






# Oceanography

Maine Virtual Academy

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

UNIT	# OF TEACHING DAYS	DATES
 Unit 1: Intro to the Oceans + Getting our Bearings	9 teaching days	Jan 16 - Jan 29, 2026
 Unit 2: Origins and Structure of Earth	15 teaching days	Jan 30 - Feb 27, 2026
 Unit 3: Chemical and Physical Oceanography	19 teaching days	Mar 2 - Mar 27, 2026
 Unit 4: Ocean Circulation and Climate Change	10 teaching days	Mar 30 - Apr 17, 2026
 Unit 5: Waves and Tides	31 teaching days	Apr 21 - Jun 12, 2026

# 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	6	7	8	9	10
11	12	13 Winter NWEA	14 Winter NWEA	15 Winter NWEA	16 Unit 1: Intro to th...	17
18	19 Martin Luther King, Jr. Day	20 Unit 1: Intro to th...	21 Unit 1: Intro to th...	22 Unit 1: Intro to th...	23 Unit 1: Intro to th...	24
25	26 Unit 1: Intro to th...	27 Unit 1: Intro to th...	28 Unit 1: Intro to th...	29 Unit 1: Intro to th...	30 Unit 2: Origins an...	31

## February

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	2 Unit 2: Origins an...	3 Unit 2: Origins an...	4 Unit 2: Origins an...	5 Unit 2: Origins an...	6 Unit 2: Origins an...	7
8	9 Unit 2: Origins an...	10 Unit 2: Origins an...	11 Unit 2: Origins an...	12 Unit 2: Origins an...	13 February Break	14 February Break
15 February Break	16 Presidents' Day	17 February Break	18 February Break	19 February Break	20 February Break	21
22	23 Unit 2: Origins an...	24 Unit 2: Origins an...	25 Unit 2: Origins an...	26 Unit 2: Origins an...	27 Unit 2: Origins an...	28

## March

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

# April

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
29	30 Unit 4: Ocean Cir...	31 Unit 4: Ocean Cir...	1 Unit 4: Ocean Cir...	2 Unit 4: Ocean Cir...	3 Unit 4: Ocean Cir...	4
5	6 MEA Testing - Spring	7 MEA Testing - Spring	8 MEA Testing - Spring	9 MEA Testing - Spring	10 MEA Testing - Spring	11
12	13 Unit 4: Ocean Cir...	14 Unit 4: Ocean Cir...	15 Unit 4: Ocean Cir...	16 Unit 4: Ocean Cir...	17 Unit 4: Ocean Cir...	18
19	20 April Break	21 April Break	22 April Break	23 April Break	24 April Break	25
26	27 Unit 5: Waves an...	28 Unit 5: Waves an...	29 Unit 5: Waves an...	30 Unit 5: Waves an...	1 Unit 5: Waves an...	2

# May

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

## June

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

# Oceanography

## Maine Virtual Academy

UNITS (5/5 SELECTED)

- Unit 1: Intro to the Oceans + Getting our Bearings
- Unit 2: Origins and Structure of Earth
- Unit 3: Chemical and Physical Oceanography
- Unit 4: Ocean Circulation and Climate Change
- Unit 5: Waves and Tides

SUGGESTED DURATION

*9 teaching days*

*15 teaching days*

*19 teaching days*

*10 teaching days*

*31 teaching days*

# Unit 1: Intro to the Oceans + Getting our Bearings

## Oceanography

### UNIT SUMMARY

This unit will be our introduction into the science of Oceanography! During this unit we will define and name our worlds oceans. We will then take a close look at the different types of continental margins that border our oceans, and dive into the different types of mapping technology that allows us to view the topography of the seafloor. Lastly, we will do a breif recap of the concepts of Latitude and longitude so we have a strong geography foundation of knowledge to bring with us throughout the rest of the course.

### STANDARDS

<b>Next Generation Science (NGSS) - High School - Earth and Space Sciences</b>
HS-ESS2-1.
Develop a model to illustrate how Earth's internal and surface processes operate at different spatial and temporal scales to form continental and ocean-floor features.
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-ESS2-5.
Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface processes.
HS-ESS2-6.
Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere.

