



PHY 333 Modern Physics

Course Description

This course is an introduction to relativity, quantum phenomena, atomic and nuclear physics.

Course Corequisite

Modern Physics Laboratory (PHY 333L)

Course Prerequisites

- Electricity, Sound, and Light (PHY 132) or Technical Physics II (PHY 242)
- Calculus I (MTH 233)

Specific Course Requirements

Textbook Requirements

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

Course Objectives

To explore the language and formalism of twentieth century physics. To cover the major core topics of special relativity and quantum theory applied to atomic structure.

Student Learning Outcomes

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

- Demonstrate on examination and through homework assignments proficiency in solving problems in special relativity, the quantum theory of light, the particle nature of matter, the wave nature of matter, tunneling phenomena, three dimensional quantum theory solutions of hydrogen and hydrogen-like atoms, atomic structure and statistical physics.

Course Content

- Special Relativity
- Particle Nature of Matter
- Quantum Mechanics
- Atomic Structure
- Quantum Theory of Light
- Matter Waves
- Quantum Tunneling
- Statistical Physics

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. The lecture and laboratory grades are computed into one grade, and the same grade is recorded for both lecture and laboratory.