

# GEOL 340: Field Methods in Environmental Geology

## Spring 2022

### Welcome!

Welcome to GEOL 340! Having worked as an environmental geologist before coming to UNLV, I am excited to share my experience and knowledge with you. This class will build on your previous classes and expand your field skills to help you become employed as an environmental geologist after you are graduated from UNLV. This class will include lectures twice a week in the classroom and field days on Friday mornings. You will learn how to write detailed geologic reports and apply your geologic knowledge during hands-on field experiences to help you become a competitive applicant in the industry.

### Faculty Information and How to Contact Me:

**Faculty:** Dr. Alison Sloat (pronouns: she/her/hers)

**Office (Student) Hours:** If you have questions, I invite you to visit me in my office in MPE-A 133 during **office hours, a time I set aside specifically for your questions and concerns:** Mondays (M), Tuesdays (Tu), Wednesdays (W), and Thursdays (Th) from 11:30 am – 12:30 pm. You are also welcome to contact me outside of class and office hours. I teach every day until 11:15 am, and I am usually in my office in the afternoons. When my office door is open, you are welcome to stop in.

**Email:** [alison.sloat@unlv.edu](mailto:alison.sloat@unlv.edu)

**Office:** MPE-A 133 (down the hall from the College of Sciences Advising Center)

**Phone:** 702-895-1535

### Course Description:

An introduction to environmental field and analytical techniques for geologists including field sampling protocols, Phase I and II environmental site assessments, contaminant fate and transport evaluation, site remediation, and regulatory compliance. Includes the design and assessment of local environmental geology problems. Requires travel to local field sites and working outdoors. Prerequisite: GEOL 333. 4 Credits (3 credit lecture and 1 credit field study).

### Learning Outcomes:

Upon successful completion of this course, each student will be able to:

1. Complete Phase I and Phase II environmental site assessments in the field.
2. Design field sampling plans, in accordance with regulatory protocols, to assess potential sources of contamination in a geologic setting.
3. Safely and skillfully collect samples of water and soil.
4. Evaluate, analyze, and interpret groundwater, soil, and chemical sampling data results.
5. Recommend appropriate remediation techniques for common sources of soil, water, and groundwater contamination.
6. Prepare technical reports and sampling plans.
7. Analyze whether an observation, experimental result, or proposed explanation is consistent with a scientific hypothesis for a natural phenomenon and effectively communicate this analysis to others.

## What You Need for This Class:

For this class, you will need the following:

1. A mask. Your mask must always be worn over your nose and mouth while in class, which includes when we are assembled outside as a group. For safety reasons, there is no eating or drinking while inside the classroom. If you do not wear a mask or if you wear your mask incorrectly, you will be immediately dismissed from class, no exceptions.
2. Notebook (8.5" x 11" in size; an expensive Rite in the Rain notebook is unnecessary)
3. Clipboard (8.5" x 11" in size)
4. Pencils, pens (red, green, blue, purple pens/colored pencils optional, but recommended)
5. Small ruler
6. Closed-toe shoes (no flip-flops allowed in the field)
7. Hat
8. Water
9. Sunscreen
10. Sunglasses
11. Snack

## How to Succeed in This Class:

Everyone can succeed in this class if you do the following:

1. Arrive to class or to the field by 8:30 am each day. The class starts early at 8:30 am. Welcome to the life of a field geologist!
2. Prepare and make your maps the day before you need them in the field. Time is money in the consulting industry—the better prepared you are, the more efficiently you use your time in the field.
3. Gather your maps, documents, and field supplies, including appropriate footwear, the night before so that you are not rushing around in the morning. Make a checklist!
4. When out in the field, listen to and follow directions. You are an ambassador for UNLV. Trespassing, climbing of fences, destruction of property and/or natural surroundings will not be tolerated and are grounds for immediate dismissal from the course.
5. Listen, take notes, and participate in class so that you can do well on your weekly reports.
6. When out in the field, work with a partner. It's safer, you'll learn more, and it's fun.
7. Write your own reports and turn them in. Plagiarism will not be tolerated.
8. Do not use your phone/tablet/laptop in class.
9. Read my comments and edits on your reports and exercises.
10. Ask questions if you do not understand something or if you need clarification.
11. Check your RebelMail/WebCampus at least once per day for announcements/field schedule changes.

