

COMPUTATIONAL STRUCTURAL ANALYSIS LAB

VI-Semester								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
A5AE27	PCC	L	T	P	C	CIA	SEE	Total
		-	-	3	1.5	30	70	100
COURSE OBJECTIVES:								
The purpose of this subject is								
1. To train the students for structural analysis using FEM based software packages.								
2. To introduce the problems and modern calculation methods in stress analysis of aircraft structures, as well as their application to solving real problems.								
3. To introduce the modern computational methods for stress analysis related to airframe structures								
LIST OF EXPERIMENTS								
1. Introduction to ANSYS-APDL.								
2. Stress analysis using bar element.								
3. Drawing SFD and BMD using beam element.								
4. Determination of nodal displacement in truss structure.								
5. Structural analysis of stiffened plane panel.								
6. Structural analysis using axi-symmetric elements.								
7. Structural analysis of thin walled open and closed section.								
8. Model analysis of structures.								
9. Buckling analysis of column for various end conditions.								
10. Thermal analysis (convection and conduction) of structures.								
11. Thermal analysis of a composite structure (wall) in 2D.								
12. Aircraft Applications based structural problem-solving using FEM Packages								
Note: Ten experiments should be performed								
Reference Books:								
1. Tadeusz Stolarski, Y Nakasone and S Yoshimoto, Engineering Analysis with ANSYS Software, Butterworth-Heinemann, 2006.								
2. DivyaZindani, ApurbaKumafR Roy and Kaushik Kumar, Working with ANSYS: A Tutorial Approach, I K International Publishing House Pvt. Ltd, 2017								
Software's Required								
ANSYS & its equivalent								
COURSE OUTCOMES:								
At the end of the course the students are able to:								
1. Understand the basic features of ANSYS software tools.								
2. Analyze the torsion and shear stress for a section beams								
3. Analyze and design the various models in ANSYS.								
4. Analyze and design of fuselage and wing box								
5. Understand the different types design methodologies in CATIA								