

# Plymouth Public Schools' Science and Technology/Engineering Program Honors Biology Course Syllabus

## STE0022 Biology Honors

Full year course intended for 9<sup>th</sup> grade students worth 5 credits

### Course Description

This laboratory course is a rigorous exploration into biology for the highly motivated, academically talented college-bound student. All aspects of biology are treated in depth with the approach centering on the chemistry of life, cell biology, genetics, anatomy and physiology, evolution and biodiversity, and ecology. Class work is supplemented by extensive laboratory work and independent projects. All students enrolled in this course will be expected to explore the various topics discussed in class, using a wide variety of resources. Students in this course will take the MCAS Biology exam at the conclusion of the course. Passing the MCAS exam is a graduation requirement. The prerequisite includes departmental recommendation.

### Instructional Objectives

Students will independently and collaboratively:

1. Engage in scientific inquiry and engineering design through the use of science and engineering practices.
2. Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to answer a question or solve a problem.
3. Draw evidence from literary or informational texts to support analysis, reflection, and research.
4. Produce clear and coherent writing in which the development, organization and style are appropriate to task, purpose and audience.
5. Demonstrate proficiency in phenomena related to genetics, the functioning of organisms, and interrelationships between organisms, populations, and the environment.

### Themes and Topics

1. Molecules to Organisms: Structures and Processes – building proteins, roles of DNA and RNA, structures and functions of human body systems, homeostasis, cell cycle, photosynthesis and cellular respiration, and macromolecules
2. Ecosystems: Interactions, Energy, and Dynamics – an area's ability to support life with living and nonliving factors, how factors affect populations and species, constant flow of energy throughout an ecosystem, cycling of carbon, how areas with living and nonliving components resist change, and human impacts on living organisms and ecosystem health
3. Heredity: Inheritance and Variation of Traits – passing of DNA from parents to offspring, genetic variations from new combinations of genes, use of probability to determine gene combinations, and effects of genetic and environmental factors on traits of individuals

4. Biological Evolution: Unity and Diversity – use of evidence to demonstrate evolution, Darwin’s Theory of Natural Selection, differences between viruses and bacteria, and how environmental changes may result in modifications of organisms

#### Text and Instructional Materials

1. Nowicki, Stephen. *Holt McDougal Biology*. Orlando, FL: Holt McDougal, 2012.
2. [Web-based product that accompanies textbook](#); see teacher for access

#### Cheating/Plagiarism

The excerpt from the Plymouth Public Schools’ Student Handbook on plagiarism and copyright infringement states, “Existing copyright law will govern the use of material accessed through network. The user will not plagiarize works found on the Internet. Plagiarism is taking the ideas or writings of others and presenting them as if they were yours. All copyrighted material used must have the express written permission of the person or organization that owns the copyright. Any student who has cheated on any academic exercise will receive no credit for that exercise. Plagiarism is a form of cheating. A parent/guardian will be notified by the involved teacher in all instances of cheating. The investigation of the claim of cheating and plagiarism will involve the student, teacher, and administration.”

#### Grading Policy and Assessment

Levels of proficiency on various tasks and assignments determine student grades. During each grading term, students’ grades will be based upon the following:

30% Class Work and Homework

70% Assessments: formal lab reports, major projects and writing assignments, quizzes, unit tests, etc.

The final year average will be calculated as follows:

22.5% Term 1 Grade

22.5% Term 2 Grade

22.5% Term 3 Grade

22.5% Term 4 Grade

10% Final Exam