## Grading Policy:

Grade	Semester Total Points	Grade	Semester Total Points
A	651-700	C	511-545
A-	630-650	C-	490-510
B+	616-629	D+	476-489
B	581-615	D	441-475
B-	560-580	D-	420-440
C+	546-559	F	419 and lower

## **Assignments:**

100 Points	Phase I Environmental Site Assessment
150 Points	Phase II Sampling and Analysis Plan
100 Points	Remedial Action Plan
250 Points	Homework Problems and Field Exercises
100 Points	Research Poster Project and Presentation

*Note: No makeup assignments will be allowed without an authorized university excuse.*

### ***Research Poster Project and Presentation (100 points)***

You will complete a research analysis poster project and brief presentation on a local environmental geology problem. Research topics will be discussed during the first week of the course. You will be responsible for using the resources and field techniques learned in class to collect background information on the site, analyze the problem, plan and conduct a site assessment, and make recommendations for potential remediation. This project will require you to apply what you have learned in class and the field while thinking critically about the problem. You will create a scientific poster that you will present during a poster session during the last week of class, a skill that you will use in your career when presenting remediation plans to the general public.

### ***Field Reports and Sampling Plans (350 points)***

Throughout the class, you will prepare technical reports, plans, and specifications on your field findings and laboratory results. This is an important skill you will need when entering the environmental geologic consulting field.

### ***Homework Problems and Field Exercises (250 points)***

Homework problems and field exercises will be assigned to reinforce topics discussed in class (UULO 1 through 5). It is important that you attend class each day to complete and discuss the assignments. There will be no makeup assignments.

## **WebCampus:**

This course will utilize WebCampus for communicating, course handouts, and posting of grades. To access WebCampus, go to <https://www.it.unlv.edu/webcampus>. On the [WebCampus](#) page, click Log on to WebCampus; the log in page has instructions regarding your username and password.

## **Attendance**

Because of the interactive nature of this course, your attendance and participation are necessary. The course includes lectures, discussions and activities, guest speakers, and other class projects. It is impossible for you to complete the work if you do not come to class. Each student is responsible for attending every classroom and field session. Prior to each class, please complete all assignments.

**Lecture, Field, and Assignment Schedule – subject to change at the instructor’s discretion because of field/weather conditions**

<i>Week</i>	<i>Date</i>	<i>Topic</i>	<i>Assignment Due</i>
1	1/19/22	Introduction	
	1/21/22	Field Safety, Notes, Procedures, and Billing – Meet outside LFG Building	
2	1/24/22	Phase I Environmental Site Assessments	Phase I ESA Bid
	1/26/22	Phase I ESA Field Site Visit Preparation	
	1/28/22	LFG Phase I ESA – Meet outside LFG	Phase I ESA Exercise (15 Points)
3	1/31/22	Figure and Map Design	
	2/2/22	Phase II Site Assessments	Phase I ESA Report (100 Points)
	2/4/22	LFG Phase II ESA – Meet outside LFG	Phase II ESA Exercise (15 Points)
4	2/7/22	Well Drilling and Design	
	2/9/22	Core Logging	
	2/11/22	Lithologic Descriptions – Meet outside LFG	Lithologic Description Exercise (15 Points)
5	2/14/22	Well Completion and Development	Well Exercise (15 Points)
	2/16/22	Environmental Contaminants	
	2/18/22	Well Construction and Core Logging – Meet outside LFG	Well Construction Exercise (15 Points)
6	2/21/22	EPA Contaminant Regulations	Phase II ESA LVW Exercise (15 Points)
	2/23/22	Contaminant Testing	
	2/25/22	Phase II ESA – Meet at Symphony Park (SP)	
7	2/28/22	Groundwater Contamination	Phase II ESA SP Exercise (15 Points)
	3/2/22	Soil Contamination	
	3/4/22	Phase II ESA – Meet at Las Vegas Wash	
8	3/7/22	Groundwater Monitoring	Phase II ESA LVW Exercise (15 Points)
	3/9/22	Surface Water Monitoring	
	3/11/22	Site Monitoring – Meet at Las Vegas Wash	LV Wash Exercise (15 Points)
9	Spring Break – No Classes		
10	3/21/22	Landfills	
	3/23/22	Soil Gas Monitoring	
	3/25/22	Sampling Methods – Meet outside LFG	Sampling Exercise (15 Points)
11	3/28/22	Air Quality Monitoring	SP Sampling and Analysis Plan (150 Points)

