

Assignments for MEEG 3013 Mechanics of Materials

3013-002 17683 MWF (12:55 p.m. - 1:45 p.m.) MEEG 212 Fall 2017

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Text: *Mechanics of Materials, 7th Edition*, Beer, Johnston, et al., McGraw-Hill, 2015

<u>Date</u>	<u>Day</u>	<u>Mtg. #</u>	<u>Topics</u>	<u>Problems</u>
8/21	M	1	Concepts of stresses	1.1, 7
23	W	2	Components of stresses, factor of safety	1.29, 60
25	F	3	Review, Hw, & Quiz	
28	M	4	Stress-strain relations	2.15, 25
30	W	5	Statically indeterminate problems	2.44, 50
9/1	F	6	Axial loading & stress concentrations	2.68, 93
6	W	7	Review, Hw, & Quiz	
8	F	8	Stresses in torsion, angle of twist	3.2, 11
11	M	9	Statically ind. shafts, transmission shafts	3.37, 38
13	W	10	Statically ind. shafts, transmission shafts	3.53, 65
15	F	11	Review, Hw, & Quiz	
18	M	12	Stresses & deformation in pure bending	4.1
20	W	13	Stresses & deformation in pure bending	4.9, 24
22	F	14	Eccentric axial loading	4.103, 110
25	M	15	Review, & Problem 4 of Test I	
27	W	16	Test I (6:00 – 8:00 p.m., MEEG 212)	
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29	F	17	Load, shear, & bending moment	5.18, 23
10/2	M	18	Using singularity functions	5.55, 98
4	W	19	Using singularity functions	5.102, 115
6	F	20	Review, Hw, & Quiz	
9	M	21	Shearing stresses in beams	6.3, 4
11	W	22	Shearing stresses in beams	6.13, 29
13	F	23	Longitudinal shear on a beam element	6.31, 38
16	M	24	Review, Hw, & Quiz	
18	W	25	Transformation of plane stresses	7.2, 4
20	F	26	Mohr's circle	7.12, 17
23	M	27	Mohr's circle	7.21, 43
25	W	28	Mohr's circle	7.55, 62
27	F	29	Review, & Problem 4 of Test II	
30	M	30	Test II	
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11/1	W	31	Deflections by <u>M</u> ethod of <u>I</u> ntegration	9.2, 5
3	F	32	MoI with singularity functions	9.20, 35
6	M	33	Using MoI with singularity functions	9.36, 38
8	W	34	Review, Hw, & Quiz	
10	F	35	Deflections by <u>M</u> ethod of <u>M</u> odel <u>F</u> ormulas	9.2, 5
13	M	36	Using MoMF	9.20, 35
15	W	37	Using MoMF	9.36, 38
17	F	38	Review, Hw, & Quiz	
20	M	39	Deflections by <u>C</u> onjugate <u>B</u> eam <u>M</u> ethod	9.2, 5, 20
27	M	40	Using CBM	9.35, 36, 38
29	W	41	Using CBM	9.65, 68, 82
12/1	F	42	Review, & Problem 4 of Test III	
4	M	43	Test III (6:30 – 8:30 p.m., MEEG 212)	
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6	W	44	General review	
11	M	45	<i>TBD</i> Final exam (12:45 p.m. to 2:45 p.m.)	

About the Course

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TA: Abby Bishop

Drill Sessions in BELL 1108E: (TA-Tutor: TBA) *Starting date for drill sessions will be announced.*

Tu: 5:00 pm – 6:15 pm Th 3:30 – 4:45pm

Supplies: Calculator, engineering paper, mechanical pencil, eraser, *transparent* 6-in. plastic ruler, and compass or template for drawing circles.

Homework, Quizzes, Tests, and Grades

Mechanics of Materials is a course aimed at developing in students the concepts and skills related to the analysis and prediction of conditions of elastic bodies under the action of balanced force systems and the effects of temperature change. The evaluation of your efforts and achievement in this course will be based on the following: **7** collections of *homework* (each worth 5 points), **7** *quizzes* (each worth 10 points) and **3** *tests* (each worth 100 points), and ***n*** *pop quizzes* (each worth 5 points). The total maximum score you can earn in this course is, therefore, **405 + 5*n*** points. You are required to have a student ID with you when you take each of the three scheduled tests. (A rule: failure to have the required ID or failure to observe the seating assignments during each of the scheduled tests, –5%) Full credit makeups for any of the scheduled events are to be approved in advance by the instructor; otherwise, the approval may require a proof of emergency.

Scheduled tests. Each of the three scheduled tests will contain the following:

- **Problems 1 & 2:** These are similar to the homework or example problems. To receive full credit, your solutions need to include pertinent sketches or diagrams, setup of equations, solutions, and final answers with appropriate number of significant digits as well as correct units. (60 points)
- **Problem 3:** Multiple-choice questions with *different* numbers are given to students. Grading is based on the correct choices you *circled* on the test sheet. (20 points, *no partial credit*)
- **Problem 4:** Non-numerical problem, covering descriptions of terms, laws, and principles, or derivations of formulas; given in the meeting preceding the test (20 points)
- **Contingent bonus points.** To be explained in class.

Final examination. The final examination will be a review exam that consists of ten multiple-choice problems.

Grades. Except involvement in academic dishonesty or an unusual case (e.g., *lack of civility* or *breach of decorum* in class), your final grade will be at least A, B, C, and D if your final overall average score in this course is at least 91%, 81%, 71%, and 61%, respectively. Nevertheless, a grading curve in favor of the class may be employed at the discretion of the instructor.

Advice

- Keep your *cell phones* turned off during class meetings.
- Study the lesson material *before* each class, ask your questions in class, and complete the solutions for homework problems *after* each class.
- Usually, the best time to get additional needed help from the instructor is during **2:00 p.m.– 3:00 p.m.** on MWF in his office, unless he has a meeting or other commitment during that time.
- Reserve *6 hours per week* (i.e., around twice the class time) *outside the class* for the reading, doing homework, or getting needed help. (Do not underestimate the effort required to do a good job.)
- For *sample quizzes* and *sample tests*, visit **ICJ Home Page** at: <http://comp.uark.edu/~icjong/>.