



North Central Michigan College

Master Course Syllabus

Part 1:

Course Name: Environmental Geology

Course Number: ESC 110

Credit Hrs. 4 Lecture Hrs. 3 Lab Hrs. 2 Clinical Hrs. 0 Variable Hrs. 0

Total Hours of Instruction: 5 Total Contact Hours: 88
(Total Contact hour's formula: (lecture hrs. + lab hrs. + clinical hrs) x 17.6)

Course Description:

Exploration of the impact of geologic processes on the lives of humans and the effects of human activities on the Earth. Course topics will include geologic hazards such as volcanoes, earthquakes, floods, and erosion. The course will examine the environmental impacts of human activities such as mining, oil production, power generation, and waste disposal. In the laboratory and field, the students will explore these topics with real world examples from the local area and around the globe. 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:

- Explain the hazards of geologic processes to human life/property and discuss the ability of humans to model and predict these events.
- Identify rocks and minerals. Interpret the conditions under which they formed.
- Identify the Earth materials used by humans for manufacturing and power production, the associated hazards and pollution, and the relevant legislation drafted by government(s) in response.
- Give examples of environmental geology issues at local, regional, national, and global levels.

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.



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Part 2:

Lumina DQP outcomes and linked course objectives

- Explain the hazards of geologic processes to human life/property and discuss the ability of humans to model and predict these events. DQP (2, 5, 6, 11)
- Identify rocks and minerals. Interpret the conditions under which they formed. DQP (2, 6, 7)
- Identify the Earth materials used by humans for manufacturing and power production, the associated hazards and pollution, and the relevant legislation drafted by government(s) in response. DQP (5,7,11)
- Give examples of environmental geology issues at local, regional, national, and global levels. DQP (5)



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Part 2 continued:

Suggested Methods of Instruction:

Lecture, lab, discussion, and field trips.

Suggested Methods of Assessment and Evaluation:

Class participation, lab reports, projects/presentations, quizzes/exams.

Adopted Text at Time of Course Adoption/Revision:

Living with Earth, by Hudson

Topics Covered During the Semester:

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

PART I – ESSENTIALS OF GEOLOGY

WEEK 1 Introduction and Minerals

WEEK 2 Rocks

PART II – SURFACE PROCESSES AND THEIR IMPACT ON HUMANS

WEEK 3 Coastal Erosion and Sea Level Changes

WEEK 4 Rivers and Floods

WEEK 5 Groundwater

PART III – TECTONIC FORCES AND THEIR IMPACT ON HUMANS

WEEK 6 Earthquakes and Tsunamis

WEEK 7 Volcanic Eruptions

WEEK 8 Plate Tectonics

PART IV – EXTRACTION OF EARTH MATERIALS

WEEK 9 Mining for Energy Sources

WEEK 10 Ores and Mining for Manufacturing Materials

WEEK 11 Oil and Natural Gas Production

PART V – ENERGY PRODUCTION AND WASTE DISPOSAL

WEEK 12 Fossil Fuels and Power Production

WEEK 13 Nuclear Power and Waste Disposal

WEEK 14 Geothermal and Other Alternative Energies

WEEK 15 Landfills and Waste Disposal

WEEK 16 Relating Climate Change and Human Activities

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.

The Degree Qualifications Profile was adopted by CRDAP: April 11, 2012