	3/30/22	Remediation	
	4/1/22	Site Remediation – Meet at Cornerstone Park	Cornerstone Remediation Exercise (15 Points)
12	4/4/22	Soil Remediation	
	4/6/22	Groundwater Remediation	
	4/8/22	Site Remediation – Meet at Symphony Park	SP Remediation Exercise (15 Points)
13	4/11/22	Analyzing Results	
	4/13/22	Confirmation Sampling	Poster Presentation Site Selection
	4/15/22	Site Remediation – Meet at Las Vegas Wash	LV Wash Remediation Exercise (15 Points)
14	4/18/22	Poster Projects	
	4/20/22	Poster Presentations	
	4/22/22	Tour - TBD	Remediation Exercise (40 Points)
15	4/25/22	Poster Presentations – Amargosa Room in Library	Poster (100 Points)
	4/27/22	Poster Presentations – Amargosa Room in Library	
	4/29/22	GeoSymposium	
16	5/2/22	Interviewing	Cover Letter and Resume (15 Points)
	5/4/22	Career Advice	SP Remedial Action Plan Report (100 Points)
	5/6/22	Tour - TBD	

## University Policies

### *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](https://www.unlv.edu/sites/default/files/page_files/27/StudentConduct-Code.pdf), including being administratively withdrawn from the course.

### *Academic Misconduct*

Academic integrity is a legitimate concern for every member of the University community. We 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 to always take the ethical path whenever faced with choices. Students enrolling at UNLV assume the obligation to conduct themselves in a manner compatible with UNLV's educational mission. An example of academic misconduct is plagiarism. Plagiarism is using the words or ideas of another person, from the Internet or any other source without proper citation of the source(s). See the [Student Conduct Code](https://www.unlv.edu/studentconduct/student-conduct), <https://www.unlv.edu/studentconduct/student-conduct>.

### ***Auditing a Course***

Auditing a course allows a student to continue attending the lectures and/or laboratories and discussion sessions associated with the course, but the student will not earn a grade for any component of the course. Students who audit a course receive the same educational experience as students taking the course for a grade, but will be excused from exams, assessments, and other evaluative measures that serve the primary purpose of assigning a grade.

### ***Classroom Conduct***

Students have a responsibility to conduct themselves in class and in the libraries in ways that do not interfere with the rights of other students to learn, or of instructors to teach. Use of devices such as cellular phones and pagers, or other potentially disruptive activities are only permitted with the prior explicit consent of the instructor. Students are specifically prohibited to record classes without instructor authorization, including online/remote classes (either audio only, or video and audio). The instructor may rescind permission at any time during the class. If a student does not comply with established requirements or obstructs the functioning of the class, the instructor may initiate an administrative withdrawal of the student from the course.

Since the COVID-19 pandemic forced some instruction to be delivered remotely starting in Spring 2020, numerous students have asked instructors to record their synchronous classes, so that they can access them at their convenience. Instructors who agree to record their classes (audio only, or video and audio) should inform students in advance. Recorded lectures may not be broadly released to anyone, but made available exclusively to those students enrolled in the class during the particular academic term. Recorded lectures must be stored securely, and are subject to the Nevada System of Higher Education's Records Retention Policy, meaning that the recordings can only be deleted 120 days after the end of class (i.e., after grades are posted). Once this requirement is met, the recordings should be deleted. Class recordings are protected from disclosure, as they are deemed part of an educational record under the Family Educational Rights and Privacy Act (FERPA).

### ***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 student or employee 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 [copyright policy information](https://www.unlv.edu/provost/copyright) is available at <https://www.unlv.edu/provost/copyright>.

