Field Studies in Geology

GEO - 2350 001

Schedule

Class Schedule:

Lab 1: Thursday, Aug. 28, 1:00 to 4:00 – Syllabus, schedule, field book documentation, select topics for oral presentations, training on the XRF and water quality meters.

Field Trip 1, Friday, Sept. 12, 9:00 am to 5:00 pm: Big Cottonwood Canyon - many stops along the way ending at Guardsman pass, G. K. Gilbert Geologic View Park, and ending in the lower half of Little Cottonwood Canyon.

Field Trip 2, Friday, Sept. 19, 9:00 am to 5:00 pm: Upper Little Cottonwood Canyon (Albion Basin) - hike in Albion Basin and Cecret Lake, soil sampling and mine waste delineation with hand-held XRF analyzer and GPS mapping on the trail to Cardiff Pass.

Field Trip 3, Friday, Sept. 26, 9:00 am to 5:00 pm: The Wasatch Back - Park City Spiro Tunnel, Sunrise Rotary Regional Geologic Park, Keetley Volcanics along Coyote Trail, Snake Creek drain tunnel in Wasatch Mountain State Park (WMSP), Homestead Crater, WMSP road stops and Cascade Spring, Mount Timpanogos via Alpine Loop Road and American Fork Canyon. Regroup and end the trip at Summit/Horse Flat Trailhead.

Field Trip 4, Friday, Oct. 3, 9:00 am to 5:00 pm: Wasatch Fault in Salt Lake Valley – fault scarps at GK Gilbert Park, urban developments on fault at the mouth of BCC, fault springs, measure scarp in a residential neighborhood with level meters, Warm Springs Fault.

Lab 2: Thursday, Oct 9, 1:00 to 4:00 - Jordan River field sampling and training on the use of water quality meters and GPS mapping using Survey 123 App.

Lab 3: Thursday, Oct. 23, 1:00 to 4:00 – In the GIS lab, map the Jordan River or Little Cottonwood field data collected by the class.

Make-Up Field Days, Friday, Oct. 10 and Friday, Oct 24. – Save these dates on your calendars in case a field day is canceled.

Lab 4: Thursday, Nov. 6, 1:00 to 4:00 – Work on your research project in geology and/or GIS lab

Lab 5: Thursday, Nov. 20, 1:00 to 4:00 - Work on your research project in geology and/or GIS lab

Lab 6: Thursday, Dec. 4, 1:00 to 4:00 – Final research poster due and 10-minute oral presentation of your poster to the entire class.

Course Description

Prereq: Instructor approval. This course is a field- and/or laboratory-based course that focuses on field identification of earth materials (rocks, minerals, and fossils), structures (faulting and folding), surficial deposits (such as landslides and mine waste piles), and geomorphic landforms. Soil and water may be collected for geologic and chemical analysis and compared to environmental benchmarks.

Semester: All

Course Student Learning Outcomes

- Perform field identification of rocks, minerals, fossils, faults, structures, and geomorphic landforms.
- Perform field documentation including strike and dip measurements, field notes, GPS readings, and/or make hard copy or electronic geologic maps.
- Evaluate the geologic history of a field area.
- Correlate the geologic history of the area with significant geologic events in the Western Cordillera.
- Conduct field sampling using standard operating procedures.

Transfer/Certification/Licensure/Employment Information

This course articulates to Geo 2500 Wasatch in the Field at the University of Utah.

Engagement Plan

Engagment will be during the 6 three-hour labs and 4 Friday field trips. And any Open Lab time or office hour needed for research project help.

All students will need to download Microsoft Teams on their phones and computers and login with their SLCC credentials. Reearch project collaboration will done in Teams.

Keys for Success (how to succeed in the course)

- Attendance: Come to every class and come on time. Treat school like work.
- Don't miss any trips or labs.
- Go the extra mile on your topic summaries and practice your presentations.
- Go the extra mile on your research projects and ask me lots of questions weekly about it.
- Professional behavior: I expect students to conduct themselves professionally. This means coming to class on time, being respectful of other student's questions and comments, and not talking when someone else has the floor. If you cannot respect these policies, then you may be asked to withdraw from the course and/or be dropped. Coming in late is disruptive to the other students and important announcements are covered in the first few minutes of class.
- Talk to your instructor at any time or during office hours about how to succeed in this course and improve your study skills.

