ESC1000 Introduction to Earth Science Fall 2025

Williamson Hall MWF 10:40 am

General Education Designation: Natural Sciences - Physical Sciences (P) sub-designation
Click here for the state General Education Objectives https://undergrad.aa.ufl.edu/general-education/gen-ed-program/subject-area-objectives/

A minimum grade of C is required for general education credit

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Office hours: TBA

TAs: TBA
Office hours: TBA

TBA
Office hours: TBA

Textbook: There is no required book for the course this semester. If your preferred way of learning is to read a textbook on the same topics as covered in lecture, I recommend the following: *Earth Science* by *Tarbuck & Lutgens.*

Course goals Earth is dynamic planet that is continually being reshaped by forces generated within the solid earth, as well as by processes operating in the oceans, atmosphere, and biosphere (i.e. the Earth system). Using the scientific method, critical thinking skills, and data analysis, this course will examine the fundamental processes of the Earth system, composed of an atmosphere, hydrosphere, lithosphere, biosphere, and exosphere, through time. The course will also explore interactions between these spheres, including critical analysis of scientific theories and emphasize Earth's connections with humans.

Student Learning Outcomes:

1. Students will use critical thinking to recognize the rigorous standards of scientific theories
2. Students will analyze and synthesize Earth science data to draw scientifically valid conclusions
3. Students will recognize the different time scales associated with different Earth processes
4. Students will effectively describe interactions between humans and the Earth Spheres
5. Students will apply their understanding of Earth science principles to complex global and local issues

Content - Outcomes 1-5 assessed through all assessment types on a weekly to monthly/bi-monthly assignments and exams quizzes
Critical thinking – Outcomes 1-5 assessed through monthly/bi-monthly assignments and exams
Communication – Outcomes 1-5 assessed through monthly/bi-monthly assignments and exams

Specifics of course content & objectives
By clicking on the link for each module listed below you will find the following:
(1) an *overview* that provides a short description of what to expect regarding the content of the module
(2) A list of *objectives* for the module (the objectives are often quite broad)
(3) A *study guide* for the module that provides links to more detailed objectives that are organized by topics covered within each module. You will want to refer to the study guide to prepare for quizzes and exams.
(4) Links to all of the recorded *lectures.*
(5) Links to *quizzes* and any *assignments* included in the module.
(6) A list of readings from the textbook that go along with the content covered in the lectures, as well as supplemental resources that you may find interesting

Modules
Each module listed below is one week of class material
(See details of schedule and topics at the end of the syllabus)
Module 1 Introductory concepts
Module 2A Earth materials
Module 2B Earth materials
Module 3A Plate tectonics
Module 3B Plate tectonics
Module 3B Plate tectonics
Exam i
Module 4 Earthquakes
Module 5 Geologic time and dating
Module 6 Earth's resources
Module 7 Groundwater
Exam ii
Module 8 The oceans
Module 9A The atmosphere
Module 9B The atmosphere
Module 10A The solar system
Module 10B The solar system
Exam iii

Communications Please contact instructors and TAs through regular email (NOT Canvas message/email please) as it is much easier to keep track of our conversations as threads can be continued. Emails are shown at the top of the syllabus. Throughout the semester, I will provide information to you through Canvas announcements. Be sure that you check announcements regularly and set up Canvas to have announcements delivered to you as emails as well.

Delivery of content
Content for the course will be delivered through in-person lectures.

Graded activities

35% Quizzes
10% Assignments
55% Exams (three non-cumulative equally weighted)
There will be an extra credit opportunity worth 2% points published near the end of the semester

Course policies and late and missed work The following is a list of penalties for late submissions. Exceptions to these policies will only be provided with fully documented excuses.
Quizzes: 25% for each day late (no submissions accepted after 48 hours past due date/time)
Assignments: 50% for each day late (no submissions accepted after 24 hours past due date/time)
Exams require approved documentation submitted to the instructor ahead of time

Any requests for make-ups (assignments, exams, etc.) due to technical issues should be accompanied by the ticket number received from the UF Computing Help Desk when the problem was reported. The ticket number will document the time and date of the problem. You should email your instructor within 24 hours of the technical difficulty if you wish to request a make-up.

Contact information for help with technology is shown below.

This course complies with all UF academic policies. For information on those polices and for resources for students, please see this link."

Description of graded activities (Goals and logistics of each of the activities are discussed below)

Quizzes Quizzes consist of ~10-25 multiple choice questions that cover the assigned material (generally from lectures). There will be one quiz approximately every week – these are typically due on Sunday evenings, although later in the semester I try to spread them out a bit more. The quizzes are timed, and you will have around one to two minutes per question. Thus, there is time to look up a couple of questions, but not enough to expect to look up all of the material, therefore you should study ahead of time. Quizzes are provided through Canvas. Be sure that you have a secure internet connection and enough time before beginning each quiz.

