

GEL 105, Winter 2022

EARTH MATERIALS: IGNEOUS ROCKS

Meeting times:

Lectures: Monday and Wednesday 12:10-1:00 pm,

Week 1: ZOOM (January 3rd and 5th); all following weeks (starting January 10th):
Earth and Physical Sciences 1348

Labs: Earth and Physical Sciences 1314 (no labs in the first week)

Section A01: Tues. and Thurs. 1:10-4:00 pm

Section A02: Mon. and Weds. 4:10-7:00 pm

Instructors and Contact Information:

Instructor: Barbara Ratschbacher (bratschbacher@ucdavis.edu)

Lab TAs: Anjelica Guerrier (A01, aaguerrier@ucdavis.edu); Kate Hewitt (A02, kchewitt@ucdavis.edu)

Lecture TA: Emily Sonnenberg, (esonnenberg@ucdavis.edu)

Office Hours/Locations:

Ratschbacher: Wed 1-2 pm and after appointment (EPS 3133)

Guerrier: Mon 1-2 pm (EPS 1205)

Hewitt: Tues 2-3 pm (EPS 3213)

Sonnenberg: Tues 11-12 pm (EPS 3120)

Important dates:

Lectures will begin on Jan 3rd and Jan 5th remotely via Zoom (two lectures) and all following lectures will be in-person (starting January 10th)

MLK Day Holiday, Jan 17th, no lecture and no labs on Jan 17th and 18th

President's Day Holiday, Feb 21st, no lecture and no labs on Feb 21st and 22nd

Course format:

Lectures:

Lectures will remote for the first week (January 3rd and January 5th) and in-person starting January 10th (second week of instructions; see [Winter 2022 UC Davis Updates and Resources](#)Links to an external site.). In order to ensure the safety of instructors and students, everyone will adhere to the following requirements:

- Stay home if you're sick — all individuals, regardless of vaccination status, may not enter or remain on university property if they have tested positive for COVID-19 within the past 10 days or if they have symptoms of COVID-19 (not related to a chronic condition).
- Training held in non-UC Davis-managed facilities will adhere to all [state and applicable county health guidelines](#).
- The [UC Davis Daily Symptom Survey](#) must be completed by all individuals attending an event/training held in a University facility.
- All individuals attending an event/training held in a University facility are required to provide proof of vaccination or a negative COVID-test in the last 72 hours as a condition of entry into the classroom (must be a lab/PCR test; home tests/antigen tests are not valid). The vaccination status or test result of each student will be verified by our staff before they are allowed to enter the classroom (so please have your "Approved" Daily Symptom Survey result and vaccine confirmation or test result ready, either printed or on your phone).
- Everyone (including instructors), regardless of vaccination status, will be required to wear a face covering indoors. We are actively pursuing a variety of solutions to help ensure that instructors can be heard through their face covering, and, to the extent possible, accommodate students who need to see an instructor's or interpreter's mouth.
- Eating will not be permitted in class. Brief removal of a face covering to take a drink is permitted.
- Unvaccinated individuals are also required to wear a face covering outdoors when in crowded places.

Labs:

Labs will be held in-person (please see health precautions above). The laboratory sessions meet twice a week. These sessions are an integral part of this course and you are **required** to attend. The lab TAs will introduce the lab exercise at the beginning of the lab period and will then be available throughout the lab period to answer questions. **All labs are due at the beginning of the first session of a new lab exercise and should be handed to the lab TA's in person (an exception to this rule are Lab 1 and 2, which are both due on the lab session in week 3).** The final weeks of the laboratory section will be devoted to your term project. The final project report is due to the TAs on **Wednesday, March 16th by 5 pm on Canvas. No late projects will be accepted.** A 10x hand lens is essential for this course. If you do not already own one, now is the time to buy one. Amazon sells them for example.

Required Text and Reading:

- Winter, D., An Introduction to Igneous and Metamorphic Petrology (digital version available via bookshelf in Canvas).
- Laboratory Exercises & Problem Sets (see lab syllabus for details; these will be uploaded on Canvas).
- Additional reading is optional and will be introduced during the lectures.
- The book 'Rock-forming Minerals in Thin section' has been uploaded to the 'Files' section and is highly recommended to use during the labs to assist with mineral identification.

