ME1020/ME2020 Mechanical Vibrations.

J. S. Vipperman jsv@pitt.edu

A copy of this syllabus, which hyperlinks below is available at the course web page:
http://www.pitt.edu/~jsv/courses/me1020-2020

Contact Information:

Dr. Jeffrey Vipperman
531 Benedum Hall
412-624-1643
jsv@pitt.edu

Tentative Office Hours:

- Monday 11:00-1:00
- By appointment
- Many issues can also be resolved by email

Text and Printed Materials:

- Engineering Vibration, 2nd Edition, Daniel J. Inman, Prentice Hall, Upper Saddle River, NJ, 2001.
- Application notes, etc. that will be distributed from time to time.

Email:

If you use a different email address from you Pitt account, please set up email forwarding, which can be done by logging into: http://accounts.pitt.edu/ with your Pitt userid and password. I periodically contact the class by email and otherwise you won't receive them. Call CSSD at (412) 624-HELP [4357] or http://technology.pitt.edu/Help.aspx if you don't know what your userid and password are.

Course Prerequisites:

Undergraduates: ME1014 Dynamic Systems, or equivalent

Course Objectives:

To introduce the foundations of vibration theory and to show its application in the analysis and design of mechanical systems.

Topics include:

- Behavior Mechanical elements
- Free response of single and multiple degree of freedom (SDOF/MDOF) systems
- Forced response of single and multiple degree of freedom (SDOF/MDOF) systems
- Vibration control/design
- Distributed parameter systems
- Testing (if time permits)

Course Policies:

Reading Assignments: Reading assignments will be given for the homework and include readings that should be completed before the material is covered in the next lecture.

Homework Assignments: Problems are assigned to give you practice in applying the material discussed in class and in the reading assignments. The problems assigned on the Course Syllabus for a given week will be collected for grading at the beginning of class of the following week. In general, *no late homework will be accepted.*

Design Project: An open-ended design problem will be assigned during the latter half of the term, the due-date of which is to be announced. *No late design projects will be accepted.*

Tests: There will be one test, tentatively scheduled for **February 27, 2007**. Makeup tests will be given only for extreme circumstances. You must see me *before* the test date to make necessary arrangements. If, for some unforeseen reason, classes are canceled on the day of a scheduled test, the test will be given the next time we meet.

Final Exam: The final exam will either be given according to the graduate or undergraduate policy (will clarify before the end of the course).

Computing Requirements: The use of a computer and MATLAB will be required for the course. A public computing cluster with MATLAB on Windows XP and Unix platforms is available in Room 1075 Benedum Hall. You can also purchase MATLAB with many of the toolboxes from the University of Pittsburgh Software Licensing Services for $10!

Please download the Engineering Vibration Toolbox, which will also be used in the course from: http://www.cs.wright.edu/people/faculty/jslater/vtoolbox/vtoolbox.html

Grading:

Midterm	30%
Final Exam	30%
Project	20%
Homework	20%

References:

Math:

- Schaum's Mathematical Handbook of Formulas & Tables. Spiegel, Murray R., 1998, ISBN: 0070382034, The McGraw-Hill Companies

Modal Analysis:

- Modal Testing: Theory, Practice and Applications, D J Ewins, January 2000, Research Studies Press Limited, ISBN: 0-86380-218-4

Vibrations:

- 0070413428Mechanical Vibrations, J.P. DenHartog, Dover Publications, 1985 (reprent from circa 1956)Schaum's Outline of Mechanical Vibrations, McGraw-Hill, 1996**MATLAB:**
- Mastering MATLAB 7 (or Mastering MATLAB 6), Hanselman, Duane C.; Littlefield, Bruce C., 2003 and 2004, Prentice Hall
- Mathworks (MATLAB) documentation. The toolbox manuals often have great information and theory in them: http://www.mathworks.com/access/helpdesk/help/helpdesk.html

If you have a disability for which you are or may be requesting an accommodation, please contact both me and Disability Resources and Services, 216 William Pitt Union, (412) 648-7890/(412) 383-7355 (TTY), as early as possible in the term. DRWS will verify your disability and determine reasonable accommodations for this course. DRWS website: http://www.drs.pitt.edu