

BEST High School
Marine Biology & SCI611
Daniel Weiss
email: dweiss@lwsd.org
Competency-based Syllabus

Desired Results

Credit: .125 per session

Estimate of hours per week engaged in learning activities: 5 hours

Course Overview: We will study ocean ecosystems, intertidal zones, creatures of the abyss, volcanoes of the deep and mapping of ocean currents. We will also examine careers and jobs related to the growing field of marine science. Marine Biology will provide an excellent background for further biological and environmental science classes, as well as increasing your awareness of life in our Pacific Northwest.

Instructional Materials: - *Class reading handouts, science notebook, online resources. Reading materials and handouts will be posted on the class website on Communicator.*

This is a one semester course. Semester 1 and Semester 2 cover the same basic material with slight changes in emphasis of information.

Semester 1:

Session 1 (9/6 – 10/4) – What is Marine Biology, Chemical and Physical Features of the Oceans

Session 2 (10/5 – 11/4) - Ocean Ecology, Food Chains, and Plankton

Session 3 (11/7 – 12/9) - Ocean Zoology - Benthic Communities (the sea floor), Intertidal Communities, Coral Reef Communities, Invertebrates (squid, shellfish, snails, worms, urchins, etc)

Session 4 (12/12 – 1/27) - Ocean Zoology (Fish, Marine Mammals, Marine Birds, Marine Reptiles)
 Impacts and Threats to the Oceans (Oil Spills, Plastics, Overfishing, Fish Farming)

Semester 2:

Session 5 (1/30 – 3/2) - What is Marine Biology, Chemical and Physical Features of the Oceans

Session 6 (3/5 – 3/30) - Ocean Ecology, Food Chains, and Plankton

Session 7 (4/9 – 5/11) - Ocean Zoology - Benthic Communities (the sea floor), Intertidal Communities, Coral Reef Communities, Invertebrates (squid, shellfish, snails, worms, urchins, etc), Fish

Session 8 (5/14 – 6/22) - Ocean Zoology (Fish, Marine Mammals, Marine Birds, Marine Reptiles)
 Impacts and Threats to the Oceans (Oil Spills, Plastics, Overfishing, Fish Farming)

All summative assessments are due by 1 pm two school days before the end of session
All coursework is aligned with the Washington State and District EALR's
Students earn credit for proficient completion of each session's summative assessments

Session	Learning Target	Formative	Summative
1/5	Describe and analyze the physical features and processes that control the oceans	Instructor will collect science Netbooks during week 2 and 3 to ensure that their project will	Prepare 5 test questions by and take a test on Session 1/5 material . This test will cover

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	<p>including: Currents and Temperature, Waves and Tides, Nutrients, Physical features of the ocean floor</p> <p>Distinguish the differences (compare and contrast) between the different ocean zones such as benthic, intertidal, and pelagic.</p>	<p>work and that they are completing assigned in-class and homework.</p> <p>Bathymetry Activity/Model, Density Lab, Tides, and Levels of the ocean</p>	<p>all of the material learned in class and assigned for reading and homework on the physical features of the ocean. The test questions will be made up primarily by students taking the test</p> <p>OR</p> <p>You will prepare a poster on the physical features of the ocean and present it to the class. Your poster will include information regarding: Chemical and Physical Features or Properties of the Oceans such as:</p> <ul style="list-style-type: none"> • What are the physical features of the ocean floor? • Salinity of the Ocean – Why is this important? Is it the same everywhere? • How do waves, currents and tides happen and why are they important? • What nutrients are in the oceans and why are they important to living things in the ocean? <p>You will also describe the marine zones (Intertidal, Pelagic, and Benthos) and discuss what lives in these different zones and why they live there?</p>
<p>2/6</p>	<p>Distinguish the differences (compare and contrast) between the different ocean zones such as Euphotic, benthic, intertidal, and pelagic.</p> <p>Understand the basic ecological functions in the marine ecosystems</p>	<p>Instructor will collect science Netbooks during week 2 and 3 to ensure that their project will work and that they are completing assigned in-class and homework.</p>	<p>Prepare 5 test questions by and take a test on Session 2/6 material. This test will cover all of the material learned in class and assigned for reading and homework on the physical features of the ocean. The test questions will be made up primarily by students taking the test</p>

