

CAD/CAM LAB

Course code		Year	IV	Semester	I
Course category	Professional Core	Branch	ME	Course Type	Lab
Credits	1.5	L-T-P	0-0-3	Prerequisites	-
Continuous Internal Evaluation	30	Semester End Evaluation	70	Total Marks	100

Course Outcomes: Upon successful completion of the CAD/CAM Laboratory, students will be able to:

CO's	Statement:	Blooms Level
CO1	Perform structural analysis using simulation tools to determine stresses, deflections, and behavior of trusses, beams, and shell structures.	L3
CO2	Analyze engineering components under different conditions to evaluate principal stresses, Von-Mises stresses, and failure criteria.	L4
CO3	Conduct dynamic, thermal, and stability analyses including natural frequency, harmonic response, heat transfer, and buckling using CAE tools.	L4
CO4	Develop CNC part programs for lathe and milling operations using manual programming for various machining operations.	L4
CO5	Apply rapid prototyping (RP) concepts and CNC programming knowledge to fabricate simple components and understand modern manufacturing practices.	L4

Contribution of Course outcomes towards the achievement of program outcomes & Strength of correlations (High :3, Medium:2, Low:1)													
CO's	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	2	2	3	3	-	-	1	1	-	1	3	1
CO2	3	3	2	3	3	-	-	-	1	-	1	3	1
CO3	3	2	2	3	3	1	-	-	1	-	1	3	2
CO4	3	2	3	1	3	-	-	-	2	1	1	3	3
CO5	2	2	2	1	2	1	-	1	2	2	1	2	3

Experiments	<u>CAD</u>	Mapped CO'S
Experiments to determine stresses, deflection, natural frequencies, harmonic analysis, HT analysis and buckling analysis.		
E1	Determination of deflection and stresses in 2D and 3D trusses and beams.	CO1
E2	Determination of principal and Von-mises stresses in plane stress, plane strain and axisymmetric components.	CO2
E3	Determination of stresses in 3D and shell structures (at least one example in each case)	CO3
E4	Estimation of natural frequencies and mode shapes, harmonic response of 2D beam.	CO3
E5	Steady state heat transfer analysis of plane and axisymmetric components.	CO3
E6	Buckling analysis	CO3
<u>CAM</u>		
E7	CNC part programming for turned components (i) Plain turning and facing (ii) Step Turning Operation (iii) Taper turning	CO4
E8	CNC programming for milled components (i) Circular interpolation (ii) End milling (iii) Pocket milling	CO5
E9	Automated CNC Tool path and G-Code generation using CAM packages.	CO5
E11	Study and demonstration of RP machine-creation of simple parts.	CO5
E12	Virtual 3D Printing Simulation lab using Vlabs.	CO5

E-Resources & other digital Material:

1. <https://3dp-dei.vlabs.ac.in/List%20of%20experiments.html>

