Stephen F. Austin
STATE UNIVERSITY

PHY 441
Optics

Course Description

This course examines the fundamentals of physical and geometrical optics including polarization and diffraction. PHY 441 may be taken for graduate credit.

Course Corequisite

Optics Laboratory (PHY 441L)

Course Prerequisite

Electricity and Magnetism (PHY 440)

Specific Course Requirements

Textbook Requirements

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

Student Learning Outcomes

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

- *Geometrical Optics*: Apply the laws of reflection and refraction to plane and spherical surfaces, and discuss the principles of various optical instruments.
- *Wave Optics*: Explain wave propagation of light, interference, diffraction, and polarization of light waves, and the electromagnetic nature of light.

Course Content

- Mathematics of Wave Motion
- Electromagnetic Theory, Photons, and Light
- The Propagation of Light
- Geometrical Optics
- The Superposition of Waves
- Interference
- Diffraction
- Fourier Optics

Course Assessment

The lecture and laboratory grades are computed into one grade, and the same grade is recorded for both lecture and laboratory. The course assessment may use any or all of the following evaluation tools: exam scores, classroom participation, homework average, quizzes, and team projects.