

**Abbott Lawrence Academy 2018-2019 Curriculum Map:**

**Year at a Glance**

**Subject: Advanced Honors Introductory Physics**

**Grade: 9**

Unit Title	Time Allocation (# of weeks based on 38 weeks in school year)	Essential Questions	Core Text/Supplemental Learnings	Performance Tasks
1. Patterns in Physics	3	<p>How do we find and use patterns in nature to predict the future, make data-informed decisions in the present, and understand the past?</p> <p>How does uncertainty help us understand our data?</p> <p>How can we describe and represent uncertainty?</p> <p>How can we represent data?</p> <p>How do scientists answer questions?</p>	<p>Physics: Principles and Problems (Glencoe) - Chapter 1</p> <p>Unit and Variables Reading</p>	<p>Pendulum Lab - Release Angle</p> <p>Pendulum Lab - Mass</p> <p>Spring Lab</p> <p>Marble Lab</p> <p>Paragraph Lab</p>
2. Constant Velocity and Balanced Forces	5	<p>What information do motion graphs provide?</p> <p>How can we describe motion? When is one way of describing motion more helpful than another?</p> <p>How does a chosen coordinate system impact the way we measure motion?</p> <p>What does it mean to be in equilibrium?</p>	<p>Physics: Principles and Problems (Glencoe) - Chapters 2, 3, 4 and 5</p> <p>College Physics (OpenStax: <a href="https://openstax.org/details/college-physics">https://openstax.org/details/college-physics</a>) - Chapters 2, 4 and 5</p> <p>Uncovering Student Ideas Series by Page Keeley</p> <p>Physics Invention Tasks - <a href="http://inventiontasks.physics.rutgers.edu/index.html">http://inventiontasks.physics.rutgers.edu/index.html</a></p> <p>Veritasium Videos Mass and Weight <a href="https://www.youtube.com/wa">https://www.youtube.com/wa</a></p>	<p>Motion Detector Activity</p> <p>Constant Buggies Lab Report</p> <p>Mini quizzes every other class period</p> <p>Open response quiz</p> <p>Binder check - binders collected and graded</p> <p>Uncovering Student Ideas in Physics Task Responses</p>

			<a href="https://www.youtube.com/watch?v=_Z0X0yE8loc">tch?v=_Z0X0yE8loc</a> Newton's 3rd Law <a href="https://www.youtube.com/watch?v=8bTdMmNZm2M">https://www.youtube.com/watch?v=8bTdMmNZm2M</a>	
3. Acceleration and Unbalanced Forces	5	<p>How is fastness different than speeding up?</p> <p>How do objects in freefall move?</p> <p>How can we change the motion of an object?</p> <p>How is mass different than weight?</p> <p>How does friction impact our everyday lives?</p> <p>How can we measure and describe friction?</p>	<p>Physics: Principles and Problems (Glencoe) - Chapters 2, 3, 4 &amp; 5</p> <p>College Physics (OpenStax: <a href="https://openstax.org/details/college-physics">https://openstax.org/details/college-physics</a>) - Chapter 2, 4, and 5</p> <p>Uncovering Student Ideas Series by Page Keeley</p>	<p>Mini quizzes every other class period</p> <p>Open response quiz</p> <p>Stomp Rocket Analysis</p> <p>Projectile Motion Murder Mystery Write-up</p> <p>Binder quiz</p> <p>Pinball Machine Project Write-up</p>
4. Momentum and Impulse	3	<p>When is momentum conserved?</p> <p>How is Newton's 3rd Law related to the conservation of momentum?</p> <p>How can the law of conservation of momentum describe the motion of objects?</p>	<p>Physics: Principles and Problems (Glencoe) - Chapter 9</p> <p>College Physics (OpenStax: <a href="https://openstax.org/details/college-physics">https://openstax.org/details/college-physics</a>) - Chapter 8</p> <p>Uncovering Student Ideas Series by Page Keeley</p> <p>Physics Invention Tasks - <a href="http://inventiontasks.physics.rutgers.edu/index.html">http://inventiontasks.physics.rutgers.edu/index.html</a></p>	<p>Mini quizzes every other class period</p> <p>Open response quiz</p> <p>Cell Phone Drop Engineering Challenge Write-up</p>
5. Energy and Work	4	<p>What are work and energy and how are they related?</p> <p>How is power related to work and energy?</p> <p>When is energy conserved?</p>	<p>Physics: Principles and Problems (Glencoe) - Chapters 10 and 11</p> <p>College Physics (OpenStax: <a href="https://openstax.org/details/college-physics">https://openstax.org/details/college-physics</a>) - Chapter 7</p>	<p>Spring Poppers Lab Report</p> <p>Mini quizzes every other class period</p> <p>Open response quiz</p>

