Syllabus for MAE 422
Dynamics of Mechanical Systems
Spring Semester 2006
Tuesday, Thursday
9:25-10:40AM
Room EGC 220

Instructor: Hodge Jenkins, Ph.D., P.E.
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Hours: As posted, drop by, or by appointment

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Textbooks and Supplies:

Web Sites: http://faculty.mercer.edu/jenkins_he/MAE422.htm

Catalog Description:
Planar (two-dimensional) kinetics of rigid bodies: force and acceleration, work and energy, and impulse and momentum. Three dimensional kinematics of rigid bodies. Three dimensional kinetics of rigid bodies: force and acceleration. Introduction to vibrations. Design of systems to produce different types of motion.

Course Objectives:
Upon successful completion of this course, you should be able to perform the following:
1. two dimensional rigid body kinetics using force and acceleration
2. two dimensional rigid body kinetics using work and energy
3. two dimensional rigid body kinetics using impulse and momentum
4. three dimensional rigid body kinematics
5. three dimensional rigid body kinetics using force and acceleration
6. three dimensional rigid body kinetics using work and energy
7. three dimensional rigid body kinetics using impulse and momentum
8. discrete element mechanical vibration analysis

Prerequisites:
Grade of C or better in EGR 233, MAE 310
Grading:

Homework 10%
Quizzes 20%
Tests (2) 20% each
Final Exam 30%

Grade Averages: A (90-100), B (80-89), C (70-79), D (60-69), F(<60)

Homework:
Homework is a part of the grade as performing the homework is the only way to have a good understanding of the course material, and form good engineering work habits. Problems will be assigned periodically in class. Assigned homework will be collected at the beginning of class on the date due. Late homework will not be accepted. The lowest homework grade will be discarded.

Homework must be done neatly on engineering paper in pencil. Please place your name, date and assignment number on each page in the upper right hand corner. Messy, unorganized papers will receive less than full credit. Sketches should be done using appropriate tools (straight edge, pencil, etc.) Show all forces, coordinate systems, governing equations that are used in the solution. Equations and solutions must follow logically, step by step. Thus, your complete solution is supported by what you have presented. Show all your work. Generally, leave variables in the equations until the solution is found, then substitute the values for the variables to obtain the specific answer in the correct units. Begin each problem on a new sheet of paper, and staple all the sheets together in order.

You may work together in small groups, but copying is not permitted. Each student must turn in his own work. DO NOT COPY HOMEWORK.

Solutions will be placed in the library on 2-hour reserve.

Quizzes:
A short, 10 to 15-minute problem or question will be handed out periodically. Quizzes may or may not be announced. Quizzes will be closed notes and closed book, unless otherwise stated. A calculator is recommended.

Tests:
There will be two 50-minute tests of approximately 4 problems during the semester. Problems will be similar to the homework and quizzes. All tests will be closed notes and closed book. A calculator is recommended. No make-up tests will be given without a documented excuse.

Final Exam:
There will be a comprehensive final exam. It will be closed notes and closed book. It will consist of approximately 7 to 8 problems similar to those on the tests, homework or quizzes.

The final exam will be given as follows:
Saturday, May 6, 2006 9:00 AM - 12:00 PM
Course Standards:
1. **Assignments are due at the beginning of the class period on the date due.** In an exceptional circumstance you may petition to hand in an assignment late. If granted, the grade will be reduced one letter grade per day late.

2. **Attendance is required** due to the large amount of in-class work we will be doing. You can’t “make up” experiential learning. More than three absences will result in grade penalties.

3. **Grading** encompasses every aspect of the course, from participation through final products. You can assume that every task requested directly or indirectly factors into your grade. For example, having your work prepared for your group is as important as having it ready for me. Regular feedback will be given on documents handed in.

4. You are encouraged to schedule a **conference** at any point that you need it. If you need to see me, catch me after class to schedule a time or call to get on my calendar.

5. Please turn off cell phones and pagers before entering the classroom.

6. The **honor code** provisions as outlined in the *Bulletin* and in the student handbook, *The Lair*, will be assumed for everyone. It should be clear from class discussion which projects will be collaborative and which ones must be individual. When in doubt, please ask to avoid potentially embarrassing situations. Plagiarism is a violation of the honor code and is prohibited.

7. Students with a documented disability should inform the instructor at the close of the first class meeting. The instructor will refer you to the office of Student Support Services (SSS) for consultation regarding evaluation, documentation of your disability, and recommendations for accommodation, if needed. Students will receive from SSS the *Faculty Accommodation Form*. On this form SSS will identify reasonable accommodations for this class. The form must be given to the course instructor for signature and then returned to SSS.

   To take full advantage of disability services, it is recommended that students contact the Office of Student Support Services, immediately. The office is located on the third floor of the Connell Student Center.

8. This syllabus is subject to change.

**Electronic Communication:**
Electronic communication is an important adjunct to face-to-face communication, including from professor to students, students to professor, and students to students. You must have regular access to your e-mail. Students are required to use their Mercer assigned e-mail address for all electronic communication. Access to the Web and to the Internet is also integral to the class work. A number of laboratories on campus will provide access, in addition to ECG 102 and 216-A.

**Course E-Mail Instructions**
An automatically generated class e-mail list based on course enrollment in the Student Information System will be used. The list will be updated daily using the current course enrollment; as students are added to or removed from class rosters, the lists will be updated accordingly.

The list name will be the same as the course id and section number with all spaces and punctuation removed (e.g., MAE422001). To send a message to your class list, you would address the message to: MAE422001@Mercer.edu

Note that entries are not case sensitive. The faculty person's Mercer e-mail address and the student's Mercer e-mail address will be used to create these lists.