ME 382 SYLLABUS & HOMEWORK SCHEDULE - F08
(subject to change)
Page numbers correspond to **3rd editions** of text books

Lec. #	Date	HW due in class	**Topic** / textbook readings
1	W-9/3		**Introduction – use of materials in structural applications** A&J-1: Chapter 1 Dowling: Chapter 1
2	F-9/5		**The tensile test** A&J-1: 8 (not 8.8); 11.4 Dowling: 4.2; 4.3; 4.4; 4.5.1-4.5.3; 4.5.5-4.5.6
3	M-9/8		**Stress analysis, multiaxial stresses** ME 211 review Dowling: 6.2.3; 6.3.2
4	W-9/10		**Elastic properties of materials (3-D Hooke's law)** ME 211 review Dowling: 5.3.1-5.3.4; 6.6
5	F-9/12	HW 1 due (1-3)	**Bonding & physical origin of modulus** A&J-1: 4 Dowling: 2.2; 2.4.1-2.4.2
6	M-9/15		**Crystal structure** A&J-1, Ch. 5 (excluding 5.5 & 5.6) Dowling: 2.3.1-2.3.2
7	W-9/17		**Defects and microstructure** A&J-1: 9.3 A&J-2: 2 Dowling: 2.3.3
8	F-9/19	HW 2 due (4-6)	**Equilibrium phase diagrams (2 lectures)** A&J-2: 3; 4; Appendix 1
9	M-9/22		
10	W-9/24		**Yield criteria & design against yield (2 lectures)** Dowling: 7.1-7.2; 7.4-7.5
11	F-9/26	HW 3 due (7-9)	
12	M-9/29		**Mechanisms of plastic deformation** A&J-1: 9
13	W-10/1		**Strengthening mechanisms** A&J-1: 10 Dowling: 3.2
	F-10/3	HW 4 due (10-11)	**REVIEW**
	M-10/6		**MIDTERM EXAM #1 (Lectures 1-11)**
14	W/10/8		**Introduction to kinetics (2 lectures)** A&J-1: 21 A&J-2: 6 - 9
15	F-10/10		
16	M-10/13		**Light alloys** A&J-2: 10 Dowling: 3.4
17	W-10/15		**Light alloys and steel** A&J-2: 11
18	F-10/17	HW 5 due (12-15)	**Steel** A&J-2: 12 Dowling: 3.3
	M-10/20		**STUDY-BREAK**
19	W-10/22		**Fracture (3 lectures)** A&J-1: 13-15 Dowling: 8.1-8.4; 8.5.3; 8.5.5; 8.6 (p.349-352);8.6.1; 8.6.1; 8.7-8.8
20	F-10/24	HW 6 due (16-18)	
21	M-10/27		

22	W-10/29		**Crack-tip plasticity and limits of LEFM** Dowling: 8.3; 8.4.1-8.4.2; 8.5.1; 8.5.3; 8.5.5; 8.6(p.349-352); 8.6.1; 8.7-8.8
23	F-10/31	HW 7 due (19-21)	**Weibull statistics** A&J-1: 16 A&J-2: 18
24	M-11/3		**Stress corrosion cracking** Dowling: 11.10
25	W-11/5		**Cyclic crack growth** A&J-1: 17.3; 19.4 Dowling: 11.1-11.2; 11.3.3; 11.6.1-11.6.2
26	F-11/7	HW 8 due (22-23)	**Fatigue (3 lectures)** A&J-1: 17.1, 17.2, 17.4; Ch. 18; 19.1-19.3 Dowling: 9.1-9.3; 9.5-9.7; 9.9.1; 10.9; 14.1; 14.2.1; 11.8
27	M-11/10		
28	W-11/12		
	F-11/14	HW 9 due (24-25)	**REVIEW**
	M-11/17		**MID TERM EXAM #2 (Lectures 12-25 & 1-11)**
29	W-11/19		**Creep and design using materials at high temperatures (4 lectures)** A&J-1: Ch. 20, (21), 22, 23 Dowling: 15.1-15.2; 15.3.1-15.3.5; 15.4; 15.
30	F-11/21		
31	M-11/24		
32	W-11/26	HW 10 due (26-28)	
	F-11/28		**THANKSGIVING BREAK**
33	M-12/1		**Polymers (2 lectures)** A&J-2: 21-23
34	W-12/3		
35	F-12/5	HW 11 due (29-32)	**Composites** A&J-1: 6.4 A&J-2: Ch 25 (p.289-296) Dowling: 3.7; 5.4.4-5.4.5
	M 12/8		**REVIEW**
	Tu 12/9	HW 12 due (33-35)	