# Washtenaw Community College Comprehensive Report

# GLG 110 Geology of the National Parks and Monuments
# Effective Term: Winter 2020

## Course Cover

**Division:** Math, Science and Engineering Tech
**Department:** Physical Sciences
**Discipline:** Geology
**Course Number:** 110
**Org Number:** 12330
**Full Course Title:** Geology of the National Parks and Monuments
**Transcript Title:** Geol Nat'l Parks & Monuments
**Is Consultation with other department(s) required:** No
**Publish in the Following:** College Catalog , Time Schedule , Web Page
**Reason for Submission:** Course Change
**Change Information:**
**Course description**
**Credit hours**
**Total Contact Hours**
**Pre-requisite, co-requisite, or enrollment restrictions**
**Outcomes/Assessment**
**Objectives/Evaluation**
**Other:**
**Rationale:** This course is being revised to update the course description, credit hours, objectives, and outcomes to provide students with a robust science-based geology course.
**Proposed Start Semester:** Winter 2020
**Course Description:** In this course, students will be introduced to the fundamental geological processes and concepts that created the parks and monuments of the United States. The course will explore the various geologic features through time, preserved by the National Park Service, with a focus on the interconnectivity and evolution of various systems that led to these geologic formations.

## Course Credit Hours

**Variable hours:** No
**Credits:** 3
**Lecture Hours: Instructor:** 45 **Student:** 45
**Lab: Instructor:** 0 **Student:** 0
**Clinical: Instructor:** 0 **Student:** 0

**Total Contact Hours: Instructor:** 45 **Student:** 45
**Repeatable for Credit:** NO
**Grading Methods:** Letter Grades
Audit
**Are lectures, labs, or clinicals offered as separate sections?:** NO (same sections)

## College-Level Reading and Writing

College-level Reading & Writing

## College-Level Math

Level 2

## Requisites

## General Education

**MACRAO**

MACRAO Science & Math
MACRAO not WCC Gen Ed

**General Education Area 4 - Natural Science**

Assoc in Applied Sci - Area 4
Assoc in Science - Area 4
Assoc in Arts - Area 4

**Michigan Transfer Agreement - MTA**

MTA Science (no lab)

## Request Course Transfer

**Proposed For:**

Central Michigan University
College for Creative Studies
Eastern Michigan University
Ferris State University
Grand Valley State University
Jackson Community College
Kendall School of Design (Ferris)
Lawrence Tech
Michigan State University
Oakland University
University of Detroit - Mercy
University of Michigan
Wayne State University
Western Michigan University

## Student Learning Outcomes

1. Recognize and identify introductory principles and concepts of the geology and Earth sciences, as exposed and developed in various national parks and monuments of the United States.

   **Assessment 1**

   Assessment Tool: Outcome-related questions on departmental exams
   Assessment Date: Winter 2023
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All sections
   Number students to be assessed: All students
   How the assessment will be scored: Multiple-choice questions will be scored using an answer key. Essay and short-answer questions will be scored using a departmentally-developed rubric.
   Standard of success to be used for this assessment: 70% of the students will score an average of 72.5%, or better, on each exam. An item analysis of outcome-related questions will be done to identify areas of strengths and weaknesses.
   Who will score and analyze the data: Appropriate geology faculty will assess the data.

2. Connect and correlate appropriate knowledge, principles, and concepts to synthesize the geologic information contained within individual parks, and extrapolate to broader geographical areas.

   **Assessment 1**

   Assessment Tool: Outcome-related questions on departmental exams
   Assessment Date: Winter 2023
   Assessment Cycle: Every Three Years

Course section(s)/other population: All sections
Number students to be assessed: All students
How the assessment will be scored: Multiple-choice questions will be scored using an answer key. Essay and short-answer questions will be scored using a departmentally-developed rubric.
Standard of success to be used for this assessment: 70% of the students will score an average of 72.5%, or better, on each exam. An item analysis of outcome-related questions will be done to identify areas of strengths and weaknesses.
Who will score and analyze the data: Appropriate geology faculty will assess the data.

3. Write a research paper that describes the geologic and cultural history of a national park not covered in the course material.

**Assessment 1**

Assessment Tool: Research paper
Assessment Date: Winter 2023
Assessment Cycle: Every Three Years
Course section(s)/other population: All sections
Number students to be assessed: All students
How the assessment will be scored: Research paper will be scored using a departmentally-developed rubric.
Standard of success to be used for this assessment: 70% of the students will score a 2.5 (between acceptable and good), or above on a rubric scale of not acceptable (1), acceptable (2), good (3), and exemplary (4).
Who will score and analyze the data: Appropriate geology faculty will assess the data.

