






Marine Biology

Maine Virtual Academy

School Year 2025-2026 (Aug 25, 2025 - Jun 12, 2026)

UNIT	# OF TEACHING DAYS	DATES
 Unit 1: Intro to Marine Biology + Climate Change	7 teaching days	Aug 26 - Sep 4, 2025
 Unit 2: Microscopic and Macroscopic Primary Production in the Oceans	13 teaching days	Sep 5 - Sep 26, 2025
 Unit 3: Invertebrate Organisms in our Oceans	10 teaching days	Sep 29 - Oct 16, 2025
 Unit 4: Vertebrate Organisms in Our Oceans	29 teaching days	Oct 17 - Dec 2, 2025
 Unit 5: Student Driven Marine Biology Exploration	18 teaching days	Dec 3, 2025 - Jan 9, 2026

August

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
27	28	29	30	31	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26 Unit 1: Intro to M...	27 Unit 1: Intro to M...	28 Unit 1: Intro to M...	29 Unit 1: Intro to M...	30
31	1 Labor Day	2 Unit 1: Intro to M...	3 Unit 1: Intro to M...	4 Unit 1: Intro to M...	5 Unit 2: Microscop...	6

September

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
31	1 Labor Day	2 Unit 1: Intro to M...	3 Unit 1: Intro to M...	4 Unit 1: Intro to M...	5 Unit 2: Microscop...	6
7	8 Unit 2: Microscop...	9 Unit 2: Microscop...	10 Unit 2: Microscop...	11 Unit 2: Microscop...	12 Unit 2: Microscop...	13
14	15 Unit 2: Microscop...	16 Fall NWEA	17 Fall NWEA	18 Fall NWEA	19 Unit 2: Microscop...	20
21	22 Unit 2: Microscop...	23 Unit 2: Microscop...	24 Unit 2: Microscop...	25 Unit 2: Microscop...	26 Unit 2: Microscop...	27
28	29 Unit 3: Invertebra...	30 Unit 3: Invertebra...	1 Unit 3: Invertebra...	2 Unit 3: Invertebra...	3 Unit 3: Invertebra...	4

October

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
28	29 Unit 3: Invertebra...	30 Unit 3: Invertebra...	1 Unit 3: Invertebra...	2 Unit 3: Invertebra...	3 Unit 3: Invertebra...	4
5	6 MTY Testing	7 MTY Testing	8 MTY Testing	9 Unit 3: Invertebra...	10 Unit 3: Invertebra...	11
12	13 Indigenous Peoples Day	14 Unit 3: Invertebra...	15 Unit 3: Invertebra...	16 Unit 3: Invertebra...	17 Unit 4: Vertebrate...	18
19	20 Unit 4: Vertebrate...	21 Unit 4: Vertebrate...	22 Unit 4: Vertebrate...	23 Unit 4: Vertebrate...	24 Unit 4: Vertebrate...	25
26	27 Unit 4: Vertebrate...	28 Unit 4: Vertebrate...	29 Unit 4: Vertebrate...	30 Unit 4: Vertebrate...	31 Unit 4: Vertebrate...	1

November

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
26	27 Unit 4: Vertebrate...	28 Unit 4: Vertebrate...	29 Unit 4: Vertebrate...	30 Unit 4: Vertebrate...	31 Unit 4: Vertebrate...	1
2	3 Unit 4: Vertebrate...	4 Unit 4: Vertebrate...	5 Unit 4: Vertebrate...	6 Unit 4: Vertebrate...	7 Unit 4: Vertebrate...	8
9	10 Unit 4: Vertebrate...	11 Veterans Day	12 Unit 4: Vertebrate...	13 Unit 4: Vertebrate...	14 Unit 4: Vertebrate...	15
16	17 Unit 4: Vertebrate...	18 Unit 4: Vertebrate...	19 Unit 4: Vertebrate...	20 Unit 4: Vertebrate...	21 Unit 4: Vertebrate...	22
23	24 Unit 4: Vertebrate...	25 Unit 4: Vertebrate...	26 Thanksgiving Break	27 Thanksgiving	28 Thanksgiving Break	29
30	1 Unit 4: Vertebrate...	2 Unit 4: Vertebrate...	3 Unit 5: Student D...	4 Unit 5: Student D...	5 Unit 5: Student D...	6

