WARREN COUNTY SCHOOL DISTRICT

PLANNED INSTRUCTION

COURSE DESCRIPTION

Course Title: Marine Science (CR option)
Course Number: 10327/10327CR
Course Prerequisites: None

Course Description: About 70% of the Earth is covered by water. Even today, much of the world's oceans remain unexplored. Marine scientists make exciting new discoveries about marine life every day. In this course, students will discover the vast network of life that exists beneath the ocean's surface and study the impact that humans have on the oceans.

Suggested Grade Level: Grades 9-12
Length of Course: One Semester
Units of Credit: .5
PDE Certification and Staffing Policies and Guidelines (CSPG) Required Teacher Certifications:
CSPG 32, CSPG 46
To find the CSPG information, go to CSPG
Certification verified by the WCSD Human Resources Department: ☒Yes ☐No

WCSD STUDENT DATA SYSTEM INFORMATION

Course Level: Academic
Mark Types: Check all that apply.
☒F – Final Average ☒MP – Marking Period ☒EXM – Final Exam

GPA Type: ☐ GPAEL-GPA Elementary ☐ GPAML-GPA for Middle Level ☒ NHS-National Honor Society
☒ UGPA-Non-Weighted Grade Point Average ☒ GPA-Weighted Grade Point Average

State Course Code: 03005
To find the State Course Code, go to State Course Code, download the Excel file for *SCED*, click on SCED 6.0 tab, and choose the correct code that corresponds with the course.

TEXTBOOKS AND SUPPLEMENTAL MATERIALS

Board Approved Textbooks, Software, and Materials:

Title:	Accelerate Learning
Publisher:	Virtual Learning
ISBN #:	Click or tap here to enter text.
Copyright Date:	Click or tap here to enter text.
WCSD Board Approval Date:	Click or tap here to enter text.

Supplemental Materials: Click or tap here to enter text.

Curriculum Document

WCSD Board Approval:

Date Finalized:	4/20/2023
Date Approved:	6/26/2023
Implementation Year:	2023.2024

SPECIAL EDUCATION, 504, and GIFTED REQUIREMENTS

The teacher shall make appropriate modifications to instruction and assessment based on a student's Individual Education Plan (IEP), Chapter 15 Section 504 Plan (504), and/or Gifted Individual Education Plan (GIEP).

SCOPE AND SEQUENCE OF CONTENT AND CONCEPTS

Marking Period 1/3

Module 1: Microscopic Life and Zooplankton

Module 2: Macroscopic Algae and Kelps.

Non-Algae Plants: Seagrasses and Mangroves.

Categorizing Life in the Sea and Invertebrates: Sponges, Crustaceans, and Marine Worms.

Invertebrates: Cnidarians and Mollusks and Fish

Module 3: A closer look: Tiger Sharks and Chinook

A closer look: Clownfish and Eels, Marine Mammals, Whales, Seals, Seabirds, Reptiles 1: Sea Snakes and Sea Turtles, Reptiles 2: Saltwater Crocodiles

Marking Period 2/4

Module 4: The Intertidal Zone and Coral Reefs

Coral Reefs on the Decline and Open Ocean

The Deep Sea and Lower layers of the ocean

The Environment and Seamounts and Brine Pools

Module 5: Group behaviors 1: Movement and Decision making and Introduction to Microscopic extremes.

Xenophyophores and tripod fish and anglerfish

The Yeti Crab and Ice worms and Intelligence in Cetaceans

Dolphin and Orca Social Life and Intelligence in Sea Lions

Module 6: Group Behaviors 2: Avoiding Predators and feeding and Two Case Studies for Intelligence

Medical Advances and Deep sea exploration

Inventions for deep sea exploration and Conservation Challenges 1: Acidification and Bycatch

Conservation Challenges 2: Coral Bleaching and Whaling and career options

Standards/Eligible Content and Skills

Performance Indicator	PA Core Standard and/or Eligible Content	Marking Period Taught
Define marine science.		MP 1/3
Identify aspects that make up marine science.		MP 1/3
Define climate change.		MP 1/3
Define global warming.		MP 1/3
Compare and contrast global warming and climate change.		MP 1/3
Describe how climate change impacts sea levels.		MP 1/3
Define point source pollution and nonpoint source pollution.		MP 1/3
Differentiate between various ocean contaminants.		MP 1/3
Explain how the ocean affects human life through medicine, nutrition, and the economy.		MP 1/3
Identify renewable and non-renewable energies.		MP 1/3
Differentiate different kinds of energies and their positive and negative traits.		MP 1/3
Identify the different types of aquatic microorganisms.		MP 1/3
Describe traits of different types of aquatic microorganisms.		MP 1/3
Identify different types of zooplankton.		MP 1/3
Differentiate different types of macroscopic algae.		MP 1/3
Describe the traits of macroscopic algae.		MP 1/3
Discuss how algae help support other life on Earth.		MP 1/3
Describe the common characteristics of kelps.		MP 1/3
Identify the different types of kelp.		MP 1/3
Discuss the function of non-algae plants in the ocean.		MP 1/3
Describe the function of mangroves in oceans.		MP 1/3
Order the Linnaean divisions.		MP 1/3
Identify a species using Linnaean taxonomy.		MP 1/3
Differentiate between various invertebrates.		MP 1/3
Identify common characteristics of invertebrates.		MP 1/3
Describe how coral reefs and human activity impact each other.		MP 1/3
Describe the variation of fish and their anatomy.		MP 1/3
Describe the adaptations that allow tiger sharks and chinook salmon to survive.		MP 1/3
Discuss the habitat and life cycle of the Chinook salmon.		MP 1/3
Describe the symbiotic relationship between the clownfish and sea anemone.		MP 1/3
Discuss the life cycle of eels.		MP 1/3
Describe how bycatch impacts dolphins and other species.		MP 1/3
Differentiate between different adaptations of aquatic animals and their environments.		MP 1/3

