MECH 6350.501
Advanced Solid Mechanics
Fall Semester, 2016
Mondays & Wednesdays 5:30 pm - 6:45 pm, GR 3.302

Instructor:	Hongbing Lu, Professor, Associate Head for Graduate Program Office: ECSN 2.528 Phone: (972) 883-4647 Email: hongbing.lu@utdallas.edu
Office Hours:	Tuesdays: 10:30 am - 12:00 pm, ECSN 2.528 and other times as available.
Teaching Assistant:	Zhe Xu, PhD student Email: zhe.xu1@utdallas.edu, Phone: 214-606-2260, Office: RL 1.718
Teaching Assistant Office Hours:	2:00 – 4:00 pm, Tuesdays, and other times by appointment Lobby, RL
Prerequisites:	MECH 4301 or equivalent
Textbook:	None.
Course Description:	This course provides a foundation for studying mechanical behavior of materials analyzing deformation and failure problems common in engineering design and materials science. Topics to be covered include elasticity, elastic stability, wave propagation, plasticity, and fracture. This course explores static and dynamic stress analysis, two- and three-dimensional theory of stressed elastic solids, analyses of structural elements with applications in a variety of fields, variational theorems and approximate solutions.
Course Objectives	The objective of this course is to provide the fundamental concepts and theories of solid mechanics and their applications to mechanical engineering.
Homework:	Homework will be assigned throughout the semester and must be turned in at the beginning of the class of the due day. No late homework will be accepted. Discussion of homework problems among students is acceptable; however, each student must sit down and work problems without assistance. A logical progression from problem to solution must be shown. It is not allowed to refer to last year's homework solutions.

Homework Solutions: Homework Solutions will be posted on the website eLearning.utdallas.edu

Grade Basis:

Homework:	20 points
Mid-term Exam #1	25*
Mid-term Exam #2	25*
Mid-term Exam #3	25*
Final Exam	30
Total	100

*The grades from the two better scores in the three mid-term exams will be used to calculate the overall grade of the course.

Policy on the Use of Electronics: Prohibited in class.

References

Sadd, Martin H. (Martin Howard), *Elasticity Theory, Applications and Numerics*, 2005 (Available online at UTD Library)

Achenbach, J.D., *Wave Propagation in Elastic Solids*, Amsterdam, 1973

Fung, Y.C., Tong, P. *Classical and Computational Solid Mechanics*, World Scientific, 2001

Lai, W.M., Rubin, D. and Kremple, E., *Introduction to Continuum Mechanics*, Pergamon Press, 1993

Kanninen, M.F. and Popelar, C.H., *Advanced Fracture Mechanics*, Oxford University Press, 1985

Knot, J.F., *Fundamentals of Fracture Mechanics*, Cambridge University Press, 1975

Shames, I.H. and Cozzarelli, *Elastic and Inelastic Stress Analysis*, Prentice Hall, 1992

Timoshenco, S. and Goodier, J.N., *Theory of Elasticity*, McGraw-Hill Book Company, New York, 1970

Timoshenco, S.P. and Woinowsky-Krieger, S., *Theory of Plates and Shells*, McGraw-Hill, 1959

Ugural, A.C., *Stresses in Plates and Shells*, McGraw-Hill, 1981

Wang, C.T., *Applied Elasticity*, McGraw-Hill Book Company, New York, 1953