December

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
30	1 Unit 4: Vertebrate...	2 Unit 4: Vertebrate...	3 Unit 5: Student D...	4 Unit 5: Student D...	5 Unit 5: Student D...	6
7	8 Unit 5: Student D...	9 Unit 5: Student D...	10 Unit 5: Student D...	11 Unit 5: Student D...	12 Unit 5: Student D...	13
14	15 Unit 5: Student D...	16 Unit 5: Student D...	17 Unit 5: Student D...	18 Unit 5: Student D...	19 Unit 5: Student D...	20
21	22 Winter Break	23 Winter Break	24 Winter Break	25 Christmas Day	26 Winter Break	27 Winter Break
28 Winter Break	29 Winter Break	30 Winter Break	31 Winter Break	1 New Year's Day	2 Winter Break	3






January

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
28 Winter Break	29 Winter Break	30 Winter Break	31 Winter Break	1 New Year's Day	2 Winter Break	3
4	5 Unit 5: Student D...	6 Unit 5: Student D...	7 Unit 5: Student D...	8 Unit 5: Student D...	9 Unit 5: Student D...	10
11	12	13 Winter NWEA	14 Winter NWEA	15 Winter NWEA	16	17
18	19 Martin Luther King, Jr. Day	20	21	22	23	24
25	26	27	28	29	30	31

Marine Biology

Maine Virtual Academy

UNITS (5/5 SELECTED)

	SUGGESTED DURATION
 Unit 1: Intro to Marine Biology + Climate Change	<i>7 teaching days</i>
 Unit 2: Microscopic and Macroscopic Primary Production in the Oceans	<i>13 teaching days</i>
 Unit 3: Invertebrate Organisms in our Oceans	<i>10 teaching days</i>
 Unit 4: Vertebrate Organisms in Our Oceans	<i>29 teaching days</i>
 Unit 5: Student Driven Marine Biology Exploration	<i>18 teaching days</i>

Unit 1: Intro to Marine Biology + Climate Change

Marine Biology

UNIT SUMMARY

In this unit, students learn key concepts in marine biology and explore why the world's oceans are essential to life on Earth. Students examine how ocean systems work and investigate how climate change affects marine ecosystems. Through this learning, students develop a deeper understanding of the importance of protecting ocean environments.

STANDARDS

Next Generation Science (NGSS) - High School - Life Sciences

HS-LS2-5.

Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.

HS-LS2-6.

Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.

HS-LS2-7.

Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.

HS-LS2-4.

Use mathematical representations to support claims for the cycling of matter and flow of energy among organisms in an ecosystem.

Next Generation Science (NGSS) - High School - Earth and Space Sciences

HS-ESS2-2.

Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems.

HS-ESS2-4.

Use a model to describe how variations in the flow of energy into and out of Earth's systems result in changes in climate.

HS-ESS3-1.

Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.

Unit 1: Intro to Marine Biology + Climate Change

Marine Biology

HS-ESS3-3.

Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.

ASSESSMENT EVIDENCE (DIAGNOSTIC / FORMATIVE / SUMMATIVE)

Intro to Marine Biology

Assessment Type: Formative

Assessment Tier: Drill & Practice (D&P)

Assessment Level (DOK): DOK1 / DOK2 / DOK3 / DOK4

Description: Students complete a short answer style question that has them describing why they chose to take the course, what they find interesting about marine biology, and one thing they hope to learn this semester

Critical Thinking Question 1

Assessment Type: Formative

Assessment Tier: Rehearsal & Scrimmage (R&S)

Assessment Level (DOK): DOK1 / DOK2 / DOK3 / DOK4

Description: Students complete a short answer style question that has them describe the difference between climate change and global warming and discuss why are these topics important in a marine biology class.

