

King Saud University
Mechanical Engineering Department
ME 374 Thermodynamics -II-

Instructors: Prof. Mohamed Ali, Dr. Mohamed Morsy

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Course Description

Me 374 Thermodynamics II

Availability; Ideal gas mixtures; Gas vapor mixtures; Thermodynamics of reciprocating gas compressors; Chemical reactions; Air standard cycles.

Textbook: Thermodynamics: An Engineering Approach, by Cengel and Boles, 6th or Latest Edition.

Reference: Applied Thermodynamics for Engineering Technologists, T. D. Eastop and A. McConkey, Longman Scientific & Technical, Ch. 12.

Course Content

Chapter		Sections	Home work
1	Second law analysis (availability or exergy) for open and closed systems	Chapter 8	33, 38, 52, 110, 111, 113, 116
2	Reciprocating air compressor, single and multi-stage with inter-cooling	Chapter 7 (7-11)	
3	Gas Power Cycles.	Chapter 9	31, 32, 33, 35, 54, 57, 73, 92
4	Enthalpy, internal energy and entropy change of real gases	Chapter 12 (12-6)	12-72, 12-75
5	Basic laws of ideal and real gas mixtures	Chapter 13	28, 32, 59, 61, 71, 12-73
6	Properties of gas-vapor mixtures	Chapter 14	16, 18, 30, 31, 32
7	Combustion stoichiometric, first law application to a reacting system	Chapter 15	25, 32, 33, 66, 74, 84

Design Content: None

Lectures: 100 %

Laboratory Portion: None

Assessment Tools:

Homework + quizzes: 10 % (3 for HW and 7 for quizzes every two weeks)
2 Midterm Exams: 50 %
Final Exam: 40 %

Estimated ABET Category Content:

Mathematics and Basic Science: 0 credit units or 0%
Engineering Science: 2.0 credit units or 100%
Engineering Design: 0 credit units or 0%

Prepared by

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