

ENGR:2750 MECHANICS OF DEFORMABLE BODIES
SUMMER 2014
THE UNIVERSITY OF IOWA

Instructor: Professor Colby C. Swan, Ph.D.
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Lectures: M,T,W 8:30AM – 10:20 AM in 2229 SC
Exam Period: R 8:30AM – 10:20AM in 3026 SC
Office Hours: M,T,W 11am-12:30PM, 4120 SC

Teaching Assistants:	Haitham al Rabadi (June 1 st to end)	haitham-alrabadi@uiowa.edu
	Brandon Warshawsky (May 19-June 1 st)	brandon-warshawsky@uiowa.edu
	Office Hours	MWF noon-1:30pm TBA on ICON

Course Website: ICON

Textbook: R.C Hibbeler, Mechanics of Materials, 9th Edition, Prentice Hall, New Jersey

Homework/Exam/Grading Policy:

- Homework problems will be assigned each class period and then collected at the next lecture period. If you are not physically present at the next lecture, you may submit the assignment as a multi-page PDF (the only acceptable format) by email to both the instructor and the TA by 8:30am. Graded homework assignments will be returned to you either in class or by email.
- All homework assignment should be done either on plain paper or engineering paper. For each problem briefly re-state the information provided, draw a sketch and free-body diagram unless it is inappropriate for the problem, and present your solution process neatly and logically. Clearly identify your final answer and make sure that it is reported with correct units and at most four significant figures.
- We will start out solving homework problems from the textbook, but if this is “abused”, we will switch to problems from other sources. Abuse here means students finding bootlegged copies of the solutions manual and then submitting those solutions rather than actually doing and submitting their own work.
- So that you can experience a broad range of problems, you are strongly encouraged to solve problems from the textbook beyond just those that are assigned and graded.
- Course grades will be based on six in-class quizzes (@12.5% each), class participation and homework (25%).

This course is given by the College of Engineering. This means that class policies on matters such as requirements, grading, and sanctions for academic dishonesty are governed by the College of Engineering. Students wishing to add or drop this course after the official deadline must receive the approval of the Dean of the College of Engineering. Details of the University policy of cross enrollments may be found at: <http://www.uiowa.edu/~provost/deos/crossenroll.pdf>

COURSE SCHEDULE

Lec	Day	Hour	Lecture Topic	Text	HW Problems
1	M 5/19	1	Introduction/Equilibrium	1.1-2	1:F1-4, 5
2		2	Stress	1.3-4	1:F1-8, F1-10
3	T 5/20	1	Shear Stress	1.5	1: 58, 65
4		2	Simple Connections	1.6-7	1: 71, 79
5	W 5/21	1	Strain	2.1-2	2:F2-5, 15, 27
6		2	Mechanical Properties of Materials	3.1-7	3: 10-12,25
E1	R 5/22		Exam Period #1		
7	M 5/26	1	Axial Load	4.1-2	4: F4-5, 8, 27
8		2	Statically Indeterminate Members	4.3-9	4:43, 78
9	T 5/27	1	Torsion of Circular Shafts	5.1-3	5:13, 23, 38
10		2	Angle of twist	5.4	5:F5-14, 64
11	W 5/28	1	Statically Indeterminate Torsion Members	5.5	5:81, 87
12		2	Shear and Bending Moment Diagrams (I)	6.1-2	6:F6-4, 7
E2	R 5/29		Exam Period #2		
13	M 6/1	1	Shear and Bending Moment Diagrams (II)		6:10,24
14		2	One Way Bending & Flexure Formula	6.3-4	6:F6-11,55
15	T 6/2	1	Two Way Bending	6.5	6:110, 114
16		2	Composite Beams	6.6-7	6:131, 134
17	W 6/3	1	Transverse Shear	7.1-3	7:16,28
18		2	Shear Flow	7.4-5	7:F7-9,47
E3	R 6/4		Exam Period #3		
19	M 6/8	1	Combined Loadings & Pressure vessels	8.1-2	8:4,16, 43
20		2	Plane stress Transformation	9.1-3	9:F9-3, F9-6, 18
21	T 6/9	1	Mohr's Circle-Plane Stress	9.4	9:64, 67
22		2	Mohr's Circle- Absolute Max Shear Stress	9.5-7	9:78, 79,88
23	W 6/10	1	Plane Strain & Mohr's Circle	10.1-4	10:13,17,18
24		2	Strain Rosettes, Hooke's Law	10.5-6	10:38, 44, 47
E4	R 6/11		Exam Period #4		
25	M 6/15	1	Hooke's Law		10:49, 52, 58
26		2	Prismatic Beam Design	11.1-3	11:8,14,30
27	T 6/16	1	Shaft Design	11.4	11:33,41,45
28		2	Deflection of Beams By Integration	12.1-2	12:F12-3,15
29	W 6/17	1	Discontinuity Functions	12.3	12:41,48
30		2	Finer Points of Discontinuity Functions	12.3	12:70,73
E5	R 6/18		Exam Period #5		
31	M 6/22	1	Superposition	12.5	12:86,92
32		2	Statically Indeterminate Members	12.6,7,9	12:108,110, 119
33	T 6/23	1	Buckling of Compression Members	13.1-3	13:2,12, 24
34		2	Energy Methods: Conservation of Energy	14.1-3	14:7,18, 27
35	W 6/24	1	Energy Methods: Principle of Virtual Work	14.5-7	14:86,95,121
36		2	Energy Methods: Castigliano's Theorem	14.8-10	14:86,95,121
E6	R 6/25		Exam Period #6		

Attendance Policy:

- Since this class is being taught with both on-campus students and on-line students, there is no attendance policy that requires you to physically attend the lectures.
- Lectures take place from 8:30am – 10:20am MTW, and are captured electronically. Links to the captured videos will be posted on ICON as soon as is possible after the lecture periods. Typically this will mean that they'll be posted by noon of the same day.

Words of Wisdom:

- The material of this course is best learned by following this sequence for each topic:
 - Obtain a basic familiarity with the fundamental principles involved (typically by combinations of: reading the textbook, course notes, absorbing the lectures) ;
 - Apply the principles to a number of textbook type problems;
 - Once things begin to make sense, try to lock in your understanding by verbalizing it. In other words, either explain to yourself, or someone else what you just learned, and how to apply that understanding. If you cannot explain it, it is likely that you don't really understand it yet, so keep trying.
 - Working in groups is helpful because it gives you partners willing to listen to you explain things, and vice versa.
- Solving problems is a critical part of the learning process, so don't skimp on this.

Getting Help:

- If you are struggling with the course material, get help from the instructor and/or the TAs during office hours or by special appointment.
- There is no shame in admitting that you're struggling.
- The most important thing in this course is that you learn the material, not what anyone else might think of you.