

## **Biology**

**Department:** Science

**Department Chair:** Nycole Noble

**Credits:** 1.0

**Course Length:** Full Year



### **Requirements:**

Successful completion of Chemistry and Principles of Earth, Space and Physics.

### **Course Description:**

This is an introductory course for juniors who have completed Principles of Earth, Space and Physics as well as Chemistry. This course is an inquiry-based exploration of the many concepts in life science. The course is designed to meet the Next Generation Science Standards in Life Science as well as some earth and space science. This hands-on course incorporates the three dimensions of the NGSS: the disciplinary core ideas, practices and cross-cutting concepts. Topics to be covered include traditional areas such as ecology, the cell, biochemical processes, genetics and evolution, as well as recent and relevant advances in the field. Engineering practices are incorporated into this course. Students will meet school wide expectations for learning by participating in hands-on labs, working in individual and cooperative learning situations, and completing both traditional and performance-based assessments throughout the year.

### **Essential Questions:**

- How has natural selection led to the wide diversity and unity of life on earth?
- How does the structure of organisms lead to the variety of functions organisms have in the living world?
- How does the genetic code reproduce, change and provide information about an individual?
- Why is understanding genetics important for scientists? Why is biodiversity valuable and what benefits does it provide for humans? How has society changed through our understanding of genetics? What societal changes could occur in the future through our understanding of genetics?

- How do cells communicate with each other and other types of cells to facilitate the functioning of an organism?
- How has biotechnology influenced scientists?
- How do organisms live, grow, respond to their environment and reproduce?
- How do the structures of organisms enable life's functions?
- How do organisms grow and develop?
- How do organisms obtain and use the matter and energy they need to live and grow?

### **Related Frameworks/Competencies:**

- PHS Learner Expectations ([Found on pg. 5 of the newest iteration of our Program of Studies](#))
- Next Generation Science Standards (NGSS)
- Rhode Island Social Emotional Learning (RISEL) Standards

### **Course Outcomes/Power Standards:**

#### Science and Engineering Practices

1. Asking questions and defining problems
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Constructing explanations and designing solutions
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating ideas

#### Crosscutting Concepts

1. Patterns
2. Cause and effect: Mechanism and explanation
3. Scale, proportion, and quantity
4. Systems and system models
5. Energy and matter: Flows, cycles, and conservation
6. Structure and function
7. Stability and change

#### Disciplinary Core Ideas

- LS1: From molecules to organisms: Structures and processes
- LS2: Ecosystems: Interactions, energy, and dynamics
- LS3: Heredity: Inheritance and variation of traits
- LS4: Biological evolution: Unity and diversity

## **Course Expectations (Attendance, Participation, & Preparation):**

**Participation/Preparation for Class:** In order for students to find success in science, students are expected to come prepared for class with their notebook/binder, charged Chromebook, pen/pencil, calculator, and any other supplies required for class. Completed homework is due at the beginning of class.

All students enrolled in a lab science course are required to review, sign and adhere to a lab safety contract. Students who violate this contract will be subject to disciplinary action.

**Attendance:** Students are expected to attend all classes and will have greater success in doing so.. Attendance will be taken each class. YOU are responsible for making arrangements to get notes, assignments, directions, or announcements for missed classes. YOU are also responsible for reaching out to the teacher to make up any missed lab work and/or assessments.

If an absence is deemed “unexcused” the student will not be allowed to make-up any graded classwork/quizzes/exams administered during the missed class. If you have ANY questions please see the classroom teacher and/or read the policy outlined in the most recent iterations of the Student Handbook.

**Course Communication:** Some methods for class communication will be through personal conversation, school email, Remind, and Google Classroom. The best way to contact the teacher is through use of these methods. Messages and/or assignments may be posted in Google Classroom. For this reason students should check Google Classroom regularly.

**Course Incompletes:** Incompletes are not common practice. In the event that an incomplete must be given the student, teacher, school counselor, and guardian(s) will collaboratively come up with a dated plan that outlines the necessary steps for course completion. If you have ANY questions please see the classroom teacher and/or read the policy outlined in the most recent iterations of the Student Handbook.

**Electronic Devices:** While students are allowed to possess cell phones in school, all cell phones must be placed in the designated, wall mounted phone pockets at the beginning of each period. *Students who do not "turn-in" a cell phone at the beginning of class and are found to have one on their person/in their possession will be subject to disciplinary consequences.*

In the rare instance that a student requires access to their cell phone as indicated by a 504 plan, IEP (Individualized Education Program), or Multilingual Learner services. If you have ANY questions please see the classroom teacher and/or read the policy outlined in the most recent iterations of the PHS Student Handbook.

**Academic Dishonesty:** It is paramount that you do your own work; provide appropriate references to all assignments; and abide by the Portsmouth High School academic honesty policy. Students who violate this policy will be subject to disciplinary action. If you have ANY questions please see the classroom teacher and/or read the policy outlined in the most recent iterations of the PHS Student Handbook.

**Grade Reporting:** Grades will be entered into the ASPEN in a timely fashion. It is your responsibility to verify grades have been entered correctly. If you notice a discrepancy, and/or feel an error has been made, please speak with the teacher as soon as possible so that the issue might be resolved.

**Make-up Exams:** Make-ups due to absence must be scheduled on an individual basis with the teacher. Please see me ASAP if an exam has been missed so that next steps might be discussed. Due to issues relating to academic honesty and fairness the teacher reserves the right to administer a different style exam to students requiring make-ups.

## **Grading:**

### **Formative (40%)**

Biology students are expected to take an active role in their learning. Formative work will include textbook readings, notes, review questions, class discussions, computer activities, laboratory work, practice quizzes, case studies, and more. At times this work will be independent, however many times it will be collaborative. It is important to remember that all assignments are crafted to help students learn the required content and skills of the course. Whether independently, with a partner or a group, it is the student's responsibility to be active in the learning process - completing all coursework with integrity. Students are expected to hand in all coursework on time and to come to class each day with all needed materials and be ready to learn!

### **Summative (60%)**

Summative assessments will be given regularly throughout the school year. Quizzes, traditional tests, projects, and performance based assessments will assess mastery of content and skills in biology. Students will be notified in advance of any upcoming unit summative assessment, allowing time for preparation and study. It is the student's responsibility to work hard, ask questions and get extra help when needed. There are many resources available to help students prepare, including peer study sessions, NHS tutors, online practice, and after school help from the teacher.

*Extra help is always available - students just need to ask!*

### **GRADING SCALE:**

A+	96.5-100%	B	82.5-86.4%	C-	69.5-72.4%
A	92.5-96.4%	B-	79.5-82.4%	D	64.5-69.4%
A-	89.5-92.4%	C+	76.5-79.4%	F	< 64.5%
B+	86.5-89.4%	C	72.5-76.4%		

***\*\* In order to receive credit for the course, you must pass with at least a "D"***

## SCOPE & SEQUENCE

*\* Please note that the Scope & Sequence provided below outlines the closest representation of course topics and timelines. Depending on the circumstances of any given school year, the order and inclusion of these topics may be subject to change.*

Timeframe	Units of Study
Quarter 1	Unit 1: Chemistry of Life Unit 2: Cell Structure and Function
Quarter 2	Unit 3: Cell Cycle & Homeostasis Unit 4: Heredity <i>Midterm Exam Prep</i>
END OF SEMESTER ONE	
Quarter 3	Unit 5: DNA & Protein Synthesis Unit 6: Evolution & Diversity of Life <i>Next Generation Science Assessment</i>
Quarter 4	Unit 7: Cellular Energetics Unit 8: Ecology <i>Final Exam Prep</i>