

# DETAILED COURSE DESCRIPTION

**Course Number** PHYS 138

**Course Title** Honors: Fundamentals of Physics for Physics Majors II

**Target audience** The course is designed for freshman-level physical science or physics majors. Physics 136 is an alternative. The course has a two-hour weekly lab.

**Corequisites** Mathematics 142

**Catalog description** Calculus-based physics of electricity, magnetism, optics.

## Expected previous knowledge

**Concepts** Physical science at the high-school level. A previous physics course in physics is not required.

**Skills** Integral calculus should be taken concurrently.

## Course Objectives

The objectives are: To cover the basics of 1) electricity and magnetism, 2) circuits and circuit elements 3) geometrical optics 4) interference and diffraction

## Sample Text

“Fundamentals of Physics, 6<sup>th</sup> Ed.”, Halliday, Resnick, and Walker; Wiley.

## Minimum Material Covered

Gauss’s law

Electric potential

Capacitors, resistors, dielectrics, and current

DC circuits

Magnetic fields

Faraday’s law and induction

Inductance and AC circuits

Maxwell’s equations and electromagnetic waves

Geometrical optics

Interference

Diffraction

