

Physics

Course Number: SC1117

Grade level: 11–12

Credits: 1.0

Prerequisite Courses: None

Course Description

Combining scientific inquiry with advanced mathematics, SC1117 is a stimulating, two-semester high school-level course that will challenge students to understand and explain how energy, matter, and motion are all related. Engaging lessons introduce theories and experiments and encourage students to develop the knowledge and understanding necessary to support conclusions with numerical results. Inspiring students to relate knowledge to real-world applications, the course connects basic principles to more complex ideas in many fascinating areas: thermal energy, vibrations and waves, light and refraction, sound, electricity, and magnetism.

Course Objectives

Throughout the course, you will meet the following goals:

- Apply mathematical formulas to show the relationships among position, velocity, acceleration, and time
- Depict the motion of an object using diagrams, graphs, and vectors
- Explain how energy is stored, conserved, and utilized
- Use mathematical relationships to calculate and apply Newton's Laws
- Examine the characteristics and behaviors of waves, sound, light, electricity, and magnets

Student Expectations

This course requires the same level of commitment from you as a traditional classroom course would. Throughout the course, you are expected to spend approximately 5–7 hours per week online on the following activities:

- Interactive lessons that include a mixture of instructional videos and tasks
- Assignments in which you apply and extend learning in each lesson
- Assessments including quizzes, tests, and cumulative exams

Communication

Your teacher will communicate with you regularly through discussions, e-mail, chat, and system announcements. Through this communication with your teacher, you will monitor your progress through the course and improve your learning by reviewing material that was challenging for you.

You will also communicate with classmates, either via online tools or face-to-face, as you do the following:

- Collaborate on projects
- Ask and answer questions in your peer group
- Develop speaking and listening skills

Grading Policy

You will be graded on the work you do online and the work you submit electronically to your teacher. The weighting for each category of graded activity is listed below.

Assignments	10%
Labs	0%
Lesson Quizzes	20%
Unit Tests	50%
Cumulative Exams	20%
Additional	0%

Scope and Sequence

When you log into the Virtual Classroom, you can view the entire course map, which provides a scope and sequence of all topics you will study. Clicking a lesson's link in the course map leads to a page listing instructional activities, assignments, and learning objectives specific to that lesson. The units of study are summarized below.

- Unit 1:** Introduction to Physics
- Unit 2:** Representing Motion
- Unit 3:** Accelerated Motion
- Unit 4:** Two-Dimensional Motion and Vectors
- Unit 5:** Forces and Laws of Motion
- Unit 6:** Work and Energy
- Unit 7:** Rotational Motion
- Unit 8:** Momentum and Its Conservation
- Unit 9:** Circular Motion and Gravitation
- Unit 10:** Fluid Mechanics
- Unit 11:** Thermal Energy
- Unit 12:** Vibrations and Waves
- Unit 13:** Sound
- Unit 14:** Light and Reflection
- Unit 15:** Refraction
- Unit 16:** Interference and Diffraction

- Unit 17:** Static Electricity and Fields
- Unit 18:** Electricity Currents and Circuits
- Unit 19:** Magnetism
- Unit 20:** Electromagnetic Induction
- Unit 21:** Atomic Physics
- Unit 22:** Subatomic Physics