Grading:

Grading will be based on the following percentages. For the Exams and Problem Set, **both lecture and lab content** is important to know. Lab Exercises and Problem Sets will be posted on Canvas on the dates indicated in the schedule at the end of the document. Exams will be taken in-person during the lab sessions indicated in the schedule.

Exams	20%
Problem Sets	15%
Labs	50%
Final Project	15%

Problem Sets:

You are responsible for completing and submitting solutions to topical problems. There are a total of four problem sets that will be posted on the class Canvas site. They are due at **5 pm on the day indicated in the class schedule at the end of this document**. You have to upload your filled out Problem Set to the Canvas website. You can fill it out by hand and then either scan it or take a (high-resolution) picture or answer the question using Word or another program. You are welcome to turn in your problem set early; however, no credit will be given for problem sets turned in late. Problem sets are open book but you cannot work together on problem sets. Solution keys will not be posted, though every effort will be made to grade and hand them back before the next problem set is assigned. I highly recommend you take advantage of office hours to review the problem sets after they have been graded. Problem Sets will build on lectures and reading by giving you some experience working through problems and calculations related to the course material, as well as having some questions that are similar to exam questions.

Exams:

There will be two exams, which are shorter than regular midterms or final exam. The exams for the course will be taken in-person during lab times indicated in the schedule. **Both lecture and lab content will be important to know in order to answer exam questions.** More details will be provided closer to the first exam.

Final term project:

The final weeks of the laboratory section will be devoted to your term project. The final project report is due to the TAs on **Wednesday, March 16th by 5 pm on Canvas. No late projects will be accepted.**

COVID-19 Safety Protocols

Due to the ongoing Covid-19 pandemic, safety protocols will be in place for the in-person lectures and labs. These are necessary in order to maintain the health and safety of everyone. Any students who don't follow these protocols will be required to leave. The following requirements apply to all faculty, staff and students while on campus (see full Campus Policy 290-01 at <https://campusready.ucdavis.edu/public-health-policies-requirements>)

- 1. Participate in the university's daily screening process.**
Everyone must complete a [Daily Symptom Survey](#) to access a university worksite. Failing to comply with the university's symptom survey means you are denied access to the university's facilities, properties and/or services.
- 2. Participate in the university's testing program.**
Unvaccinated people are required to participate in the [COVID-19 Testing program](#) once every four days. Failing to comply with the university's testing program means you are denied access to the university's facilities, properties and/or services. Starting Sept. 20, vaccinated people must get tested every 14 days if they access campus on a weekly basis — or prior to accessing campus facilities if they visit less often. Additional surveillance testing may also be required. Read more about the current [Scope of the COVID-19 Testing and Screening Program](#)
- 3. Wear a face covering.**
As of July 28, everyone is required to [wear face coverings indoors](#) and in mass transit regardless of vaccination status. Unvaccinated people are also required to wear face coverings while outdoors in crowded spaces and when inside vehicles with other people. See [face-covering details](#) for exceptions and FAQs about wearing a mask on campus.
- 4. Practice physical distancing in some circumstances.**
Any time a face covering is required, please continue to maintain physical distance if possible. Unvaccinated employees in particular need to maintain

physical distance while eating or drinking in workplace settings, per Cal/OSHA requirements.

5. **Assist in the contact tracing process.**

If you're contacted by a Yolo County Public Health department or university-designated official, please respond promptly. You must assist with identifying other individuals who might have some degree of risk due to close contact with individuals who have been diagnosed with COVID-19.

6. **Follow CDC guidelines for domestic and international travel.**

Read more on the [Global Affairs website](#)

Accessibility and accommodations:

If you have concerns about accessibility or need special accommodations for exams or lectures, first contact the UC Davis Student Disability Center, and if they determine that special accommodations are warranted, I will work with you to find a solution. Accommodations must be put in place *before* the lab sections or exams, and it is your responsibility to start the process early enough to allow enough time for this to happen.

