# RARITAN VALLEY COMMUNITY COLLEGE
# ACADEMIC COURSE OUTLINE

# PHYS 102 – GENERAL PHYSICS II

## I. Basic Course Information

A. Course Number and Title: PHYS 102 – General Physics II

B. New or Modified Course: Modified

C. Date of Proposal: Semester: Fall Year: 2025

**D. Effective Term: Fall 2026**

E. Sponsoring Department: Science & Engineering

F. Semester Credit Hours**:** 4

G. Weekly Contact Hours**:** 6 Lecture**:** 3
Laboratory**:** 3
Out of class student work per week: 7.5

H. ☒ Prerequisite (s): PHYS 101 - General Physics I or equivalent.
☐ Corequisite (s):

I. Additional Fees**:** No

## II. Catalog Description

Prerequisites: PHYS 101 - General Physics I or equivalent. This is the second semester of a two-semester sequence in introductory algebra-based physics, which is required for students majoring in many of the sciences and a variety of other disciplines. Topics include: Simple harmonic motion and elasticity, vibrations and waves, sound, electric and magnetic forces and fields, electric potential, direct current circuits and components, alternating current, electromagnetic waves, geometric and physical optics, and topics in modern physics.

## III. Statement of Course Need

**A.** This is a standard course in any algebra-based physics course sequence.

**B.** This course requires a lab component for students to employ a scientific approach to understanding of the physics principles and concepts, and obtain first-hand experience in observation, data collection, analysis, and research.

**C.** This course generally transfers as a program requirement, general education course in science with lab, and/or free elective dependent on the transfer institution.

## IV. Place of Course in College Curriculum

**A**. Free Elective.

**B**. This course serves as a General Education course in Science with Lab.

**C**. This course meets a program requirement for:
Mechanical Engineering Technology, Associate of Science
Biological Sciences, Associate of Science Degree in Science and Mathematics
Engineering, Associate of Science
Exercise Science, Associate of Science
Mathematics, Associate of Science Degree in Science and Mathematics
Information Systems & Technology, Associate of Science
Environmental Science, Associate of Science Degree in Science and Mathematics
Chemistry, Associate of Science Degree in Science and Mathematics

**D**. To see course transferability: a) for New Jersey schools, go to the NJ Transfer website, www.njtransfer.org; b) for all other colleges and universities, go to the individual websites.

## V. Outline of Course Content

This course explores the following topics:

A. Simple harmonic motion
B. Elasticity
C. Waves and Sound
D. Electric charge
E. Electric forces and fields
F. Electric potential energy and voltage
G. Capacitance
H. Current and resistance
I. DC circuits
J. Magnetic forces and fields
K. Electromagnetic induction
L. Alternating current
M. Electromagnetic waves
N. Geometric optics

O. Physical optics
P. Topics in modern physics

## VI. A. Course Learning Outcomes:

**At the completion of the course, students will be able to:**

1. Analyze and solve mathematically appropriate physics problems (**GE 2, 3)**.
2. Conceive logical inferences to conceptual physics questions using scientific knowledge from the fundamental principles and laws of physics **(GE 2, 3)**.
3. Use technology to identify and collect information (**GE 4)**.
4. Collect and interpret data accurately (**GE 3)**.

### B. Assessment Instruments

1. Exams
2. Final
3. Lab reports
4. Other, as specified by instructor

## VII. Grade Determinants

A. Exams
B. Final
C. Lab reports
D. Other, as specified by instructor (e.g., Extra credit assignments).

Given the goals and outcomes described above, LIST the primary formats, modes, and methods for teaching and learning that may be used in the course:

A. Lecture/discussion
B. Small-group work
C. Laboratory
D. Student collaboration
E. Independent study
F. Other, as specified by instructor

## VIII. Texts and Materials

A. suggested textbooks
B. web sources
C. other computer-based sources
D. other, as specified by instructor

Textbook Options:

College Physics (**free online**, OpenStax)
Cutnell/Johnson, Physics, Wiley Publishers.

(Please Note: The course outline is intended only as a guide to course content and resources. Do not purchase textbooks based on this outline. The RVCC Bookstore is the sole resource for the most up-to-date information about textbooks.)

**IX. Resources**

A. Laboratory
B. Computers
C. Library

**X. Check One: ☐Honors Course ☒ N/A**