

# Introducing Earth

EARTH AND OCEANOGRAPHIC SCIENCE DEPARTMENT



The Earth is a dynamic system that has been shaped in part by geologic processes such as earthquakes, volcanic activity, and mountain building. During classes and weekly laboratories for this course, we will introduce Earth and plate tectonics through accessible field experiences along the Maine coast, rock and mineral specimens, images, and models. We will practice making observations, collecting data, and communicating interpretations.

Image from nasa.gov

## Class meets

Wed & Fri 11:40 AM-1:05 PM  
in Roux 207

## Laboratories meet

Mon *or* Tues 1:15-4:15 PM  
in Roux 108  
(or outside as announced)

## PROF. RACHEL BEANE

[rbeane@bowdoin.edu](mailto:rbeane@bowdoin.edu)

(207) 725-3160

Student Hours in Roux 122

Mon 9-10 am

Tues 10-11am

Fri 1-2pm

*Or email to set up a mutually convenient time.*

## JOANNE URQUHART

Laboratory Instructor

[jurquhar@bowdoin.edu](mailto:jurquhar@bowdoin.edu)

(207) 725-3806

Student hours in Roux 108

Thurs 9 am - 10 am

Thurs 3:30 - 5 pm

*Or email to set up a mutually convenient time.*



## WHAT PRIOR STUDENTS HAVE SAID

"I now think of the world in a different way and every time I see rocks or mountains or basically anything I think of geological processes."

"I loved the hands-on aspect of this course from field labs to rocks around the room."

"I made friends by working with people during labs, in class, and during office hours."

# Preparing for Earth's future

includes assessing risks in active tectonic regions, developing a sustainable Earth resource supply (including water and energy, predicting and responding to changes in climate, and effectively sharing scientific findings. These multi-dimensional challenges will require us to be adept at collaborating, work with incomplete datasets, and communicate. In this course, we will begin to develop the skills and knowledge needed to ask informed questions and respond to challenges such as these.

Image from eduweb.com



## COURSE GOALS

Are for us to:

- Pose and evaluate questions & hypotheses
- Collect and interpret data in the field & lab
- Create and analyze maps and graphic data
- Interpret geologic history by integrating:
  - Field observations
  - Knowledge of rock types
  - Geologic maps
  - Satellite imagery
  - Rock Structures
  - Principles of relative dating

## TRANSFERABLE SKILLS

In class & lab, we will practice to:

- Identify patterns and trends in data
- Interpret in three dimensions and through time
- Communicate in a variety of formats (written, verbal, graphical)
- Work individually and collaboratively

## TIPS TO SUPPORT YOUR LEARNING IN THIS COURSE

- Ask questions!
- Check in at <https://blackboard.bowdoin.edu> for assignment details & course updates
- Come to classes and labs, and be prepared to actively participate - this is your opportunity to practice with the material and skills we are learning
- Complete assigned reading before class
- Do (and turn in!) all laboratory and other assignments
- Expect to dedicate at least 4 hours per week for readings, assignments, review, and study
- Try studying with others in the course
- Attend student (office) hours with Rachel and/or Joanne - this is part of the course and a great way to receive one-on-one (or small group) teaching tailored to you
- Reach out to the Baldwin Center for additional support <https://www.bowdoin.edu/baldwin-center>

## WHAT DO YOU MEAN BY ACTIVELY PARTICIPATE?

We strive to create a community in which you learn from us and from each other by actively engaging with the material. Each of you has experiences and skills to contribute that will enhance our course. Educational research has shown that people learn best by actively engaging. Examples of active participation include making observations, asking questions, writing, doing, sketching, graphing, etc. For classes and labs, you should bring a 10x hand lens, ruler, pencil, pen, and notebook. You should be prepared for cold, warm, wet, or sunny weather, and for slippery and rough terrain during field laboratories.

## HOW DOES ACADEMIC HONESTY APPLY IN THIS COURSE?

Scientists seldom work alone and learning to collaborate effectively with others is a key skill that you will benefit you in any career path you choose. Many class and laboratory exercises will involve collaboration. For most assignments, however, we expect the writing and final analysis will be your own. When appropriate, please acknowledge those with whom you have worked or from whom you have received ideas. Plagiarism and cheating are unacceptable on any assignment or exam. Please ask us or consult <https://www.bowdoin.edu/dean-of-students/judicial-board/academic-honesty-and-plagiarism/index.html> if you have questions about academic honesty.

