

# North Hennepin Community College

## NSCI 1201: Oceanography Lab

### A. COURSE DESCRIPTION

Credits: 1

Lecture Hours/Week: \*.\*

Lab Hours/Week: 1

OJT Hours/Week: \*.\*

Prerequisites: None

Corequisites: None

MnTC Goals: Goal 03 - Natural Science, Goal 10 - People/Environment

This course is designed to complement GEOL 1150, Oceanography. The 3 hour lab sessions will include group and individual projects that supplement concepts and topics from oceanography lecture. Learners will collect their own data and use oceanographic data from ocean science databases. Lab topics that will be covered include plate tectonics, marine sediments, temperature and salinity, water masses and ocean circulation, mapping the seafloor, marine ecosystems, coastal erosion, climate change, primary productivity, el niño and biogeochemical cycling. Course is open to All Students (3 hours lab) 1 credit

**B. COURSE EFFECTIVE DATES:** 07/21/2016 - Present

### C. OUTLINE OF MAJOR CONTENT AREAS

1. Students will be introduced to and work with the tools and data that oceanographers have used in their scientific practice to unravel our understanding of the worlds oceans and their impact on our daily lives.
2. Students will work with oceanographic data and practice using the scientific process to explore ocean circulation, plate tectonics, distribution of marine sediments, marine chemistry, ocean-atmosphere interactions, waves, currents and tides, marine ecosystems and distribution of marine life, climate change.

## **D. LEARNING OUTCOMES (General)**

1. describe and use the scientific method; explain what science is, how it works and the role of science in society; and discriminate/recognize science from pseudoscience by evaluating examples of each (MnTC G-3a; MnTC G-9c; NHCC ELOs 1, 2)
2. practice making observations, formulating scientific questions, developing hypotheses and means to test them, and predict outcomes related to their hypotheses (MnTC G-3a,b,c; NHCC ELOs 1, 2)
3. describe/explain, using diagrams and pictures: a) commonly accepted theories on the origin of our solar system, b) the subsequent development of and controls on the layered structure of earth, atmosphere and oceans and c) the data/observations scientists used in support of such (MnTC G-3a,c,d; MnTC G-10a,b,d; NHCC ELOs 1, 2)
4. demonstrate, using diagrams and pictures: a) an understanding of plate tectonic theory; b) how and why plate tectonics is considered the unifying theory in geology; and c) recognize its influence, by way of example, in formation of earth materials, coastlines, ocean basins and seafloor physiography (MnTC G-3a,c,d; NHCC ELOs 1, 2)
5. recognize (and/or diagram) and explain the distribution patterns of chemical elements critical to biogeochemical cycles that control the distribution of life in the oceans and the process(es) by which the ocean maintains its salinity (MnTC G-3a,c,d; MnTC G-10a,b,d,e,f; NHCC ELOs 1, 2)
6. explain the concept of cyclicity and the interactions in earth-ocean-atmospheric systems and describe, using diagrams and diagrams, the forcing mechanisms that produce and/or regulate the following: ocean currents, seafloor sediment distribution patterns, climate/climate change, distribution of life and resources in the marine realm (MnTC G-3a,c,d; MnTC G-10a,b,d,e,f; NHCC ELO #1, 2)
7. demonstrate the use of the concept of classification; with emphasis on the classification of marine organisms and how they have adapted to life in the marine realm (MnTC G-3a,c; NHCC ELO #1, 2)
8. construct a framework for recognizing: how marine ecosystems differ from terrestrial ecosystems, the fragile nature of marine habitats and communities, and the significance of human influence on them today as well as in the past (MnTC G-3a,c,d; MnTC G-10a,b,d,e,f; NHCC ELOs 1, 2)
9. recognize patterns in oceanographic information/data and relate these patterns to oceanographic processes, features and/or marine life (MnTC G-3 a,c,d; MnTC G-10a,b,d,e,f; NHCC ELOs 1, 2)
10. use comprehension skills such as translation, interpretation and extrapolation to interpret oceanographic data presented in written, graphic or pictorial form (MnTC G-3a,c,d; MnTC G-10a,b,d,e,f; NHCC ELOs 1, 2)

## **E. Minnesota Transfer Curriculum Goal Area(s) and Competencies**

### Goal 03 - Natural Science

1. Demonstrate understanding of scientific theories.
2. Formulate and test hypotheses by performing laboratory, simulation, or field experiments in at least two of the natural science disciplines. One of these experimental components should develop, in greater depth, students' laboratory experience in the collection of data, its statistical and graphical analysis, and an appreciation of its sources of error and uncertainty.
3. Communicate their experimental findings, analyses, and interpretations both orally and in writing.
4. Evaluate societal issues from a natural science perspective, ask questions about the evidence presented, and make informed judgments about science-related topics and policies.

### Goal 10 - People/Environment

1. Explain the basic structure and function of various natural ecosystems and of human adaptive strategies within those systems.
2. Discern patterns and interrelationships of bio-physical and socio-cultural systems.
3. Evaluate critically environmental and natural resource issues in light of understandings about interrelationships, ecosystems, and institutions.
4. Propose and assess alternative solutions to environmental problems.
5. Articulate and defend the actions they would take on various environmental issues.

## **F. LEARNER OUTCOMES ASSESSMENT**

As noted on course syllabus

## **G. SPECIAL INFORMATION**

1. Knowledge of Human Cultures and the Physical and Natural World--Through study in the sciences, mathematics, social sciences, humanities, histories, languages, the arts, technology and professions.
2. Intellectual and Practical Skills--Including: Inquiry and analysis; Critical and creative thinking; Written and oral communication; Quantitative literacy; Information literacy; Teamwork and problem solving.