Assignments - In contrast to the quizzes and lecture-embedded questions, which emphasis basic recall and understanding, the assignments will require you to apply the concepts, analyze data, and/or perform calculations. Thus, these require more advanced thinking than the quizzes and lecture questions. Therefore, the points from the assignments are not as easily earned as in those activities. These assignments are designed to help reinforce the topics discussed in lecture, particularly those that emphasize the analysis of geologic features – questions similar to those on the assignments will be found on the exams. The assignments consist of set of questions commonly tied to figures distributed as a pdf. Questions are framed as multiple-choice questions so that your answers are input via untimed Canvas quizzes.Not every week/module has an assignment - there will be three or four throughout the semester.

Exams - These will be multiple choice exams delivered through Canvas. Exam content will focus on a specific subset of material to be specified in the clear lists of objectives from the study guides provided in Canvas. Thus, it will be helpful to be looking through the objectives and study guides while watching the lectures. Any additional information will be given in class and through Canvas announcements.

Suggested approach for success in the course

(1) Look at the activities for the upcoming week so you can plan your week

(2) Read through objectives and study guides to get a sense of the focus of the material in the lectures

(3) Watch lectures and make notes in the study guides while watching the lectures

(4) Look through the study guides and be sure you have completed them

(5) Take the quiz with your completed study guides in hand

(6) Complete any assignments due for that material. Some of the assignments are due after the quizzes, but you may find it more effective to at least work through the assignment prior to taking the quiz. Recall that not every module/week will have an assignment.

(7) Add additional notes to your study guides to incorporate material from the assignments. Some material in the assignments may not be covered on the quizzes

(8) Review your study guides prior to the exam. If your study guides are completed as you progress through the material, then the last couple days before the exams can be spent reinforcing the material, rather than learning it for the first time.

Grading scale

A	90 - 100%
A-	88 - 90
B+	86 - 89
B	80 - 86
B-	78 - 80
C+	76 - 78
C	70 - 76
C-	68 - 70
D+	65 - 68

NOTE: If you fall on a boundary (e.g., 80%), you will receive the higher grade (e.g., 80% = B)

Prerequisites

There are no prerequisites for this course.

Minimum Technology Requirements

The University of Florida expects students entering an online program to acquire computer hardware and software appropriate to their degree program. Most computers are capable of meeting the following general requirements. A student's computer configuration should include:

- Webcam
- Microphone
- Broadband connection to the internet and related equipment (cable/DSL modem)
- Microsoft Office Suite installed (provided by the university)

Individual colleges may have additional requirements or recommendations that students should review before starting their program.

Minimum Technical Skills

To complete your tasks in this course, you will need a basic understanding of operating a computer and using word processing software.

Materials/Supply Fees

There is no supply fee for this course.

Zoom

Zoom is an easy-to-use video conferencing service available to all UF students, faculty, and staff that allows for meetings of up to 100 participants.

You can find resources and help using Zoom at the University of Florida's ZoomLinks to an external site. website.

Netiquette and Communication Courtesy

It is important to recognize that the online classroom is, in fact, a classroom, and certain behaviors are expected when you communicate with both your peers and your instructors. These guidelines for online behavior and interaction are known as netiquette.

Security
• General Guidelines • Email • Discussion Boards • Zoom

Remember that your password is the only thing protecting you from pranks or more serious harm.

- Don't share your password with anyone.
- Change your password if you think someone else might know it.
- Always log out when you are finished using the system.

Getting Help

Technical Difficulties

For help with technical issues or difficulties with Canvas, please contact the UF Computing Help Desk at:

- http://helpdesk.ufl.eduLinks to an external site.
- 352-392-HELP (4357)
- Walk-in: HUB 132

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Privacy and Accessibility Policies

For information about the privacy policies of the tools used in this course, see the links below:

- Adobe
  - Adobe Privacy PolicyLinks to an external site.
  - Adobe AccessibilityLinks to an external site.
- Honorlock
  - Honorlock Privacy PolicyLinks to an external site.
  - Honorlock AccessibilityLinks to an external site.
- Instructure (Canvas)
  - Instructure Privacy Policy
  - Instructure Accessibility
- Microsoft
  - Microsoft Privacy PolicyLinks to an external site.
  - Microsoft AccessibilityLinks to an external site.
- PlayPosit
  - PlayPosit Privacy PolicyLinks to an external site.

    - PlayPosit AccessibilityLinks to an external site.
- YouTube (Google)
    - YouTube (Google) Privacy PolicyLinks to an external site.
    - YouTube (Google) AccessibilityLinks to an external site.

