ME 620 - STRESS METHODS IN MECHANICAL DESIGN

NJIT
New Jersey's Science &
Technology University

TEXTS: <u>Advanced Mechanics of Materials and Applied Elasticity</u>, A.C. Ugural and S.K. Fenster, Prentice-Hall,5th ed., 2012.

REFERENCES: <u>Theory of Elasticity</u>, S. Timoshenko and J. Goodier, McGraw-Hill Book Co.
<u>Applied Elasticity</u>, C.T. Wang, McGraw-Hill Book Co.

WEEK	TOPICS	READING ASSIGNMENT	PROBLEMS
1	Introduction, stress tensor, equilibrium of stresses	1.1-1.8	13,14, 26, 27
2	State of stress at a point, principal stresses, transformation of stresses, Mohr's Circle	1.9-1.17,	43, 55, 66
3	Strain tensor, normal and shearing strains, compatibility	2.1-2.4	1,3,4,5
4	State of strain at a point, stress-strain relations	2.5-2.10	9, 15, 17
5	Measurement of strain, strain energy, St. Venant's Principle	2.11-2.16	38, 41, 42, 52
6	Plane stress, plane strain, generalized plane strain	3.1-3.5	1a,5,6
7	**MIDTERM EXAM**		
8	Airy stress function, thermal stresses	3.6-3.8	14,16,19
9	Stress and strain relations in polar coordinates	3.9 - 3.10	13,25
10	Axisymmetrically loaded members, thick-walled cylinders	8.1-8.4	1,4,11,13
11	Shrink and force fit, compound cylinders	8.5	32, <u>Wang</u> (Pg. 58) Prob. 1,2
12	Stress concentration, small hole in a large plate	3.12	<u>Wang</u> (Pg. 62) Prob. 1,2,3
13	Rotating disks, constant and variable thickness, uniform stress	8.6-8.9	35, 41, <u>Wang</u> (Pg. 67) Prob. 1,2
14	Introduction to bending of plates and shells	13.1-13.7	------
15	**FINAL EXAM**		

<u>**Homework**</u> **will be assigned, collected and graded.**
<u>**Grading**</u> **will be based on the Mid-term Exam (40%)**
Final Exam (40%), and Homework/Classwork (20%)

The NJIT Honor Code and Professional Conduct will be strictly enforced.