

Fall 2023

ME 312-003: Thermodynamics II

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ME 312 Thermodynamics II

Text: Cengel & Boles Thermodynamics: An Engineering Approach 9th Edition

Property Table Booklet for 9th Edition

Prerequisites: ME 311, Math 211 and Physics 111

Assignment Sheet—Kountouras

Week	Topic	Sections	Problems
1	Review of Thermodynamics I Concepts Energy, Reversible Work, Irreversibility, Second— Law Efficiency Energy Change of a System Energy Transfer by Heat, Work and Mass	8.1-8.3 8.4 8.5-8.6	In—class review problems
2	Basic Considerations, Carnot Cycle, Air Standard Cycle Otto Cycle Diesel Cycle	9.1-9.4 9.5 9.6	9/16E, 17E, 40E, 57
3	Brayton Cycles Brayton Cycle with Regeneration, Reheating Second—Law Analysis	9.7-9.8 9.9-9.10 9.11-9.12	9/92, 112, 136
4--5	Rankine Vapor Cycles Parameters Affecting Efficiency, Reheat Cycle Regenerative Rankine Cycle	10.1-10.3 10.4-10.5 10.6	10/17, 19, 25, 36
6	Second—Law Analysis of Vapor Power Cycles Societal/Environmental/Economic Issues and Power Plants Professionalism	10.7	10/50, 51
7	Test 1 on Chapters 8 and 10 Refrigeration & Heat Pumps, Reversed Carnot Cycle Composition of Gas Mixtures	11.1-11.2 11.3	11/3, 18E, 17, 41, 42, 46
8	Actual Vapor—Compression Refrigeration Cycle Composition of Gas Mixtures	11.4 13.1	13/12, 36, 52, 58, 67
9	P-v-T Behavior of Gas Mixtures Properties of Gas Mixtures Properties of Gas—Vapor Mixtures	13.2 13.3 14.1-14.3	14/18E, 29, 39E, 66E
10	Adiabatic Saturation and Wet—Bulb Temperatures Psychrometric Chart, Air Conditioning Processes	14.4 14.5-14.7	14/67, 73E, 74, 79, 101, 109
11	Test 2 Chapter 11-13 Review Fuels and Combustion	15.1	

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Week	Topic	Sections	Problems
12	Theoretical and Actual Combustion Enthalpy of Formation and Enthalpy of Combustion	15.2 15.3	15/15, 17, 18
13	First—Law Analysis of Reacting Systems Adiabatic Flame Temperature Entropy Change of Reacting Systems	15.4 15.5 15.6	15/21, 29, 56, 63, 76
14	Second—Law Analysis of Reacting Systems Stagnation Properties, Speed of sound and Mach Number One Dimensional Isentropic Flow	15.7 17.1-17.2 17.3	17/22E, 26, 35
	Final Exam Comprehensive		

COURSE GRADE:

Ex #1 : 25% } OPEN BOOK, ONE CHEAT SHEET (BOTH SIDES)
Ex #2 : 25% }
FE : 35% } OPEN BOOK, THREE CHEAT SHEETS
HW : 10% }
PROJECT: 10% } WITH PROJECT GROUP (3)
105%