

Professor: Dr. Libby Hausrath
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Office Hours: M 12-1, T 11-12
WebCampus link: <https://webcampus.nevada.edu/webct/logon/851344741051>

Course Description:

Principles of aquatic geochemistry such as chemical thermodynamics, tableaux, and oxidation reduction and environmental organic geochemistry such as physicochemical properties of organic compounds and air/water/soil exchange of organic compounds for environmental studies. Concepts for practical environmental problems, geochemical modeling, and contaminant transport. Credit at the 600-level requires additional work.
 *Lecture.

Learning Outcomes:

Upon completion of this course, students should be able to quantitatively solve a wide variety of hydrogeochemical and environmental problems, including redox, the carbonate system, ion exchange, organic pollution, chemical weathering, and others.

Text:

Geochemistry, Groundwater and Pollution by C.A.J. Appelo and D. Postma 2nd Edition. Available through the bookstore here:
<http://unlv.bncollege.com/webapp/wcs/stores/servlet/TBWizardView?catalogId=10001&langId=-1&storeId=19074>

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	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:

Date	Topic	Assignments
1/15/2018	NO CLASS- MLK day recess	
1/17/2018	1. Introduction to Groundwater Geochemistry	
1/22/2018	2. From Rainwater to Groundwater	
1/24/2018	3. Flow and transport	HW #1
1/29/2018	3. Flow and transport	
1/31/2018	4. Minerals and Water	HW #2
2/5/2018	4. Minerals and Water	
2/7/2018	5. Carbonates and Carbon Dioxide	HW #3
2/12/2018	5. Carbonates and Carbon Dioxide	
2/14/2018	6. Ion Exchange	HW #4
2/19/2018	NO CLASS- Pres. day recess	
2/21/2018	6. Ion Exchange	
2/26/2018	Review	HW #5
2/28/2018	MIDTERM	
3/5/2018	Research skills class (library)	
3/7/2018	7. Sorption of Trace Metals	Hand in a paragraph about your final project
3/12/2018	7. Sorption of Trace Metals	
3/14/2018	8. Silicate Weathering	HW #6
3/19/2018	8. Silicate Weathering	
3/21/2018	Modeling class (Tec 113)	HW #7
3/23/2018	Last day to drop the class	
3/26/2018	SPRING BREAK - NO CLASS	
3/28/2018	SPRING BREAK - NO CLASS	
4/2/2018	NO CLASS - WORK ON PROJECTS	
4/4/2018	9. Redox Processes	reference assignment due
4/9/2018	9. Redox Processes	
4/11/2018	10. Pollution by Organic Chemicals	HW #8
4/16/2018	10. Pollution by Organic Chemicals	
4/18/2018	11. Numerical Modeling	HW #9
4/23/2018	11. Numerical Modeling	
4/25/2018	Final Presentations	
4/30/2018	Final Presentations	Final Paper due
5/2/2018	Review Day	
5/9/2018	FINAL EXAM WED (COMPREHENSIVE) May 9 3:10-5:10	

Problem sets: Problems will address topics from each chapter, and due dates are identified on the syllabus. If problem sets are late, points will be deducted.

Discussion: In most classes we will discuss examples and problems in class. You will be expected to participate in this discussion for 10% of your grade. I will drop two absences from your discussion grade; please talk to me if you are missing further discussion.

Final Project: For the final project, you will be asked to apply the geochemical code PhreeqC to a hydrogeochemical problem. You will be able to choose a topic that is of interest to you with my guidance. In order to help you choose the topic, we will have a workshop taught by the UNLV Science Librarian to teach research skills. You will then turn in a paragraph about your proposed topic, I will provide feedback, and then we will have a class in the computer lab to help everyone move forward on their project. You will also turn in a reference assignment that will help contribute to your final paper. You will make an oral presentation and write a final paper about your use of PhreeqC to solve the problem or your choice. Your talk (~12-15 min) and your final paper (5 pages) 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. The final project will be expected to be at the graduate level for students enrolled in 678. 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 and examples. The best way to study is to work the problems. 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.

Cell phones

Please turn your cell phones to vibrate or off.

Academic Misconduct – Academic integrity is a legitimate concern for every member of the campus community; all share in upholding the fundamental values of honesty, trust, respect, fairness, responsibility and professionalism. By choosing to join the UNLV

community, students accept the expectations of the Student Academic Misconduct Policy and are encouraged when faced with choices to always take the ethical path. Students enrolling in UNLV assume the obligation to conduct themselves in a manner compatible with UNLV's function as an educational institution.

An example of academic misconduct is plagiarism. Plagiarism is using the words or ideas of another, from the Internet or any source, without proper citation of the sources. See the *Student Academic Misconduct Policy* (approved December 9, 2005) located at: <http://studentconduct.unlv.edu/misconduct/policy.html>.

