

MECHANICAL ENGINEERING PROGRAM
ABET COURSE SYLLABUS

ME 303 Thermodynamics II (3 Units) Required

Course Description: (2019-20 Catalog) Vapor and gas power cycles, refrigeration cycles, thermodynamic relations, psychrometrics, and chemical reactions. 3 lectures.

Prerequisite Courses: ME 302

Prerequisites by Topic: Thermodynamics I

Textbook: (and/or other required material) Fundamentals of Engineering Thermodynamics, 6th, 7th, or 8th Editions by Moran Shapiro, Boettner, and Bailey, John Wiley & Sons.

References: None

Course Coordinator/Instructor: Andrew Kean, Professor of ME

Course Learning Outcomes: Building on the outcomes of ME 302, the student will be able to:

1. Analytically solve engineering problems involving work, heat transfer, and energy
2. Synthesize their thermodynamics knowledge and apply it to systems of greater complexity
3. Evaluate and assess the performance of vapor and gas power systems and refrigeration systems
4. Determine the thermodynamic properties of gas mixtures
5. Apply the thermodynamic laws to reacting mixtures

Relationship of Course to Mechanical Engineering Student Outcomes:

SO 1: Developed (D)
SO 2:
SO 3:
SO 4: Introduced (I)
SO 5:
SO 6:
SO 7:

Topics Covered:

Exergy (3 lectures)
Vapor power systems (4 lectures)
Gas power systems (5 lectures)
Refrigeration systems (4 lectures)
Thermodynamic Property Relations (2 lectures)
Ideal gas mixtures (2 lectures)

Air-water vapor mixtures (psychrometrics) (2 lectures)
Combustion fundamentals including adiabatic flame temperature (4 lectures)

Laboratory Projects:

None

Class/Lab Schedule:

Three 50-minute lectures per week.

Contribution of Course to Meeting the Professional Component:

(a) College-level mathematics and basic sciences: 0 credits

(b) Engineering Topics: 3 credits
Design: 0 credits

(c) General Education: 0 credits

(d) Other: 0 credits

Prepared by:

Andrew Kean

Date:

2/21/20
