Course Type	Course Code	Name of Course	L	T	P	Credit
DE	NMED506	Theory of Plates and Shells	3	0	0	3

Course Objective
• To study the behaviour of the plates and shells with different geometry under various types of loads. • To understand theory and design of plate and thin shell structures of different geometries. • To understand the basic governing differential equations involved for analysing the plate and shell structure. • To understand the solution techniques for bending of the plate and shells under various types of loading.
Learning Outcomes
Upon successful completion of this course, students will: • have a broad understanding formulation of engineering structure under loading. • have an understanding about different boundary conditions and there uses for the solution of the problem . • be able to solve inversely the bending problem of plate and shell.

Unit No.	Topics	Lecture Hours	Learning outcomes
1	Introduction to elasticity (pre-requisite of this course).	5	Understanding the basic concept of classical elasticity theory
2	Introduction to Plates: Classification of Plates, Basic Theory of Plate Bending, Governing Equations of Plates, Boundary Conditions on different Edges, Governing Equations for Deflection of Plate	10	Understand the basic theory, governing equations and design of plate structures.
3	Rectangular plates: Navier's Solution for Simply Supported Rectangular Plates, Levy's Solution for Rectangular Plates, Method of Superposition.	9	Students will learn the solution technique for the bending of a rectangular plate with different boundary conditions.
4	Circular Plates: Basic Relation in Polar Coordinates, Symmetrical Bending of Uniformly Loaded Circular Plates, Symmetrical	9	Students will learn the bending relationship of a circular plates under various loading condition.

	Bending under point loading, Annular plates.		
5	Shells structure: Introduction, Parametric representation of a surface, Governing Equations of Shells, Boundary Conditions, Governing Equations for bending of shells, Analysis of Shells	9	Understand the basic theory and design of shell structures of different geometries.
Total		42	

Text Books:

1. C. Ugural, *Stresses in Plates and Shells*, 2nd ed., McGraw-Hill, 1999

Reference Books:

1. S. P. Timoshenko and S. Woinowsky-Krieger, *Theory of Plates and Shells,* McGraw Hill Pub
2. Analysis of plates by T.K.Varadan and K.Bhaskar , Narosa Publishing House, 1999