



# North Central Michigan College

## Master Course Syllabus

### PART 1:

Course Name: Physical Geology

Course Number: ESC 121

Credit Hrs. 4      Lecture Hrs. 3      Lab Hrs. 3      Clinical Hrs. 0      Variable Hrs. 0

Total Hours of Instruction: 6      Total Contact Hours: 105.6  
(Total Contact hour's formula: (lecture hrs. + lab hrs. + clinical hrs) x 17.6)

### Course Description:

An introductory course designed to develop an understanding of Earth materials and processes. Students will learn to identify and interpret rocks and minerals. We will explore the relationships between earthquakes, volcanoes, mountains, and plate tectonics. Through field trips and lab exercises we will witness the effects of processes that shape the Earth's surface: wind, waves, streams and glaciers. This course includes field work, lecture and lab.

Prerequisite (s): None

Co-requisite (s): None

### Course Objectives:

Upon successfully completing this course, you should be able to:

- Interpret your observations of the world around you in terms of fundamental geologic processes, while demonstrating familiarity with the correct terminology used by geoscientists.
- Use selected laboratory instruments and techniques to collect, analyze, and interpret data.
- Explain how and why scientists subdivide the Earth into layers or zones; including major forces or mechanisms at work and landforms or environmental conditions unique to each.
- Identify rocks and minerals. Interpret the conditions under which they formed.
- Use remote sensing imagery and maps in a variety of tasks, including examining patterns in the occurrence of various geologic hazards and interpreting the geologic history of a landscape.
- Explain the major theories and concepts in geology, including the Theory of Plate Tectonics and Uniformitarianism.
- Explain how geologists place past geologic events in chronological order.

Reasonable accommodations can be provided for students with documented disabilities. Please contact Learning Support Services to arrange for these-(231)348-6687 or (231)348-6817, Room 533 SCRC.



# North Central Michigan College

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### **PART 2:**

#### **Lumina DQP outcomes and linked course objectives**

- Interpret your observations of the world around you in terms of fundamental geologic processes, while demonstrating familiarity with the correct terminology used by geoscientists. DQP(1, 2, 6, 7, 8)
- Effectively use selected laboratory instruments and techniques to collect, analyze, and interpret data. DQP (2, 6, 7, 8)
- Explain how and why scientists subdivide the Earth into layers or zones; including major forces or mechanisms at work and landforms or environmental conditions unique to each. DQP(1, 2, 4, 6, 8)
- Identify rocks and minerals. Interpret the conditions under which they formed. DQP(1, 2, 6, 7, 8)
- Use remote sensing imagery and maps in a variety of tasks, including examining patterns in the occurrence of various geologic hazards and interpreting the geologic history of a landscape. DQP(1, 6, 7, 8)
- Explain the major theories and concepts in geology, including the Theory of Plate Tectonics and Uniformitarianism. DQP(1, 2, 4, 6, 8)
- Explain how geologists place past geologic events in chronological order. DQP(1, 2, 6, 8)



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## **Suggested Methods of Instruction:**

Lecture, lab, discussion, and field trips.

## **Suggested Methods of Assessment and Evaluation:**

Lab reports, projects, and exams

## **Adopted Text at Time of Course Adoption/Revision:**

Essentials of Geology, by Stephen Marshak

## **Topics Covered During the Semester:**

*Sequence of topics and time allowance are at the discretion of the instructor*

WEEK 1	Introduction to Geology
WEEK 2	Minerals
WEEK 3	Igneous Rocks
WEEK 4	Sedimentary Rocks
WEEK 5	Metamorphic Rocks
WEEK 6	Fossils and Geologic Time
WEEK 7	Groundwater
WEEK 8	Streams
WEEK 9	Oceans and Coastal Processes
WEEK 10	Glaciers
WEEK 11	Desert Processes
WEEK 12	Volcanoes
WEEK 13	Earthquakes and Seismic Waves
WEEK 14	Geologic Structures
WEEK 15	History leading to Plate Tectonics
WEEK 16	The Theory of Plate Tectonics

Part 1 & Part 2 approved by CRDAP on: 05 01 15

Part 2 approved by AD:

Date:

Part 2 approved by CRDAP Chair:

Date:

### **Part 3:**

#### **Use this reference sheet in Part 2 of Master Course Syllabus**

##### **Specialized Knowledge**

1. Describes the scope and principal features of the field of study, citing at least some of its core theories and practices, and offers a similar explication of at least one related field.
2. Illustrates contemporary terminology used in the field.
3. Generates substantially error-free products, reconstructions, data, juried exhibits or performances as appropriate to the field.

##### **Broad Integrative Knowledge**

4. Describes how existing knowledge or practice is advanced, tested and revised
5. Describes and examines a range of perspectives on key debates and their significance both within the field and in society.
6. Illustrates core concepts of the field while executing analytical, practical or creative tasks.
7. Selects and applies recognized methods of the field in interpreting characteristic discipline-based problems.
8. Assembles evidence relevant to characteristic problems in the field, describes the significance of the evidence, and uses the evidence in analysis of these problems.
9. Describes the ways in which at least two disciplines define, address and interpret the importance of a contemporary challenge or problem in science, the arts, society, human services, economic life or technology.

##### **Intellectual Skills – Analytic Inquiry**

10. Identifies, categorizes and distinguishes among elements of ideas, concepts, theories and/or practical approaches to standard problems.

##### **Intellectual Skills – Use of Information Resources**

11. Identifies, categorizes, evaluates and cites multiple information resources necessary to engage in projects, papers or performance in his or her program.

##### **Intellectual Skills – Engaging Diverse Perspectives**

12. Describes how knowledge from different cultural perspectives would affect his or her interpretations of prominent problems in politics, society, the arts and/or global relations.

##### **Intellectual Skills – Communication Fluency**

13. Presents accurate calculations and symbolic operations, and explains how such calculations and operations are used in either his or her specific field of study or in interpreting social and economic trends.
14. Presents substantially error-free prose in both argumentative and narrative forms to general and specialized audiences.

##### **Applied Learning**

15. Describes in writing at least one substantial case in which knowledge and skills acquired in academic settings are applied to a challenge in a non-academic setting; applies that learning to the question; and analyzes at least one significant concept or method related to his or her course of study in light of learning outside the classroom.
16. Locates, gathers and organizes evidence on an assigned research topic addressing a course-related question or a question of practice in a work or community setting; offers and examines competing hypotheses in answering the question.

##### **Civic Learning**

17. Describes his or her own civic and cultural background, including its origins and development, assumptions, and predispositions.
18. Describes diverse positions, historical and contemporary, on selected democratic values or practices, and presents his or her own position on a specific problem where one or more of these values or practices are involved.
19. Takes an active role in a community context (work, service, co-curricular activities, etc.), and examines the civic issues encountered and the insights gained from the community experience.