



Brookline High School

Science Department

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Dear Parents of 8th Graders,

While deciding on which science courses your child will take over the four years at BHS, the 9th grade is the most simple. The courses are *Physics 1* or *Physics 1 Honor*. After that, students take *Chemistry* and then *Biology* with additional choices based on pedagogy as well as level of difficulty. Then, there are 15 optional courses to choose from, as you can see in the table below.

To help decide which course to take, I offer the following statements and an example of the type of learning for each course, on the back of this page:

- *Physics 1* is for all students. The rigor is in understanding the concepts profoundly. Problems are solved step-by-step. Students who are mostly interested in the arts and humanities often prefer this course.
- *Physics 1 Honor* is for all students. The rigor is in linking concepts together. Students who prefer this course are inquisitive about science, and they take pride in solving multi-step problems for themselves. Algebra is used to a higher degree.
- While the level of math skills is an indicator for the level of physics, it is not necessarily an obstacle for selecting any science course. Students may be in *Geometry Honor* and *Physics 1*, however, these students are often ready for *Physics 1 Honor*. Students should mainly select their choice based on their level of curiosity in science.
- Also, please know that we do not track students into levels. Students have gone from *Physics 1* to *AP Physics* by senior year.

Sincerely,

Ed Wiser

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BHS Science Course List and Sequence

<u>9th Grade</u>	<u>Optional Courses</u>	
Physics 1 Physics 1 Honor	Physics 2 Honor AP Physics – 1&2 AP Physics - C	Anatomy & Physiology (S/H) Astronomy (S/H) Marine Biology (S/H)
<u>10th Grade</u> Chemistry 1 Chemistry 1 LBC Honor Chemistry 1 Honor	Chemistry 2 Honor AP Chemistry Biology 2 Honor AP Biology	Meteorology (S/H) Forensic Science (S/H) Genetics (S/H)
<u>11th Grade</u> Biology 1 Biology 1 BSCS (Standard or Honor) Biology 1 Honor	AP Environmental Science Body/Mind Honor	

Example of the difference in student work for Physics 1 and Physics 1 Honor

Students watch a video of a ball being dropped, and graphs of its motion are drawn in real time. Below are (hard to read) graphs of the height and the velocity of a 100-gram bouncing ball. Physics students might be asked the following questions:

Physics 1	Physics 1 Honor
• What is the maximum height the ball drops? • What is the maximum Potential Energy of the ball? • What is the maximum velocity of the ball? • What is the maximum Kinetic Energy of the ball? • What is the Potential and Kinetic Energy of the ball after it stops? • Describe the conservation of energy as the ball bounces? • What happened to the energy of the ball when it finally stopped?	• What is the maximum Potential Energy of the ball? • What is the maximum Kinetic Energy of the ball? • Describe the conservation of energy as the ball bounces? • What happened to the energy of the ball when it finally stopped? • If all of the energy went into the thermal energy of the ball, knowing that its specific heat capacity is $2400 \text{ J/(kg } ^\circ\text{C}^\circ)$, what was the corresponding change in temperature? • What would its temperature change be, if it were dropped from the top of Burj Khalifa (the world's tallest building at 828 meters)?

