

CANKAYA UNIVERSITY

FACULTY OF ENGINEERING
MECHANICAL ENGINEERING DEPARTMENT

ME 211 THERMODYNAMICS I
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SYLLABUS

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CHAPTER 1.GETTING STARTED : INTRODUCTORY CONCEPTS AND DEFINITIONS

- 1.1 Using Thermodynamics
- 1.2 Defining Systems
- 1.3 Describing Systems and Their Behaviour
- 1.4 Measuring Mass,Length,Time and Force
- 1.5 Two Measurable Properties : Specific Volume and Pressure
- 1.6 Measuring Temperature
- 1.7 Engineering Design and Analysis

CHAPTER 2.ENERGY AND THE FIRST LAW OF THERMODYNAMICS

- 2.1 Reviewing Mechanical Concepts of Energy
- 2.2 Broadening Our Understanding of Work
- 2.3 Broadening Our Understanding of Energy
- 2.4 Energy Transfer By Heat
- 2.5 Energy Accounting : Energy Balance for Closed Systems
- 2.6 Energy Analysis of Cycles

CHAPTER 3.EVALUATING PROPERTIES

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Evaluating Properties: General Considerations

3.2 p-v-T Relation

3.3 Retrieving Thermodynamic Properties

3.4 Generalized Compressibility Chart

Evaluating Properties Using The Ideal Gas Model

3.5 Ideal Gas Model

3.6 Internal Energy, Enthalpy, and Specific Heats of Ideal Gases

3.7 Evaluating Δu and Δh of Ideal Gases

3.8 Polytropic Process of an Ideal Gas

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4.2 Conservation of Energy for a Control Volume

4.3 Analysis of Control Volumes at Steady State

4.4 Transient Analysis

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5.2 Identifying Irreversibilities

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5.4 Defining the Kelvin Temperature Scale

5.5 Maximum Performance Measures for Cycles Operating Between Two Reservoirs

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6.3 Retrieving Entropy Data

6.4 Entropy Change in Internally Reversible Process

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6.6 Entropy Rate Balance for Control Volumes

6.7 Isentropic Processes

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7.3 Closed System Exergy Balance

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7.5 Exergy Rate Balance for Control Volumes

7.6 Exergetic (Second Law) Efficiency