Swedesboro-Woolwich School District's Science Curriculum Guidance Document

GRADE 6– Unit/Module 1 Physical Science

Mission Statement
The primary goal of the Swedesboro-Woolwich School District is to prepare each student with the real life skills needed to compete in a highly competitive global economy. This will be achieved by providing a comprehensive curriculum, the integration of technology, and the professional services of a competent and dedicated faculty, administration, and support staff. Guiding this mission will be Federal mandates, including No Child Left Behind, the New Jersey Core Curriculum Content Standards, and local initiatives addressing the individual needs of our students as determined by the Board of Education. The diverse resources of the school district, which includes a caring PTO and active adult community, contribute to a quality school system. They serve an integral role in supporting positive learning experiences that motivate, challenge and inspire children to learn.

Unit/Module Overview
In unit 1, students will learn to: ● During the first week of school, students will learn the scientific method through a brief introductory lab designed to help establish norms, develop collaboration skills, and complete their online workbook. ● By the end of the first trimester, students will be introduced to Newton's Laws of Motion to explain the motion of objects. Students will apply engineering principles and concepts to solve a problem involving objects in collision. In addition, students will learn the basic principles of electric and magnetic forces by observing how objects can exert forces on each other, even though they are not in contact, through fields. Students will take the Trimester 1 Assessment on LinkIt. Guiding Question: **Part 1: Scientific Method** ● How do scientists use the scientific method to conduct investigations? **Part 2: Motion and Stability: Forces and Interactions** ● How do Newton's First and Second Laws of Motion affect the change in an object's motion? ● How does Newton's Third Law of Motion affect the collision of two objects? ● Where does the field exist between objects exerting forces on each other? ● What factors affect the strength of electric and magnetic forces?

Standards Covered in Current Unit/Module
Related Standards and Learning Goals
Motion and Stability: Forces and Interaction ● MS-PS2-1 Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects. [Clarification Statement: Examples of practical problems could include the impact of collisions between two cars, between a car and stationary objects, and between a meteor and a space vehicle.] [Assessment Boundary: Assessment is limited to vertical or horizontal interactions in one dimension.] ● MS-PS2-2 Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object. [Clarification Statement: Emphasis is on balanced (Newton's First Law) and unbalanced forces in a system, qualitative comparisons of forces, mass and changes in motion (Newton's Second Law), frame of reference, and specification of units.] [Assessment Boundary: Assessment is limited to forces and changes in motion in one-dimension in an inertial reference frame and to change in one variable at a time. Assessment does not include the use of trigonometry.] ● MS-PS2-3 Ask questions about data to determine the factors that affect the strength of electric and magnetic forces. [Clarification Statement: Examples of devices that use electric and magnetic forces could include electromagnets, electric motors, or generators. Examples of data could include the effect of the number of turns of wire on the strength of an electromagnet, or the effect of increasing the number or strength of magnets on the speed of an electric motor.] [Assessment Boundary: Assessment about questions that require quantitative answers is limited to proportional reasoning and algebraic thinking.] ● MS-PS2-4 Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects. [Clarification Statement: Examples of evidence for arguments could include data generated from simulations or digital tools; and charts displaying mass, strength of interaction, distance from the Sun, and orbital periods of objects within the solar system.] [Assessment Boundary: Assessment does not include Newton's Law of Gravitation or Kepler's Laws.] ● MS-PS2-5 Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact. [Clarification Statement: Examples of this phenomenon could include the interactions of magnets, electrically-charged strips of tape, and electrically-charged pith balls. Examples of investigations could include first-hand experiences or simulations.] [Assessment Boundary: Assessment is limited to electric and magnetic fields and limited to qualitative evidence for the existence of fields.]

Unit/Module Weekly Learning Activities and Pacing Guide			
Topic & # Days	**NJ Standards**	**Critical Knowledge & Skills**	**Possible Resources & Activities**

Scientific Method and 7 days/weeks	• MS-PS2-1 Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects. • MS-PS2-2 Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.	**Obj. We are learning to**: • Define the scientific method using scientific vocabulary **Suggested Formative Assessment(s)**: • Sections of online workbook/worksheets • Exit tickets • Learning target tracker • Teacher feedback • Catch and Release • Think-Pair-Share • Thumb-o-meter	• Texts ○ The Scientific Method PDF ○ The Scientific Method Google Slides ○ *The Complete Middle School Study Guide Everything You Need to Ace Science in One Big Fat Notebook* • Materials ○ Online workbook ○ Worksheets ○ Lab materials ○ Google Form assessment ○ IXL
Newton's Law of Motion and 26 days/weeks	• MS-PS2-1 Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects. • MS-PS2-2 Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object. • MS-PS2-4 Construct and present arguments using evidence to support the claim that gravitational interactions are attractive	**Obj. We are learning to**: • Define Newton's Laws of Motion • Conduct labs to study an object's motion • Collect and analyze data on the sum of the forces on the object and the mass of the object **Suggested Formative Assessment(s)**: • Sections of online workbook/worksheets • Exit tickets • Learning target tracker • Teacher feedback • Catch and Release • Think-Pair-Share • Thumb-o-meter	• Texts ○ Newton's Law of Motion Google Slides ○ *The Complete Middle School Study Guide Everything You Need to Ace Science in One Big Fat Notebook* • Materials ○ Online workbook ○ Worksheets ○ Lab materials ○ Google Form assessment ○ IXL

	and depend on the masses of interacting objects.		
Electric and Magnetic Forces and 25 days/weeks	• MS-PS2-3 Ask questions about data to determine the factors that affect the strength of electric and magnetic forces. • MS-PS2-5 Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.	**Obj. We are learning to**: • Define electric and magnetic forces • Conduct labs to study electric and magnetic forces • Provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact **Suggested Formative Assessment(s)**: • Sections of online workbook/worksheets • Exit tickets • Learning target tracker • Teacher feedback • Catch and Release • Think-Pair-Share • Thumb-o-meter	• Texts ○ Electric and Magnetic Forces Google Slides ○ *The Complete Middle School Study Guide Everything You Need to Ace Science in One Big Fat Notebook* • Materials ○ Online workbook ○ Worksheets ○ Lab materials ○ Google Form assessment ○ IXL

Link to Additional Components including Cross Curricular Connections, Accommodations, Assessments, Etc

ELA Enduring Understanding Statements