Syllabus for EGR 232, Section 3
Statics/Solid Mechanics
Fall Semester 2011
Meeting Days: Monday, Wednesday, Friday
11:00-11:50 AM
Room EGC 208

Instructor: Hodge Jenkins, Ph.D., P.E., Associate Professor
Department of Mechanical Engineering

Office: Suite 101-D, School of Engineering
Hours: As posted, drop by, or by appointment
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Textbooks and Supplies:

Web Sites:  http://faculty.mercer.edu/jenkins_he/egr232.htm
http://www.ptc.com/

Catalog Description:
Newton’s laws, force and vectors, rigid body equilibrium, beams, trusses, and centroids. Stress, strain, material properties, axial deformation. Stresses and deformation in beams and shafts. Column buckling.

Course Objectives:
Upon successful completion of this course, you should be able to do the following:

- Prepare appropriate free body diagrams.
- Solve 2-D and 3-D particle and rigid body equilibrium problems.
- Solve problems involving moments.
- Solve problems involving friction.
- Solve problems involving static stresses and strains.
- Calculate axial deformation of a structure.
- Solve torsion shafts problems.
- Calculate beam deflections under various loading and support conditions.
- Calculate shear and bending moment stresses in beams, using shear and bending moment diagrams.

Corequisites: MAT 192, PHY 161
Course Content:
Newton’s Laws, units, Free Body Diagrams, Problem-solving skills, Force Resolution, Particle equilibrium 2D & 3D, Stress and Strain, Moments, Friction, Centroids, Rigid Body Equilibrium in 2-D & 3-D, Frames, machines, Torsion, Shear and bending stresses in beams, Beam deflections, Column buckling, software modules using Pro-Engineer/Pro-Mechanica

Grading:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>10%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>15%</td>
</tr>
<tr>
<td>Tests (3)</td>
<td>15% each</td>
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<tr>
<td>Final Exam</td>
<td>30%</td>
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</tbody>
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Grade Averages: A (90-100), B (80-89), C (70-79), D (60-69), F(<60)

Homework:
Homework is an important part of learning 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 and will be periodically collected. Late homework will not be accepted.

Follow the problem solving skills you have learned in EGR126. Homework must be done neatly on engineering (or graph or plain white) 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, compass). Show all forces, coordinate systems, governing equations, assumptions 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. **Numbers without units are meaningless. You may put up to 2 problems per page. Do not write on the backs of paper. Have problems ready to submit on the due date.**

You may work together in small groups, but copying is not permitted.
**Each student must turn in his own work. DO NOT COPY HOMEWORK.** Copying work and submitting as your is an Honor Code violation.

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

Quizzes:
Short, 10-15 minute problem or question will be handed out periodically. **Quizzes may or may not be announced. Expect a quiz everyday.** Quizzes will be based on the homework assigned. Quizzes will be closed notes and closed book. A calculator is recommended.

Tests:
There will be Three 50-minute tests of 3 or 5 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.

The final exam will be given **Thursday 12/15, 9:00 a.m. - 12:00 p.m. (noon).**
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. You are encouraged to schedule a **conference** at any point that you need it. If you need to see me, catch me after class, call or e-mail me to schedule a time.

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

6. **NO TEXTING** in the classroom is permitted.

7. Please do not use computers for entertainment during class, as it may distract other students.

8. 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.

9. Students requiring accommodations for a disability should inform the instructor at the close of the first class meeting or as soon as possible. If you are not registered with Disability Services, the instructor will refer you to the Disability Support Services office for consultation regarding documentation of your disability and eligibility for accommodations under the ADA/504. In order to receive accommodations, eligible students must provide each instructor with a “Faculty Accommodation Form” from Disability Services. Students must return the completed and signed form to the Disability Services Coordinator on the 3rd floor of the Connell Student Center. Students with a documented disability who do not wish to use academic accommodations are also strongly encouraged to register with Disability Services and complete a Faculty Accommodation Form each semester. For further information, please contact Carole Burrowbridge, Disability Services Coordinator, at 301-2778 or visit the website at [http://www.mercer.edu/stu_support/swd.htm](http://www.mercer.edu/stu_support/swd.htm)

10. 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. If you do not have an active e-mail address on the first day of class, please secure one. 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 EGC 216. Information will be periodically given via e-mail. You must check your Mercer student e-mail regularly.