

# North Hennepin Community College

## EEVS 1150: Boundary Waters Field Geology

### A. COURSE DESCRIPTION

Credits: 4

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 lecture, lab & field-based course is designed for people interested in learning about basic principles of astronomy, geology, and meteorology in an applied setting. This course will be offered as a component of our Outdoor Education Program, usually during summer session. Topics include: rock and mineral identification, geologic history of the area, geologic time, plate tectonics, topographic maps, surficial processes, physical processes of weather and astronomical features. Students will participate in an 8-9 day mandatory field trip to BWCA-Quetico Wilderness Area.

**B. COURSE EFFECTIVE DATES:** 10/19/2017 - Present

### C. OUTLINE OF MAJOR CONTENT AREAS

1. Students will be introduced to and work with the tools that geoscientists have used in their scientific practice to unravel our understanding of: 1) how the earth and solar system were formed and recognition of celestial bodies in the field, 2) the internal structure of the earth and the earth as a system and 3) the internal and external processes that shape the earth's surface and that can be natural hazards, 4) meteorologic concepts such as cloud formation and recognition, physical processes of weather and storms and climate change.
2. In addition to the topics of origin & evolution of the solar system and earth, students will be introduced to and practice using the scientific process and basic geologic concepts and content along with topographic and geologic maps to explore such topics as constellations, weather vs. climate, plate tectonics, rock and mineral identification, geologic time, earth system and cycles, landform development.

#### **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 (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 words 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, and c) the data/observations scientists used in support of such (MnTC G-3a,c,d; NHCC ELO #1, 2)
4. demonstrate, using words 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 and landscape construction of the North American Craton and the Canadian Shield (MnTC G-3a,c,d; NHCC ELO #1, 2)
5. using field data and modern analogs, formulate and test hypotheses to develop a better understanding of the geologic history of northern Minnesota and southern Canada (MnTC G-3a,b,c; NHCC ELO #1, 2)
6. explain and apply, using words and pictures, basic astronomic, geologic and meteorologic principles in a field setting (MnTC G-3a,c; NHCC ELO #1, 2)
7. develop an understanding of cyclicity and interaction in earth-atmosphere systems with emphasis on influence of terrane on meteorologic conditions and climate change (MnTC G-3a,c,d; NHCC ELO #1, 2)
8. recognize landforms common to BWCA in model, diagram, photographic and map form in preparation for field trip and will relate them to the surficial or internal processes that created them (MnTC G-3a,c,d; NHCC ELO #1, 2)
9. identify celestial bodies such as stars, constellations and planets appropriate to the time of year and latitude of field excursion (MnTC G-3a,c; NHCC ELO #1, 2)
10. students will demonstrate an understanding of the influence/impact, if any, of Minnesota's geologic history on the economy, environments, and politics of the state (MnTC G-3c,d; G-10b,c,d; NHCC ELO #1, 2)
11. gain a better appreciation for the impact that man and society has on wilderness areas, the BWCA in particular, by developing a better understanding of the interrelationship between the earth-atmosphere-hydrosphere system (MnTC G-3c,d; G-10a,b,c,d; NHCC ELO #1, 2)
12. recognize and explain the significance of and show an appreciation for geologic time, the geologic time scale and the methods with which geologists determine the ages of rock layers and the geologic events they represent (MnTC G-3a,c,d; NHCC ELO #1, 2)
13. demonstrate an understanding of the concept of classification; with emphasis on the relationship between rock classification schemes, the origin of various rocks and plate tectonic theory (MnTC G-3a,c; NHCC ELO #1, 2)
14. recognize patterns in geologic information/data and relate these patterns to geologic processes, features and/or earth materials (MnTC G-3a,c,d; NHCC ELO #1, 2)
15. use comprehension skills such as translation, interpretation and extrapolation to interpret geologic data presented in written, graphic or pictorial form (MnTC G-3a,c,d; 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. 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.

## **F. LEARNER OUTCOMES ASSESSMENT**

As noted on course syllabus

## **G. SPECIAL INFORMATION**

None noted