Year & Sem:	Course Code: ME3502	Course Name: **Theory of Elasticity**	No. of Credits: 4	L	T&PS	P
				2	2	0

Introduction to analysis of strain, types of strain, strain tensors, strain transformation. Principal strains, strain invariants, octahedral strains, Mohr's Circle for Strain, equations of Compatibility for Strain,strain rosettes. Stress-strain relations, generalised Hooke's law, transformation of compatibility Condition from Strain components to stress components.Strain energy in an elastic body, St. Venant's principle, uniqueness theorem. Two dimensional problems in Cartesian coordinate system, plane stress and plane strain problems.Stress function, stress function for plane stress and plane strain cases. Solution of two-dimensional problems with different loading conditions by the use of polynomials. Two dimensional problems in polar coordinate system, strain-displacement relations, compatibility equation, stress- strain relations, stress function and biharmonic equation. Axisymmetric problems, thick-walled cylinders, rotating disks of uniform thickness, stress concentration, effect of circular holes on stress distribution in plates. Winkler's - Bach theory, stresses in closed rings. Torsion of prismatic bars, general solution of the torsion problem, stress function, torsion of circular and elliptic cross sections. Prandtl's membrane analogy, torsion of thin walled and multiple cell closed sections.

References/Text Books:

1. Y. C. Fung, "Foundations of Solid Mechanics", Prentice - Hall Publishers.
2. T.G. Sitharam and L.GovindaRaju, "Applied Elasticity", Interline Publishers, Bangalore.
3. S.P.Timoshenko and J.N. Goodier, "Theory of Elasticity", McGraw-Hill Book Company.
4. C.T. Wang, "Applied Elasticity", McGraw-Hill Book Company.

Lecture Plan: Unit-I & -II syllabus for MID-I, Unit-III & -IV syllabus for MID-II and Unit-V & -VI syllabus for MID-III examinations.

Video Lectures (Web Links):

1.
2.

Study Materials (Web Links):

1.
2.

Problems & Solutions (Web Links):

1.
2.

Assignments (Web Links):

1.
2.