# Unit 1: Intro to the Oceans + Getting our Bearings

## Oceanography

ASSESSMENT EVIDENCE (DIAGNOSTIC / FORMATIVE / SUMMATIVE)

### Unit 1 Critical Thinking Question 1

**Assessment Type:** Formative

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

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

**Description:** Students complete a short answer style question that has them comparing and contrasting active and passive continental margins

### Unit 1 Test

**Assessment Type:** Summative

**Assessment Tier:** Drill & Practice (D&P) / Rehearsal & Scrimmage (R&S) / Authentic Performance (AP)

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

**Description:** This is a summative Unit Test with multiple choice, fill in the blank and true false style questions assessing knowledge of the whole unit

## Unit 2: Origins and Structure of Earth

### Oceanography

#### UNIT SUMMARY

During this unit we will spend time describing the geological structure of our planet, and discuss the formation of Earth and our solar system. We will then review the concepts surrounding the Theory of Plate Tectonics and how the movement of our planet's tectonic plates directly correlates to various oceanographic features. Lastly we will define and describe some of the major underwater geological features including the process of island chain formation and underwater mountain ranges.

#### STANDARDS

<b>Next Generation Science (NGSS) - High School - Earth and Space Sciences</b>
HS-ESS1-5.
Evaluate evidence of the past and current movements of continental and oceanic crust and the theory of plate tectonics to explain the ages of crustal rocks.
HS-ESS2-1.
Develop a model to illustrate how Earth's internal and surface processes operate at different spatial and temporal scales to form continental and ocean-floor features.
HS-ESS2-3.
Develop a model based on evidence of Earth's interior to describe the cycling of matter by thermal convection.
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.

## Unit 2: Origins and Structure of Earth

### Oceanography

ASSESSMENT EVIDENCE (DIAGNOSTIC / FORMATIVE / SUMMATIVE)

### Unit 2 Critical Thinking Question 1

**Assessment Type:** Formative

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

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

**Description:** Students complete a short answer style question that has them describing the process of "differentiation" in context of the formation of our planet. It then asks them to describe the importance of this process in their own words.

### Unit 2 Critical Thinking Question 2

**Assessment Type:** Formative

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

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

**Description:** Students complete a short answer style question that has them comparing and contrasting the 3 different types of tectonic plate boundaries and giving examples of where some are located

### Unit 2 Test

**Assessment Type:** Summative

**Assessment Tier:** Authentic Performance (AP)

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

**Description:** This is a summative Unit Test with multiple choice, fill in the blank and true false style questions assessing knowledge of the whole unit

# Unit 3: Chemical and Physical Oceanography

## Oceanography

### UNIT SUMMARY

This unit has us taking a closer look at various chemical and physical properties of oceans and seawater. We will describe the unique characteristics water molecules have at the molecular level that allow it to support life on our planet. We will then learn about the concentrations of specific ions found in our world's oceans, as well as defining the dissolved oxygen and salinity patterns found throughout the seas. We will discuss the physics of ocean water and how sound, pressure, temperature, density and light impact ocean environments. Lastly, we will define and describe the phenomena of Ocean Acidification.

### STANDARDS

#### Next Generation Science (NGSS) - High School - Physical Sciences

HS-PS1-3.

Plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles.

HS-PS3-3.

Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy.

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

HS-ESS2-1.

Develop a model to illustrate how Earth's internal and surface processes operate at different spatial and temporal scales to form continental and ocean-floor features.

HS-ESS2-6.

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

## Unit 3: Chemical and Physical Oceanography

### Oceanography

ASSESSMENT EVIDENCE (DIAGNOSTIC / FORMATIVE / SUMMATIVE)

### Unit 3 Critical Thinking Question 1

**Assessment Type:** Formative

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

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

**Description:** Students complete a short answer style question that has them identify the relative proportions of the six major ions found in seawater and have them describe the "rule of constant proportions" in their own words.

