Course Description

Teaches principles of modern physics. Includes in-depth coverage of relativity, quantum physics, solid state, and nuclear physics. For majors requiring calculus-based physics. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week. Additional 1 credit recitation hour recommended.

General Course Purpose

The purpose of the course design is to provide engineers, mathematicians, and scientists with the basic concepts of physics that are required for their full development into competent professionals and informed and informing citizens.

Course Prerequisites/Co-requisites

Prerequisites are PHY 232- General University Physics II and satisfactory placement score for ENG 111.

Course Objectives

Upon completion of the course, the student should be able to understand:

- physics as the basic tool of quantitative science and technology
- how to relate physical events in terms of mathematical description using calculus
- the required physical and mathematical concepts and their sources

Major Topics to be Included

- Special theory of Relativity
- Wave properties of matter
- Introduction to quantum physics
- Bohr theory and the hydrogen atom
- Schrödinger wave equation and the hydrogen atom
- Solid state
- Nuclear structure and nuclear energy
- Nuclear interactions
- Elementary particles
- General Theory of Relativity and Cosmology