PHY 131
Mechanics and Heat (PHYS 1301)

Course Description

General Bulletin Description: Fundamental principles of mechanics and heat. Computation of lecture and laboratory grades into one grade; same grade recorded for both lecture and laboratory.

Number of Credit Hours - 3 for lecture, 1 for lab

Course Corequisite

Mechanics and Heat Laboratory (PHY 131L)

Course Prerequisite

High school trigonometry

Specific Course Requirements

Textbook Requirements

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

Program Learning Outcomes

- The student will demonstrate proficiency in the basic and applied fields of physics.
- The student will develop effective written and oral communication skills, especially the ability to transmit complex technical information in a clear and concise manner.

General Education Core Curriculum Objectives/Outcomes

- To understand and apply method and appropriate technology to the study of physical science
- To recognize scientific and quantitative methods and the differences between these approaches and other methods of inquiry, and to communicate findings, analyses, and interpretation both orally and in writing.
- To demonstrate knowledge of the major issues and problems facing modern science, including issues that touch upon ethics, values, and public policies
- To demonstrate knowledge of the interdependence of science and technology and their influence on, and contribution to, modern culture

Student Learning Outcomes

- Demonstrate the ability to apply Newton's laws to the study of mechanical systems
- Describe the laws of thermodynamics
- Solve mechanics and thermodynamics problems using conservation principles

Outline of Topics

- Linear and Rotational Motions (20%)
- Newton's Laws of Motion (15%)
- Work-Energy Principles (10%)
- Momentum-Impulse Principles (10%)
- Gravitational Processes (10%)
- Oscillatory Motion (10%)
- Hydrostatics and Hydrodynamics (10%)
- Heat and Thermodynamics (15%)

Laboratory

The PHY 131 laboratory and lecture are fully integrated and share the same learning outcomes and course objectives.

Course Assessment

The lecture part of the course requirements and method of evaluation are set by the individual instructor for the course. The method of evaluation is frequently based on outside exercises (homework) and scores from in-class and/or take-home examinations. In the determination of the final grade for both the lecture and the lab, the laboratory grade carries a weighting factor of one whereas the lecture part of the final grade carries a weighting factor of three. The same grade is recorded for both the lecture and the laboratory.