GEL 105, WINTER 2020
EARTH MATERIALS: IGNEOUS ROCKS

Meeting times
Lectures: Tues. and Thurs. 11:00-11:50, Earth and Physical Sciences 1348
Labs: Earth and Physical Sciences 1314
Section A01: Tues. and Thurs. 1:10-4:00 pm
Section A02: Mon. and Weds. 4:10-7 pm

Instructors and Contact Information
Instructor: Kari Cooper (Office: Earth and Physical Sciences 3127)
Email: kmcooper@ucdavis.edu
Lab TAs: Supratim Dey, supratim@ucdavis.edu; Tyler Schlieder (tdschlied@ucdavis.edu),
Lecture TA: Dylan Vasey, davasey@ucdavis.edu;
Office Hours/Locations:
Cooper: M 1-2 PM, EPS 3127
Vasey: W 11-12 AM, EPS 1348
Dey: M 11-12 AM, W 1-2 PM, EPS 1348
Schlieder: MW 3-4 PM, EPS 1348

Required Text and Reading
(1) Winter, J. D., An Introduction to Igneous and Metamorphic Petrology

(2) Laboratory Exercises & Problem Sets (see lab syllabus for details)

Additional Readings: Ehlers - *The Interpretation of Geological Phase Diagrams*, W. H. Freedman and Co., 1972 (out of print - relevant chapters provided on class website)

Grading

Midterm Exams I & II	30%
Final Exam	20%
Problem Sets	10%
Labs/quizzes	25%
Final Project	15%

Important dates
First Midterm (lecture/lab) – Wednesday/Thursday, Jan 29-30 (during lab period)
Second Midterm (lab/lecture) - Wednesday/Thursday, Feb. 26-27 (during lab period)
Stillwater project due – Friday, March 13, 5 pm
Final Exam – Wednesday, March 18 at 10:30 AM, EPS 1348

Problem Sets
You are responsible for completing and submitting solutions to topical problems. There are a total of five problem sets that will be handed out and/or posted on the class Canvas site. They are due at the **start** of lecture on the due date indicated in the

class schedule. You are welcome to turn in your problem set early; however, **no credit** will be given for problem sets turned in late.

Laboratory
The laboratory sessions meet twice a week. These sessions are an integral part of this course and you are **required** to attend. The previous lab exercise is due at the beginning of the first session of a new lab exercise. You are welcome to use the laboratory whenever lectures or other labs are not in progress. See the laboratory syllabus for more information. The final two weeks of the laboratory section will be devoted to your term project. The final project report is due to the TAs on **Friday, March 17 by 5 pm**. **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. The bookstore may still carry them, or ask the TAs or instructor for advice on where to find one.

Schedule

The schedule appears at the end of this syllabus. 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 blue shaded boxes highlight the due dates and exam dates. The exams must be taken on the exam dates; **there are no make-up exams**. It is your responsibility to keep up with the reading assignments.

Code of Conduct

Read UC Davis Code of Academic Conduct (http://sja.ucdavis.edu/cac.html) and comply with that code in all matters related to this course. 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).

For additional guidance on what constitutes good academic conduct, please adhere to the following policies:

- Show respect for your instructors and fellow classmates.
- Please arrive on time to class and stay for the entire class period.
- Wait until class is completely over before putting your materials away in your backpack, standing up, or talking to friends.
- Do not disturb others by engaging in disruptive behavior.
- No cell phone usage or emailing/web surfing on laptops during class.
- No listening to iPods or other MP3 players, and no use of electronic recording devices during class (unless you have explicitly cleared it with the instructors first)
- You are expected to write emails to the instructors and/or other students as you would in any professional correspondence.
- Do not expect an immediate response via email (normally, I will respond within two business days).

GEL 105: Course Schedule - Winter 2020

	Lecture	Reading	Problem Sets	Exams	Laboratory
Week 1: Jan 6-10	Magmas and planet Earth	Chapters 1 & 2 (Winter)			Lab 1: Igneous Minerals Lab 2: Igneous Textures
Week 2: Jan 13-17	Thermodynamics of magmatic systems	Chapters 3-5 (Winter)	**Prob. Set 1: Due Tues. (Jan. 14)**		Lab 3: Magmatic differentiation
Week 3: Jan 20-24	Thermodynamics; Phase diagrams	Chapter 6 (Winter) Chapters 1 & 2 (Ehlers)	**Prob. Set 2: Due Thurs (Jan. 23)**		University Holiday: No Lab Lab 4: Basalts
Week 4: Jan 27-31	Phase diagrams	Chapter 3 (Ehlers), Chapter 7 (Winter)		**Midterm I (Wed/Thurs, Jan 29-30)**	Lab 4: Basalts **Midterm I**
Week 5: Feb 3-7	Phase diagrams	Chapter 3 (Ehlers), Chapter 7 (Winter)	**Prob. Set 3: Due Thurs. (Feb 6)**		Lab 5: Plutons and Batholiths
Week 6: Feb 10-14	Chemical Petrology (trace elements and isotopes)	Chapters 8 & 9 (Winter)			Lab 6: Trace Element Geochemistry
Week 7: Feb 17-21	Chemical Petrology (trace elements and isotopes)	Chapters 8 & 9 (Winter)			University Holiday: No Lab Lab 7: Arc Volcanism
Week 8: Feb 24-28	Chemical Petrology (trace elements and isotopes)	Chapters 10, 13-15 (Winter)	**Prob. Set 4: Due Fri. Feb 28**	**Midterm II (W/Th Feb 26-27)**	**Midterm II** Stillwater Term Project
Week 9: Mar 2-6	Chemical Petrology (trace elements and isotopes)	Chapters 10, 13-15 (Winter)	**Prob. Set 5: Due Thurs. (March 5)**		Stillwater Term Project
Week 10: Mar 9-13	Applications and Case Studies	Chapters 10, 13-15 (Winter)			**Stillwater Term Project Due (Friday, March 13; 5 pm) NO LATE WORK ACCEPTED!**
Mar 16-20	**Final Exam - Wednesday, March 18, 10:30-12:30**				