General Course Information

Course Name: Physics	
Department: Science	Grade Level(s): 10-12
Duration/Credits: 1 year/1 credit	Prerequisites: Successful completion of Algebra I and concurrently enrolled in Geometry. Students should have a strong understanding of the following: -Performing algebraic manipulations of mathematical equations -Creating a graph using data -interpreting graph data using tools such as slope and area.
BOE Approval Date: December 2022	Course Code: H3420- Physics
Course Description:	
This course introduces the study of the physical world and promotes problem solving and analysis of data with valid conclusions. The student studies and measures the interaction of matter and energy, accompanied by laboratory explorations. Emphasis is placed on individual investigations and class discussion of experimental results and analysis of data. The course also includes discussion and practice with problem solving. Topics include Kinematics (motion, forces, energy and momentum), Waves and Electromagnetic Radiation, and Electricity.	

Course Rationale:
Knowledge of physics is important for the student to understand the laws and principles that make up how the universe works. In addition, today's job market demands advanced skills, requiring people to be able to learn, reason, think creatively, make decisions, and solve problems. An understanding of physics and the processes of science contribute in an essential way to these skills. Students must analyze and interpret data and draw conclusions about the laws of the physical world.
Course Objectives:
1. The student will be able to represent and analyze uniform and accelerated motion both quantitatively and qualitatively. 2. The student will use mathematical representations to describe and predict the gravitational forces between objects and to describe the motion of falling things. 3. The student will be able to use Newton's second law to analyze the forces acting on an object and their effect on the change in motion. 4. The student will be able to analyze and describe the relationships among work, energy, power (A+: Writing) 5. The student will be able to evaluate information to describe and discuss the results of a collision between two or more moving objects. (A+: Speaking). 6. The student will research scientific explanations and theories to support his or her physics investigations. (A+: Research)

7. The student will plan and conduct an investigation to provide evidence that an electric current can produce a magnetic field and that a changing magnetic field can produce an electric current. 8. The student will analyze a process to show that energy cannot be created or destroyed but can be transferred or transformed. 9. The student will read, analyze and discuss how waves are transmitted and how changing the medium that the wave travels through changes the properties of the wave. (A+: Reading)
Standards Alignment:
NGSS (Alignment to MLS)

Priority Standards

PS2-1
Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration.

HS-PS2-2
Use mathematical representations to support the claim that the total momentum of a system of objects is conserved when there is no net force on the system.

HS-PS2-5