## Course Objectives

1. Summarize the history and creation of the National Park System in the United States.
2. Identify the fundamental concepts of rock identification.
3. Describe the processes of plate tectonics, mountain building, and geologic sequences.
4. Explain the rock cycle and identify the three primary rock types in the rock cycle.
5. Describe how plate tectonics, mountain building, and deposition fit into the rock cycle.
6. Explain the techniques of relative and absolute age dating; compare and contrast their applications.
7. Identify the major periods and eras of the geologic time scale.
8. Relate the history and formation of Grand Canyon National Park through its geologic layering, materials, topographic features, and important evolutionary events.
9. Relate the history and formation of Zion National Park through its geologic layering, materials, topographic features, and important evolutionary events.
10. Relate the history and formation of Bryce Canyon National Park through its geologic layering, materials, topographic features, and important evolutionary events.
11. Compare and contrast the scale and significance of the features exposed in the Grand Canyon, Zion, and Bryce Canyon National Parks.
12. Correlate and connect the Grand Canyon, Zion and Bryce Canyon National Parks to discuss their significance and contribution to our broader understanding of the geologic history and evolution of the Colorado Plateau Province.
13. Evaluate and discuss where Arches, Petrified Forest, and Dinosaur National Parks fit into the broader evolutionary history of the Colorado Plateau.
14. Relate the history and formation of Rocky Mountain National Park through its geologic layering, materials, topographic features, and important evolutionary events.
15. Relate the history and formation of Glacier National Park through its geologic layering, materials, topographic features, and important evolutionary events.
16. Relate the history and formation of Grand Teton National Park through its geologic layering, materials, topographic features, and important evolutionary events.
17. Correlate and connect the Rocky Mountain, Glacier, Grand Teton National Parks to discuss their significance and contribution to our broader understanding of the geologic history and evolution of the region.

18. Relate the history and formation of Yellowstone National Park through its geologic layering, materials, topographic features, and important evolutionary events.
19. Propose a geologic process that better explains how Yellowstone National park better fits in the geologic history and evolution of the Rocky Mountains province.
20. Evaluate how Dinosaur National Monument fits into both the Colorado Plateau and Rocky Mountain Provinces and provides supporting data and limitations on whether Dinosaur National Monument can be used to link the histories of the two provinces.
21. Relate the history and formation of Yosemite National Park through its geologic layering, materials, topographic features, and important evolutionary events.
22. Relate the history and formation of Lassen Volcanic National Park through its geologic layering, materials, topographic features, and important evolutionary events.
23. Relate the history and formation of Mount Rainier National Park through its geologic layering, materials, topographic features, and important evolutionary events.
24. Recall that Yosemite, Lassen Volcanic, and Mount Rainier National Parks each represent different aspects of an active margin magmatic system.
25. Connect the evolution of an active margin magmatic system, from ancient lower crust to active magmatic systems.
26. Compare and contrast the active margin magmatic system as exposed and developed in Yosemite, Lassen Volcanic, and Mount Rainier National Parks to a hot spot magmatic system as found in Yellowstone National Park.
27. Relate the history and formation of Isle Royale National Park through its geologic layering, materials, topographic features, and important evolutionary events.
28. Relate the history and formation of Pictured Rocks National Park through its geologic layering, materials, topographic features, and important evolutionary events.
29. Relate the history and formation of Sleeping Bears Dunes National Lakeshore through its geologic layering, materials, topographic features, and important evolutionary events.
30. Analyze the various impacts of glacial erosional and depositional processes on Isle Royale National Park, Pictured Rocks National Park, and Sleeping Bear Dunes National Lakeshore, and how these same processes also influenced the landscape and topography of Michigan.
31. Relate the history and formation of Hawai'i Volcanoes National Park through its geologic layering, materials, topographic features, and important evolutionary events.
32. Compare and contrast the volcanic formation and features of Hawai’i Volcanoes National Park to Yellowstone National Park.
33. Relate the history and formation of Mammoth Caves National Park through its geologic layering, materials, topographic features, and important evolutionary events.
34. Relate the history and formation of Guadalupe Mountains National Park through its geologic layering, materials, topographic features, and important evolutionary events.
35. Write a research paper on a national park not already covered in the course, including a summary of the creation of the park, the geological history, the evolution of the park, and any important geological or topographical features.

## New Resources for Course

## Course Textbooks/Resources

Textbooks

Foster,D., Hacker, D., Harris, A.. *Geology of National Parks*, 7 ed. Kendall Hunt, 2019, ISBN: 9781465291004.

Manuals

Periodicals

Software

## Equipment/Facilities

Level I classroom

| Reviewer | Action | Date |
|---|---|---|
| **Faculty Preparer:** | | |
| *Suzanne Albach* | *Faculty Preparer* | *Aug 13, 2019* |
| **Department Chair/Area Director:** | | |
| *Suzanne Albach* | *Recommend Approval* | *Aug 13, 2019* |
| **Dean:** | | |
| *Victor Vega* | *Recommend Approval* | *Sep 17, 2019* |
| **Curriculum Committee Chair:** | | |
| *Lisa Veasey* | *Recommend Approval* | *Nov 04, 2019* |
| **Assessment Committee Chair:** | | |
| *Shawn Deron* | *Recommend Approval* | *Nov 08, 2019* |
| **Vice President for Instruction:** | | |
| *Kimberly Hurns* | *Approve* | *Nov 08, 2019* |