

Northampton Area High School Oceanography

“Year at a Glance”

Board Approval Date: January 28, 2019



**NORTHAMPTON AREA
SCHOOL DISTRICT**

Learn, Listen, and Lead

Common Units of Study with Sample Lesson Topics	Textbook Chapter(s)	Estimated Time	Big Idea (s)	PA Academic Standard(s)
Diving into Ocean Ecosystems <ul style="list-style-type: none"> Observing migration routes Researching marine ecosystems Comparing biotic and abiotic factors 	Lesson 1	1 week	What are the different marine ecosystems like?	3.1.10.A1
Water Properties <ul style="list-style-type: none"> Water density, temperature, and salinity activities Analyzing phase change diagrams 	Lessons 2&3	2 weeks	What are the unique properties of water that make it such a vital substance?	3.1.B.A8 3.2.10.A3
Migrations in the Sea <ul style="list-style-type: none"> Plotting and analyzing animal migration data Satellite and other animal tracking technology Studying physical parameters influencing sea migrations 	Lesson 5	1 week	What are the factors influencing animal migrations and what is the technology used to track marine animals?	3.4.10.A2
Explore the Seafloor <ul style="list-style-type: none"> Studying topographic/bathymetric images and maps Surveying a model of the seafloor 	Lesson 6	2 weeks	Bathymetry- the study of sea floor features and topography.	3.4.10.A2
Formation of the Ocean <ul style="list-style-type: none"> Examining maps of Earth continent changes over time Understanding the Theory of Plate Tectonics 	Lesson 7	1 week	How do geologic processes shape Earth’s surface over billions of years?	3.3.10.A1
Seasons of Change <ul style="list-style-type: none"> Modeling Earth’s revolution around the Sun and investigating changes in insolation with latitude 	Lesson 8	1 week	How does Earth’s position and behavior influence conditions on the planet?	3.3.10.A4
The Sea Surface “Great Energy Distributor” <ul style="list-style-type: none"> Creating and studying false color images of sea surface temperature. Studying the global pattern of ocean currents 	Lesson 9	1 week	How is energy transferred around the surface of the planet?	3.3.10.A5
Weather, Climate and the Ocean <ul style="list-style-type: none"> Analyze the correlation between sea surface temp and hurricane strength Describe the features of land, water and air that affect climate. 	Lesson 11	1 week	How is weather and the climate influenced by the ocean?	3.3.10.A6

Voyage to the Deep <ul style="list-style-type: none"> Investigate the construction and use of submersibles Plot and analyze temperature, pressure, salinity, and density data with respect to depth. 	Lesson 12	1 week	What are conditions like deep within the ocean and how do scientists study these environments?	3.4.10.A2
Photosynthesis in the Ocean <ul style="list-style-type: none"> Investigate the process of photosynthesis Analyze the carbon cycle and chlorophyll imagery 	Lesson 13	1 week	Marine Primary Production	3.3.10.A2
Biodiversity in the Ocean <ul style="list-style-type: none"> Discuss the importance of biodiversity on Earth Compare and contrast characteristics of major groups of marine organisms. 	Lesson 14	1 week	The great diversity of life within the ocean.	3.1.10.C1
Marine Populations <ul style="list-style-type: none"> Describe changes in human population over time Interpret and summarize age structure diagrams 	Lesson 15	1 week	Review of “populations” and their characteristics.	3.1.10.C1
Population Changes <ul style="list-style-type: none"> Modeling the process of natural selection Describe how populations change over time 	Lesson 16	1 week	How and why do populations change over time?	3.1.10.C1
Food Webs in Action <ul style="list-style-type: none"> Create a model food web Diagram the flow of energy and nutrients through ecosystems. 	Lesson 17	2 weeks	What factors influence marine feeding relationships?	3.1.B.A7