- Zoom
    - Zoom Privacy PolicyLinks to an external site.
    - Zoom AccessibilityLinks to an external site.

TOPICS AND DUE DATES

Module 1

Topics Covered in This Module: The Earth as a system; The nature of scientific inquiry (scientific method); Matter and density; Temperature and thermal energy; Maps and latitude/longitude; Layering within the Earth; and The Earth's crust, surface elevations, and the concept of isostasy

Lecture 1.1 79 minutes

Module 1 Quiz

All Due: Aug 31

Module 2A

Topics Covered in This Module: Minerals; Igneous rocks; Volcanoes, volcanic eruptions, and other igneous features

Lecture 2.1 65 minutes

Lecture 2.2 77 minutes

Module 2A Quiz

All Due: Aug 31

Module 2B

Topics Covered in This Module: Weathering and sedimentary rocks; Metamorphic rocks; The rock cycle

Lecture 2.3 62 minutes

Lecture 2.4 31 minutes

Module 2B Quiz

Assignment 1 (Mastering Geology)

All Due: Sep 7

Module 3A

Topics Covered in This Module: Introductory topics such as defining the plates and basics of plate motion; Earth's magnetic field and how paleomagnetism records past plate motions; Divergent boundaries

Lecture 3.1 20 minutes

Lecture 3.2 13 minutes

Lecture 3.2 35 minutes

Module 3A Quiz

All Due: Sep 14

Module 3B

Topics Covered in This Module: Convergent boundaries; Transform boundaries; Hotspots; Driving forces of plate tectonics

Lecture 3.4 46 minutes

Lecture 3.5 44 minutes

Module 3A Quiz

Assignment 2

All Due: Sep 20

Exam I - September 25th (Modules 1-3)

Module 4

Topics Covered in This Module: The cause of earthquakes; Seismic waves; Locating earthquakes; Earthquake magnitude scales; Destructive aspects of earthquakes; Where earthquakes occur; Earthquake prediction and mitigation; Using seismic waves to characterize the layers within the Earth

Lecture 4.1 50 minutes

Lecture 4.2 61 minutes

Module 4 Quiz

Assignment 3

All Due: Oct 5

Module 5

Topics Covered in This Module: Basic principles that scientists use to assemble the relative ages of events; Isotopic/radiometric dating, Overview of Earth's history since its formation, focusing on important changes and periods of time with significant events or processes. in the evolution of the atmosphere, oceans, and life forms, including extinction events.

Lecture 5.1 27 minutes

Lecture 5.2 44 minutes

Lecture 5.2 47 minutes

Module 5 Quiz

Assignment 4

All Due: Oct 12

Module 6

Topics Covered in This Module: Fossil fuels, Conventional: coal, oil, & natural gas, Unconventional development & resources: fracking, oil shales, oil sands, gas hydrates; Nuclear energy; Mineral resources: Metallic resources, Lithium, Phosphate in Florida

Lecture 6.1 39 minutes

Lecture 6.2 22 minutes

Lecture 6.2 32 minutes

Module 6 Quiz

All Due: Oct 19

Module 7

Topics Covered in This Module: Basic principles of groundwater, including the nature, movement, and other processes associated with groundwater as they pertain to both freshwater resources and hazards; groundwater and springs in Florida, sinkholes and cavern formation.

Lecture 7.1 49 minutes

Lecture 7.2 33 minutes

Module 7 Quiz

All Due: Oct 26

Exam ii – October 30th

Module 8

Topics Covered in This Module: Basic principles of groundwater, including the nature, movement, and other processes associated with groundwater as they pertain to both freshwater resources and hazards; groundwater and springs in Florida, sinkholes and cavern formation.

Lecture 8.1 54 minutes

Lecture 8.2 70 minutes

Lecture 8.2 38 minutes

Module 8 Quiz

All Due: Nov 6

Module 9A

Topics Covered in This Module: Basic principles of Earth's atmosphere, including.

Lecture 9.1 47 minutes

Lecture 9.2 70 minutes

Module 9A Quiz

Assignment 5 (Mastering Geology)

All Due: Nov 14

Module 9B

Topics Covered in This Module: Basic principles of Earth's atmosphere, including.

Lecture 9.3 42 minutes

Lecture 9.4 46 minutes

Lecture 9.5 53 minutes

Module 9B Quiz

Assignment 6 (Mastering Geology)

All Due: Nov 23

Module 10

Topics Covered in This Module: Basic principles of Earth's atmosphere, including.

Lecture 10.1 41 minutes

Lecture 10.2 46 minutes

Lecture 10.3 59 minutes

Module 10 Quiz

Assignment 7 (Mastering Geology)

All Due: Dec 3

Exam iii – Tuesday December 9th Modules 8-10