

Professor: Dr. Hausrath
Office: SEB 4132
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Office Hours: M 2:30-3:30 and by appointment

Course Description:
 Introduction to the chemistry of geologic processes, including low-temperature aqueous geochemistry and petrogeochemistry. *Lecture.

Learning Outcomes:
 Upon completion of this course, students should be able to apply fundamental geochemical principles to a wide variety of geological and environmental problems, including aqueous geochemistry, chemical weathering, geochemical cycling, chemical pollution, isotopic applications, and others.

Text:
 Principles and Applications of Geochemistry by Gunter Faure 2nd Edition. Available through the bookstore.
 Additional readings will be available on Webcampus

Assessment: Assessment of the course objectives will be based on exams, assignments, and the final paper and project as listed below.

Grades:

Midterm exam	20%
Assignments (problem sets relating to the topics in each chapter)	25%
Discussion participation	10%
Final Exam	25%
Final paper and project	20%

Grade	Semester average	Grade	Semester Average
A	over 93	C	between 73 and 77
A-	between 90 and 93	C-	between 70 and 73
B+	between 87 and 90	D+	between 67 and 70
B	between 83 and 87	D	between 63 and 67
B-	between 80 and 83	D-	between 60 and 63
C+	between 77 and 80	F	less than 60

Tentative course schedule:

	Topic	Assignments due	In class exercises
8/23/2021	Introduction, Chapter 4, and introduction to Excel		
8/25/2021	Chapter 5		
8/30/2021	Chapter 6 and discussion	Homework due	discussion
9/1/2021	Chapter 7 Chemical Bonds, Ionic Radii and Crystals		
9/6/2021	NO CLASS Labor Day recess		
9/8/2021	Chapter 8 and discussion	Homework due	discussion
9/13/2021	Chapter 9 Acids and Bases		
9/15/2021	Chapter 9 Acids and Bases	Homework due	
9/20/2021	Chapter 10 Salts and their ions		
9/22/2021	Chapter 10 Salts and their ions and discussion	Homework due	discussion
9/27/2021	Chapter 11 Thermodynamics		
9/29/2021	Chapter 11 Thermodynamics		
10/4/2021	Review Day	Homework due	
10/6/2021	MIDTERM EXAM		
10/11/2021	Library Research Skills class (in library)		
10/13/2021	Chapter 12 Mineral Stability Diagrams + research integrity		
10/18/2021	Chapter 12 Mineral Stability Diagrams	Hand in a paragraph about your final project - what are you going to do?	
10/20/2021	Modeling class - in computer lab		
10/25/2021	Modeling class - in computer lab		
10/27/2021	Chapter 13 Clay Minerals and discussion		discussion
10/29/2021	FINAL DAY TO DROP THE CLASS		
11/1/2021	Chapter 14 Oxidation-reduction reactions		
11/3/2021	Chapter 14 Oxidation-reduction reactions		
11/8/2021	Chapter 15 Rates of Geochemical Processes	Homework due	
11/10/2021	Final presentations	Homework due	Final presentations
11/15/2021	Final presentations		Final presentations
11/17/2021	Final presentations		Final

			presentations
11/22/2021	No class- work on final papers		
11/24/2021	No class - work on final papers		
11/29/2021	Final presentations		Final presentations
12/1/2021	Review Day	Final Paper due	
12/6/2021	FINAL EXAM (COMPREHENSIVE) Monday DEC 6 1-3 pm		

Problem sets: Problems will be related to the material in each chapter. If problem sets are late, points will be deducted. **No problem sets will be accepted after answers have been gone over in class.**

Final Project: For the final project, you will be asked to apply a geochemical model to a geological, environmental, or biogeochemical problem of your choosing. I encourage you to find a problem of interest (from your research or career goals or a topic that interests you) and find an appropriate program for that type of problem. Multiple programs (e.g. PhreeqC) are available online. You should utilize the program, and then make an oral presentation and write a final paper about the program and your use of it to solve the problem. Your talk should explain your application of the program. Your final paper should describe how you used the code to solve your problem of interest, and should be entirely in your own words and correctly referenced – you will submit it through Turnitin. Please work on this throughout the semester – you will be asked to submit a paragraph describing what you intend to do partway through the semester, and we will have a class on Library Research Skills taught by the UNLV Science Librarian, Ms. Orozco. Please feel free to ask me for help at any point during the semester.

Exams: Exams will largely consist of problems similar to the homework assignments. The best way to study is to work problems, both the assigned problems and the problems at the end of each chapter. No makeup exams are allowed except under legitimate circumstances, and you must contact me *prior* to missing the exam.

Group work:

I encourage you to study together for this class, particularly for exams. For problem sets, since they are similar to problems that will be on exams, I recommend that you begin by trying to solve the problems independently without help from others. If after some effort you are not able to answer a question, please contact me for help. It is acceptable for you to discuss general approaches and concepts with other students. It is not acceptable to ask or tell someone how to answer a question, to show your work to another student or ask to see another student's work, or to copy another student's work.

It will help you to attend class daily, and take careful notes. It is also helpful to read the textbook before you come to class.

Student Responsibilities:

Students are responsible for: text material, participation in class; completion of all assignments on schedule and in proper format; attainment of a satisfactory level of achievement for the course.

Public Health Directives

Face coverings are mandatory for all faculty and students in the classroom. Students must follow all active UNLV public health directives while enrolled in this class. UNLV public health directives are found at [Health Requirements for Returning to Campus](https://www.unlv.edu/coronavirus/health-requirements), <https://www.unlv.edu/coronavirus/health-requirements>. Students who do not comply with these directives may be asked to leave the classroom. Refusal to follow the guidelines may result in further disciplinary action according to the [UNLV Student Conduct Code](https://www.unlv.edu/sites/default/files/page_files/27/StudentConduct-Code.pdf), https://www.unlv.edu/sites/default/files/page_files/27/StudentConduct-Code.pdf, including being administratively withdrawn from the course. Please sit in the same seat each class to facilitate contact tracing, and please self report here: https://unlv.co1.qualtrics.com/jfe/form/SV_1EQxswF9scaBtkx

Cell phones

Please turn your cell phones to vibrate or off.

Diversity Statement

As an institution of higher learning, UNLV represents a rich diversity of human beings among its faculty, staff, and students, and is committed to aspiring to maintain a Campus environment that values that diversity. Accordingly, the University supports understanding and appreciation of all members of its community, regardless of race, sex, age, color, national origin, ethnicity, creed, religion, disability, sexual orientation, gender, gender identity, marital status, pregnancy, genetic information, veteran status, or political affiliation. Please see University Statements and Compliance, <https://www.unlv.edu/about/statements-compliance>.

A successful learning experience requires mutual respect and trust between the students and the instructor. Accordingly, the instructor asks that students be willing to listen to one another's points of view, acknowledging that there may be disagreements, keep discussion and comments on topic, and use first person, positive language when expressing their perspectives.

Please see the Student Syllabus Policies Handout for select, useful information for students. This document can be found at: <https://www.unlv.edu/about/policies/current-policies>

I will plan to answer emails I receive regarding the class within 1 business day except under unusual circumstances (e.g. travel). Please contact me through Webcampus.

This syllabus is subject to change.