New Jersey Institute of Technology

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ME 312-103: Thermodynamics

Harry Kountouras

Recommended Citation

"The Book and Lecture will 'teach' you little unless are willing to put an active, organized effort into the learning process. Active- directed work is necessary to understand and remember the material."

Assignment Sheet-Kountouras

Week	Topic	Sections	Problems
1	Review of Thermodynamics I Concepts	8.1-8.3	In class review problems
	Exergy, Reversible Work, Irreversibility, Second-Law Efficiency	8.4	
	Exergy Change of a System		
	Exergy Transfer by Heat, Work, and Mass	8.5-8.6	
2	Basic Considerations, Carnot cycle, Air standard cycle	9.1-9.4	9/16E,17E, 38E,54
	Otto Cycle	9.5	
	Diesel Cycle	9.6	
3	Brayton Cycles	9.7-9.8	9/87, 107, 133
	Brayton Cycle with Regeneration, Reheating	9.9-9.10	
	Second-Law Analysis	9.11-9.12	
4-5	Rankine Vapor Cycles	10.1-10.3	10/14,16 22,31
	Parameters Affecting Efficiency, Reheat Cycle	10.4-10.5	
	Regenerative Rankine Cycle	10.6	
6	Second-Law Analysis of Vapor Power Cycles	10.7	10/45, 46 See instructor handout assignment.
	Societal/Environmental/Economic Issues and Power Plants. Professionalism		
7	**Test 1 on Chapters 8 and 10**		
	Refrigerators & Heat Pumps, Reversed Carnot Cycle	11.1-11.2	11/3,12E,42 44,46
	Ideal Refrigeration cycle	11.3	
8	Actual Vapor-Compression Refrigeration Cycle	11.4	13/11,33,50, 50,54,66
	Composition of Gas Mixtures	13.1	
9	P-v-T Behavior of Gas Mixtures		
		13.2	14/15E,29,39 66E
	Properties of Gas Mixtures	13.3	
	Properties of Gas-Vapor Mixtures	14.1-14.3	

Week	Topic	Sections	Problems
10	Adiabatic Saturation and Wet-Bulb Temperatures	14.4	14/64,7 2E,7378 101,109
	Psychrometric Chart, Air Cond. Processes	14.5-14.7	

Test 2 Chapter 11-13

Week	Topic	Sections	Problems
11	Review Fuels and Combustion	15.1	
12	Theoretical and Actual Combustion Processes	15.2	15/14,15, 18
	Enthalpy of Formation and Enthalpy of Combustion	15.3	
13	First-Law Analysis of Reacting Systems	15.4	15/19,26, 57,61,72,73
	Adiabatic Flame Temperature	15.5	
	Entropy Change of Reacting Systems	15.6	
14	Second-Law Analysis of Reacting Systems Stagnation Properties, Speed o	15.7	
	of sound and Mach number	17.1-17.2	17-18,22E,35
	One Dimensional Isentropic Flow	17.3	

Final Exam Comprehensive