites
	Machine Shop
CO No.	Course Outcomes
CO1	PERFORM welding using TIG/ MIG/ Resistance/Gas welding technique
CO2	MAKE Fibre-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

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202052	Project Based Learning - II
CO No.	Course Outcomes
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

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