

Vibration and Shock, MAE 467/567

Spring 2003

Instructor: Dr. R. C. Wetherhold, 606 Furnas, mecrew@acsu.buffalo.edu,
645 2593 x2241

Office time: MW 3:00-4:30 (to be confirmed) *and by appointment* (meant to be encouraging, not discouraging)

TA, office times: Tung King See, tungsee@eng.buffalo.edu; 3:30-4:45 TR.

Web location: <http://www.eng.buffalo.edu/Courses/mae467> for hw solutions, test solutions, extra notes, etc.

Class time, location: M W F, 12:00 - 12:50 from 1/13/2003 - 4/28/2003, 260 Capen

NOTE: We may schedule 2 or so Problem Sessions outside of class;

Text: WT Thomson, MD Dahleh, Theory of Vibration with Applications, 5th ed (1998).

Course Objective: This course should enable you to model and analyze the vibration behavior of single- and multiple-degree of systems as well as of simple continuous systems (beams). At the end of this course, you should be familiar with:

- Derivation of equations for free and forced vibration of lumped parameter systems in steady-state and transient conditions, including damping;
- Solution methods, primarily analytical, for these equations and insight into the design variables
- The use of energy methods, including Lagrange's equations
- Derivation of equations for continuous systems and their solutions

The topics to be covered are as follows*:

Chapter	Sections	Contents
1	all	Oscillatory motion
2	all	Free vibration
3	all	Harmonically excited vibration
4	1 to 6	Transient vibration
5	all	Systems with two or more DOF
6	selected	Properties of vibrating systems
7	all	Lagrange's equation
9	selected	Vibration of continuous systems
12	selected	Classical methods

Word to the Wise: Be active on your own behalf! Review what I do and come to class prepared to ask questions.

Grades and Grading Policies*:

3 (equal) In-class Tests	90% (Grad students may have extra problems)
Homework	10%

Test Schedule*: Current plans are to hold Test #1 on 2/21 on material through 2/14, Test #2 on 4/2 on material through 3/26 and Test #3 either on 4/28 or (more likely) at the scheduled finals time.

* means that these items are subject to change on minimum of 1 week notice.

Homework: *“Homework is where the learning occurs.”*

Do not to allow HW to pile up, since completing it is necessary to keeping up with the class. No extensions will be given for the HW due dates; it is best to hand in what you have completed. Homework is due at the **beginning** of class. (That means 12:00, right?) I may grade all or part of the homework. You may be asked to present problems before the class.

Other notes: If you must miss a test or homework, you should come to me or contact me **before** the date. If you are ill, get a medical proof.

Academic Honesty: This is the beginning of your professional career, and there are standards to be observed. Any dishonesty in any form (cheating, plagiarism, etc) is grounds for your receiving an F in this course; I may also pursue additional measures as allowed for by the University.