Syllabus for Master of Technology

Civil Engineering (Structure)

Analysis of Laminated Composite Plates

01ST0303 (PSE)

Objective of the Course: Objectives of introducing this subject at Second year level in Masters of civil engineering are:

- To analyze rectangular composite plates using the analyticalmethods
- To Analysis of Finite Element Solutions for Bending ofRectangular Laminated Plates using FSDT

Credit Earned: 4

Students learning outcomes:

After successful completion of the course it is expected that student will be able to,

1. Analyse the rectangular composite plates using the analyticalmethods.
2. Analyse the composite plates using advanced finite elementmethod.
3. Develop the computer programs for the analysis of composite plates

Teaching and Examination Scheme

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial/ Practical Marks		Total Marks
Theory	Tutorial	Practical		ESE (E)	IA (M)	CSE (I)	Viva (V)	Term Work (TW)	
03	02	0	04	50	30	20	25	25	150

Detailed Syllabus

Sr No.	Title of the unit	Number of hours
1	**Introduction:**	
	Displacement Field Approximations for Classical Laminated Plate Theory (CLPT)	02
	First Order Shear Deformation Theory (FSDT),	03
	Analytical Solutions for Bending ofRectangular Laminated Plates using CLPT.	03
2	**Governing Equations**	
	Navier Solutions of Cross-Ply and Angle-Ply	**04**
	Laminated SimplySupported Plates And Determination of Stresses	04

	Levy Solutions for Plates with Other Boundary Conditions	02
	Analytical Solutions for Bending of Rectangular Laminated Plates Using FSDT	03
3	**Analytical Methods.**	
	Introduction to Finite Element Method, Rectangular Elements, Formation of Stiffness Matrix, Formation of Load Vector, Numerical Integration, Post Computation of Stresses.	07
	Finite Element Solutions for Bending of Rectangular Laminated Plates using CLPT	05
	Analysis of Rectangular Composite Plates using Analytical Methods.	**03**
	Finite Element Solutions for Bending of Rectangular Laminated Plates using FSDT.	02
	Finite Element Model, C0 Element Formulation, Post Computation of Stresses	02
		40

Suggested Theory Distribution

The suggested theory distribution as per Bloom's taxonomy is as per follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation					
Remember	Understand	Apply	Analyze	Evaluate	Create
10%	15%	10%	35%	20%	10%

Instructional Method and Pedagogy:

1. Use of Learning Management system like canvas
2. Demonstration through presentations on power point and videos and lectures
3. Brainstorming and group discussion sessions
4. Collaborative learning

Recommended Study Material:

Reference Book:

Mechanics of Laminated Composites Plates and Shells, Reddy J. N., CRC Press.

Web Resources

http://nptel.ac.in

***