ESM 2204 MWF Fall 2010 MECHANICS OF DEFORMABLE BODIES

TEXT: Mechanics of Materials 5th Edition, by Beer, Johnston, DeWolf, and Mazurek
Prerequisite: ESM 2104, Statics

LECTURE	DAY	DATE	ARTICLES	TOPICS	HW PROBLEMS
1	M	8/23	1.1-1.5,1.9-1.10	Introduction, normal stress	1.3, 1.5, 1.7
2	W	8/25	1.6-1.8, SP 1.1, 1.2	Shearing and bearing stress	1.15, 1.17, 1.26
3	F	8/27	1.13, SP 1.3-1.4	Factors of safety, design	1.37, 1.41, 1.53
4	M	8/30	2.1-2.3, 2.5, 2.8	Stress-strain diagrams, axial loading	2.6, 2.17, 2.26
5	W	9/1	2.9, EX 2.02, 2.03, 2.04, 2.05, SP 2.3	Statically indeterminate problems (axial)	2.35, 2.41, 2.43, 2.45
6	F	9/3	2.10, EX 2.06, SP 2.4	Effect of temperature	2.49, 2 51, 2.58
7	M	9/6	1.12, 2.11, 2.12, 2.14, 2.15; EX 2.07, 2.08, 2.10, SP 2.5	Multiaxial loading	2.62, 2.69, 2.76
8	W	9/8	2.17-2.18, EX 2.12	Stress concentration	2.94, 2.95, 2.98
9	F	9/10	3.1-3.4, SP 3.1-3.2	Torsional stress	3.1, 3.17, 3.22
10	M	9/13	Review	------	-----
-	W	9/15	**TEST 1**	------	-----
11	F	9/17	3.5, EX 3.02, 3.03, 3.04, SP 3.3, 3.4	Angle of twist	3.34, 3.35, 3.45
12	M	9/20	3.6, EX 3.05, SP 3.5	Statically indeterminate problems (torsion)	3.51, 3.53, 3.63
13	W	9/22	3.7, EX 3.06, 3.07	Design (torsion)	3.70, 3.71, 3.80
14	F	9/24	Appendix A.1 – A.5	Moment of inertia	4.5, 4.8, 4.9, Locate centroid and find I (composite sections)
15	M	9/27	4.1-4.4, SP 4.1-4.2	Bending stresses	4.1, 4.7, 4.23
16	W	9/29	4.12, SP 4.8, EX 4.07	Eccentric axial loading	4.106, 4.113, 4.118
17	F	10/1	4.14, EX 4.09, SP 4.9	Eccentric axial loading	4.140, 4.144, 4.189
18	M	10/4	5.1-5.2, SP 5.1-5.2	Shear and moment diagrams	5.2, 5.4, 5.19
19	W	10/6	5.3, SP 5.3-5.5	Shear and moment diagrams	5.51, 5.55, 5.59
-	F	10/8	NO CLASS	FALL BREAK	
20	M	10/11	5.4, SP 5.7-5.8	Design of beams for bending	5.68, 5.75, 5.87

21	W	10/13	6.1-6.5, EX 6.01-6.03, SP 6.1-6.2	Transverse shear stress	6.3, 6.6, 6.24
22	F	10/15	6.6, EX 6.04, SP 6.3	Transverse shear stress	6.29, 6.33, 6.44
23	M	10/18	Review	------	-----
-	W	10/20	**TEST 2**	------	-----
24	F	10/22	7.1, 7.2	Stress transformation	7.17, 7.18, 7.21
25	M	10/25	7.3, EX 7.01, SP 7.1	Principal and maximum shear stress	7.6, 7.23, 7.26
26	W	10/27	7.4, EX 7.02, SP 7.2-7.3	Mohr's Circle	7.32, 7.34, 7.48
27	F	10/29	Review	------	-----
28	M	11/1	7.6, EX 7.03	Maximum shear stress	7.66, 7.68, 7.71
29	W	11/3	7.9, SP 7.5	Pressure vessels	7.107, 7.114, 7.120
30	F	11/5	8.1, 8.2, SP 8.1-8.2	Principal stresses	8.3, 8.6, 8.7
31	M	11/8	8.4, EX 8.01, SP 8.4-8.5	Combined loading	8.31, 8.33, 8.35
32	W	11/10	8.4	Combined loading	8.40, 8.44, 8.47
33	F	11/12	8.4	Combined loading	8.51, 8.72, 8.74
34	M	11/15	Review	------	-----
-	W	11/17	**TEST 3**	------	-----
35	F	11/19	9.1-9.4, EX 9.01-9.04, SP 9.1,9.2	Beam deflections – integration	9.2, 9.3, 9.6
Thanksgiving break					
36	M	11/29	9.5, EX 9.05, SP 9.3	Statically indeterminate beams	9.17, 9.18, 9.21
37	W	12/1	9.7-9.8, EX 9.07-9.08, SP 9.7-9.9	Beam deflections – superposition	9.71, 9.83, 9.89, 9.90
38	F	12/3	Review	------	-----
39	M	12/6	10.1, 10.3-10.4, EX 10.01, SP 10.1	Buckling of columns	10.10, 10.13, 10.20, 10.24, 10.28
40	W	12/8	Review	------	-----

SP – Sample Problem
EX – Example Problem

FINAL EXAM (Common-time): Friday, December 10, 2010, 7 – 9pm (location TBA).