

Sample Syllabus

Book: Vable "Mechanics of Materials, Second Edition", 2009, <http://www.me.mtu.edu/~mavable/MoM2nd.htm>

The syllabus is for 15 weeks, three credit course with two term exams and final.

The class problems are incorporated in the slides though the numbering system is different from the book.

There are many more problems in the book than the total in the two sets described below.

Static Review Exam is in the Appendix of the book.

Problems like SR1 refer to the Static review problems posted as slide on the web page.

Problems like C23 refers to the exercise in the box 'Consolidate your knowledge' on page 23.

Problems with * are computer problems.

Problems with + are 'Stretch yourself problems'

Class	Section	Topic	Home Problems Set 1	Home Problems Set 1
1		Introduction	Static review exam 2, SR1-SR4	Static review exam 2, SR1- SR4
2	1.0-1.1	Stress on a surface	1.2,1.6, 1.8, 1.12, 1.19, 1.25	1.3,1.7, 1.9, 1.14, 1.18, 1.20,126
3	1.1	Stress on a surface	1.33,1.37, 1.44,1.53,1.55	1.33,1.36, 1.45,1.54,1.56
4	1.1	Internal distributed force systems	1.77,1.80,1.82,C27	1.78,1.81,1.83,C27
5	1.2	Stress at a point	1.85, 1.94,1.101,C38	1.86,1.97,1.99,C38
6	2.0-2.4	Small strain	2.4, 2.5, 2.15, 2.25, 2.29, 2.36, 2.34,2.54	2.3, 2.7,2.16 , 2.26, 2.32, 2.38,2.57
7	2.5-2.6	Strain at a point	2.68, 2.71,2.78,2.80,C75,2.85+,2.87*	2.69,2.72, 2.79,2.80,C75,2.85+,2.87*
8	3.0-3.1	Tension test	3.2, 3.4, 3.12, 3.18, 3.25,C97	3.3, 3.4, 3.13, 3.18 ,3.26,C97
9	3.2-3.3	Logic in mechanics of materials/Factor of safety	3.44, 3.45, 3.47, 3.53, 3.59, 3.65+, 3.69*	3.42, 3.46, 3.48, 3.56,3.59,3.65+, 3.69*
10	3.4-3.6	Generalized Hooke's law	3.71,3.74,3.81,3.86,3.98	3.72,3.75,3.83,3.87,3.99
11	3.7-3.9	Stress Concentration/ Effect of Temperature	3.119,3.127,3.130,3.133	3.121,3.126,3.132,3.133
12	4.1	Axial members	4.2, 4.5, 4.9, 4.18, 4.21	4.1, 4.5, 4.11, 4.17, 4.21
13	4.1	Axial members	4.31,4.32,4.36+, 4.41*,C163	4.31,4.32, 4.36+, 4.41*, C163
14	4.3	Structural analysis	4.50, 4.54,4.61	4.50, 4.57,4.60
15	4.3	Structural analysis	4.65, 4.74,4.84C178	4.71, 4.73, 4.85,C178
16	4.4-4.5	Initial Strain/ Temperature effects	4.90,4.93,4.95	4.92,4.95,4.98
17	4.6-4.7	Thin-walled pressure vessels	4.100, 4.103,4.106	4.100,4.103,4.107
18		Exam 1		
19	5.0-5.1	Prelude to theory of torsion of shafts	5.2, 5.11, 5.14+	5.2, 5.12, 5.14+
20	5.2	Torsion of shafts	5.19,5.23,5.27,5.29,5.35	5.20,5.25,5.27,5.32,5.33
21	5.2	Torsion of shafts	5.38,5.43, 5.49+, 5.57*,C219	5.38,5.41, 5.49+, 5.57*,C219

21	5.3	Statically indeterminate shafts	5.63,5.69,5.74	5.64,5.67,5.73
22	6.0-6.1	Prelude to theory of bending of beams	6.1, 6.5, 6.7, 6.12, 6.14,6.15+	6.2, 6.3, 6.6, 6.13,6.14,6.15+
23	6.2	Bending of beams	6.19,6.27,6.29,6.33,6.35	6.19,6.28,6.30,6.37,6.39,
24	6.2	Bending of beams	6.38,6.50,6.52,6.55+,C274	6.40,6.49,6.53,6.55+,C274
25	6.3-6.4	Shear and moment by equilibrium	6.60,6.62,6.69,6.73,6.76,	6.59,6.66,6.70,6.72,6.74
26	6.4-6.5	Shear and moment diagrams	6.79,6.87,6.92,6.95,6.99	6.80,6.88,6.96,6.99
27	6.6	Shear stresses in beams	6.107,6.111,6.113,6.117	6.107,6.111,6.114,6.117
28	6.6	Shear stresses in beams	6.119,6.123,6.124,6.128,6.134+,6.138*,C308	6.119,6.124,6.125,6.130,6.134+,6.138*,C308
29	7.0-7.1	Beam deflection 2nd Order	7.2, 7.5, 7.9,7.13	7.1, 7.6, 7.10,7.16
30	7.0-7.1	Beam deflection 2nd Order	7.17,7.20,7.23,7.31+	7.19, 7.22, 7.23,7.31+
31	7.2	Beam deflection 4th Order	7.32,7.36,7.38	7.33,7.39,7.40
32	Exam 2			
33	8.0-8.1	Stress transformation: Wedge method	8.1, 8.4, 8.10, 8.15, 8.19, 8.25,8.27+	8.1, 8.4, 8.11, 8.17, 8.21, 8.26,8.27+
34	8.2-8.3	Method of equations/ Mohr's circle	8.29, 8.34, 8.36,8.37,8.47	8.29, 8.33, 8.40,8.41,8.46
35	8.2-8.3	Method of equations/ Mohr's circle	8.54,8.60,8.65,8.68,8.78+	8.55,8.61,8.66,8.72,8.78+
36	9.0-9.4	Strain transformation	9.3,9.6,9.16,9.20	9.1,9.5,9.14,9.20
37	9.4-9.5	Strain transformation/Strain Gages	9.31,9.36,9.43,9.54,9.58	9.33,9.37,9.45,9.54,9.59
38	9.5	Strain gages	9.62,9.64,9.68,9.83*	9.63,9.65,9.69,9.83*
39	10.0-10.1	Combined loading	10.1, 10.4, 10.12,C467	10.2, 10.5, 10.12, C467
40	10.1-10.2	Analysis and design of structures	10.22,10.36,10.37	10.24,10.38,10.39
41	10.2	Analysis and design of structures	10.44,10.47	10.44,10.45
42	10.2	Analysis and design of structures	10.48,10.55	10.48,10.55
43	11.0-11.2	Euler buckling	11.2, 11.6, 11.15, 11.18,C504	11.3,11.5,11.14,11.18C504
44	11.2	Euler buckling	11.25, 11.28, 11.43	11.21,11.27,11.44
45	Review			
Final				