### Unit 3 Critical Thinking Question 2

**Assessment Type:** Formative

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

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

**Description:** Students complete a short answer style question that has detailing the process of Oxygen and Carbon Dioxide circulation within the depths of our worlds oceans.

### Unit 3 Test

**Assessment Type:** Summative

**Assessment Tier:** Authentic Performance (AP)

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

**Description:** This is a summative Unit Test with multiple choice, fill in the blank and true false style questions assessing knowledge of the whole unit

# Unit 4: Ocean Circulation and Climate Change

## Oceanography

### UNIT SUMMARY

This unit will we will observe how the ocean circulates the globe and influences climate patterns.

This unit focuses on weather patterns and oceanic circulation. We will define the Coriolis effect and describe its significant impact on our globes climate. We will discuss how the oceans affect the wind and weather patterns across the globe. We will take time to learn about the formation of large ocean storms such as hurricanes/ typhoons. Lastly we will attempt to understand a variety of ocean circulation processes such as: surface gyres, the gulf stream, ekman spirals, geostrophic flow, upwelling, downwelling and thermohaline circulation.

### STANDARDS

<b>Next Generation Science (NGSS) - High School - Earth and Space Sciences</b>
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-ESS2-6.
Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere.
HS-ESS3-5.
Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth systems.
HS-ESS2-1.
Develop a model to illustrate how Earth's internal and surface processes operate at different spatial and temporal scales to form continental and ocean-floor features.

# Unit 4: Ocean Circulation and Climate Change

## Oceanography

ASSESSMENT EVIDENCE (DIAGNOSTIC / FORMATIVE / SUMMATIVE)

### Unit 4 Critical Thinking Question 1

**Assessment Type:** Formative

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

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

**Description:** Students complete a short answer style question that has them discussing the greenhouse effect and why it is so important for the heating of our planet. It then has them discuss what are our modern day concerns are regarding this phenomena relating to our worlds oceans.

### Unit 4 Critical Thinking Question 2

**Assessment Type:** Formative

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

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

**Description:** Students complete a short answer style question that has them describing how hurricanes form and which aspects of hurricanes bring the most destruction to coastal environments.

### Unit 4 Test

**Assessment Type:** Summative

**Assessment Tier:** Authentic Performance (AP)

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

**Description:** This is a summative Unit Test with multiple choice, fill in the blank and true false style questions assessing knowledge of the whole unit

# Unit 5: Waves and Tides

## Oceanography

### UNIT SUMMARY

This unit has students learning all about the formation of waves and the planetary phenomena that leads to our oceans tides. We will discuss the different forms of oceans waves and when/how waves form. This will lead us into a discussion about the largest of ocean waves: Tsunamis. Finally, we will discuss the Dynamic Theory of Tides and describe how and why tides exist in our oceans.

### STANDARDS

#### Next Generation Science (NGSS) - High School - Physical Sciences

HS-PS2-4.

Use mathematical representations of Newton's Law of Gravitation and Coulomb's Law to describe and predict the gravitational and electrostatic forces between objects.

HS-PS3-3.

Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy.

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

HS-ESS2-1.

Develop a model to illustrate how Earth's internal and surface processes operate at different spatial and temporal scales to form continental and ocean-floor features.

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.

## Unit 5: Waves and Tides

### Oceanography

ASSESSMENT EVIDENCE (DIAGNOSTIC / FORMATIVE / SUMMATIVE)

## Unit 5 Critical Thinking Question 1

**Assessment Type:** Formative

**Assessment Tier:** Rehearsal & Scrimmage (R&S) / Authentic Performance (AP)

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

**Description:** Students complete a short answer style question that has them comparing and contrasting 3 different types of ocean waves

## Unit 5 Test

**Assessment Type:** Summative

**Assessment Tier:** Authentic Performance (AP)

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

**Description:** This is a summative Unit Test with multiple choice, fill in the blank and true false style questions assessing knowledge of the whole unit