Code of Conduct:

Academic misconduct such as cheating or plagiarism will be dealt with in accord with the Code of Academic Conduct. You must review this document before the course and confirm that you have reviewed it online (you will be prompted to do so by email and on MyUCDavis). An updated version can be found at [here](#). You must also confirm your participation in this course by following this [link](#). Academic Senate policy requires instructors to report any suspected cases of cheating or plagiarism to Student Judicial Affairs.

Student wellness:

You deserve respect, and are encouraged to practice self-care so that you can remain focused and engaged; that might mean getting a drink of water, leaving to use the restroom, taking a moment to stretch, or doing something else you need to do to take care of yourself. Please be respectful of others by minimizing distractions when practicing self-care – especially in lab

College life can be overwhelming at times, but know that you are not alone if you're feeling stressed. For many of us, systems of oppression such as racism, sexism, heterosexism or cissexism may cause additional stress. Please remember to practice self-care and reach out for support if and when you need it.

You can visit <https://studentaffairs.ucdavis.edu/student-life> to find resources related to health and well-being, academics, basic needs (food and housing) and more.

Additional information on general academic, health and wellness, career/internship, and community resources for students can be found here: [Student Resources FAQ page](#)

Course Schedule:

Lectures: I will try to adhere to the attached schedule in terms of topics, but this may be updated during the quarter based on how the class evolves. The schedule also shows due dates and exam dates. The exams must be taken during the exam dates; **there are no make-up exams**. It is your responsibility to keep up with the reading assignments.

Week	Lecture Dates	Lecture topics	Reading	Problem Sets	Problem Set due dates	Exams	Week	Labs	Lab due dates
Week 1 (Remotly)	Jan 3rd	Introduction, Earth's interior	Chapters 1-5				Week 1	no labs	
	Jan 5th	Magma generation, ascent	Chapters 1-5						
Week 2	Jan 10th	Thermodynamics 1	Chapter 5				Week 2	Lab 1: Igneous Minerals	week 3
	Jan 12th	Thermodynamics 2	Chapter 5	Problem Set 1: Quarz Polymorphs	January 21st			Lab 2: Igneous Textures	week 3
Week 3	<i>Holiday</i>						Week 3	<i>no lab Jan 17/18</i>	
	Jan 19th	Thermodynamics 3	Chapter 5					Lab 3: Differentiation	
Week 4	Jan 24th	Phase diagrams 1	Chapter 6				Week 4	Lab 3: Differentiation	week 5
	Jan 26th	Phase diagrams 2	Chapter 6,7,8,10	Problem Set 2: Phase Diagrams 1	February 1st	Exam I Wed/Th Jan 26/27		Exam I	
Week 5	Jan 31st	Phase diagrams 3	Chapter 6,7,8				Week 5	Lab 4: Basalts	
	Feb 2nd	Phase diagrams 4	Chapter 6,7,8						week 6
Week 6	Feb 7th	Phase diagrams 5	Chapter 6,7,8, 18				Week 6	Lab 5: Plutons	
	Feb 9th	Magma diversity	Chapter 11	Problem Set 3: Phase Diagrams 2	February 18th				week 7
Week 7	Feb 14th	Magma diversity	Chapter 11				Week 7	Lab 6: Trace elements	
	Feb 16th	Trace elements	Chapters 8, 9						week 9
Week 8	<i>Holiday</i>						Week 8	<i>no lab Feb 21/22</i>	
	Feb 23th	Trace elements	Chapters 8, 9	Problem Set 4: Granites	March 4th	Exam II Wed/Th Feb 23/24		Exam II	
Week 9	Feb 28th	Trace elements	Chapters 8, 9				Week 9	Lab 7: Arc volcanism	
	March 2nd	Isotopes	Chapter 16, 17						week 10
Week 10	March 7th	Isotopes	Chapter 16, 17				Week 10	Term project	
	March 9th	Isotopes	Chapter 16, 17						
Final week	March 14th	no lecture					Final week	Term project, due Wednesday March 16th, 5 pm	
	March 16th	no lecture							