

# Physics 116: General Physics (3 of 3)

## Overview

Phys 116 is the third course of a three-quarter course sequence of introductory physics courses targeted for students in life sciences. Upon successful completion of this course, a student will be able to develop algebra-based models to describe the physical world pertaining to oscillatory motion, sound, geometrical and physical optics, and modern physics. Additionally, students will be able to apply these physics concepts to other fields of science and everyday phenomena.

The course consists of lecture (3 per week) and tutorial (Tuesday from 5pm to 6pm) components.

## Evaluation

The final course grade is based on one of the following grade weightings. The exams are curved, but all other aspects of the course are graded on an absolute scale. The average grade in the course will be set to around 3.0, with top 5 to 10 % of students getting a grade point of 3.9 or 4.0.

- **60 %:** Closed-book exams: two midterms and one final exam. A better option is chosen from the two below.
  1. 40 % midterms and 20 % final
  2. 20 % midterm (better of 2) and 40 % final
- **25 %:** Pre-lecture quizzes before each lecture
- **10 %:** In-class quizzes during lectures
- **5 %:** Tutorial pre-tests before tutorials
- Practice problems are assigned but not graded.

## Texts

- **Required:** *College Physics a strategic approach*, Knight, Jones and Field (Pearson, 3<sup>rd</sup> edition technology update, 2017)

## Lecture Topics (Textbook chapters)

- **Ch. 14 (4 lectures):** Simple harmonic oscillators
- **Ch. 15 (4 lectures):** Traveling waves, wave model, Doppler effect
- **Ch. 16 (2 lectures):** Superposition of waves and standing waves
- **Ch. 17 (3 lectures):** Physical optics
- **Ch. 18 (3 lectures):** Geometrical optics
- **Ch. 19 (2 lectures):** Optical instruments
- **Ch. 25 (2 lectures):** Electromagnetic waves
- **Ch. 28 (2 lectures):** Quantum physics
- **Ch. 29 (2 lectures):** Atomic physics
- **Ch. 30 (3 lectures):** Nuclear physics

**Tutorial Topics (7 or 8 of the following)**

- Simple harmonic motion
- Damped oscillations
- Superposition and reflection
- Reflection and transmission
- Two source interference
- Convex lenses
- Photoelectric effect
- Wave-particle duality
- Spectroscopy