THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Thermodynamics

AEROENG 2405

Credit Hours:
3.00

Course Levels:
Undergraduate (1000-5000 level)

Course Components:
Lecture

Course Description:
Aerospace engineering thermodynamics: Introduction to the concepts of energy and entropy, the First and Second Law analysis of systems and control volumes, and the analysis of power and refrigeration cycles.

Prerequisites and Co-requisites:
Prereq: 2200 (200), and AeroEng-BS student (No AAE pre-majors can enroll in this class).

Course Goals / Objectives:
- Study of energy and energy transfer mechanisms. By the end of this course, students should have a thorough understanding of the basic tools needed to analyze engineering systems where energy transfers or transformations take place

Course Topics:
- Introduction and basic concepts, forms of energy, energy transfer First law, efficiency
- Phase, property diagrams, equation of state, compressibility
- Energy balance for closed system
- Internal energy, enthalpy, specific heats, mass conservation, flow work, energy analysis of steady flow
- Steady-flow devices, unsteady flow process, second law Reversible and irreversible processes, Carnot cycle
- Entropy, reversible steady-flow work, isentropic efficiencies, entropy balance
- Gas power cycle, Brayton cycle, jet-propulsion cycle, Rankine cycle
- Exams and Reviews

Designation:
Required