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Performance Indicator	**PA Core Standard and/or Eligible Content**	**Marking Period Taught**
Describe specific adaptations for aquatic environments.		MP 1/3
Differentiate between the two major groups of whales.		MP 1/3
Describe the process by which dolphins hunt and eat anchovies.		MP 1/3
Describe the attributes of seals that make them well-suited to water.		MP 1/3
Define semi-aquatic.		MP 1/3
Discuss how seals' bodies help keep them warm in cold climates and cool in warmer climates.		MP 1/3
Differentiate between various species of seabirds.		MP 1/3
Discuss how the diversity of seabirds around the world adapt to their environments.		MP 1/3
Describe the sea turtle life cycle.		MP 1/3
Differentiate between various sea snakes.		MP 1/3
Describe the survival adaptations of crocodiles.		MP 1/3
Explain how the saltwater crocodile is different from other crocodiles.		MP 1/3
Differentiate between different tidal zones.		MP 2/4
Describe stresses on organisms in different tidal zones.		MP 2/4
Explain why death is important to the creation of coral reefs.		MP 2/4
Discuss the structure of coral reefs.		MP 2/4
Describe the relationship between African dust and coral reefs.		MP 2/4
Identify some ways to protect coral reefs.		MP 2/4
Describe the needed adaptations of deep water creatures.		MP 2/4
Explain why most life in the mesopelagic zone relies on what comes from above.		MP 2/4
Describe the attributes of deep water and discuss the challenges and advances associated with deep water exploration.		MP 2/4
Describe the various lower ocean layers.		MP 2/4
Describe extreme adaptations of aquatic creatures.		MP 2/4
Describe the impact of plate tectonics on regions underneath the water.		MP 2/4
Discuss the impacts of overfishing.		MP 2/4
Describe how brine pools function.		MP 2/4
Describe the group movement and decision-making processes of fish.		MP 2/4
Describe the challenges that researchers face in finding new extreme life-forms.		MP 2/4
Differentiate xenophyophores from sponges.		MP 2/4
Describe the unique adaptations of angler fish and tripod fish.		MP 2/4
Discuss the unique attributes of the yeti crab.		MP 2/4
Describe features of the dolphin that lead researchers to believe that they are intelligent.		MP 2/4
Describe the social structure of dolphins and orcas.		MP 2/4

Performance Indicator	**PA Core Standard and/or Eligible Content**	**Marking Period Taught**
Describe the features of human interactions that resemble the behavior of orcas or dolphins.		MP 2/4
Describe the mating and breeding processes of sea lions.		MP 2/4
Describe schooling behaviors for avoiding predators.		MP 2/4
Describe schooling behaviors for feeding.		MP 2/4
Compare the intellectual abilities of dolphins and octopuses.		MP 2/4
Describe the findings at the Kewalo Basin Marine Mammal Laboratory and discuss what these findings suggest about dolphin intelligence.		MP 2/4
Identify medical and technological advances that have come from the oceans.		MP 2/4
Discuss early deep sea exploration and its impact on understanding aquatic life.		MP 2/4
Describe ROVs impacts on deep sea exploration.		MP 2/4
Describe the inventions for deep-sea exploration and explain the specific uses for which each is designed.		MP 2/4
Describe the impacts of acidification.		MP 2/4
Define bycatch and describe the causes.		MP 2/4
Describe the causes of coral bleaching.		MP 2/4
Discuss the impacts of whaling.		MP 2/4
Discuss the marine biology related career options.		MP 2/4

ASSESSMENTS

PDE Academic Standards, Assessment Anchors, and Eligible Content: The teacher must be knowledgeable of the PDE Academic Standards, Assessment Anchors, and Eligible Content and incorporate them regularly into planned instruction.

Formative Assessments: The teacher will utilize a variety of assessment methods to conduct in-process evaluations of student learning.

Effective formative assessments for this course include: Practice activities, multiple-choice questions, worksheets, and quizzes. (Activities modified for credit recovery version)

Summative Assessments: The teacher will utilize a variety of assessment methods to evaluate student learning at the end of an instructional task, lesson, and/or unit.

Effective summative assessments for this course include: Exams and Critical Thinking Questions (Critical thinking questions eliminated for credit recovery version)