			<p>Uncovering Student Ideas Series by Page Keeley</p> <p>Physics Invention Tasks - <a href="http://inventiontasks.physics.rutgers.edu/index.html">http://inventiontasks.physics.rutgers.edu/index.html</a></p>	Binder quiz
6. Electricity	6	<p>What happens when we separate charges? What are the differences between insulators and conductors?</p> <p>How can we describe electric current?</p> <p>What affects electric current?</p> <p>How does the design of a circuit affect how it works?</p>	<p>Physics: Principles and Problems (Glencoe) - Chapters 20, 21, 22, and 23</p> <p>College Physics (OpenStax: <a href="https://openstax.org/details/college-physics">https://openstax.org/details/college-physics</a>) - Chapters 19, 20, 21, and 22</p> <p>Uncovering Student Ideas Series by Page Keeley</p>	<p>Ohm's Law Lab Report</p> <p>Electric Art Project Presentation</p> <p>Mini quizzes every other class period</p> <p>Open response quiz</p> <p>Binder check</p>
7. Waves	5	<p>How can we describe harmonic motion?</p> <p>How are sound and light similar? How are they different?</p> <p>How can we categorize waves?</p> <p>What influences how we hear music?</p> <p>How do waves travel?</p>	<p>Physics: Principles and Problems (Glencoe) - Chapters 14, 15, 16, 17, 18, and 19</p> <p>College Physics (OpenStax: <a href="https://openstax.org/details/college-physics">https://openstax.org/details/college-physics</a>) - Chapters 16, 17, 24 and 27</p> <p>Uncovering Student Ideas Series by Page Keeley</p>	<p>Reflection and Refraction Lab Report</p> <p>Mini quizzes every other class period</p> <p>Open response quiz</p> <p>Binder quiz</p>
8. Heat	3	<p>How are temperature and thermal energy related?</p> <p>How are thermal equilibrium and temperature related?</p> <p>How is thermal energy transferred?</p> <p>Why do some objects heat up and cool</p>	<p>Physics: Principles and Problems (Glencoe) - Chapters 12 and 13</p> <p>College Physics (OpenStax: <a href="https://openstax.org/details/college-physics">https://openstax.org/details/college-physics</a>) - Chapters 13 and 14</p>	<p>Specific Heat Lab Report</p> <p>Mini quizzes every other class period</p> <p>Open response quiz</p> <p>Binder check</p>

		down faster than others?	Uncovering Student Ideas Series by Page Keeley	
9. Gravitation and Space	1	<p>How can we describe Earth's orbit around the Sun?</p> <p>How does Newton's Law of Gravitational compare to Coulomb's Law?</p>	<p>Physics: Principles and Problems (Glencoe) - Chapters 6 and 7</p> <p>College Physics (OpenStax: <a href="https://openstax.org/details/college-physics">https://openstax.org/details/college-physics</a>) - Chapter 6</p> <p>Uncovering Student Ideas Series by Page Keeley</p>	<p>Universal Gravitation POGIL</p> <p>Open response quiz</p>
10. Alternative Energy	2	<p>What properties does the nucleus of an atom have?</p> <p>How are energy and matter related?</p> <p>Why are some forms of energy renewable while others are not?</p> <p>What is the impact of humans' energy consumption?</p> <p>How does energy efficiency affect the performance of everyday devices?</p>	<p>Physics: Principles and Problems (Glencoe) - Chapters 27 and 30</p> <p>College Physics (OpenStax: <a href="https://openstax.org/details/college-physics">https://openstax.org/details/college-physics</a>) - Chapter 31 and 32</p>	<p>Alternative Energy Presentation</p> <p>Mini quizzes every other class period</p> <p>Open response quiz</p> <p>Binder quiz</p>