## WHAT IF I NEED ACCOMMODATIONS?

We teach this course in a way that is intended to be as accessible for as many students as possible. However, no class or lab will be perfectly accessible. We ask students who may need accommodations for class or laboratories to meet with us as soon as possible so that we can best assist your learning. If you have not done so already, please contact Lesley Levy in the Student Accessibility Office to discuss your accommodation request. We welcome feedback on the accessibility of this class. If something is making it difficult for you to learn, please reach out to us.

## WHERE CAN I GET SUPPORT ON CAMPUS?

The **Baldwin Center for Learning and Teaching** located in Kanbar 102 is a great campus resource that offers support from professional staff and student peers for academic mentoring and coaching, academic communication for multilingual speakers, quantitative reasoning, writing and rhetoric. It also offers a space to study. <https://www.bowdoin.edu/baldwin-center/index.html>.

Counseling services offers counseling consultations and other mental health support <https://www.bowdoin.edu/counseling>. In the event of a crisis or emergency or you are unsure who to call, contact Campus Security at (207) 725-3500 and they will direct you to the appropriate support.

## WHAT IF I MISS A CLASS/LAB OR CAN'T COMPLETE AN ASSIGNMENT ON TIME?

The expectation for this course is that you will attend all classes and labs, and turn in all assignments on time. This is ideal to support your learning. Sometimes things get in the way of this ideal. Reach out to Rachel (for a missed class, exam, or assignment) or Joanne (for a missed lab or lab assignment) before if possible, or as soon as possible afterwards if unavoidable, to request an alternative arrangement. Repeated absences and late work (not related to illness, emergencies, or the observation of major religious holidays) will impact your learning and your grade.

Per college policy, no student is required to take an examination or fulfill any other course requirements on recognized major religious holidays. Students are expected to let faculty know at the beginning of the semester their intention to observe specific religious holidays.

## HOW IS MY GRADE DETERMINED?

This course will follow Bowdoin College's grading system which is as follows:

**A** student has mastered the material of the course and has demonstrated exceptional critical skills and originality

**B** student has demonstrated a thorough and above average understanding of the material of the course

**C** student has demonstrated a thorough and satisfactory understanding of the material of the course

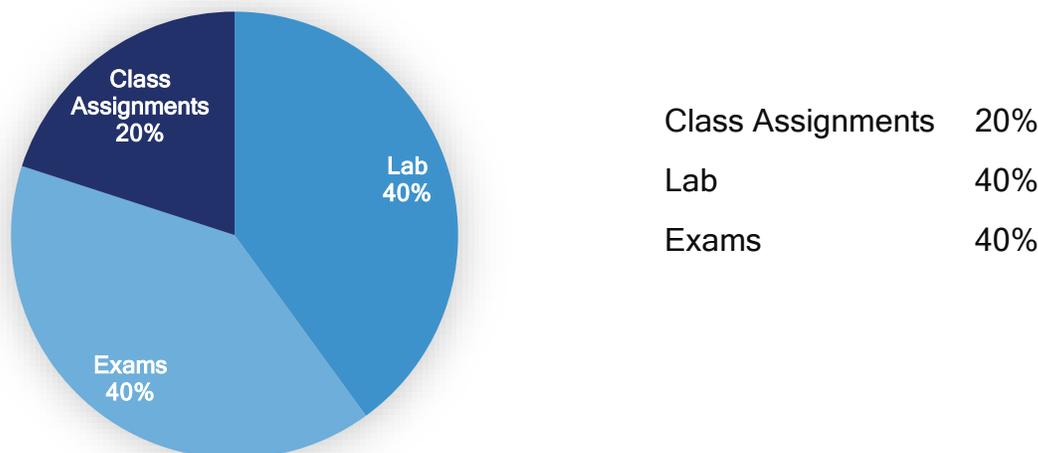
**D** student has demonstrated a marginally satisfactory understanding of the basic material of the course

**F** student has not demonstrated a satisfactory understanding of the basic material of the course

Plus (+) modifier may be added to the B and C grades.

Minus (-) modifier may be added to the A, B, and C grades.

How EOS 1105 course components contribute to the determination of your final grade are as follows:



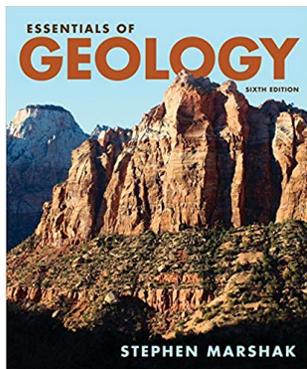
*Please note the following:* Most lab assignments are due one week after they are assigned. There are three exams scheduled for this course (see course schedule on the following pages). Class assignments include things such as reflections, reading quizzes, active engagement, and other in- and out-of-class assignments.

