JAMESTOWN COMMUNITY COLLEGE
State University of New York

INSTITUTIONAL COURSE SYLLABUS

Course Title: General Physics II

Course Abbreviation and Number: PHY 1620 **Credit Hours:** 4 **Course Type:** Lecture/Lab

Course Description: Students will continue their investigative approach to understanding the principles of physics. They will further their comprehension of wave phenomena, including sound waves, and will study electricity and magnetism, light and optics, and selected topics in modern physics such as relativity.

Eligibility: MAT 1600; Prerequisite: PHY 1610 or PHY 1710. J spring; C occasionally.

General Education Requirements Met

SUNY	JCC
Natural Sciences	Scientific Reasoning

Student Learning Outcomes:

Students who demonstrate understanding can:

1. Read, write, and/or speak about current physics topics.
2. Write laboratory reports using proper grammar in which they:
   a. Describe a purpose
   b. Propose a hypothesis
   c. Summarize and analyze observations
   d. Draw a conclusion
   e. Determine error analysis
3. Design and interpret graphs or tables of data.
4. Demonstrate a conceptual understanding of:
   a. Simple harmonic oscillators
   b. Mechanical waves
   c. Sound waves and superposition of waves
   d. Electric charge, electric fields and electric force for point particles
   e. Simple circuits
   f. Magnetism
   g. Induction, electric generators
   h. Electromagnetic waves
   i. Light and geometric optics
5. Choose effective problem solving techniques in the area of:
   a. Mass-spring system and simple pendulum
   b. Standing waves
   c. Sound intensity and loudness levels
   d. Coulomb's law and electric force and electric field
   e. Analyzing simple circuits involving resistors and capacitors in series and parallel.
   f. Electric potential
   g. Magnetism and magnetic fields
   h. Forces on electric charge moving in a magnetic field and forces on current carrying wires in magnetic fields
   i. Laws of induction
   j. Geometric optics
6. Employ a computer to collect data and to analyze data.
7. Demonstrate successful collaboration in the laboratory and/or classroom.
8. Demonstrate competency with standard laboratory equipment
9. Demonstrate an understanding of the methods scientists use to explore natural phenomena, including observation, hypotheses development, measurement and data collection, experimentation, evaluation of evidence, and employment of data analysis or mathematical modeling. [SUNY Gen Ed – Natural Sciences]
10. Application of scientific data, concepts, and models in one of the natural sciences. [SUNY Gen Ed – Natural Sciences]

Topics Covered:

- Vibrations and waves
  - Energy in a simple harmonic oscillator
  - The simple pendulum
  - Types of waves
  - Standing waves
- Sound
  - Intensity of sound
  - Sources of sound
  - Doppler effect

- Electric charge
  - Forces and fields
  - Insulators and conductors
  - Coulomb's law
- Electric potential and electric energy and capacitance
  - Equipotential lines
  - Capacitance
  - Storage of energy
- Electric current
  - Electric battery
  - Simple circuits
  - Kirchoff's rules
- Magnetism
  - Magnets and magnetic fields
  - Force on electric current in electric field
  - Magnetic field due to a long straight wire
  - Mass spectrometer
  - Electromagnets and solenoids
- Electromagnetic induction
  - Induced EMF
  - Electric generators
- Electromagnetic waves and Optics
  - Light as an electromagnetic wave
  - Ray model of light
  - Formation of images by mirrors and lenses
  - Optical instruments
- Special theory of relativity

Information for Students

- Expectations of Students
  - Civility Statement
  - Student Responsibility Statement
  - Academic Integrity Statement
- Accessibility Services
  Students who require accommodations to complete the requirements and expectations of this course because of a disability must make their accommodation requests to the Accessibility Services Coordinator.
- Get Help: JCC & Community Resources
- Emergency Closing Procedures
- Course grade is determined by the instructor based on a combination of factors, including but not limited to, homework, quizzes, exams, projects, and participation. Final course grade can be translated into a grade point value according to the following:

A=4.0	B+=3.5	B=3	C+=2.5	C=2	D+=1.5	D=1	F=0

- Veterans and active duty military personnel with special circumstances (e.g., upcoming deployments, drill requirements, VA appointments) are welcome and encouraged to communicate these to the instructor.

Effective Date: Fall 2026