國立清華大學
National Tsing Hua University

Professor Jen-Yuan (James) Chang
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PME 534500 Elasticity

Fall 2013

Instructor:	Prof. Jen-Yuan (James) Chang
Credits:	3 credits.
Class meetings:	**Mondays** 09:00 AM~12:00 noon in Engineering Building I – R430.
Office hours:	Mondays 5:00PM~6:00PM in Engineering Building I – R509.
Course description:	This is the course covering a variety of important problems in solid mechanics. Topics covered in this course include torsion of non-circular cross sections, field equations of elasticity with boundary conditions, stress concentrations, flexure and large deformation of beams, and a number of classical plane stress/plane strain solutions in rectangular and polar coordinates. Emphasis is given to theory of elasticity and derivations of classical elasticity solutions. Comparisons are also made between solutions derived via full theory of elasticity and simplified solutions obtained from undergraduate strength of materials course.
Textbooks:	Sadda, Adel S., **Elasticity – Theory and Applications,** 2nd Edition, Revised and Updated, Florida, USA, 2009. Lecture notes provided by Professor Chang.
References:	Timoshenko, S. P. and Goodier, J. N., Theory of Elasticity, 3rd Edition, McGraw Hill, New York, USA, 1987. Sadd, M.H., **Elasticity – Theory, Applications, and Numerics,** 2nd Edition, Elsevier Academic Press, Oxford, UK, 2009 Boresi, A.P., Chong, K.P., and Lee J.D., **Elasticity in Engineering Mechanics**, 3rd Edition, John Wiley & Sons, Inc., New Jersey, USA, 2011.
Teaching Method:	Classroom lectures in English with teaching materials posted in Moodle.
Assessments:	Homework 25% Midterm Exam 25% Final Exam 30% Semester group project 20%
Homework Policy:	Problem sets will be assigned regularly and will usually be due one week later. Usually combination of analytical, computational, and graphical approaches will be expected in homework. Copy of homework is not allowed. However, you are allowed to *discuss* homework problems with one another in order to teach each other how to solve problems. You are NOT allowed to copy work from someone else OR to work step-by-step through a problem with someone else. The work you hand in with your name on it must be your attempt to work through the problem. As a general guideline, oral communication regarding the homework is allowed, whereas written communication is not allowed. Because of the past pace of the class, please avoid handing in late homework. If homework is submitted after solution set is distributed, 50% of the grade will be taken off.

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Course Outlines

1. Mathematical Preliminaries
2. Review of Strength of Materials
3. Analysis of Strains
4. Analysis of Stress
5. Constitutive Equations & Problem Classification
6. Torsion
7. Flexure
8. Large Deflection Beam Theory
9. Stress Concentration

Disability Resource Services Reasonable Accommodations Statement

Reasonable accommodations are available for students who have a documented disability. Classroom accommodation forms are available through the Disability Services Office. If you have a documented disability (even temporary) make an appointment as soon as possible with the university student services. You will need to provide your instructor with the appropriate classroom accommodation form from Disability Services during the first week of class. Late notification may mean that requested accommodations might not be available. All accommodations for disabilities must be approved through the Disability Services Coordinator.