



ChE 221 - Thermodynamics I

Code and Name: ChE 221 - Thermodynamics I

Credit Hours: 3 (Lecture: 3, Tutorial: 1)

Textbook:

- Principles of Engineering Thermodynamics, Michael J. Moran, et al., 7th Edition, John Wiley & Sons, 2012

Other References:

- None

Course Description:

Fundamental concepts of thermodynamic systems, heat and work, properties of pure substances, first and second laws, entropy and energy analysis.

Pre-requisites: ChE 211: Principles of Chem. Eng. I

Co-requisites: None

Course Learning Outcomes:

With relation to ABET Student Outcomes (SOs: 1-7)

1. Recognize basic concepts of thermodynamic such as temperature, pressure, system, properties, process, state, cycles and equilibrium (1)
2. Outline first and second law of thermodynamics (1)
3. Identify the properties of substances on diagrams and obtain the data from property tables (1)
4. Analyze the thermal efficiencies of heat engines and the coefficients of performance for refrigerators and heat pumps (1)
5. Evaluate the performance of engineering equipment as turbines, compressors, and cycles (1)

Topics to be covered:

- Introductory, Concepts and Definitions
- Energy and the First Law of Thermodynamics
- Evaluating Properties
- Control Volume Analysis Using Energy
- The Second Law of Thermodynamics
- Using Entropy
- Energy Analysis

Grading Policy:

The grading for the course are 60% coursework and 40% Final Exam. The course work consists of two Midterm Exams, where each midterm exam is worth 20%. It also includes quizzes, homework, and projects for the remaining 20% that is modified by the course instructor.

