

Virginia Western Community College

PHY 202

General College Physics II

Prerequisites

PHY 201 with a grade of "C" or better, and MTH 162 or MTH 167 with a grade of "C" or better.

Course Description

Covers waves, electromagnetism, optics, and modern physics. Includes mechanical waves, sound, electrostatics, Ohm's law and DC circuits, magnetic forces and magnetic fields, electromagnetic induction, ray optics, wave optics, and selected topics of modern physics. Part II of II.

Semester Credits: 4

Lecture Hours: 3

Laboratory Hours: 3

Required Materials

Mastering Physics (online homework system) and a scientific calculator.

Textbook:

College Physics with Mastering Physics access. Young and Adams. 11th edition. Pearson Publishing. ISBN: any of 99780135180327, 9780135720349, 9780135720516

Course Outcomes

At the completion of this course, the student should be able to:

- Understand the wave phenomena.
- Solve the problems involving standing waves and interference.
- Understand the properties of light and geometric optics and physical optics.
- Solve problems involving refraction, reflection, and diffraction of light.
- Understand the electric force, electric field, and electric potential
- Find the equivalent resistance in series and in parallel connection.
- Analyze simple DC circuits consisting of resistors and EMFs by using Kirchhoff's rules.
- Learn the magnetic force and understand the magnetic field.
- Solve problems involving the motion of charged objects in electric and magnetic fields.
- Understand the electromagnetic induction and its application.
- Understand AC circuits consisting of resistors, capacitors, inductors, and EMFs.
- Learn the special relativity
- Learn the basic modern physics regarding photos, electrons, atoms, and molecules

Topical Description

Lecture Topics

Chapter 12	Mechanical Waves and Sound
Chapter 24	Geometric Optics
Chapter 25	Optical Instruments
Chapter 25	Interference and Diffraction
Chapter 17	Electric Charge and Electric Field
Chapter 18	Electric Potential and Capacitance
Chapter 19	Current, Resistance, and Direct-Current Circuits
Chapter 20	Magnetic Field and Magnetic Force
Chapter 21	Electromagnetic Induction
Chapter 22	Alternating Current
Chapter 23	Electromagnetic Waves
Chapter 27	Relativity
Chapter 28	Photons, Electrons, and Atoms
Chapter 29	Atoms, Molecules, and Solids

Laboratory Topics

Lab 1	Introduction. Safety. Fitting Curves
Lab 2	Standing wave
Lab 3	Sound wave
Lab 4	Snell's law
Lab 5	Lens and mirror
Lab 6	Mapping equipotential lines
Lab 7	Adding resistors and capacitors in series and in parallel
Lab 8	DC circuits
Lab 9	RC circuit and time constant
Lab 10	Magnetic field and Faraday's law
Lab 11	AC-RLC circuit

Notes to Instructors

- In order to pass the course, students should earn 50 % of the entire homework grade by the end of the semester. Earning less than 50% of homework will result in 'F grade'.

[ADA Statement \(PDF\)](#)

[Title IX Statement \(PDF\)](#)