

Introduction to Geology GEOL 110

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Please note that all times listed below are Central Daylight Time i.e., Carleton time.

Office Hours: Drop-in Zoom office hours: Tuesdays 10-11AM; Fridays 10-11AM; Please note that anyone can join these office hours (Zoom meeting link on Moodle); If you would like to schedule a one-on-one meeting time with me, send me an email and we can find a time that works.

Synchronous meeting times: Thursdays, 10:10-11:55AM via Zoom (link on Moodle); Labs will be asynchronous (see below for details).

TAs: Ethan Karp (Wednesday lab TA); Oren Lieber-Kotz (Thursday lab TA); John Hoffman (Thursday lab TA); Gabe Lobet (Class TA). Lab TAs will be available during lab times to answer any questions that you may have on the course. In addition, all of our student TAs have a several hours set aside in their week to meet with students. Please feel free to email any of them to set up a time to meet. Contact Gabe if you have a question about the material covered in class. Contact Ethan, Oren, and/or John if you have a question about the lab. **If you have any technological issues (can't log onto Zoom, can't figure out how to make a graph in Excel, can't figure out how to post to a Moodle Forum), please email Gabe as he is our "technology TA".**

Required Textbook: Understanding Earth (8th edition) by John P. Grotzinger and Thomas H. Jordan

Online Learning in the Time of COVID-19: This is a stressful, anxiety-inducing time for all of us as we try to navigate a global pandemic. I understand that each of you will have your own set of challenges and obstacles to learning throughout this course. Please know that I recognize that this course will likely not be your top priority, nor should it be. The health and safety of you and your family needs to come first.

That being said, I hope that this course can serve as a much-needed distraction from your every-day stresses and that you can learn something about geology and the earth along the way. This is still a 6 credit, Carleton course and therefore will include all of the rigor, challenge, and high expectations that you have come to expect from Carleton courses. However, I promise I will be as flexible as possible in terms of deadlines and accommodations for those of you who encounter technological problems or other issues. If you encounter challenges to your learning that prevent you from accessing the material or turning assignments in on time, please email me as soon as possible and we can work together to make sure you get caught up.

Course and Learning Objectives: Through this course, you will develop an understanding of major concepts and fundamental processes in geology. These include the formation of rocks and land forms, the evolution of Earth's surface and climate through time, and more. Through the study of the geology, students will develop skills in scientific reasoning and methods. While some memorizing of facts and terms is required since it is an introductory course, my goal is that the majority of your learning will come in the form of learning how to think like a scientist and use investigative reasoning to answer questions about the Earth that we live on.

The Importance of Inclusivity: Diversity of all kinds is welcomed and encouraged in this course. Learning and understanding are greatly enhanced when each of us brings our own experiences, shaped by our own diversity, to course discussions and assignments. While I try to draw on a range of perspectives in my teachings, I am limited to some extent by my own personal experiences. I highly encourage you to speak up in the Moodle Forums and the Zoom meetings and lend new and diverse perspectives where appropriate. I will strive to make this a safe and inclusive place of learning. Please always be respectful of your classmates and their opinions. Before you enter a comment on a Moodle Forum, think to yourself: would I say this if I were in the classroom. Please let me know if there is anything I can do to make you feel more comfortable or included in this course.

For students with learning and/or physical disabilities, please let me know how I can best accommodate your needs in this course. Carleton College is committed to providing equitable access to learning opportunities for all students. The Disability Services office is the campus office that collaborates with students who have disabilities to provide and/or arrange reasonable accommodations. If you have, or think you may have, a disability (e.g., mental health, attentional, learning, autism spectrum disorders, chronic health, traumatic brain injury and concussions, vision, hearing, mobility, or speech impairments), please contact disability@carleton.edu or call Sam Thayer ('10), Accessibility Specialist (x4464) or Chris Dallager, Director of Disability Services (x5250) to arrange a confidential discussion regarding equitable access and reasonable accommodations.

Academic Honesty: Cheating (including plagiarism) of any kind will not be tolerated in this course. All Moodle Forum posts, labs, projects and exams must be your own work, in collaboration with your teammates where appropriate (see below). Given the ease of the Google search engine, it is very easy for me to quickly discover whether you have plagiarized others work. As noted below, exams are open book and open notes BUT NOT OPEN INTERNET. If I discover that you have cheated in any way, I will report you to the Dean of Students.

Grading: The final course grade will be determined as follows:

Assignments	Weight
Exams (3 total)	40%
Labs	25%
ArcGIS StoryMap group project	20%
Participation (Panopto quizzes/Moodle Forums)	15%
Total	100%

Team-based Learning: It can be easy to feel isolated and disconnected during an online course. In an attempt to provide some sense of community learning, you will be broken up into teams. These are the peers that you will interact with during breakout sessions in Zoom meetings (see below) as well as the peers that you will work on the ArcGIS StoryMap project with (see below). I also encourage you to work with these peers for labs. I will leave it up to you as to what is the best way to communicate with your teammates. Examples could include a group text message, email chain, Google hangouts, or Slack. Teams will be randomly assigned. I encourage you to try to work out any issues you may have with teammates amongst yourselves as this is a good life skill to have. However, if you encounter issues that you feel you cannot resolve on your own, please contact me and I can help you navigate these issues.

