

WINTHROP HIGH SCHOOL

Marine Science Syllabus

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Course Overview

Seventy percent of the surface of Planet Earth is covered by the ocean, which includes 97% of one of our most precious resources- water. 40% of the Human population lives within 100Km of the coast, yet we know more about the moon than the great deeps of the sea. The ocean, the last great frontier, has 95% yet to be explored. This course will explain how oceans operate and affect life on land. During the first semester we will focus on oceanography; we will learn about plate tectonics, water chemistry, waves, tides, and currents - all of the chemical and physical features of the oceans that in turn affect the biological features of the oceans. During the second semester we will focus on the various forms of life found in oceans from the microbial to marine mammals. We will learn about various kinds of marine ecosystems, and explore our environmental impacts on the oceans. An ongoing focus throughout the year will be the impacts of climate change on the oceans. Case studies and current marine and estuarine events will be discussed. This course will consist of outreach with Belle Isle Marsh or other citizen science projects and will be academically rigorous. This course will conduct several dissections including; sand worm, hydra, mollusk and dogfish shark, and other lab investigations.

Materials

This course will utilize the following texts:

- Greene, TF..*Marine Science*. Amsco School Publications, Inc. 1998.
- Marine Science, The Dynamic Ocean. US. Satellite Laboratory, Inc. 2012.
- Tech Components: Marine Science website: www.us-satellite.net/marinescience
- <http://oceantracks.org/curriculum/high-school>
- <http://www.noaa.gov/resource-collections/classroom-ready-data-resources>

* The text will be provided via selected scanned materials on schoology.

Curriculum Content Map

| Month | Ch.'s | Unit | Topics | Selected Labs |
|-------|-------|------|--|--|
| Sept | 1,2 | 1 | <ul style="list-style-type: none">● Ocean Ecosystems overview● Marine Scientists● Physical Properties of Water | Buoyancy, density, salinity Parts per Million, m ³ |
| Sept | 3 | 1 | <ul style="list-style-type: none">● salinity and osmoregulation● water: the universal solvent | drops on a penny hydrometers |

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| | | | <ul style="list-style-type: none"> • surface tension | solutions |
| Oct | 4, 5, 6, 7, 14 | 2 | <ul style="list-style-type: none"> • human reliance on • history of ocean over time • Animal movement tracking • plate tectonics • ocean mapping, bathymetry | timeline marine algae, plankton tow net pg 279 mollusk siphon ocean floor mapping plate tectonics |
| Nov | 8, 9, 10 | 2 | <ul style="list-style-type: none"> • seasonal migration • sea surface, energy • differential heating • Buoy, NOAA • currents, winds • Heat capacity | all about the rays convection coriolis |
| Nov | 11 | 3 | <ul style="list-style-type: none"> • weather • climate • analysing weather and climate data | coral bleaching Chasing Coral video |
| Dec, Jan | 12,13, 15,16 | 3,4 | <ul style="list-style-type: none"> • Depth and physical properties • adaptations of marine organisms • carbon cycle • Endangered Species, Marine Mammal • Evolution | sea otter and kelp case study |
| Jan, Feb | 16, 17, 18, | 4 | <ul style="list-style-type: none"> • Invasive Species • marine food webs • Marine invertebrates | jellies video hydra, tentacles sand worm |
| Feb | 19 | 4,5 | <ul style="list-style-type: none"> • marine vertebrates • Bony Fishes • Cartilaginous fish | red Perch sea bass or virtual dogfish |
| | | | !Good Luck on MidYear Exam! | |
| Feb, March | 20, 21, 23, 24 | 5,6 | <ul style="list-style-type: none"> • Marine reptiles, birds • Marine mammals • whales • waves, tides | osprey tracking |
| March | 22, | 6 | <ul style="list-style-type: none"> • Symbiosis | Chemical water testing, |

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|--------------|------------|---|---|---|
| | | | <ul style="list-style-type: none"> • reproduction life cycles | |
| April | 30, 32, 33 | 7 | <ul style="list-style-type: none"> • human impacts • point and nonpoint source pollution • fishing • climate, sea level rise • El Nino | plastic ocean video Tuna, sea lion cyberlab |
| May, June | | 7 | <ul style="list-style-type: none"> • Renewable energy innovations <p>Independent Research Design & Community Projects: <i>Plastic Pollution, invasive saltmarsh study, eutrophication, energy, fishing regulations, bioengineering, stormwater runoff, etc</i></p> | research design |
| | | | FINAL EXAM! HAVE A GREAT SUMMER! | |

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Marine Science

2018-2019

Please return this paper with signatures completed!!!*

Syllabus Acknowledgement

I acknowledge that I have read and understand the class syllabus for Marine Science. I understand that if I have any questions or concerns regarding the course grade, content, or policies that I should contact Ms. Baker immediately.

Student Printed Name

Student Signed Name

Parent Printed Name

Parent/Guardian Signed Name

Parent/Guardian Email Address

Best time/way to Contact Parent/Guardian (optional):