### ***Disability Resource Center (DRC)***

The [UNLV Disability Resource Center](https://www.unlv.edu/drc) (Student Services Complex, SSC-A, Room 143, <https://www.unlv.edu/drc>, telephone 702-895-0866) provides resources for students with disabilities. Students who believe that they may need academic accommodations due to a permanent disability, temporary or permanent medical need, or academic support due to pregnancy are encouraged to contact the DRC as early as possible in the academic term. A Disabilities Specialist will discuss what options may be available to you. Students who are already registered with the DRC should request their accommodations online each semester, and make an appointment to discuss their accommodations with their instructors.

### ***Final Examinations***

The University requires that final exams given at the end of a course occur on the date and at the time specified in the Final Exam schedule. The Final Exam schedule is typically available at the start of the semester, and the classroom locations are available approximately one month before the end of the semester. See the [Final Exam Schedule](https://www.unlv.edu/registrar/calendars), <https://www.unlv.edu/registrar/calendars>.

### ***Identity Verification in Online Courses***

All UNLV students must use their Campus-issued ACE ID and password to log in to WebCampus-Canvas.

UNLV students enrolled in online or hybrid courses are expected to read and adhere to the [Student Academic Misconduct Policy](https://www.unlv.edu/studentconduct/misconduct/policy), <https://www.unlv.edu/studentconduct/misconduct/policy>, which states that “acting or attempting to act as a substitute for another, or using or attempting to use a substitute, in any academic evaluation or assignment” is a form of academic misconduct. Intentionally sharing ACE login credentials with another person may be considered an attempt to use a substitute, and could result in investigation and sanctions, as outlined in the Student Academic Misconduct Policy.

UNLV students enrolled in online courses are also expected to read and adhere to the [Acceptable Use of Computing and Information Technology Resources Policy](https://www.it.unlv.edu/policies/acceptable-use-computing-and-information-technology-resources-policy), <https://www.it.unlv.edu/policies/acceptable-use-computing-and-information-technology-resources-policy>, which prohibits sharing university accounts with other persons without authorization.

To the greatest extent possible, all graded assignments and assessments in UNLV online courses should be hosted in WebCampus-Canvas or another UNLV-managed platform that requires ACE login credentials for access.

### ***Incomplete Grades***

The grade of “I” (Incomplete) may be granted when a student has satisfactorily completed three-fourths of course work for that semester/session, but cannot complete the last part of the course for reason(s) beyond the student’s control and acceptable to the instructor, and the instructor believes that the student can finish the course without repeating it. For undergraduate courses, the incomplete work must be made up before the end of the following regular semester. Graduate students receiving “I” grades in 500-, 600-, or 700-level courses have up to one calendar year to complete the work, at the discretion of the instructor. If course requirements are not completed within the period indicated, a grade of “F” will be recorded, and the student’s GPA will be

adjusted accordingly. Students who are fulfilling an Incomplete grade do not register for the course, but make individual arrangements with the instructor who assigned the “I” grade.

### ***Library Resources***

Librarians are available to consult with students on research needs, including developing research topics, finding information, and evaluating sources. To make an appointment with a subject expert for this class, please visit the [Libraries’ Research Consultation](https://guides.library.unlv.edu/appointments/librarian) website, <https://guides.library.unlv.edu/appointments/librarian>. You can also [ask the library staff](https://ask.library.unlv.edu/) questions via chat and text message at <https://ask.library.unlv.edu/>.

### ***Missed Classwork***

Any student missing class, quizzes, examinations, or any other class or laboratory work because of observance of religious holidays will be given an opportunity during that semester to make up the missed work. The make-up opportunity will apply to the religious holiday absence only. It is the responsibility of the student to notify the instructor within the first 14 calendar days of the course for Fall and Spring courses (except for modular courses), or within the first 7 calendar days of the course for Summer and modular courses, of their intention to participate in religious holidays which do not fall on state holidays or periods of class recess. For additional information, please visit the Missed Classwork policy, under Registration Policies, on the [Academic Policies](https://catalog.unlv.edu/content.php?catoid=32&navoid=8271&hl=) webpage, <https://catalog.unlv.edu/content.php?catoid=32&navoid=8271&hl=>.

