Stephen F. Austin
STATE UNIVERSITY

PHY 430
Thermodynamics

Course Description

This course presents a survey of the principles of classical macroscopic thermodynamics with an introduction to statistical mechanics with some kinetic theory. These principles can be applied to a wide range of thermodynamic systems. PHY 430 may be taken for graduate credit.

Course Prerequisite

Modern Physics (PHY 333)

Specific Course Requirements

Textbook Requirements

See current semester textbook list at http://www.physics.sfasu.edu/docs/books.pdf

Course Objectives

Explore the basic concepts of thermodynamics which can be used for solving many classes of problems in such diverse fields as chemistry, biology, geology, meteorology, environmental science, engineering, low-temperature physics, solid state physics, astrophysics, and cosmology.

Student Learning Outcomes

By the end of the course, a successful student will be able to:

- Understand fundamental concepts and definitions of thermodynamics such as temperature, equation of state, entropy, thermodynamic potentials, etc.
- Know and apply the laws of thermodynamics to simple systems.
- Derive the equation of state for an ideal gas using kinetic theory.

Course Content

The concept of temperature and temperature scales, equations of state, the three laws of thermodynamics and their consequences, thermodynamic potentials and introduction to kinetic theory and statistical mechanics.

Course Assessment

The course assessment may use any or all of the following evaluation tools: exam scores, classroom participation, homework average, quizzes, and team projects.