Copyright – The University requires all members of the University Community to familiarize themselves **with** and to follow copyright and fair use requirements. **You are individually and solely responsible for violations of copyright and fair use laws. The university will neither protect nor defend you nor assume any responsibility for employee or student violations of fair use laws.** Violations of copyright laws could subject you to federal and state civil penalties and criminal liability, as well as disciplinary action under University policies. Additional information can be found at: <http://www.unlv.edu/provost/copyright>.

Disability Resource Center (DRC) – The UNLV Disability Resource Center (SSC-A 143, <http://drc.unlv.edu/>, 702-895-0866) provides resources for students with disabilities. If you feel that you have a disability, please make an appointment with a Disabilities Specialist at the DRC to discuss what options may be available to you.

If you are registered with the UNLV Disability Resource Center, bring your Academic Accommodation Plan from the DRC to **the instructor** during office hours so that **you** may work together to develop strategies for implementing the accommodations to meet both your needs and the requirements of the course. Any information you provide is private and will be treated as such. To maintain the confidentiality of your request, please do not approach **the instructor** before or after class to discuss your accommodation needs.

Library Resources—Students may consult with a librarian on research needs. Subject librarians for various classes can be found here: https://www.library.unlv.edu/contact/librarians_by_subject. UNLV Libraries provides resources to support students' access to information. Discovery, access, and use of information are vital skills for academic work and for successful post-college life. Access library resources and ask questions at <https://www.library.unlv.edu/>.

Administrative Drops/Classroom Conduct

Any student that conducts themselves in a manner that is disruptive and interferes with the right of other students to learn or the instructor to teach will be administratively dropped from the class.

Recording Lectures

No electronic recording of lectures (audio, photography or video) will be allowed without the prior approval of the instructor.

Religious Holidays Policy—Any student missing class quizzes, examinations, or any other class or lab work because of observance of religious holidays shall be given an opportunity during that semester to make up missed work. The make-up will apply to the religious holiday absence only. It shall be the responsibility of the student to notify the instructor **within the first 14 calendar days of the course for fall and spring courses (excepting modular courses), or within the first 7 calendar days of the course for summer and modular courses**, of his or her intention to participate in religious holidays which do not fall on state holidays or periods of class recess. For additional information, please visit: <http://catalog.unlv.edu/content.php?catoid=6&navoid=531>.

Transparency in Learning and Teaching—The University encourages application of the transparency method of constructing assignments for student success. Please see these two links for further information:

<https://www.unlv.edu/provost/teachingandlearning>

<https://www.unlv.edu/provost/transparency>

Incomplete Grades - The grade of I – Incomplete – can be granted when a student has satisfactorily completed three-fourths of course work for that semester/session but for reason(s) beyond the student’s control, and acceptable to the instructor, cannot complete the last part of the course, and the instructor believes that the student can finish the course without repeating it. The incomplete work must be made up before the end of the following regular semester. If course requirements are not completed within the time indicated, a grade of F will be recorded and the GPA will be adjusted accordingly. Students who are fulfilling an Incomplete do not register for the course but make individual arrangements with the instructor who assigned the I grade.

Tutoring and Coaching—The Academic Success Center (ASC) provides tutoring, academic success coaching and other academic assistance for all UNLV undergraduate students. For information regarding tutoring subjects, tutoring times, and other ASC programs and services, visit <http://www.unlv.edu/asc> or call 702-895-3177. The ASC building is located across from the Student Services Complex (SSC). Academic success coaching is located on the second floor of the SSC (ASC Coaching Spot). Drop-in tutoring is located on the second floor of the Lied Library and College of Engineering TEB second floor.

UNLV Writing Center – One-on-one or small group assistance with writing is available free of charge to UNLV students at the Writing Center, located in CDC-3-301. Although walk-in consultations are sometimes available, students with appointments will receive priority assistance. Appointments may be made in person or by calling 702-895-3908. The student’s Rebel ID Card, a copy of the assignment (if possible), and two copies of any writing to be reviewed are requested for the consultation. More information can be found at: <http://writingcenter.unlv.edu/>

Rebelmail – By policy, faculty and staff should e-mail students' Rebelmail accounts only. Rebelmail is UNLV's official e-mail system for students. It is one of the primary ways students receive official university communication such as information about deadlines, major campus events, and announcements. All UNLV students receive a Rebelmail account after they have been admitted to the university. Students' e-mail prefixes are listed on class rosters. The suffix is always @unlv.nevada.edu. Emailing within WebCampus is acceptable.

Final Examinations – The University requires that final exams given at the end of a course occur at the time and on the day specified in the final exam schedule. See the schedule at: <http://www.unlv.edu/registrar/calendars>.

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

This syllabus is subject to change.