

Newton North High School Science Sequence Frequently Asked Questions

Foundation Physics- Keystone Chemistry - Capstone Biology

WHAT IS DIFFERENT ABOUT THE NNHS SCIENCE SEQUENCE?

- Historically, US High Schools have taught science in a sequence of Biology, then Chemistry, then Physics. Since 1999, NNHS has been in the process of inverting its sequence to a “Physics First” sequence. The 2006-2007 school year will complete the process of inverting our sequence.
- The basic idea of "Physics First" is a Physics, Chemistry, Biology (P-C-B) science sequence that builds on fundamental skills and concrete experiences to prepare students to encounter increasingly abstract subject matter. For example, students can use physics lessons on energy transfer to understand chemical equilibrium and then apply this learning to ecosystems in biology.

WHERE DID THIS COME FROM? WHO ELSE IS INVOLVED?

- This is a national movement that is well grounded in current research.
- This sequence change began in 2001 when all 9th graders entered Introductory Physics. Students opting for the honors/AP sequence have taken Chemistry in 10th grade for the past four years. During the 2005-2006 school year Curriculum I students took chemistry in the 10th grade.
- In our area, Brookline, Weston, Cambridge, Boston, Belmont, and Natick also offer a “Physics First” program.

HOW DOES THIS AFFECT STUDENTS AT NNHS?

- We are continuing into the final phase of our transition to a P-C-B sequence.
- Specifically, all sophomores will enroll in chemistry in 06/07.
- This will not affect sequence for students presently in 10th or 11th grade. 10th graders who are currently taking chemistry will take biology next year. 10th graders who are currently taking biology may take chemistry next year.

HOW DOES THIS AFFECT GRADUATION REQUIREMENTS?

- This does not affect science graduation requirements at Newton North High School. Students are still required to take two (2) years of science to graduate.
- However, most schools and colleges either recommend or require three (3) years of science. Presently, ~90% of all Newton seniors have satisfied or exceeded this requirement by taking three or more years of science.

WILL ALL 10th GRADERS BE PREPARED FOR CHEMISTRY?

- Our Intro Physics curriculum has been developed with this sequence in mind. We are working with colleagues in math to further align our curriculum and instruction.

HOW WILL THIS AFFECT OTHER SCIENCE ELECTIVES/OPTIONS?

- We are pleased with the current enrollment in electives and Advanced Placement classes.
- We hope that even more students will be motivated and prepared to take these classes. We encourage students to strive to the depth/distance of their ability in science.

WHAT ARE SOME ADVANTAGES?

- CONSISTENCY: One standard for all students.
- All students working on same subject at a grade level.
- Increased focus on MCAS performance through a single subject
- Increased flexibility in student schedules by aligning specific curriculum to a given year.
- Increased options for level changes on an “as needed” basis
- Improved preparation for next class in science sequence.
- Supports teaching and learning in Chemistry and Biology. This is a more logical sequence.
- More students exposed to chemistry. More time in biology for a richer, deeper curriculum.
- Increased opportunities to integrate with Math early in the sequence.
- Greater opportunity to really articulate the sequence for students that supports a greater depth of understanding and real world application.
- Fewer biology teachers telling students “you’ll understand this better when you take chemistry”

WHAT IF I (or my child) DON’T WANT TO TAKE CHEMISTRY?

- We encourage ALL students to take three years of science, including chemistry. However, we understand that the graduation requirement is one year of physical science and one year of biological science.
- Students may take curriculum II biology without having taken chemistry first however chemistry is a pre-requisite for curriculum I and AP biology.
- Students may not take biology until they have completed their sophomore year.
- If a student would like to take biology without having taken chemistry, he must seek the approval of the department chair.

HOW DOES SUMMER SCHOOL FIT INTO THIS SEQUENCE?

- The science department encourages students to take their science classes during the school year. Summer school courses do not provide the depth or richness of a school-year class. Also, colleges recognize that summer school courses do not provide the same rigor as school-year courses. However, we understand that some families still choose to elect the summer school option for science.
- If a current freshman would like to take summer school, he can take chemistry. Then he will wait until junior year to take biology. Starting with the class of 2009, we will not allow sophomores to take biology.
- If a current sophomore would like to take summer school, he can take biology or chemistry (whichever he needs to take.)
- If a current junior would like to take summer school, he can take biology, chemistry or physics.
- Summer school chemistry is not acceptable preparation for AP Biology and/or AP Chemistry. If a student has questions about this, he should see the department chair.
- Sometimes students who plan on taking summer school are confused about whether or not to register for a science class for the following September. If there is ANY chance that he might need a spot in a science class in the fall, then a student must register for that class now. In the fall, classes will be extremely full and there may not be space to add additional students to classes.