

Branch Name:	Mechanical Engineering (Production Technology)
Program Code:	ET201
Course Name:	Finite Element Methods Practical
Course Code:	2ET2010202P
Pre-requisite Course:	Knowledge of Applied Mathematical Techniques, Numerical Methods

Course Objectives:

1. Acquire fundamental understanding of the principles of CAD/CAM, including engineering drawing, geometric and surface and feature-based design
2. Applying CAD/CAM concept to product design and manufacturing
3. Exposure to CAD/CAM softwares.

Teaching and Examination Scheme:

Credit	Teaching Scheme Hours per week				Evaluation Scheme (Marks)								
					Theory (Marks)				Practical (Marks)				Total (Marks)
	L	T	P	Total	SEE		CCA		SEE		CCA		
					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
1	-	-	2	2	-	-	-	-	10	25	10	25	50

Subject Contents:

Sr. No	Detail of Practicals	Contact Hours
1	Introduction to Finite Element Analysis software	04
2	Solve 1D – Structural, thermal and fluid problems using FEA software.	02
3	Solve Plane truss problems, using FEA software. Include problems with symmetry.	02
4	Solve Beam problems with different boundary and loading conditions using FEA software.	02
5	Solve 2D problems using different element types in a FEA software	02
6	Solve 3D problems using FEA software.	02
7	Solve plate and shell problems using FEA software.	02
8	Solve Dynamic problems using FEA software.	02

List of Reference Books:

1. An Introduction to the Finite element Method, Reddy, J.N, McGraw – Hill
2. Finite Element Method in Engineering , Rao, Pergammon Press

3. Introduction to Finite Elements in Engineering, Chandrupatla T. R. and Belegunda A. D., PHI
4. Text book of Finite Element Analysis, Seshu P., PHI

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Learn the mathematical formulation of the finite element method and its applications	2 Understanding
CLO2	Learn how to implement the finite element method efficiently in order to solve 1D, 2D problems.	2 Understanding 3 Applying
CLO3	Formulate simple problems into finite elements.	2 Understanding
CLO4	Apply the capabilities of finite element software to solve the structural engineering and heat transfer Problems	3 Applying 4 Analyze
CLO5	Interpret and evaluate the quality of results obtained using FE software.	5 Evaluating
CLO6	Appreciate the importance of ethical issues pertaining to the effective utilization of FEA.	2 Understanding

Mapping of CLOs with POs & PSOs:

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes(PSOs)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CLO1	M	M				L							M	
CLO2			M	M									M	
CLO3			M		M								H	
CLO4					M		L		M		M			M
CLO5					H					L				M
CLO6								M			M	H		H

H: High, M: Medium, L: Low