1 Basic Information

Instructor : Dr. Ashok Ramasubramanian
Office : 207 Steinmetz Hall
Lab : 202 Butterfield Hall (check here if I am not in my office)
Phone : (518) 388-8366
e-mail : ramasuba@union.edu

Office hours : Wednesday & Friday 9:00 AM to 10:30 AM or by appointment
Walk-ins welcome

Lecture : Monday, Wednesday, Friday from 10:30 AM to 11:35 AM, Room N201
Lab session : Thursday 1:55 PM to 4:45 PM, Room N205

Course website : Use Blackboard, online.union.edu

2 Due Dates

Homework Assignments : Monday at the beginning of class
Project : Friday March 13 at the beginning of class

3 Grading

Typical letter grades:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
<th>Typical Range</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>93-100</td>
<td>A</td>
</tr>
<tr>
<td>A-</td>
<td>90-92.99</td>
<td>C+</td>
</tr>
<tr>
<td>B+</td>
<td>87-89.99</td>
<td>C</td>
</tr>
<tr>
<td>B</td>
<td>83-86.99</td>
<td>D</td>
</tr>
<tr>
<td>B-</td>
<td>80-82.99</td>
<td>F</td>
</tr>
<tr>
<td>C</td>
<td>77-79.99</td>
<td>Less than 60</td>
</tr>
<tr>
<td>C-</td>
<td>73-76.99</td>
<td></td>
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<tr>
<td>D</td>
<td>70-72.99</td>
<td></td>
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<tr>
<td>D-</td>
<td>67-69.99</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>Less than 60</td>
<td></td>
</tr>
</tbody>
</table>

Note: These ranges may be amended based on the statistical distribution of the class's grades

4 Course Outline

This course will cover many of the sections of Beer and Johnston that were skipped in MER 214: principal stresses and strains (Cook 2.1–2.5), stress concentrations (Cook 2.7), fail-
ure criteria (Beer 7.7–7.8, Cook 3.5–3.6), plastic torsion and torsion in noncircular shafts
(Beer 3.9–3.13), plastic bending and curved beams (Beer 4.8–4.10, 4.15), deflection of
beams (Beer 9.1–9.8), unsymmetric bending of beams (Beer 4.13–4.14), columns (Beer
10.1–10.7), energy methods (Beer 11.1–11.14), and if time permits, beams on elastic
foundations (Cook 5.1–5.7).

The laboratory section will introduce Finite Element Analysis. We will use two software packages to do the analysis: ABAQUS and CosmosWorks. The following laboratory schedule is preliminary and will likely change.

| Lab 1 (Jan 8) | Introduction to ABAQUS |
| Lab 2 (Jan 15) | Introduction to the theory of finite elements |
| Lab 3 (Jan 22) | An application of finite elements |
| Lab 4 (Jan 29) | Introduction to COSMOSWorks |
| Lab 5 (Feb 5) | Large deformation considerations in finite elements |
| Lab 6 (Feb 12) | Element shape and order selection |
| Lab 7 (Feb 19) | Work on project |
| Lab 8 (Feb 26) | Work on project |
| Lab 9 (Mar 5) | Work on project |
| Lab 10 (Mar 12) | Work on project |

5 Notes on Homework

1. Homework assignments will be posted on Monday and are due the following Monday in class. **Late homework will not be accepted.** If the homework is not turned in time, your grade for that homework will be zero. In case of special circumstances – religious observances, athletic travel and the like – please contact me beforehand to make alternative arrangements.

2. **Homework assignments that are turned in by Friday will receive 10 extra points.**

3. **Take pride in your work and do your best.** Discussion with your peers is not only permitted, but also encouraged. However, you are responsible for your own work and each person must turn in a separate assignment even when significant collaboration is involved. Always list the persons with whom you collaborated.

4. Even though working together is allowed, each person is expected to understand what she or he is writing down.

5. **I expect you to start working on the homework early. Starting it the day before it is due is a terrible idea.** You are expected to read ahead and start solving problems even though the material has not yet been covered in class.
Reading ahead will also greatly enhance your classroom comprehension. I strongly encourage you to use the office hours to clarify questions regarding the homework.

6. Homework presentation:
   (a) Homework should be neatly done and pages must be stapled together.
   (b) Label all axes when presenting graphs. Always use units for physical quantities.
   (c) All graphs should be made using MATLAB. Excel graphs are not permitted.
   (d) Attach all rough work at the end.

6 Notes on Lab Assignments and Projects

1. A project report is expected at the end of class. This will account of 50% of the grade allocated for labs and project. Each lab assignment will be graded to account for the remaining 50%.

2. Details on the project will be provided soon.

3. Some lab periods may be appropriated to cover material left out in the lecture periods.

4. Lab attendance is mandatory. Unauthorized excuses will be penalized

7 Notes on Exams

1. Both exams are cumulative and take-home. You may use any class notes you have taken and any of the texts mentioned in this syllabus. Nothing else is permitted.

2. Further instructions will be given along with the exams.

8 Honesty Policy

In Spring 2008, two seniors failed my class, received a two-term suspension, and did not graduate as a result of being academically dishonest; do not let this happen to you. The ME department takes academic honesty seriously.

1. Cheating of any kind will not be tolerated. Cheating on homework assignments and lab reports will at least result in a zero for that particular assignment. Additional penalties, including failure in the class, may be imposed depending on the severity of the offense. Cheating on exams will likely result in a failing course grade.
2. Copying homework solutions from others, solution manuals, or from previously released solutions constitutes cheating, as does plagiarizing preexisting lab reports. Please be careful to acknowledge, in writing, the contributions of others if you worked together on an assignment. Do not accept credit for work that you do not understand.

3. Ask me if you have any doubt about what might be considered academically dishonest. When in doubt, ask!

4. Engineering as a profession cannot survive if the people who practice it are not honest. You are professionals and I expect professional conduct.

9 Class Policies

1. Please show professionalism and courtesy during class. Please arrive on time, be prepared to participate in class, and do not disturb the class by talking, reading the paper, etc. Please do not leave and reenter the class during lecture.

2. Using the computer or other electronic devices during class or lab to check email, surf the net, or play Solitaire is not permitted. Computers are to be used only when I ask you to do so.

3. Please turn off all cell phones, beepers, palmers, and other electronic devices before class and lab.

4. Leaving the classroom to make/answer cell phone calls is not acceptable. Eating in the classroom is not acceptable.

5. Lecture attendance is not mandatory. However, you are responsible for any material presented in class.

10 Course Textbooks

Title : Mechanics Of Materials
Author : Beer, Johnston, DeWolf
Publisher : McGraw Hill
Edition : Fifth or Fourth
ISBN : 9780073529387 (5th ed) and 9780072980905 (4th ed)
Required ? : Yes
This is an optional text. All the sections necessary for this course are available in Blackboard. There is also a copy on reserve in the library.

11 Disclaimer

It is not possible to precisely predict all the events that will happen during the term. As a result, some of these rules may change as the term proceeds. I will, however, keep you apprised of all changes.