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

			tch?v=_Z0X0yE8Ioc Newton's 3rd Law https://www.youtube.com/watch?v=8bTdMmNZm2M	
3. Acceleration and Unbalanced Forces	5	How is fastness different than speeding up? How do objects in freefall move? How can we change the motion of an object? How is mass different than weight? How does friction impact our everyday lives? How can we measure and describe friction?	Physics: Principles and Problems (Glencoe) - Chapters 2, 3, 4 & 5 College Physics (OpenStax: https://openstax.org/details/college-physics) - Chapter 2, 4, and 5 Uncovering Student Ideas Series by Page Keeley	Mini quizzes every other class period Open response quiz Stomp Rocket Analysis Projectile Motion Murder Mystery Write-up Binder quiz Pinball Machine Project Write-up
4. Momentum and Impulse	3	When is momentum conserved? How is Newton's 3rd Law related to the conservation of momentum? How can the law of conservation of momentum describe the motion of objects?	Physics: Principles and Problems (Glencoe) - Chapter 9 College Physics (OpenStax: https://openstax.org/details/college-physics) - Chapter 8 Uncovering Student Ideas Series by Page Keeley Physics Invention Tasks - http://inventiontasks.physics.rutgers.edu/index.html	Mini quizzes every other class period Open response quiz Cell Phone Drop Engineering Challenge Write-up
5. Energy and Work	4	What are work and energy and how are they related? How is power related to work and energy? When is energy conserved?	Physics: Principles and Problems (Glencoe) - Chapters 10 and 11 College Physics (OpenStax: https://openstax.org/details/college-physics) - Chapter 7	Spring Poppers Lab Report Mini quizzes every other class period Open response quiz

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

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