

Physics 2

Revised May 2020

Course Description:

Physics II is a course designed to be the equivalent of a college introductory physics course. Students use mathematical models and lab experiences to study relationships between objects in terms of motion, energy, forces, heat, and waves. A variety of assessments are used throughout the course including laboratory work, special activities and projects.

Big Ideas:

1. Motion can be measured and described using a variety of methods.
2. Forces and energy are essential to understanding motion.
3. Collisions can be described using forces, energy, and momentum.
4. Energy and its conservation are essential in describing and analyzing motion.
5. Inquiry involves engaging in scientifically oriented questions, giving priority to evidence in responding to questions, formulating, connecting, communicating and justifying explanations.
6. The development of scientific knowledge is based on questioning current knowledge, using empirical facts to develop logical theories, and verifying observations and claims.

Essential Learner Outcomes:

ELO #	Essential Learner Outcome Description	Standards
1	Students will investigate a problem through experimentation and effectively communicate the result.	9-12.PS2.A.3 9-12.PS2.B.2
2	Students will represent, describe and predict an objects motion.	9-12.PS2.A.1 9-12.PS2.B.1
	• Motion in one dimension	9-12.PS2.A.1 9-12.PS2.B.1
	• Motion in two dimensions	9-12.PS2.A.1 9-12.PS2.B.1
	• Rotational and circular motion	9-12.PS2.A.1 9-12.PS2.B.1
	• Simple harmonic motion	9-12.PS4.A.1
3	Students will describe the interaction of forces and how they relate to an objects motion.	9-12.PS2.A.1 9-12.PS2.A.2 9-12.PS2.A.3 9-12.PS2.B.1
	• Newton's Laws	9-12.PS2.A.1 9-12.PS2.A.2
	• Momentum	9-12.PS2.A.2 9-12.PS2.A.3
	• Gravitation	9-12.PS2.B.1

4	Students will explain the transfer of energy in a given system.	9-12.PS3.A.1 9-12.PS3.A.2 9-12.PS3.A.3 9-12.PS3.B.1 9-12.PS4.A.1 9-12.PS4.A.2
	<ul style="list-style-type: none"> • Energy 	9-12.PS3.A.1 9-12.PS3.A.2 9-12.PS3.A.3
	<ul style="list-style-type: none"> • Thermal Energy 	9-12.PS3.A.1 9-12.PS3.A.2 9-12.PS3.A.3
	<ul style="list-style-type: none"> • Waves and sound 	9-12.PS3.A.2 9-12.PS4.A.1 9-12.PS4.A.2
5	Students will apply the concepts of forces and energy to the atomic level.	9-12.PS3.A.1 9-12.PS3.A.2 9-12.PS3.A.3 9-12.PS3.B.1
	<ul style="list-style-type: none"> • The Ideal Gas Law and Kinetic Theory 	9-12.PS3.A.1 9-12.PS3.A.2
	<ul style="list-style-type: none"> • Thermodynamics 	9-12.PS3.A.1 9-12.PS3.A.2 9-12.PS3.A.3 9-12.PS3.B.1
6	Students will translate scientific information into a table or graph and be able to explain it verbally and mathematically.	9-12.PS3.A.1 9-12.PS2.A.1 9-12.PS2.A.2 9-12.PS2.B.1 9-12.PS3.A.3