Unit 2: Microscopic and Macroscopic Primary Production in the Oceans

Marine Biology

UNIT SUMMARY

In this unit, students learn about major groups of microorganisms found in ocean environments. Students explore the important role these microorganisms play in primary production and how they support ocean ecosystems. Students also learn about larger, macroscopic primary producers and how they contribute to marine food webs and ocean communities.

STANDARDS

Next Generation Science (NGSS) - High School - Life Sciences

HS-LS2-3.

Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.

HS-LS2-1.

Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales.

HS-LS1-5.

Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy.

HS-LS2-5.

Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.

Next Generation Science (NGSS) - High School - Earth and Space Sciences

HS-ESS2-6.

Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere.

Unit 2: Microscopic and Macroscopic Primary Production in the Oceans

Marine Biology

ASSESSMENT EVIDENCE (DIAGNOSTIC / FORMATIVE / SUMMATIVE)

Critical Thinking Question 1

Assessment Type: Formative

Assessment Tier: Rehearsal & Scrimmage (R&S)

Assessment Level (DOK): DOK1 / DOK2 / DOK3 / DOK4

Description: Students complete a short answer style question that has them discussing the importance of microscopic producers in our oceans, specifically having them focus on how the health of these producers impacts the health of the whole biosphere.

Coastal Seas Documentary Assignment

Assessment Type: Formative

Assessment Tier: Drill & Practice (D&P)

Assessment Level (DOK): DOK1 / DOK2 / DOK3 / DOK4

Description: This assignment has student discussing 3 interesting facts that they learned from the Our Planet: Coastal Seas episode (this episode contains more detailed information and video footage of a wide variety of the species we have been discussing during the rest of the unit!)

Unit 1+2 Exam

Assessment Type: Summative

Assessment Tier: Drill & Practice (D&P) / Rehearsal & Scrimmage (R&S)

Assessment Level (DOK): DOK1 / DOK2 / DOK3 / DOK4

Description: This is a summative unit exam that covers all topics from Unit 1 and 2. Unit 1 is very short (only about 3 class days worth) hence the combining of both units into one summative exam that covers intro to marine biology topics (climate change/human relationships to the ocean) AND the topics on Primary Production in our oceans

Unit 3: Invertebrate Organisms in our Oceans

Marine Biology

UNIT SUMMARY

In this unit, students learn about the major groups of invertebrate organisms that live in ocean ecosystems. Students explore organisms ranging from microscopic animals such as zooplankton to larger marine invertebrates, including sponges, mollusks, and crustaceans. Through this study, students develop an understanding of the diversity and ecological roles of invertebrates in ocean environments.

STANDARDS

Next Generation Science (NGSS) - High School - Life Sciences
HS-LS2-2.
Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.
HS-LS2-3.
Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.
HS-LS2-1.
Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales.
HS-LS1-2.
Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.
HS-LS4-2.
Construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment.

Unit 3: Invertebrate Organisms in our Oceans

Marine Biology

ASSESSMENT EVIDENCE (DIAGNOSTIC / FORMATIVE / SUMMATIVE)

Critical Thinking Question 1

Assessment Type: Formative

Assessment Tier: Drill & Practice (D&P)

Assessment Level (DOK): DOK1 / DOK2 / DOK3 / DOK4

Description: Students complete a short answer style question that has them comparing and contrasting holoplanktonic organisms vs meroplanktonic organisms

Critical Thinking Question 2

Assessment Type: Formative

Assessment Tier: Drill & Practice (D&P)

Assessment Level (DOK): DOK1 / DOK2 / DOK3 / DOK4

Description: Students complete a short answer style question that has them describing the basic features of a sea sponge and comparing them to other animal groups.