Academic Integrity

Everything you write in college has to be your own words. Many students graduate from college without learning what they need to and end up in a job that doesn't require a college degree. Employers need students to learn how to read, write, critically think, solve problems, organize information and work load, and do quantitative analysis. They way

students make sure they are devloping those skills so they can compete in the work place is to read and write everything yourself in college. When you professor assigns 10 math problems from the book, you should do 12. When your professor asks you to read the book and take hand written notes, do it and budget 3 hours per chapter for it.

About 30% of what is generated by AI is wrong. All AI generated content is suspect and needs to be verified. Don't ask AI to write somethign for you and copy and paste it, unless you don't like money and or career/life choices (and everyone likes money and choices).

Being successful boils down to this: show up every day, show up early, when they say do 10 - you do 12, hand write everything your professor and readings say, read and follow assignment instructions, never turn anything in late or incomplete (stay up all night if you have to), and follow thier suggestions. You pay them for thier wisdom - take it.

Additional Policies

Electronics Policy

- All electronic devices such as phones, laptops, and tablets are not allowed during lectures. During the lecture, students will practice taking hand-written notes.
- During activities and labs, or other special discussion topics, I encourage you to use your electronic devices to explore concepts.

Missed Due Dates Policy:

- Late labs will be accepted but may be marked down if very late.
- There are only two lab exams, and make up lab exams will be marked down 20 points per calendar day late starting at the regular exam time. So, if the late exam is taken the same day but late, then 20 points will be taken off.

Attendance Policy:

- Regular and prompt attendance is expected at all classes. Regular attendance and consistent study habits are necessary for success in college.
- Attendance will be taken verbally at the beginning of class.
- Attendance is required at least once during the first week of class, otherwise, the student may be dropped from the class.

- You must come to class on time. Coming in late is highly disruptive.
- It is the student's responsibility to drop the class if they are no longer interested in remaining in the course.

Incomplete Grades

Incomplete Grade and Withdraw from Class: A grade of "I" (Incomplete) is the instructor's option and is not given except only in the most extenuating of circumstances for which there is verifiable written documentation. To receive an incomplete, nearly all coursework must have been completed (e.g. ~75%) with a passing grade. It is the responsibility of the student to drop/withdraw from this class, not the instructor.

Required Text or Materials

Title: N°540F Geological Hard Cover
Subtitle: by Rite in the Rain

For more information on textbook accessibility, contact Accessibility & Disability Services at ads@slcc.edu.

Brief Description of Assignments/Exams

Specific Course Description For this field course students will investigate the local geology of the Wasatch Range in Little Cottonwood Canyon, Big Cottonwood Canyon, Wasatch Mountain State Park, Park City, Heber Valley, and the Jordan River. We will spend 4 days driving roads, and hiking trails, making observations, and collecting real data in the field to investigate geologic problems. This field data may include the collection of 1) soil samples to be analyzed for heavy metals in the field using a hand-held x-ray fluorescence (XRF) analyzer and 2) water samples for analysis for water quality parameters such as dissolved oxygen (DO) and acidity (pH). Students will learn about the local geology, give mini-presentations on chosen topics in the field, learn how to use the XRF analyzer, water quality meters, and GPS device, and map the data using GIS. Lab class time will be spent learning how to use the field tools, preparing for your mini-field presentations, and analyzing data. These are resume-builder skills and look good to employers and transfer institutions.

Everyone will do an independent research project that generates new knowledge and contributes to science. Students may choose from a list of suggested projects or develop their own with my help. Some students may want to use the data we collect during the weekend field trips as the foundation of their research project. Others may want to use these new field analysis skills to go collect new and unique data (such as metals in soil and water quality in a different river) to solve a problem that they have identified. In all cases, students will work with their professor to develop their hypothesis or research question and develop a plan for how to test it. Data will be collected in the field and analyzed in the lab and mapped in GIS. Students will read about their topics in the literature and interpret their results. The results of their research will be made into a poster that students will present on the last day of class (Lab 6) and each student will give a 10-minute talk on it to the class. Further, students can expand on this work, improve their poster, and present it at the SLCC Science Symposium. This type of independent work looks good to transfer institutions and employers and can lead to internships.

Assignments:

- Six Lab Days: During lab days, students will conduct activities in class.
- Four field days – During the field days, students will take notes, give mini-oral presentations, and collect sample results.
- Field Book: During the field days, students will document their observations, make sketches, and make interpretations of geologic phenomena in their field notebooks at each site visited. The field book will be collected at the end of each day to be graded at night. Each site we visit will have an assigned number. Put this number in a box so that it is easy for me to find. At each site include the following:
    - Name of site and number like “Stop 1” and other location information such as highway number, name of the lake, visitor center name, or other identifying features so you could find the site again.
    - Your geologic observations and the observations of the group.
    - Any interpretations you have made or were made by the group.
    - Descriptions of any rocks, minerals, landforms, etc.
    - Potentially sketches of any landforms or other geologic phenomena.
    - Each day should start with a new page with the following information at the top: Date, project name (Teton-Yellowstone Field Trip), weather, and locations

visited that day (such as GTNP). Document everything and don't rely on your memory.

