

Course Code: ESC 102 (IAI P1 907L)

Course Title: Introduction to Physical Geology

Department: Natural Sciences

Effective Date: Summer 2026

PCS Code: 1.1 - Baccalaureate/Transfer

CIP Code: 40.0601

Repeatability: 0

Credit Hours

Catalog Notation: 3-2-4

Credit Hour Distribution:

Lecture: 3

Lab: 2

Clinical: 0

Total: 4

General Course Information

Catalog Description

Introduction to Earth's physical geologic processes, materials, and landforms through interactive lecture, hands-on lab activities, and optional field experiences. Topics include plate tectonics, geologic time, minerals, rocks, volcanoes, weathering, mass wasting, streams, glaciers, groundwater, earthquakes, and rock structures.

General Course Objectives

- To examine earth processes and materials.
- To develop skills in the identification of common minerals and rocks.
- To identify the origin of land forms through the study of volcanic, tectonic, and erosional processes.
- To recognize the importance of the theory of plate tectonics and how it relates to earth materials and geologic processes.
- To develop proficiency in material use and interpretation.

Minimum Placement Levels

English	Reading	Math
Placement out of ENG 099	Placement out of CCS 098	None

Prerequisites

None

Methods of Evaluation

3-4 objective exams, 1 final exam, 15-16 written and practical lab exercises.

Instructional Materials and Additional Supplies

Essentials of Geology, S. Marshak, W.W. Norton & Company

ESC 102 Lab Manual (campus section only)

ESC 102 Online Lab Kit (online section only).

Course Content

General Learning Outcomes (GLOs)

- Reasoning and Inquiry: Students will demonstrate the ability to solve problems using deductive reasoning and logic, quantitative reasoning, or the scientific method.

Course Segments and Student Learning Outcomes

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Introduction to Geology	<ol style="list-style-type: none"> Discuss the basic facets of Earth's origin, internal structure, the rock and hydrologic cycles, uniformitarianism, and catastrophism. Apply the scientific method to test a hypothesis. Read and interpret topographic maps. 	3	4	0
Geologic Time	<ol style="list-style-type: none"> Identify rock/formation ages through application of basic relative and absolute dating techniques, and describe how these techniques allowed geologists to develop the geologic time scale. 	3	2	0
Geologic History	<ol style="list-style-type: none"> Summarize geologic time and translate Earth's history that has been recorded by the rocks and fossils. 	3	2	0
Plate Tectonics	<ol style="list-style-type: none"> Recognize plate tectonics as a theory for explaining a variety of geological phenomena. 	3	2	0
Earthquakes	<ol style="list-style-type: none"> Analyze the physics, distribution, origin of, and damage caused by earthquakes. 	3	2	0
Minerals	<ol style="list-style-type: none"> Recognize the basic physical and chemical properties of minerals and use these properties to identify common rock-building minerals. 	3	2	0
Igneous Rocks	<ol style="list-style-type: none"> Recognize basic compositions and textures to identify common igneous rocks. Interpret their primary formational environments. 	3	4	0
Volcanics	<ol style="list-style-type: none"> Explain the origin, distribution, and classification of volcanoes. 	3	0	0
Weathering and Soils	<ol style="list-style-type: none"> State the processes of erosion and be able to recognize the materials and landform features produced by these processes. 	3	0	0
Sedimentary Rocks	<ol style="list-style-type: none"> Recognize basic compositions and textures to identify common sedimentary rocks and interpret their formational environments. 	3	2	0
Metamorphic Rocks	<ol style="list-style-type: none"> Explain Earth's forces and how they relate to the development of metamorphic rocks. Recognize basic compositions and textures to identify common metamorphic rocks and interpret their formational environment. 	1	2	0
Geologic Structures	<ol style="list-style-type: none"> Explain Earth's forces and how they relate to the development of common geologic structures. Read and interpret geologic maps. 	2	2	0
Mass Wasting	<ol style="list-style-type: none"> Identify common geologic hazards and the conditions initiating catastrophic failure of geologic materials. Recognize potential hazards created when humans alter landscapes. 	3	0	0
Groundwater	<ol style="list-style-type: none"> Describe basic groundwater systems, explain their controls, and identify potential human impacts on groundwater quality. 	3	2	0

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Fluvial Systems	<ol style="list-style-type: none"> 1. Identify physical and depositional characteristics of surface streams during baseline and flood conditions. 2. Recognize positive and negative effects (or consequences) of flood control measures. 	3	2	0
Glaciers	<ol style="list-style-type: none"> 1. Explain the physical processes involved in the creation and movement of glaciers, summarize Illinois glacial history, and interpret past glacial environments based upon sediment composition and/or visible landforms. 	3	2	0

Total Contact Hours

Lecture Hours	Lab Hours	Clinical Hours
45	30	0