Marking Period 1 (MP1)	Science Curriculum Pacing Guide Grade HS PHYSICS + HONORS
MP1 **Standards for Science Content**	HS-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-PS2-4**:** Use mathematical representations of Newton's Law of Gravitation and Coulomb's Law to describe and predict the gravitational and electrostatic forces between objects. HS-ESS1-4: Use mathematical or computational representations to predict the motion of orbiting objects in the solar system.
MP1 **Topics**	Unit 1: Mechanics in One Dimension Unit 2: Mechanics in Two Dimensions
MP1 **Skills/Concepts**	In Unit 1, students will seek to answer the question "How can we model motion and forces?" The modules in this unit each provide part of the answer to this question. In Unit 2, students will seek to answer the question "How can forces cause so many different types of motion?"
MP1 **Core Materials**	McGraw Hill - Inspire Physics

Marking Period 2 (MP2)	Science Curriculum Pacing Guide Grade HS PHYSICS + HONORS
MP2 **Standards for Science Content**	HS-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-PS2-3: Apply science and engineering ideas to design, evaluate, and refine a device that minimizes the force on a macroscopic object during a collision. HS-PS2-4: Use mathematical representations of Newton's Law of Gravitation and Coulomb's Law to describe and predict the gravitational and electrostatic forces between objects. HS-PS2-6: Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials. HS-PS3-1: Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known. HS-PS3-2: Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motion of particles (objects) and energy associated with the relative position of particles (objects). HS-PS3-3: Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy. HS-ESS1-4: Use mathematical or computational representations to predict the motion of orbiting objects in the solar system.
MP2 **Topics**	Unit 2: Mechanics in Two Dimensions (Modules 7 – 8) Module 7: Gravitation: Students will learn that the gravitational force is responsible for objects falling to the ground, as well as orbits. Module 8: Rotational Motion: Students will learn that forces can produce changes in rotation. Unit 3: Momentum and Energy (Modules 9 – 11) Module 9: Momentum and Its Conservation: Students will learn about impulse, momentum, and the conservation of momentum, which will help them analyze collisions. Module 10: Energy and Its Conservation: Students will learn that energy comes in many forms, can be transferred or transformed, and is conserved, and that these properties allow humans to manipulate and use energy. Module 11: Thermal Energy: Students will learn about thermal energy, heat, heat capacity, changes of state, and the laws of thermodynamics, and the role that these concepts play in everyday life.
MP2 **Skills/Concepts**	In Unit 2, students will seek to answer the question "How can forces cause so many different types of motion?" In Unit 3, students will seek to answer the question "Why is energy important to humans and society?"
MP2 **Core Materials**	McGraw Hill - Inspire Physics

Marking Period 3 (MP3)	Science Curriculum Pacing Guide Grade HS PHYSICS + HONORS
MP3 **Standards for Science Content**	HS-PS4-1: Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media. HS-PS4-3: Evaluate the claims, evidence, and reasoning behind the idea that electromagnetic radiation can be described either by a wave model or a particle model, and that for some situations one model is more useful than the other.
MP3 **Topics**	Unit 4 - Waves and Light
MP3 **Skills/Concepts**	In Unit 4, students will seek to answer the question "How do waves affect our everyday lives?" •Unit 4 - Module 13: Vibrations and Waves: Students will learn about periodic motion and develop an understanding of the basic properties and behaviors of waves. (5) •Unit 4 - Module 14: Sound: Students will learn about the generation, manipulation, detection, and applications of sound waves. (5) •Unit 4 - Module 15: Fundamentals of Light: Students will learn that light allows us to see and that its wave properties are responsible for effects like color and polarization. (6) •Unit 4 - Module 16: Reflection and Refraction: Students will learn mirrors and lenses can be used to reflect and refract light in ways that are helpful to humans. (10) •Unit 4 - Module 17: Interference and Diffraction: Students will learn that the interference and diffraction of light are responsible for optical effects such as thin-film interference, iridescence, and diffraction patterns. (6)
MP3 **Core Materials**	Inspire Physics (Mcgraw Hill)

Marking Period 4(MP4)	Science Curriculum Pacing Guide Grade HS PHYSICS + HONORS
MP4 **Standards for Science Content**	HS-PS2-4: Use mathematical representations of Newton's Law of Gravitation and Coulomb's Law to describe and predict the gravitational and electrostatic forces between objects. HS-PS2-5: 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 HS-PS3-1: Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known. HS-PS3-2: Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motion of particles (objects) and energy associated with the relative position of particles (objects). HS-PS3-3: Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy. HS-PS3-5: Develop and use a model of two objects interacting through electric or magnetic fields to illustrate the forces between objects and the changes in energy of the objects due to the interaction. HS-PS4-2: Evaluate questions about the advantages of using digital transmission and storage of information. HS-PS4-4: Evaluate the validity and reliability of claims in published materials of the effects that different frequencies of electromagnetic radiation have when absorbed by matter. HS-PS4-5: Communicate technical information about how some technological devices use the principle of wave behavior and wave interactions with matter to transmit and capture information and energy.
MP4 **Topics**	Unit 5 - Electricity and Magnetism
MP4 **Skills/Concepts**	In Unit 5, students will seek to answer the question "What role do electricity and magnetism play in the technology we use every day?" The modules in this unit each provide part of the answer to this question. In Unit 5, students will seek to answer the question "What role do electricity and magnetism play in the technology we use every day?" The modules in this unit each provide part of the answer to this question. In Module 18, students will learn that electrically charged objects exert force on each other and that this force can be used in various applications, including capacitors. In Module 19, students will learn that electric currents allow for the transfer of energy, which can be transformed into other useful forms of energy. In Module 20, students will learn that both permanent magnets and electromagnets produce magnetic fields, which can be used in a variety of applications, including motors. In Module 21, students will learn that electricity and magnetism are part of the same force and that the interaction between electric and magnetic fields allows for a variety of technological applications, including generators and the use of electromagnetic waves.
MP4 **Core Materials**	Inspired Physics (McGraw Hill)