AME 30334: HEAT (and MASS) TRANSFER
Syllabus: Spring 2014

Date	Topic	Reading[1,2]	Problems[1,3]
Conduction			
W, 1/15	Introduction/Rate Equations	1-12 (1A)	1.9, 1.18, 1.34
F, 1/17	Conservation of Energy	12-31, 36-41(1B)	1.42, 1.64
M, 1/20	----	45-48	1.65, 1.76
W, 1/22	Fourier's Law and the Heat Equation	68-71, 78-80, 82-94 (2A)	2.6, 2.19, 2.37
F, 1/24	1D, SS Conduction: Plane Wall	112-119, 121-129 (3A:1-7)	2.57, 3.3a, 3.30
M, 1/27	1D, SS Conduction: Radial Systems	136-143 (3A:8-12)	3.51a, 3.68
W, 1/29	1D, SS Conduction: Generation	142-154, Appendix C (3B)	3.94, 3.97
F, 1/31	1D, SS Conduction: Extended Surfs.	154-170 (3C:1-7)	3.124, 3.126
M, 2/3	1D, SS Conduction: Fin Arrays	170-178 (3C:8-12)	3.154
W, 2/5	2D, SS Conduction	230-231, 235-257 (4A)	4.23, 4.45
F, 2/7	Transient Conduction: LC Method	280-294 (5A)	5.10, 5.25
M, 2/10	Transient Conduction: Spatial Effects	298-310 (5B:1-6)	5.59, 5.63a
W, 2/12	Transient Conduction: Cont. Quiz 1	310-317 (5B:7-9)	
F, 2/14	Exam 1		
Convection			
M, 2/17	Boundary Layers & Coefficients	378-393 (6A:1-11)	5.96, 6.11, 6.53
W, 2/19	BL Eqns. and Analogies	394-413 (6A:12-26)	6.28, 6.64
F, 2/21	Evaporative Cooling	413-418 (6A:27-29)	6.77
M, 2/24	External Flow: Flat Plates	434-454 (7A)	7.19a, 7.118
W, 2/26	External Flow: Cylinders & Spheres	455-468 (7B:1-9)	7.69, 7.146
F, 2/28	External Flow: Tube Bundles	468-476, 483-485 (7B:10-13)	7.93a,b
M, 3/3	Internal Flow: General Considerations	518-536 (8A)	8.9, 8.18a,b
W, 3/5	Internal Flow: Convection Correlations	537-555 (8B)	8.33, 8.77
F, 3/7	Internal Flow: Mass Transfer	563-567 (8C)	8.107, 8.126
Saturday, 3/8 through Sunday, 3/16: **Spring Break**			
M, 3/17	Free Convection: Flat Plates	594-613 (9A)	9.14a-c, 9.18 Project
W, 3/19	Free Convection: Other Geometries	613-627, 629-630 (9B)	9.70, 9.95
F, 3/21	Boiling Quiz 2	654-660 (10A)	----

[1] From *Fundamentals of Heat and Mass Transfer*, 7e, by Bergman, et al. and power point modules (M).
[2] Reading should be done before lecture.
[3] Problems are to be done after lecture and will be collected each Friday before the start of lecture.

Date	Topic	Reading	Problems
M, 3/24	Exam 2		
W, 3/26	Heat Exchangers: LMTD Method	706-721 (11A)	11.5, 11.23
F, 3/28	Heat Exchangers: ε-NTU Method	722-742 (11B)	11.28, 11.51
Radiation			
M, 3/31	Spectral and Directional Effects	768-782 (12A:1-12)	12.10, 12.16
W, 4/2	Blackbody Radiation	782-800 (12A:13-25)	12.23, 12.39
F, 4/4	Absorption, Reflection, Transmission	801-818 (12B)	12.50, 12.56
M, 4/7	Continued	-----	12.75, 12.99a-d
W, 4/9	Environmental Radiation	818-829 (12C)	12.128, 12.130
F, 4/11	View Factors & BB Exchange	862-876 (13A:1-7)	13.2, 13.24
M, 4/14	Enclosures of Opaque, Diffuse-Gray Surfaces	876-884, 888-892 (13A:8-13)	13.90
W, 4/16	Two-Surface Enclosures and Heat Shields	884-892 (13A:14-17)	13.60, 13.73
Friday, 4/18 through Monday, 4/21: **Easter Holiday**			
W, 4/23	Continued Quiz 3	901-902 (13A:18)	----
F, 4/25	Exam 3		
M, 4/28	Multimode Effects	893-895 (13A:19-20)	----
W, 4/30	Review		