

## ME5339

### Structural Aspects of Design

(Spring semester 2007)

This course provides analytical methods of structural analysis and failure theories that are used in design analysis. The course also provides analytical methods for fatigue life assessment.

Textbooks: "Advanced Strength and Applied Elasticity-4<sup>th</sup> Edition"

by Ansel C. Ugural and Saul K. Fenster

"Fundamentals of Metal Fatigue Analysis" by Bannantine, Comer and Handrock

#### Course Contents

##### Part I: Structural Analysis

Chapter 1:	Analysis of Stress	(1 week)
Chapter 2:	Strain, Stress/Strain Relationship	(1 week)
Chapter 3:	2-D Problems in Elasticity	(1½ weeks)
Chapter 4:	Criteria for Material Failure	(1 week)
Chapter 5:	Analysis of Beam-Bending	(1 week)
Chapter 6:	Torsion of Prismatic Bars	(1 week)
Chapter 7:	Axisymmetrically Loaded Members	(1 week)
Chapter 8:	Energy Methods	(½ week)
Chapter 9:	Elastic Stability	(½ week)

##### Part II: Fatigue and Fracture Mechanics Analysis

Chapter 10:	Fatigue Considerations in Structural Design	(1 week)
Chapter 11:	Fracture Mechanics Application in Structural Design	(1 week)
Chapter 12:	Notched Sensitivity	(1 week)
Chapter 13:	Variable Amplitude Loading in Fatigue	(1 week)
	Final Review	(½ week)
	Mid-term exams and Solution	(1 week)
	Final Exam	(1 week)
	Spring Break	(1 week)
	Total	16 weeks

Web: [www-woolf.uta.edu/me5339](http://www-woolf.uta.edu/me5339) ID:me5339 password:

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(Spring semester 2007)

Instructor: Wen S. Chan

#### Grading System

#### Tentative Grading Scale

• <u>homework</u>	120 points	A 420 or above	
		B 365--419	
• <u>mid-terms</u>	180 points	C 300--364	
		D 225--299	
• <u>final</u>	200 points	F 224 or below	<b>Semester total: 500 points</b>

Note: The cut-off score for grade may be changed depending the entire class performance.

Late homework penalty: 20% deduction per week after due date.

Class: Time & Room: TTH11:00-12:20pm @ NH Room 112

Office: Room 300B at Woolf Hall

Office Hours: Walk-in anytime or

Tuesday and Thursday 3:30-4:30 PM

Telephone: 817-272-5638; Fax: 817-272-2952; E-mail: [chan@uta.edu](mailto:chan@uta.edu)

#### American With Disabilities Act

The University of Texas at Arlington is on record as being committed to both the spirit and letter of federal equal opportunity legislation; reference Public Law 93112 - The Rehabilitation Act of 1973 as amended. With the passage of new federal legislation entitled Americans with Disabilities Act (ADA), pursuant to section 504 of the Rehabilitation Act, there is renewed focus on providing this population with the same opportunities enjoyed by all citizens.

As a faculty member, I am required by law to provide "*reasonable accommodation*" to students with disabilities, so as not to discriminate on the basis of that disability. Student responsibility primarily rests with **informing faculty at the beginning of the semester and in providing authorized documentation through designated administrative channels**. If you require an accommodation based on disability, I would like to meet with you in the privacy of my office during the first week of the semester to make sure that you are properly accommodated.

#### Academic Dishonesty

It is the philosophy of the University of Texas at Arlington that academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form. all persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. Discipline may include suspension or expulsion from the University.

"Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts." (Regents' Rules and Regulations, Part One, Chapter VI, Section 3, Subsection 3.2, Subdivision 3.22)