

JAMESTOWN COMMUNITY COLLEGE
State University of New York

INSTITUTIONAL COURSE SYLLABUS

Course Title: Thermodynamics

Course Abbreviation and Number: ENR 2510

Credit Hours: 4

Course Type: Lecture/Lab

Course Description: Students will continue investigations into mechanics with extensive study in thermodynamic systems. Students will analyze and solve problems involving fluid dynamics, energy conservation, and thermodynamic processes.

Prerequisite: MAT 1720 and PHY 1710.

General Education Requirements Met

SUNY

Natural Sciences

JCC

Scientific Reasoning

Student Learning Outcomes:

Students who demonstrate understanding can:

1. Write laboratory reports using proper grammar in which they:
 - a. Write an abstract
 - b. Summarize and analyze observations
 - c. Draw a conclusion
2. Design and interpret graphs and tables of data
3. Demonstrate an understanding of:
 - a. The laws of thermodynamics
 - b. Thermodynamic processes
 - c. Heat engines and refrigerators
4. Choose effective problem solving techniques in the areas of:
 - a. Thermodynamic processes and cycles
 - b. Efficiencies and coefficients of performance
 - c. Ideal Gas Law
 - d. Engine designs
 - e. Energy conservation
 - f. Entropy and Enthalpy
 - g. Statistical mechanics
5. Use the computer to collect information and analyze data
6. Demonstrate successful collaboration in the laboratory and/or classroom
7. Demonstrate competency with standard laboratory equipment

A pre-requisite for this course is approved for the SUNY General Education category listed. This course will reinforce the student learning outcomes for this category.

Topics Covered:

- Fluids: to include density, Bernoulli and bulk moduli
 - Laws of Thermodynamics
 - Thermodynamic processes
 - Calorimetry
 - PV diagrams and analysis; degrees of freedom
 - Quasi-static processes
 - Heat engines and heat cycles
 - Entropy and irreversible processes
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Information for Students

- Expectations of Students
 - [Civility Statement](#)
 - [Student Responsibility Statement](#)
 - [Academic Integrity Statement](#)
- [Accessibility Services](#)

Students who require accommodations to complete the requirements and expectations of this course because of a disability must make their accommodation requests to the Accessibility Services Coordinator.

- [Get Help: JCC & Community Resources](#)

- [Emergency Closing Procedures](#)
- Course grade is determined by the instructor based on a combination of factors, including but not limited to, homework, quizzes, exams, projects, and participation. Final course grade can be translated into a grade point value according to the following:

A=4.0	B+=3.5	B=3	C+=2.5	C=2	D+=1.5	D=1	F=0
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- Veterans and active duty military personnel with special circumstances (e.g., upcoming deployments, drill requirements, VA appointments) are welcome and encouraged to communicate these to the instructor.

Effective Date: Fall 2021