CIVL 7116/8116 STRUCTURAL DYNAMICS

SPRING 2007 THE UNIVERSITY OF MEMPHIS

Instructor's Name:	Dr. Shahram Pezeshk; Office ES104B; Phone: 678-4727 Email: spezeshk@memphis.edu	
Date:	January 17, 2007	
Hours Credit:	3 Semester Hours	
Office Hour:	Open door policy	
Course Meetings:	5:30 p.m. – 6:55 p.m. MW; Room EN114	
Textbook:	Dynamics of Structures; Theory and Applications to Earthquake Engineering, by Anil Chopra, Prentice Hall, Third Edition.	

Recommended Textbooks:

- Structural Dynamics; Theory and Computation by Mario Paz, Van Nostrand Reinhold
- Dynamics of Structures, by Ray W. Clough and Joseph Penzien, McGraw Hill.
- Structural Dynamics, Theory and Application, J.W. Tedesco, W.G. McDougal, and C.A. Ross, Addison Wesley.
- Dynamics of Structures, by J.L. Humar, Prentice Hall.

COURSE DESCRIPTION

Dynamic analysis of single-degree-of-freedom structures, response to general dynamic loading, modal analysis of multistory shear buildings, introduction to nonlinear and random vibration.

GRADING

The final grades for the course will be based on the following percentages:

Homework	30%
Exams	40%
Final Exam	30%

100%

ATTENDANCE

Regular attendance is necessary to maintain pace with the lectures and the progress of the class. If you must be absent, please make sure you know the assignment for the following class meeting and turn in any work due that day.

MAKE-UP WORK

Generally, if a student misses an exam or a homework assignment a score of zero will be awarded. However, the student may be allowed to make-up an exam or turn in his/her homework late if a valid reason for the absence is presented to the instructor at the next class meeting. If the student must miss an exam because of a conflict in his/her schedule the student must notify the instructor in writing at least two days prior to the absence. Late homework problems will receive only a maximum of 50% of the grade.

COURSE OUTLINE

- 1. Introduction to the course
- 2. Single-Degree-of-Freedom (SDOF) Systems
 - Equations of Motion: Basic SDOF System
 - Free Vibration Response
 - Response to Harmonic Excitation
 - Response to Periodic Excitation
 - Response to Impulsive Force
 - Response to Arbitrary Dynamic Force
 - o Linear Systems
 - o Nonlinear Systems
 - Fourier Analysis and Response in the Frequency Domain
 - Generalized Coordinates and Rayleigh's Method
 - Response to Earthquake Ground Motion & Earthquake Response Spectrum
 - Linear Systems
 - Nonlinear Systems
- 3. Multiple-Degree-of-Freedom (MDOF) Systems (Lumped Parameter)
 - Equations of Motion
 - Free Vibration Response
 - Computation of Natural Frequencies and Modes of Vibration
 - Modal Analysis of Dynamic Response
 - Damped Motion of Shear Buildings
 - Time History Response of MDOF Systems
 - Dynamic Analysis of Systems With Distributed Properties
 - Random Vibration

February	26	Exam 1
March	28	Exam 2
March	5-11	Spring Break
May	2	Final Exam, Wednesday, 5:30pm - 7:30pm