ME 211 THERMODYNAMICS I
SYLLABUS-Fall 2017

Prof. Dr. Nevzat Onur, Room: LA06
Asst. Prof. Dr. Ekin Özgirgin YAPICI, Room: LA08

1 Introduction

1.1 A Thermodynamic System and the Control Volume
1.2 Macroscopic versus Microscopic Points of View
1.3 Properties and State of a Substance
1.4 Processes and Cycles
1.5 Units for Mass, Length, Time and Force
1.6 Specific Volume and Density
1.7 Pressure
1.8 Energy
1.9 Equality of Temperature
1.10 The Zeroth Law of Thermodynamics
1.11 Temperature scales
1.12 Engineering Applications

2 Pure Substance Behavior

2.1 The Pure Substance
2.2 The Phase Boundaries
2.3 The P-v-T Surface
2.4 Tables of Thermodynamic Properties
2.5 The Two-Phase States
2.6 The Liquid and Solid States
2.7 The Superheated Vapor States
2.8 The Ideal Gas States
2.9 The Compressibility Factor
2.10 Equations of State
2.11 Computerized Tables
2.12 Engineering Applications

3 First Law of Thermodynamics and Energy Equation

3.1 The Energy Equation
3.2 The First Law of Thermodynamics
3.3 The Definition of Work
3.4 Work Done at the Moving Boundary of a Simple Compressible System
3.5 Definition of Heat
3.6 Heat Transfer Modes
3.7 Internal Energy---a Thermodynamic Property
3.8 Problem Analysis and Solution Technique
3.9 The Thermodynamic Property Enthalpy
3.10 The Constant-Volume and Constant-Pressure Specific Heats