

# North Hennepin Community College

## NSCI 1200: Oceanography

### A. COURSE DESCRIPTION

Credits: 3

Lecture Hours/Week: 3

Lab Hours/Week: 3

OJT Hours/Week: \*.\*

Prerequisites: None

Corequisites: None

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

This course is an interdisciplinary survey of the biological, chemical, physical and geologic processes at work in the world's oceans. Using the process of science learners will examine the interplay between these processes and the implications of these interactions for life on Earth, the Earth's climate and marine environments. Topics may include waves, tides, seafloor sediments, marine biology, seawater chemistry, plate tectonics, ocean currents, El niño, productivity and dead zones, sea level change, coastal processes and effects of man's influence on oceans. Course is open to all students. 3 Credits (3 hours lecture)

**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 world's 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 ELO 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 ELO 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 ELO 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 ELO 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 ELO 1, 2)
6. explain the concept of cyclicity and interaction 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 ELO 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 ELO 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 ELO 1, 2)

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

### Goal 03 - Natural Science

1. Demonstrate understanding of scientific theories.
2. Communicate their experimental findings, analyses, and interpretations both orally and in writing.
3. 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. Describe the basic institutional arrangements (social, legal, political, economic, religious) that are evolving to deal with environmental and natural resource challenges.
4. Evaluate critically environmental and natural resource issues in light of understandings about interrelationships, ecosystems, and institutions.
5. Propose and assess alternative solutions to environmental problems.
6. 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.