In accordance with the policy approved by the Faculty Senate regarding missed class time and assignments, students who represent UNLV in any official extracurricular activity will also have the opportunity to make up assignments, provided that the student submits official written notification to the instructor no less than one week prior to the missed class(es).

The spirit and intent of the policy for missed classwork is to offer fair and equitable assessment opportunities to all students, including those representing the University in extracurricular activities. Instructors should consider, for example, that in courses which offer a “Drop one” option for the lowest assignment, quiz, or exam, assigning the student a grade of zero for an excused absence for extracurricular activity is both contrary to the intent of the Faculty Senate’s policy, and an infringement on the student’s right to complete all work for the course.

This policy will not apply in the event that completing the assignment or administering the examination at an alternate time would impose an undue hardship on the instructor or the University that could be reasonably avoided. There should be a good faith effort by both the instructor and the student to agree to a reasonable resolution. When disagreements regarding this policy arise, decisions can be appealed to the Department Chair/School Director, College/School Dean, and/or the Faculty Senate Academic Standards Committee.

For purposes of definition, extracurricular activities may include, but are not limited to academic recruitment activities, competitive intercollegiate athletics, fine arts activities, liberal arts competitions, science and engineering competitions, and any other event or activity sanctioned by a College/School Dean, and/or by the Executive Vice President and Provost.



### ***Rebelmail***

Rebelmail is UNLV's official email system for students and by University policy, instructors and staff should only send emails to students' Rebelmail accounts. Rebelmail is one of the primary ways in which students receive official University communications, information about deadlines, major Campus events, and announcements. All UNLV students receive a Rebelmail account after they have been admitted to the University. Emailing within WebCampus-Canvas is also acceptable. **Emailing within WebCampus is acceptable. When emailing the instructor, please include a professional greeting, your name, the class section and/or day/time of your class, a polite note addressing the subject of your email, and a courteous valediction.**

### ***Tutoring and Coaching***

The Academic Success Center (ASC), at the Claude I. Howard Building, 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, please visit the [ASC website](https://www.unlv.edu/asc), <https://www.unlv.edu/asc>, or call 702-895-3177. The ASC is located across from the Student Services Complex (SSC). Academic success coaching is located on the second floor of SSC A, Room 254. Drop-in tutoring is located on the second floor of the Lied Library, and on the second floor of the College of Engineering building (TBE A 207).

### ***UNLV Writing Center***

One-on-one or small group assistance with writing is available free of charge to UNLV students at the [Writing Center](https://writingcenter.unlv.edu/), <https://writingcenter.unlv.edu/>, located in the Central Desert Complex, Building 3, Room 301 (CDC 3-301). Walk-in consultations are sometimes available, but students with appointments receive priority assistance. Students may make appointments in person or by calling the Center, telephone 702-895-3908. Students are requested to bring to their appointments their Rebel ID Card, a copy of the instructions for their assignment, and two copies of any writing they have completed on their assignment.

### ***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), <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.

### ***UNLV Land Acknowledgement***

UNLV is situated on the traditional homelands of Indigenous groups, including the Nuwu or Nuwuvi, Southern Paiute People, descendants of the Tudinu, or Desert People. We honor and

offer gratitude for those who have stewarded the land; for the land itself; and for the opportunity to cultivate a thriving, diverse, inclusive, and just scholarly community here today that works for a better tomorrow for all.

### ***Campus Resources***

UNLV has a variety of resources and services intended to assist students and our local community with their academic, financial, and personal needs. [The Intersection](https://www.unlv.edu/intersection/campus-resources), <https://www.unlv.edu/intersection/campus-resources>, has many resources for First-Generation, minority, LGBTQ, DACA, Justice Impacted, Veteran, foster, and food and/or housing insecure students. [Campus Life](https://www.unlv.edu/campuslife/student-support), <https://www.unlv.edu/campuslife/student-support>, provides additional information about student support services including the UNLV Food Pantry hours, reduced-cost bus passes, childcare resources, technology loan programs, and counseling and psychological services.

### ***Emergency Funding***

The [S.O.S Emergency Relief Fund](https://www.unlv.edu/campuslife/sos-fund), <https://www.unlv.edu/campuslife/sos-fund>, may help provide financial assistance to students who experience unexpected emergency situations.