# JAMESTOWN COMMUNITY COLLEGE
## State University of New York

# INSTITUTIONAL COURSE SYLLABUS

**Course Title:** Understanding Physics

**Course Abbreviation and Number:** PHY 1510 **Credit Hours:** 3 **Course Type:** Lecture/Lab

**Course Description:** Students in this one-semester introductory course will learn how physics is the foundation for all other sciences. Students will look at physics from a conceptual viewpoint where verbal reasoning is emphasized and a minimum of algebra is used. Motion, heat, forces, light, energy, electricity, and magnetism are studied with the underlying theme being energy transfer. Each topic will emphasize hands-on investigations and lab experiences.

Eligibility: MAT 1500 or higher; Prerequisite/Corequisite: ENG 1510.

**General Education Requirements Met**

| SUNY | JCC |
|---|---|
| Natural Sciences | Scientific Reasoning |

**Student Learning Outcomes:**

Students who demonstrate understanding can:

1. Communicate using scientifically correct concepts both in written work and in spoken work.
2. Analyze, breakdown, and explain complex physical phenomena into basic energy transformations.
3. Design and interpret graphs.
4. Demonstrate an understanding of conceptual physics:
    a. Energy conservation and energy transfer
    b. Forces and Motion (to include friction forces)
    c. Magnetic forces and fields
    d. Electric forces and fields
    e. Gravitational forces and fields
    f. Geometric optics
    g. Light and heat energy transfer
5. Collect and analyze data using a computer with associated probes, sensors, and software.

**Topics Covered:**

- Cycle 1: Interactions and Energy
    - Measuring motion, measuring energy, elastic interactions
- Cycle 2: Interactions and Forces
    - Motion with a constant force, pushing against the motion, changing force strength and mass, combination of forces, motion with balanced forces
- Cycle 3: Interactions and Fields
    - Magnetic interactions, electric charge interactions, gravitational interactions, strength of the gravitational interaction
- Cycle 4: Model of Magnetism
    - Experiments with magnetism, initial models for magnetism
- Cycle 5: Electric Circuit, Electromagnetic, and Thermal Interactions
    - Electric circuits, circuits and energy, electromagnetic interactions, thermal interactions.
- Cycle 6: Light Interactions
    - Seeing, surfaces, shadows
- Cycle 7: Interactions and Conservation
    - Energy inputs and outputs, keeping track of energy, conservation of energy.

**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 2021