

# North Hennepin Community College

## **NSCI 1180: Minnesota Field Geology Series: Caves, Karst and Ancient Seaways**

### **A. COURSE DESCRIPTION**

Credits: 2

Lecture Hours/Week: 2

Lab Hours/Week: \*.\*

OJT Hours/Week: \*.\*

Prerequisites: None

Corequisites: None

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

Come explore Minnesota's caves and ancient ocean floors! This course will examine the hydrogeologic processes involved in cave formation and the development of karst topography. In addition, we will evaluate the evidence of ancient oceans in Minnesota using the sedimentary and fossil record. Additional topics include: plate tectonics, geologic time, hydrologic cycle, rock, mineral and fossil identification, weathering and erosion, sealevel change, marine sedimentary processes. This course is a field experience including observations, hypothesis, predictions, and evaluation of scientific data and results. Three-day field trip around Minnesota is mandatory. Course is open to all students.

### **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 that geoscientists use in their scientific practice to unravel our understanding of various aspects of Minnesotas geologic history.
2. Students will be introduced to and practice using the scientific process with basic geologic concepts and content such as plate tectonics, rock and mineral classification and identification, geologic time, sedimentary environments and stratigraphy, hydrologic cycle, weathering and erosion, groundwater pollution, sedimentation and sea level change, shallow marine fossil assemblages, climate change, topographic and geologic maps.

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

1. describe the development of Minnesota's Paleozoic geologic history and its economic, environmental and political influence/impact on the state. (MnTC G-3a,c,d; MnTC G-10a,b,d,e,f; NHCC ELO #1, 2)
2. formulate and test hypotheses related to the recognition, identification and interpretation of map, field,
  - a. photographic and graphic data related to sedimentary depositional processes and environments, sea level fluctuations and climate change (MnTC G-3a,b,c) NHCC ELOs 1, 2
3. analyze and critique current theories and hypotheses as well as proposing their own for observations in the classroom and in the field. (MnTC G-3a,b,c; NHCC ELO #1, 2)
4. evaluate field data & making geologic interpretations using an understanding of present geologic processes & environments as a template for interpreting evidence in the rock record. (MnTC G-3a,b,c,d; NHCC ELO #1, 2)
5. develop individual and collaborative reasoning skills by evaluating geologic information. (MnTC G-3a,b,c) NHCC ELOs 1, 2
6. use quantitative and graphic methods to describe or model 3-dimensional geologic processes or features students will improve their ability to think and visualize in 3-D space. (MnTC G-3a,b,c; NHCC ELO #1, 2)
7. practice their powers of observation of the natural world around them by recognition of subtle geologic features in the field. (MnTC G-3a,c,d; MnTC G-10a,b,d,e,f; NHCC ELO #1, 2)
8. demonstrate their ability to communicate their observations and interpretations both in writing and a poster presentation. (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. 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.

### 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.