- When we are collecting soil or water data, students will record data in their field books in the form of a table.

Written Summaries of Topics – Each student will choose two topics from the provided list at our first meeting. Students will do informal research on these topics before the field trip and become a mini-expert on the subject. Students will then write up a 1- to 2-page summary of each topic, single-spaced, 10- to 12-size Times New Roman font, and one-inch margins. At least one source is needed for each topic and should be listed at the bottom under the heading "References". Additional pages may include figures, pictures, maps, diagrams, charts, or graphs. Everyone should include at least one figure per topic. Students will submit written summaries to me electronically by uploading an MS Word document via an assignment created on the Canvas class page for Geo 2350. I will compile these topics together and print packets in black and white for each student so everyone will have a packet of all the summaries. Sources: Students will use web resources and/or campus library databases as sources. Although this research is informal, meaning that you can use anything you can find, try to keep the sources high quality. Published articles are best, sources from the Utah Geological Survey or United States Geological Survey are good. Books on reserve in the library for geology are an excellent source of information (see the list below). Whatever sources you choose, just keep track and cite your sources within the text and in a References section at the end using APA or Chicago Author-Date citation styles.

Oral Presentations of Topics – Before the field trip, each student will make bulleted talking points of their written summaries of topics, and put these in their field book for easy access during the field trip. The talking points need to be in the field book so that students are prepared to present a 10-minute oral presentation on each of their topics when we reach a site with content related to the topic. Grades will be based on thoroughness and depth. Evaluation will consider the previous experience of each student. Some students have had 3 or 4 geology classes and others none, so the expectations will vary depending on the student. Students should practice giving oral presentations to their peers before the field trip.

Final Project – Each student will submit a research poster and a 10-minute talk on the last day of class.

Assignment Schedule

Due Date	Assignment Name	Assignment Type	Points
	Introduce Yourself	Discussion	0
8/28/25	Introduce Yourself	Discussion	5
8/28/25	Lab 1 - Introduction and Topics Sign-Up	Assignment	10
9/10/25	Field Trip Topic Written Summary 1	Assignment	20
9/12/25	Field Trip 1 - BCC	Assignment	40

Grading Scale

Grading Scale and Distribution:

Field Books 120points (40 points for each field day)

Labs Days 50 points (10 each for 5 labs)

Written Summaries 40 points (20 points each for depth of research, clarity and focused writing, cited sources, good figures, turned in on time)

10-minute Oral Presentations in the Field 40 points (20 points for each presentations. Grades based on depth of research, clarity, and preparedness)

Final Project Paper 100 points

Poster 40 points

PowerPoint Presentation 40 points

Total Points 430 points

How to Navigate to Canvas

Institutional Policies

As members of our academic community, we would like to invite you to review the Institutional Syllabus which covers important policies and procedures. This document contains important links for students on the code of student rights and responsibilities, academic integrity, and grading policies, Title IX and other important acknowledgements. By familiarizing yourself with this information, you can help us create a safe and respectful environment for everyone.

For more information, navigate to the Institutional Policies tab on the Institutional Syllabus page.

Learning Support and Tutoring Services

We are pleased to offer a range of tutoring and learning support services to help you achieve your academic goals. Whether you need assistance with a specific subject or want to improve your study skills, you have many options for tutoring or other support.

To learn more about the services we offer and how to access them, visit the Institutional Syllabus page under the Tutoring and Learning Support tab. We encourage you to take advantage of these resources to help you succeed in your studies. If you have any questions or would like to schedule a tutoring session, please don't hesitate to reach out to us. We are here to support you in any way we can.

Advising and Counseling Support Services

At our institution, we are committed to supporting your academic and personal growth. That's why we offer a range of advising and counseling services to help you navigate the challenges of college life. To learn more about the resources available to you and how to access them, visit the Institutional Syllabus page under the Advising and Counseling Support Services tab. Our advising team and the support centers across campus are here to support you in achieving your goals and overcoming any obstacles you may face.

Student Academic Calendar

As students you should be aware of all important dates in the semester, such as the day that courses begin and end, as well as the drop date and the last day to withdraw. To learn more about those dates, navigate to the Student Academic Calendar below:

SLCC Student Academic Calendar