Mission Blue Documentary Assignment

Assessment Type: Summative

Assessment Tier: Authentic Performance (AP)

Assessment Level (DOK): DOK1 / DOK2 / DOK3 / DOK4

Description: This assignment has students writing a personal reaction/reflection on the documentary "Mission Blue" that we watch in class. The documentary describes the life and works of Dr. Sylvia Earle, one of the foremost marine biologists/oceanographers of the past century.

Unit 3 Exam

Assessment Type: Summative

Assessment Tier: Drill & Practice (D&P) / Rehearsal & Scrimmage (R&S)

Assessment Level (DOK): DOK1 / DOK2 / DOK3 / DOK4

Description: This is a summative unit exam that covers all Unit 3 topics. This includes many of the major groups of multicellular invertebrate organisms in our oceans (basic body plans, behaviors, habitats, reproduction methods, etc)

Unit 4: Vertebrate Organisms in Our Oceans

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UNIT SUMMARY

In this unit, students learn about the major groups of vertebrate organisms that live in ocean and coastal ecosystems. Students explore fish, marine mammals such as whales, dolphins, porpoises, and pinnipeds (seals, sea lions, and walruses). Students also learn about seabirds and aquatic reptiles and examine how these animals are adapted to life in marine environments.

STANDARDS

Next Generation Science (NGSS) - High School - Life Sciences

HS-LS2-2.

Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.

HS-LS2-3.

Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.

HS-LS2-1.

Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales.

HS-LS1-2.

Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.

HS-LS4-5.

Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.

Unit 4: Vertebrate Organisms in Our Oceans

Marine Biology

ASSESSMENT EVIDENCE (DIAGNOSTIC / FORMATIVE / SUMMATIVE)

Critical Thinking Question 1

Assessment Type: Formative

Assessment Tier: Drill & Practice (D&P)

Assessment Level (DOK): DOK1 / DOK2 / DOK3 / DOK4

Description: Students complete a short answer style question that has them comparing and contrasting chondrichthyes and osteichthyes (bony fishes vs cartilaginous fishes)

Critical Thinking Question 2

Assessment Type: Formative

Assessment Tier: Drill & Practice (D&P)

Assessment Level (DOK): DOK1 / DOK2 / DOK3 / DOK4

Description: Students complete a short answer style question that has them describing examples that support the idea of vast intelligence in marine mammals like dolphins and whales. Students must give examples of behaviours that demonstrate intelligence in these organisms.

Vertebrates of the Ocean Project

Assessment Type: Summative

Assessment Tier: Authentic Performance (AP)

Assessment Level (DOK): DOK1 / DOK2 / DOK3 / DOK4

Description: This project takes the place of a more standard Unit Exam for Unit 4. The project allows students to explore 3 distinct marine vertebrate species and create a presentation to discuss lifestyles, anatomy, behaviors and adaptations these organisms possess.

Unit 5: Student Driven Marine Biology Exploration

Marine Biology

UNIT SUMMARY

In this flexible unit, students learn about marine organisms that interest them by choosing topics they would like to explore more deeply. Students investigate specific groups of marine species through documentaries, research, and discussion. Through this exploration, students expand their understanding of marine biodiversity and the unique characteristics of different ocean organisms.

STANDARDS

Next Generation Science (NGSS) - High School - Life Sciences

HS-LS2-6.

Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.

HS-LS4-3.

Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait.

HS-LS2-2.

Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.

ASSESSMENT EVIDENCE (DIAGNOSTIC / FORMATIVE / SUMMATIVE)

Choice Assignment

Assessment Type: Summative

Assessment Tier: Authentic Performance (AP)

Assessment Level (DOK): DOK3 / DOK4

Description: Students choose a marine organism or group of organisms to research and create a product that explains its characteristics, habitat, adaptations, and role in ocean ecosystems.