

Algebra Based Physics

Scope and Sequence

<i>Unit Theme</i>	<i>Suggested Unit Duration</i>	<i>Unit Focus</i>	<i>Focus Common Core Standards</i>
1 Motion and Forces <i>Kinematics</i>	<i>Days 45</i>	Study of motion will be investigated. Students are expected to plan and conduct investigations, analyze data and using math to support claims, and apply scientific ideas to solve design problems. Students will develop an understanding of an objects' motion in one dimension and ideas related to why some objects demonstrate motion, and some objects fall to the ground.	<u>(PS2.A)</u> <u>(HS-PS2-1)</u> <u>(HS-PS2-2)</u> <u>(HS-PS2-3)</u> <u>(HS-ETS1-2)</u> <u>(HS-ETS1-3)</u>
2 Motion and Forces <i>Dynamics</i>	<i>Days 45</i>	Study of forces involved in motion of objects will be investigated. Students are expected to plan and conduct investigations, analyze data and using math to support claims. Students will apply scientific ideas to solve design problems in order to develop an understanding of ideas related to forces applied to keep objects moving in one dimension	<u>(PS2.A)</u> <u>(HS-PS2-1)</u> <u>(HS-PS2-2)</u> <u>(HS-PS2-3)</u> <u>(HS-ETS1-2)</u> <u>(HS-ETS1-3)</u>
3 Energy	<i>Days 45</i>	In this unit of study, students develop and use models, plan and carry out investigations, use computational thinking and design solutions as they make sense of the disciplinary core idea. The disciplinary core idea of Energy is broken down into sub core ideas: definitions of energy, conservation of energy and energy transfer, and the relationship between energy and forces. Energy is understood as a quantitative property of a system that depends on the motion and interactions of matter, and the total change of energy in any system is equal to the total energy transferred into and out of the system.	<u>(PS3.A and PS3.B)</u> <u>(PS3.A)</u> <u>(HS-PS3-2)</u> <u>(HS-PS3-1)</u> <u>(HS-PS3-3)</u> <u>(HS-ETS1-1)</u> <u>(HS-ETS1-2)</u> <u>(HS-ETS1-3)</u> <u>(HS-ETS1-4)</u>

<p style="text-align: center;">4 Atomic Origins and Structure</p>	<p style="text-align: center;"><i>Days 45</i></p>	<p>In this unit of study, students use investigations, simulations, and models to make sense of the substructure of atoms and to provide more mechanistic explanations of the properties of substances. Chemical reactions, including rates of reactions and energy changes, can be understood by students at this level in terms of the collisions of molecules and the rearrangements of atoms. Students are able to use the periodic table as a tool to explain and predict the properties of elements. Students are expected to communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials.</p>	<p><u>(HS-PS1-1)</u> <u>(HS-PS1-2)</u> <u>(HS-PS1-3)</u> <u>(HS-PS1-8)</u> <u>(HS-PS2-6)</u> <u>(HS-PS4-3)</u></p>
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