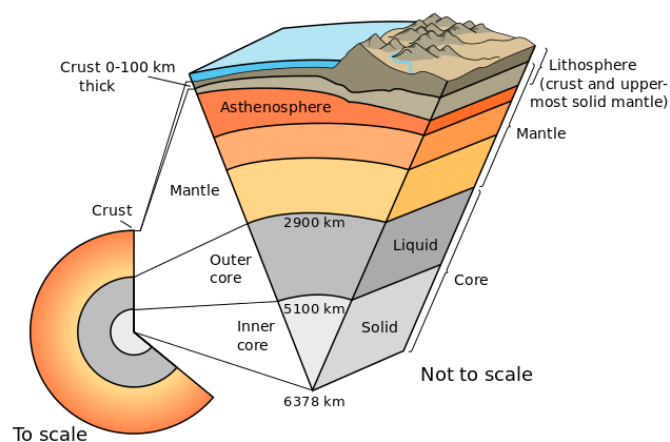


DYNAMIC EARTH & GLOBAL CHANGE (GEOL / ENVI 160 and 160L)

I. Course Information

Olin-Rice 179 | MWF 9:40 am – 10:40 am | Lab Thursdays 8:30 am – 11:30 am



Our world might be made of solid rock, but rocks can bend, break, melt, dissolve, and transform. In this course, we'll glimpse the materials and processes at depth and on Earth's surface that transform our planet (and others). We will also take a look at the development of key geological theories and ways of thinking, and consider how humans interact with the natural world. This course satisfies one writing requirement (WA) and partially fulfills Quantitative Thinking (Q2).

II. Contact Information

Instructor: Dr. Emily First | efirst@macalester.edu | +1 (651) 696-6415

Lab Instructor: Jeff Thole | thole@macalester.edu

Preceptor: Gustavo Marchant Allende | gmarchan@macalester.edu

Drop-in (“office”) hours: OLRI 113 / Dunn Brothers / the quad / library *as needed*

When I've had set office hours, it often doesn't work with everyone's schedule. Instead, feel free to come by when you see my door open...which is almost always! I can't guarantee I'll be able to drop everything and help you right away, but usually I can find a few minutes. If you want to make sure I have a bit more time to dedicate to you, please set up an appointment by e-mail.



III. Course Materials and Resources

Course text

[An Introduction to Geology](#) by Johnson, Affolter, Inkenbrandt, and Mosher [*open access*]

Other required materials

paper and pencil/pen *bring to class every day*

calculator *you can use your phone unless it's for a test*

colored pencils *we have these in the classroom*

ruler *we have these in the classroom*

hand lens *we have these in the classroom*

Additional resources

[Every Rock Has a Story episode list](#) short geo videos

We will occasionally use PollEverywhere (no login needed)



Prof. First's PollEv QR code

IV. Learning Outcomes

As a result of participating in *DE&GC*, you will gain or polish the ability to:

- Identify the basic building blocks of Earth (rocks and minerals).
- Explain the processes that form and break down rocks.
- Use methods of geological inquiry to analyze Earth materials.
- Trace global cycles (water, carbon, rock).
- Converse about geological topics in the context of current events.
- Contextualize global environmental change and ongoing societal dilemmas.
- Locate and use primary scientific literature to answer questions.
- Recognize and rebut pseudoscientific claims.
- Produce argumentative writing, using evidence to draw conclusions.

V. Expectations

Basics. I expect kindness, honesty, and respect from each person, including myself, toward every other person. To be successful in this course:

- Ask for **help** – before you feel overwhelmed. I am always here to guide you and want you all to succeed! You also have Jeff, Gustavo, and postbac Riley. So many great resources!
- **Support** each other – everyone here is probably missing home, struggling in some ways, thriving in others. Be each other’s cheerleaders and supporters, and help each other out with explaining concepts, working through problems, and just lending a listening ear when needed.
- Take **responsibility** – it’s up to you! If you miss class, it’s your responsibility to get notes, assignments, etc. from your classmate(s). You also need to turn in any work that is due. I am happy to meet with you when you have specific content questions, but I do not schedule office hours to re-teach a class. Do keep me in the loop about what’s going on, especially if you anticipate a lengthier absence. We will work together to make a plan if that’s the case.

Late work. Assignments are due when specified, and points are deducted for late work. The course builds on itself, and it hinders your learning to fall behind. I also understand that life happens, so you all have five virtual “hazard cards,” each equivalent to a 24-hour extension. Hazard cards can be used on any assignment unless otherwise specified, and you can use more than one at a time. Simply upload any obvious image of any natural hazard/disaster instead of your assignment, *by the assignment deadline*, in order to use a card. If you are using multiple cards, upload that many images. No reason needs to be given. Your hazard card count will be tracked on Moodle. There are hard deadlines the class period prior to each test, meaning that work due any time in the prior period cannot be handed in after that date. Late work in general will receive less feedback and will have lower priority for grading.