## WHAT IF I AM UNABLE TO COMPLETE THE COURSE REQUIREMENTS BEFORE THE END OF THE COURSE?

As stated in the Academic Standards and Regulations section of the Bowdoin College Catalogue and Academic Handbook, "The College expects students to complete all course requirements as established by instructors. In unavoidable circumstances (personal illness, family emergency, etc.) and with approval of the student's dean and the instructor, a grade of Incomplete may be recorded."

Students must initiate the incomplete grade process by contacting their student dean on or before the last day of classes which is Friday, December 10 for the fall 2021 semester.

Please recognize that the course schedule may change as the semester proceeds. The order of the course is based in part on when the weather is usually more favorable for field labs (early fall) and on when we need low tides to access coastal rock exposures. Changes to the syllabus, as well as details for laboratory and other assignments, and additional course context will be posted on the course page at <http://blackboard.bowdoin.edu>.



The readings listed in the far-right column are from *Essentials of Geology 6<sup>th</sup> Edition* by Stephen Marshak. You may order this book through <https://bowdoin.ecampus.com/> (select '0' for EOS1105 section). The readings should be completed prior to class to best support your learning.

Labs are listed in bold on the schedule - you will come to either Monday or Tuesday (not both) depending on which lab section you registered.

### *Earth's minerals and rocks*

Sep 1	Introducing Earth	Prelude
Sep 3	Introducing minerals	Ch. 3
<b>Sep 6-7</b>	<b>Lab 1: Minerals</b>	
Sep 8	Introducing rocks	Interlude A
Sep 10	Magma and igneous rocks	Ch. 4
<b>Sep 13-14</b>	<b>Lab 2: Roux Rocks</b>	
Sep 15	Sedimentary rocks and processes	Ch. 6
Sep 17	Metamorphic rocks and processes	Ch. 7
<b>Sep 20-21</b>	<b>Field Lab 3: Bailey Island I</b>	
Sep 22	Rock cycle	Interlude C.
Sep 24	Exam I	

### *Earth's tectonic processes*

<b>Sep 27-28</b>	<b>Lab 4: Plate Tectonics</b>	
Sep 29	Plate tectonics	Ch. 2
Oct 1	Volcanic eruptions	Ch. 5
<b>Oct 4-5</b>	<b>Field Lab 5: Wolfe's Neck State Park</b>	
Oct 6	Volcanic eruptions II	
Oct 8	Earthquakes	Ch. 8
	Fall Break - no labs	
Oct 13	Earthquakes II	
Oct 15	Geologic structures and mountain building	Ch. 9
<b>Oct 18-19</b>	<b>Field Lab 6: Pemaquid I</b>	
Oct 20	Geologic structures and mountain building II	
Oct 22	Exam II	
Oct 25-26	<b>Lab 7: Pemaquid II</b>	

### *Earth's landscapes and waters*

Oct 27	Introduction to Landscapes and the hydrologic cycle	Interlude F
Oct 29	Glaciers and Ice Ages	Ch. 18
<b>Nov 1-2</b>	<b>Field Lab 8: Maine landscapes I</b>	
Nov 3	Oceans and coasts	Ch. 15
Nov 5	Oceans and coasts II	
Nov 8-9	<b>Lab 9: Maine landscapes II</b>	
Nov 10	Groundwater	Ch. 16
Nov 12	Groundwater II	

### *Earth through time*

<b>Nov 15-16</b>	<b>Field Lab 10: Bailey Island II</b>	
17	Deep time	Ch. 10
19	Biography of Earth	Ch. 12
<b>Nov 22-23</b>	<b>Lab 11: Pennsylvania I</b>	
	<i>Nov 24-26 Thanksgiving Break - no classes</i>	
<b>Nov 29-30</b>	<b>Lab 12: Pennsylvania II</b>	
Dec 1	Grand Canyon geology	
Dec 3	Maine's geologic history	

### *Final week of the semester*

<b>Dec 6-7</b>	<b>Lab 13: Exam III</b>	
Dec 8	Who are geologists and what do they do?	
Dec 10	Geology careers	

*Note that there will be no final exam or work for this course due during Finals Week.*