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	<p>Habitat vs. Niche Trophic Pyramids Marine Food Webs, and Food Chains Limiting Factors (Biotic and Abiotic) and Five Interactions (Predation, Completion, Mutualism, Commensalism, and Parasitism) Symbiosis</p> <p>Bioaccumulation</p> <p>Describe and contrast the different types of plankton in the ocean: Phytoplankton = Primary Production in Oceans Zooplankton – What are they? Some are larval forms of larger organisms, some are not.</p>		<p>OR</p> <p>You will prepare a creative outlet that showcases your knowledge of this session. <u>You will present your project to the class.</u> Options for creative outlets include a magazine, short story, PowerPoint, video, digital video, or song lyrics. Your creative outlet will include information regarding <u>Ecology of the Ocean and Plankton as described in the session rubric.</u></p>
<p>3/7</p>	<p>Understand the characteristics and adaptations of living organisms and communities in the marine environment including:</p> <ul style="list-style-type: none"> • Benthic Communities (the sea floor) • Intertidal Communities • Coral Reef Communities • Invertebrates (squid, shellfish, snails, worms, urchins, etc) • Fish 	<p>Instructor will collect science Netbooks during week 2 and 3 to ensure that their project will work and that they are completing assigned in-class and homework.</p>	<p>ALL STUDENTS: Turn in a completed Pacific Northwest Intertidal Organisms Research activity in your science notebook. All ten (10) organisms must be completed for full credit.</p> <p>AND</p> <p>Prepare 5 test questions by and take a test on Session3/7 material. This test will cover all of the material learned in class and assigned for reading and homework on the physical features of the ocean. The test questions will be made up primarily by students taking the test</p> <p>OR</p> <p>You will prepare a magazine, poster or brochure that will include information regarding benthic, coral and intertidal communities, in addition to information on invertebrates</p>

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			<p>and fish. You will include:</p> <ul style="list-style-type: none"> ○ The characteristics of the each of the three communities (benthic, coral and intertidal). ○ The organisms live there and the types of adaptations required to live in that community ○ Invertebrates: What are they? What makes them invertebrates? What are common traits that all invertebrates share? ○ The structure and biology of the local squid species that was dissected ○ Fish: What is a fish? What makes them fish? What are common traits that all fish share?
<p>4/8</p>	<p>Understand the characteristics and adaptations of living organisms and communities in the marine environment including:</p> <ul style="list-style-type: none"> • Fish • Marine Mammals • Marine Birds • Marine Reptiles <p>Impacts and Threats to the Oceans</p> <ul style="list-style-type: none"> • Oil Spills • Plastics • Overfishing • Fish Farming 	<p>Instructor will collect science Netbooks during week 2 and 3 to ensure that their project will work and that they are completing assigned in-class and homework.</p>	<p>Part 1</p> <p>Complete quiz on vertebrates including fish, marine birds, and marine mammals.</p> <p>AND</p> <p>Part 2</p> <p>You will prepare a written report or PowerPoint Presentation that will include information regarding impacts to the marine environment, specifically focused on one major impact. The report will be at least 4 written, double-spaced pages. Your PowerPoint will be at least 12 slides. But for either project your main purpose is to cover the information thoroughly and completely.</p>

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Types of Learning Activities

[This chart demonstrates the types of learning activities the student will complete throughout the course]

Direct Instruction	Indirect Instruction	Experiential Learning	Independent Study	Interactive Instruction
<input checked="" type="checkbox"/> _X_Structured Overview <input type="checkbox"/> _X_Mini presentation <input checked="" type="checkbox"/> _X_Drill & Practice <input checked="" type="checkbox"/> _X_Demonstrations <input type="checkbox"/> ___Other (List)	<input checked="" type="checkbox"/> _X_Problem-based <input checked="" type="checkbox"/> _X_Case Studies <input checked="" type="checkbox"/> _X_Inquiry <input type="checkbox"/> ___Reflective Practice <input checked="" type="checkbox"/> _X_Project <input checked="" type="checkbox"/> _X_Paper <input type="checkbox"/> ___Concept Mapping <input type="checkbox"/> ___Other (List)	<input type="checkbox"/> ___Virt. Field Trip <input checked="" type="checkbox"/> _X_Experiments <input type="checkbox"/> ___Simulations <input type="checkbox"/> ___Games <input checked="" type="checkbox"/> _X_Field Observ. <input type="checkbox"/> ___Role-playing <input checked="" type="checkbox"/> _X_Model Bldg. <input checked="" type="checkbox"/> _X_Surveys <input type="checkbox"/> ___Other (List)	<input checked="" type="checkbox"/> _X_Essays <input checked="" type="checkbox"/> _X_Self-paced computer <input checked="" type="checkbox"/> _X_Journals <input type="checkbox"/> ___Learning Logs <input type="checkbox"/> ___Reports <input type="checkbox"/> ___Directed Study <input checked="" type="checkbox"/> _X_Research Projects <input type="checkbox"/> ___Other (List)	<input checked="" type="checkbox"/> _X_Discussion <input type="checkbox"/> ___Debates <input type="checkbox"/> ___Role Playing <input type="checkbox"/> ___Panels <input type="checkbox"/> ___Peer Partner Learning <input type="checkbox"/> ___Project team <input checked="" type="checkbox"/> _X_Laboratory Groups <input checked="" type="checkbox"/> _X_Think, Pair, Share <input type="checkbox"/> ___Cooperative Learning <input type="checkbox"/> ___Tutorial Groups <input type="checkbox"/> ___Interviewing <input type="checkbox"/> ___Conferencing <input type="checkbox"/> ___Other (List)