Technology. This course is intended to introduce you to the critical thinking skills and visualization that are key components of a geological and environmental education. As such, use of ChatGPT and other **generative AI is generally not appropriate** unless otherwise directed. When in doubt, ask first! Likewise, use of electronic devices during class time is often detrimental to your (and your classmates’) education. If you require an electronic device for note-taking purposes, that is fine; please speak with me about your needs so you can feel comfortable and successful in class. *Phones should be kept inside of a bag, off the table, and out of your hand during the entirety of class.* Exceptions include in-class calculations or quick look-up activities, lab time when you are working independently, etc. If you have an urgent medical/family situation that requires you to be reachable you can absolutely have your phone at hand and audible. Of course! Simply step out when you need to take a call of that nature. I hope we can work together to create an engaging, focused, and fun class atmosphere. My phone steals my attention just like

it does yours, and I actually look forward to in-person class time as a full hour when I don't look at my phone (and often don't bring it). So let's be old-fashioned together!

Human needs. You are always welcome to eat and drink in my classes, and you don't need my permission to get up and use the bathroom. **Eat when you're hungry, drink when you're thirsty, and go to the bathroom when the need arises!** Please just be mindful of your fellow students and the cleanliness of our space – as long as you clean up and aren't disturbing the class, you're good to go. The one absolute exception is that there should *never* *ever* be food, non-water drinks, or even open water cups at the microscopes. And if you were eating, you should wash your hands before handling thin sections, microscopes, or rock/mineral specimens. All the future Geo students thank you!!

Field trip. We have one overnight trip, mid-semester. This year's dates are Thursday, October 10 – Friday, October 11. We usually leave around 8:00 am on Day 1 and return to campus before dinnertime on Day 2. Please make every attempt to come and participate fully. Ask your other professors *now* so that they will say yes to you missing class, and so you and they will have an easier time figuring out how to make up the work. You'll bond and see amazing geology and have a great time!



VI. Evaluation

30% Labs. Each week, Jeff will lead a lab where you will gain practical, hands-on experience. Some labs relate closely to lecture topics; other times they involve learning new material. You will start at 8:30 am instead of 8:00 am. Jeff and Gustavo will be present for the entire lab period, and I expect that you will be, too. Some labs will require time outside of the lab period to complete. I encourage you to talk with each other, and ask questions of myself and your preceptor. You can help each other, work alongside each other, share resources, discuss, etc. However, labs are turned in and graded individually, meaning that *the answers, drawings, worked problems, images, etc. that you turn in should be yours and yours alone.*

10% Formative Work. To gain a complete understanding of the course material, you should expect to read the assigned parts of the textbook and read/watch/listen to other resources as indicated in Moodle. Occasionally, I will assign homework, in-class activities, drafts, pre-labs, etc. This work is completion-graded (i.e., do it = 100; don't do it = 0). In-class activities cannot necessarily be made up, so come to every class.

5% Five-Minute Quizzes (FMQ). Each Wednesday, you will take a 5-minute quiz to check your understanding and help you stay on track with the key concepts. Most quizzes have about five questions. There are ten quizzes, and I will drop the lowest grade.

25% Projects. There are two medium and one larger project over the course of the semester. The first will involve a deep dive on a geological question of your choice. The second will involve using scientific evidence to argue for the evacuation (or not) of an imaginary at-risk town, and the third will be a detailed examination of your own rock.

30% Exams. There are three exams: two in-class mid-terms and a cumulative final. The exact topics depend on our class's pace. Each exam is worth 10% of your grade.

Type of Assignment	Frequency	% Final Grade
Labs	Weekly (~11 lab assignments)	30
Formative Work	Varies	10
Five-Minute Quizzes	Weekly (~10 total)	5
Projects	Every ~5 weeks (3 total)	25
Exams	Every 4-5 weeks (3 total)	30



VII. Course Schedule

This schedule and topics covered are subject to modification based on the needs of the class, but there will be no additional major projects or exams.

Week	Class Topics	Notes
1	Intro + plate tectonics	
2	Plate tectonics, minerals	
3	Igneous rocks and processes	
4	Igneous rocks and processes	
5	Sedimentary rocks and processes	
6	Exam 1 + Field Trip	FieldTrip Oct10-11
7	Sedimentary rocks and processes	Oct 17-20 break
8	Metamorphic rocks and processes	
9	Deep time, planetary geology	

10	Earthquakes and deformation	
11	Exam 2 + Erosion	
12	Water	
13	Water	Nov27-Dec1 break
14	Climate and energy	
15	Wrap up, review	
16	Final exam	Dec 14 th 8:00 am

VIII. Accommodations and Wellbeing

Your ability to fully engage with this course is important to me. If you need them, please request accommodations early in the semester, via the [Center for Disability Resources](#), so that we have adequate time devise good solutions that work for you and for the course.

If you are dealing with physical or mental wellbeing issues, whether temporarily or long-term, you are entitled to compassion and reasonable accommodations. Please keep me in the loop to the extent that you are comfortable, so that I can help you to be successful in this course. At Macalester, you are encouraged to make your health a priority. Beyond being a student, you are a whole human being with your own experiences, thoughts, emotions, and identities. In fact, so are your professors! I hope you always feel welcome to come speak with me when you are struggling or just need a kind ear. Christopher the support kiwi is at the ready! *Not the fruit...the floofy, round little stuffed animal in my office.*

IX. Resources for Students

Resources for mental health and wellbeing can be found at the [Hamre Center](#), which includes services such as counseling and medical needs. The [Center for Religious and Spiritual Life](#) and the [Office of Student Affairs](#) provide additional support at Macalester. In an emergency, call 911. You can also call Macalester Security at (651) 696-6555. Finally, Minnesota has a suicide prevention and mental health crisis texting service available 24 hours a day, every day. Text MN or HOME to 741741 to connect to the [Crisis Text Line](#).

