Passaic County Community College
Academic Year: 2024-2025
Standard Syllabus

Department Chair: Professor Joshua Sabatini

Course Code: PY 121 **Course Title:** Physics II

Department: Biological and Physical Sciences **Semesters Offered:** Fall, Spring, Summer

Course Description: This is the second of a two-semester, calculus-based, physics sequence. The course is recommended for majors in engineering, science, or mathematics. The course covers waves, sound, electrostatics, electric fields, Gauss's Law, electric potential, capacitors, electric circuits, magnetic fields, Ampere's Law, Faraday's and Lenz's Law, inductance, alternating current, and electromagnetic waves.

Prerequisites: PY 120

Credits: 4 **Lecture Hours:** 3 **Lab/Studio Hours:** 3 **Clinical/Fieldwork Hours:** 0

REQUIRED TEXTBOOK/MATERIALS: **Textbook**: Physics for Sci & Eng. with Modern Physics by Raymond A. Serway and John W. Jewett. You will also need a **scientific calculator** for both lecture and laboratory and a **pencil**.

ADDITIONAL TIME REQUIREMENTS: Based on a 15 week semester, students are expected to complete approximately 8 hours per week of assigned work outside of class.

COURSE LEARNING OUTCOMES: Upon successful completion of this course, students will be able to:

- Analyze simple harmonic motion.
- Describe wave phenomena.
- Analyze electric fields and forces using Coulomb's Law and Gauss's Law.
- Apply Kirchhoff's rules to analyze DC circuits.
- Analyze magnetic fields for simple arrangements of currents using Ampere's Law.
- Solve basic problems of electromotive induction using Faraday's Law and Lenz's Law.
- Utilize standard laboratory techniques.

GENERAL EDUCATION OUTCOMES:

- 3.1 Use critical thinking skills appropriate for the nature and level of a given Gen Ed course to solve problems involving, but not limited to, data analysis and interpretation, and experimental design.
  The assignment(s)/activity students engage in to demonstrate their acquisition of the NJCCC GE learning goals: This outcome is measured by the lab final exam. Students are asked to use the provided equipment in order to perform a basic measurement of one or more physical quantities. They are also required to give a proper data analysis and interpretation.
- 3.2 Demonstrate an understanding of basic terminology, major concepts and fundamental theories in Physics. The assignment(s)/activity students engage in to demonstrate their acquisition of the NJCCC GE learning goals: Conceptual questions and problems embedded in the final exam are used to assess student understanding of basic terminology, major concepts and fundamental theories related to oscillatory motion, wave motion, electricity, electric circuits, and magnetism.

GRADING STANDARD:

Lecture Exams (3 exams)	45%
Lab Reports (written) & Lab Final Exam	25%
Quizzes	10%
Comprehensive Final Exam	20%
TOTAL	100%

COURSE CONTENT:

Lecture Topics*	Textbook Chapters
Oscillatory Motion-Simple Harmonic Motion	Ch. 15
Applications of Simple Harmonic Motion	Ch. 15
Wave Motion	Ch. 16
Sound Waves	Ch. 16
The Doppler Effect	Ch. 16
Superposition and Standing Waves	Ch. 17
Exam 1	
Electrostatics and Coulomb's Law	Ch. 22
The Electric Field	Ch. 22
Gauss's Law	Ch. 23
Applications of Gauss's Law	Ch. 23
Electric Potential Energy	Ch. 24
Electric Potential	Ch. 24
Capacitance and Capacitors	Ch. 25
Exam 2	
Electric Current, Resistance, and Ohm's Law	Ch. 26
Direct Current Circuits	Ch. 27
Magnetism	Ch. 28
Sources of the Magnetic Field	Ch. 29
Ampere's Law	Ch. 29
Faraday's Law of Induction and Lenz's Law	Ch. 30
Applications of Faraday's Law of Induction	Ch. 30
Exam 3	
Inductance	Ch. 31
Alternating Current	Ch. 27 & Ch. 32
Electromagnetic Waves	Ch. 33
Final Exam-Cumulative and Comprehensive	
***Lecture topics schedule subject to change**	

LABORATORY SCHEDULE:

Laboratory
Lab 0: Introduction and Safety
Lab 1: Simple Harmonic Motion
Lab 2: The Pendulum
Lab 3: Standing Waves and Resonance
Lab 4: Static Electricity and the Electroscope
Lab 5: Electric Charge and the Faraday Pail
Lab 6: Equipotential Mapping
Electric Safety, Meters, and Measurements

Lab 7: DC Circuits
Lab 8: RC Circuits
Lab 9: Magnetic Fields and Ampere's Law
Lab 10: Faraday's Law of Induction
Lab 11: DC Motor
Lab Final Exam

College Policies: For Information regarding:

- PCCC's Academic Integrity Code
- Student Conduct Code
- Student Grade Appeal Process
- Intensive Writing Requirements

Please refer to the PCCC Student Handbook and PCCC Catalog.

Inclement Weather:

In the event of inclement weather and the College is closed, all classes will switch to remote (Zoom) learning. The Zoom link for this course section is has been added here in this document by your instructor. Please also see BlackBoard for further instructions.

PANTHER ALERT: The college will announce delayed openings, closings, and other emergency situations through the Panther Alert System. Students are encouraged to sign up for Panther Alert Notifications by logging into their student accounts through the PCCC website at www.pccc.edu and following Panther Alert System instructions.

Requesting Reasonable Accommodations at Passaic County Community College: Passaic County Community College Office of Accessibility Services, in accordance with Section 504 of the Rehabilitation Act of 1973, Americans with Disabilities Act (ADA) of 1990, and the Americans with Disabilities Act Amendments Act (ADAAA) of 2008 is committed to providing reasonable accommodations to students with documented disabilities. If you have a disability and believe you need accommodations, please contact the Office of Accessibility Services (OAS) at (973) 684-6395 or email ods@pccc.edu. Students should request accommodations as early as possible, since they may take time to implement.