Asynchronous Learning: Much of the content of this course will be delivered asynchronously i.e., videos that I make on Panopto and which you will access via the Moodle tile for that week. This will ensure that technological glitches that are likely to occur during a Zoom meeting do not get in the way of your learning of the material. Content will be broken down into short videos in the hopes that it will be easier for you to concentrate on what I want you to take away from each video. All videos for a week (along with the Powerpoint slides that accompany each video) will be made available at 8am on Monday of that week via the Moodle Tile for that week. Each video will have **Panopto quizzes** embedded within them. You will have to answer the questions in these quizzes before you can continue on with the video. These quizzes are a way for me to check that you are watching the videos and will allow you to test your understanding of the content and to recognize the major points that I want you to get out of each video. These quizzes will be graded on completion, not accuracy. **You should watch the content videos and take the quizzes before the synchronous portion of the course on Thursday.**

Synchronous Learning: We will meet synchronously every Thursday at 10:10AM (central time) via Zoom. **These meetings are not mandatory** if you do not have a strong internet connection, do not have access to a computer during that time or if you are in a different time zone (i.e., I do not expect you to attend if 10:10AM central time is midnight your time). Each session will be recorded and posted to Moodle so that those of you who cannot join can watch the meeting later. The Zoom link is posted at the top of the Moodle page and will be the same for every meeting. Zoom can be downloaded onto your computer from <https://zoom.us/>. Before each session, please post a question to the **Moodle Forum**. These questions can range from simple “I don’t know what you mean by...” questions to more in-depth “If this is the case, what does that mean for x scenario.” All questions are valid and valuable to the groups learning. These questions should be based upon the video content that has been uploaded for that week or the readings assigned for that week. It is also valid to ask a question or add a constructive comment about how you are engaging with the online learning tools to alert me if there is a technological issue etc. **Moodle Forum questions are due by Wednesdays at 11:59PM central time.** During the synchronous part of this course, we will go over some of the common questions and issues that were posted in the Moodle Forums. After the synchronous meeting, please **go back to the Moodle Forum** and answer at least one

question posted there based on our class discussion. **Moodle Forum answers are due by 11:59PM on Sundays.** While do you not have to post a question and/or answer every week, these Moodle Forum posts do count towards your participation grade so I encourage you do participate fully in the forum.

Exams: There will be three exams in the course, one every third week (i.e. 3rd week, 6th week, and 9th week). These will be in the take-home exam style i.e., open book, open notes although please no internet. Exams 1 and 2 will open on Friday at 8am central time and be due by Sunday at 11:59 pm central time. The final exam will be open at 5:00pm on Wednesday, June 3rd and due by 5:00pm on Monday, June 8th. Exams will be in the form of short answer/essay questions.

Labs: Labs will be taught asynchronously i.e., you will be able complete the lab assignment at any time between when it is **posted on Mondays at 8am and when it is due on Sundays at 11:59pm.** I encourage you to work with your teammates on this but will leave it up to you to coordinate times where you can work on the labs together. Regardless of whether you work with your teammates or not, please turn in your own lab. Labs will consist of a worksheet with multiple questions that you will be asked to answer that will walk you through an activity. Activities may include manipulating data using Excel or exploring data in Google Earth. See Moodle for how to access both of these software options. The lab TAs will be on the Zoom calls during your allotted lab times to help with any questions (see Moodle page for link) so I would recommend working on your lab during your lab slot if possible and signing onto the Zoom call if you have questions. Of course, both the TAs and myself are available by appointment or during my office hours if you are unable to join the Zoom meeting during your allotted lab time.

ArcGIS StoryMap group project: The StoryMap group project will allow you to work with your team members to investigate a region or component of geology in depth and display your findings using both visuals and text. For this project, we will use ArcGIS StoryMaps (see the Moodle page for how to access this). More details of my expectations for this project will be forthcoming during 4th week. There will be a proposal due at the end of 5th week (details included in the project description provided during 4th week) that you will turn in as a group. This will give you a chance to hash out your ideas with your group members as to what topic/region/geological process you want your StoryMap to focus on, who is going to be in charge of doing what etc. The proposal will be 20% of your StoryMap project grade. StoryMaps will be due on Wednesday, June 3rd at 5pm (i.e. the last day of classes).

Readings: Assigned textbook reading is posted on the course schedule below as well as on Moodle under that week's tile. You will not be quizzed on this reading but I strongly encourage you to keep up with the reading as it is another medium to help you understand the content we are covering in class that week. In addition, there may be occasional supplementary readings that we will discuss as a group in the synchronous part of the course. The textbook readings pages are from the 8th edition. If you have the 7th edition of the book, please contact me and I can let you know what pages you need to read.

Course Schedule

Week	Topic	Lab	Assignments due (by 11:59pm on Sunday)	Textbook Readings
1 st Week (April 6-12)	Earth's Origins and Structure	Topographic Maps	Lab 1	pp. 6-12, 308-319, 600-607
2 nd Week (April 13-19)	Plate Tectonics	Plate Tectonics Lab	Lab 2	pp. 23-47
3 rd Week (April 20-26)	Minerals and the Rock Cycle	Mineral and Rock ID Lab	Exam 1; Lab 3	pp. 53-77
4 th Week (April 27-May 3)	Igneous Environments and Volcanoes	Volcanoes Lab	Lab 4	pp. 91-130
5 th Week (May 4-10)	Sedimentary and Metamorphic Rocks	Stratigraphy Lab	Lab 5; StoryMap proposal due	pp. 153-207
6 th Week (May 11-17)	Geologic Dating	Geologic Dating Lab	Exam 2; Lab 6	pp. 239-260
7 th Week (May 18-24)	Earth's Climate System	CO ₂ Lab	Lab 7	pp. 337-355, 393-412,
8 th Week (May 25-31)	Deformation Processes and Earthquakes	StoryMap project work	Nothing due, work on StoryMap project	pp. 213-232, 267-287
9 th Week (June 1-7)			StoryMap group project due @5:00pm, Wednesday, June 3rd; Exam 3 due @5:00pm Monday, June 8th;	