

# North Hennepin Community College

## NSCI 1190: Minnesota Field Geology Series: Fluvial Geology

### 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 the geologic history of Minnesota's rivers. We will examine the development of the Mississippi, Minnesota, Red, and St. Croix, and Whitewater Rivers and the influence of their development and present geomorphology on some of the state's economic, environmental and political issues. Topics include: geologic time, plate tectonics, hydrologic cycle, rock cycle, rock classification and identification, weathering and erosion, drainage patterns, flooding, fluvial landform recognition, meandering, wetlands, topographic map usage. This course is a field experience including observations, hypothesis, predictions, and evaluation of scientific data and results. Four-day field trip around Minnesota is mandatory. Course is open to all students. 2 credits

**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 Minnesota's 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, drainage patterns, flooding, fluvial geomorphology of Mississippi, Minnesota, Red and St. Croix Rivers, meandering and braided stream recognition, wetlands, climate change, topographic and geologic maps.

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

1. describe the development of Minnesota's rivers, both past and present, and their 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 fluvial processes, deposits, and landforms, both present and past. (MnTC G-3a,b,c; NHCC Critical Thinking-a,c)
3. analyze and critique current theories and hypotheses as well as propose their own for observations in the classroom and in the field. (MnTC G-3a,b,c; NHCC Critical Thinking-a,c)
4. evaluate field data & make 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 Critical Thinking-a,c)
5. develop individual and collaborative reasoning skills by evaluating geologic information. (MnTC G-3a,b,c; NHCC Critical Thinking-a,c)
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 orally and in writing. (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.
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.