

EARTH296: Introduction to Earth and Environmental Science - Summer 2020

5-credit online course in 7 modules (June 1 – July 17)

Faculty Instructors (Department of Earth and Environmental Sciences; University of Michigan)

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Course Description

Earth 296 will be taught as a streamlined set of 7 one-week modules. Morning lectures will provide the essential background in hydrology, climate, geology and tectonics, and societal impacts on local environments, particularly the Great Lakes region. Daily hands-on activities will involve working individually and collaboratively in small groups.

Schedule:

- 1: June 1- 5; Introduction to Earth and Environmental Science (Ritsema/Gleason)
- 2: June 8-12; Earth's Place in the Universe (Gleason/Ritsema)
- 3: June 15-19; Hydrology of the Great Lakes Region (Robbins/Gleason)
- 4: June 22-26; Glacial Processes, Landscape Evolution, and Ice Age Climates (Robbins/Levin)
- 5: June 29-July 3; Earth Structure and Geology of Michigan/Great Lakes (Ritsema/Clark)
- 6: July 6-10; Volcanoes: Hazards and Climate through Earth History (Lange/Gleason)
- 7: July 13-17; Active Tectonics, Natural Hazards and Climate Change (Clark/ Levin)

Weeks 1 and 2 are dedicated to learning the major concepts of earth and environmental sciences. In week 3, students will investigate present Earth surface hydrology and how stream discharge varies with climate change. Week 4 will focus on the current state of the cryosphere, controls on ice mass, and how to identify evidence of and effects from glaciations on Michigan's current environment. In weeks 5, students will map the Mid Continent Rift in central Michigan, analyze the 2015 Kalamazoo earthquake, and monitor daily earthquake activity around the globe. Week 6 explores various aspects of volcanism, including its connection to plate tectonics, associated benefits/hazards, impact on Earth's climate through time, and role in shaping Michigan's geological history. In week 7, students will explore the impacts of earthquakes and climate change on human populations.

Prerequisites and Credits

There are no prerequisites. No textbook required (assigned readings tbd).

This 5-credit course counts toward the 60 credits of math/science required for a Bachelor of Science degree. For those majoring in Earth and Environmental Sciences (EES), this course satisfies the EES Category 1 or Category 2 prerequisite for the major and the introductory

geology/geoscience requirements for all five minors in EES. For the PitE major, this course satisfies the Natural & Earth Systems Science Core OR the Intro Geo Sciences requirement.

Course Format and Structure

Asynchronous, instructor-led morning lectures. Synchronous afternoon activities and tutorials will be led by GSIs using Zoom. Students will be divided into smaller cohorts for these activities. Recorded lectures and all other materials will be posted using Canvas and YouTube.

- Asynchronous faculty instruction on Monday, Tuesday, Wednesday, and Thursday, posted in morning.
- Each student will be assigned to a group for synchronous activities which will be led by a Graduate Student Instructor with project due dates TBD. (***)
- Quizzes on Tuesday, Wednesday, Thursday, and Friday on topics introduced in lectures.
- Daily faculty hours between 9 -11 am. Faculty will also “drop” by to participate during the synchronous afternoon activities.

	Faculty office hours*	Quiz posted	Asynchronous lectures	Synchronous activities***
Monday	9-11 am		morning	afternoon
Tuesday	9-11 am	11 am	morning	afternoon
Wednesday	9-11 am	11 am	morning	afternoon
Thursday	9-11 am	11 am	morning	afternoon
Friday	9-11 am	11 am		afternoon

All times are in EDT.

* Tentative timing for faculty office hours. This schedule may be adjusted based on student schedules.

** The times of the synchronous small-group activities will be arranged at the beginning of the course based on student availability using a When2Meet survey.

Key Elements to Course Participation:

Technology: Students are expected to have access to a computer (desktop, laptop) and work with course materials using the [Google G Suite For Education Software Bundle available](#) to all University of Michigan students. The course will also rely on free software such as GoogleEarth.

Interactive Learning: Students will be expected to work independently on projects and assignments in addition to group work with their cohort. Much of this work will involve hands-on activities making observations, both outside and inside one’s home. There will also be activities where students engage primary data available on-line relevant to local, national and global earth and environmental processes.