

PTYS 594A: Planetary Geology Field Studies

Kuiper 312: Fridays from 3:00 pm to 5:00 pm

Description of Course

The acquisition of first-hand experience with geologic processes and features, focusing on how those features/processes relate to the surfaces of other planets and how accurately those features/processes can be deduced from remote sensing data. This is a three- to five-day field trip to an area of geologic interest where each student gives a short presentation to the group. This trip typically involves camping and occasional moderate hiking; students need to supply their own camping materials. Students may enroll in the course up to 10 times for credit. Field trips are led by a Planetary Sciences faculty member once per semester. Alternative grading (SPF).

This semester (Fall 2019) the destination of the field trip will be to the Zuni-Bandera Volcanic Field in New Mexico, led by Dr. Christopher Hamilton. The field trip duration will be five days.

Course Prerequisites or Co-requisites

The course is intended for students Department of Planetary Sciences (PTYS) Graduate Program. Students outside of PTYS must obtain consent from the Instructor, Dr. Christopher Hamilton, prior to registering for the course. The course itself has no prerequisites. However, students will be required to undertake light hiking to access outcrops for field-based observations. If there are any reservations or concerns regarding such hikes, students should contract the Instructor. Participation in the field trip is required to obtain a passing grade of S or P.

Instructor and Contact Information

Instructor: Dr. Christopher Hamilton

Instructor's Office Location: Kuiper 430

Instructor's Telephone Number: +1-301-305-3818

Instructor's E-mail address: hamilton@lpl.arizona.edu

Office Hours: By Appointment

Course Website: "Desire2Learn" (D2L)

Course Format and Teaching Methods

Course information will be made available through D2L with planning sessions held prior to the field trip on August 30, October 4, and October 11. The field trip itself will be held on October 18-22, subject to final discussion to ensure that

there are not other major events that conflict with the proposed field trip dates. A post-field trip meeting will be held on October 25. Students are expected to complete a research report prior to leaving for the field (i.e., on or before October 11) and present the report during the field trip. Students are also expected to take field notes to document their observations of relevant geological outcrops. Teaching methods will therefore include a combination of in-class lectures and fieldwork, with students being required to participate in both of these activities.

Course Objectives

The objective of the course is for students to develop skills related to geological observation and description, linking their understanding of terrestrial geology with the remote sensing of planetary surfaces. Additional learning outcomes include developing an improved understanding of geological, geophysical, and geochemical processes relevant to the study of planetary bodies.

Expected Learning Outcomes

Students will learn techniques for collecting field-based techniques including basic geological descriptions of geologic outcrops as well as advanced methods of measurement. Additionally, students will learn about fundamental geological surface processes related to volcanology, sedimentology, and tectonics. These skills and knowledge-based outcomes are applicable to both Earth and Planetary Sciences. Students will also learn about field safety and how to develop research plans to develop and test hypotheses related to geology.

Absence and Class Participation Policy

Assignments are due at the beginning of class on (or before) the due date. If an assignment is due, you are responsible for turning it in, even if you are absent from class. Late work will generally not be accepted without preapproval from the Instructor. Absences for university-approved activities for which you have in advance a note of dean's approval will be excused, or other arrangements will be made. If you will be absent due to a religious holiday, please let me know in advance. Absences for other reasons will not be excused unless special dispensation was received prior to the deadline.

The UA's policy concerning Class Attendance, Participation, and Administrative Drops is available at: <http://catalog.arizona.edu/policy/class-attendance-participation-and-administrative-drop>

The UA policy regarding absences for any sincerely held religious belief, observance or practice will be accommodated where reasonable, <http://policy.arizona.edu/human-resources/religious-accommodation-policy>.

Absences pre-approved by the UA Dean of Students (or Dean Designee) will be honored. See: <https://deanofstudents.arizona.edu/absences>

Participating in the course and attending lectures and other course events are vital to the learning process. As such, attendance is required at all lectures and discussion section meetings. Absences may affect a student's final course grade. If you anticipate being absent, are unexpectedly absent, or are unable to participate in class online activities, please contact me as soon as possible. *To request a disability-related accommodation to this attendance policy, please contact the Disability Resource Center at (520) 621-3268 or drc-info@email.arizona.edu.* If you are experiencing unexpected barriers to your success in your courses, the Dean of Students Office is a central support resource for all students and may be helpful. The Dean of Students Office is located in the Robert L. Nugent Building, room 100, or call 520-621-7057.

Makeup Policy for Students Who Register Late

Students registering late for the course will have the opportunity to select a field trip research topic after August 30, but will be required to participate in lectures and training exercises on October 4 and 11 and complete their field report on time (i.e., on or before October 11).

Course Communications

Lectures, homework assignments and general information related to the course will be available online on the following class websites:

The University of Arizona's D2L Website: <https://d2l.arizona.edu/d2l/login/>

Announcements will also be sent through the D2L website, so please ensure that you regularly check emails sent to your address registered with D2L.

Required Texts or Readings

There are no required texts, but students are expected to conduct independent readings to research their field trip report. These readings should include peer-reviewed sources of information with appropriate references.

Required or Special Materials

Field books, hand lenses, hand-held global positioning systems (GPS) and other educational materials required for the field will be provided.

All other materials (e.g., camping equipment) will not be provided, and are the student's responsibility to obtain.

Required Extracurricular Activities

Participation in the field trip to the Zuni-Bandera Volcanic Field (October 18-22) is required. Students are also encouraged to complete High Occupancy Vehicle (HOV) training prior to the field trip. Students who have completed this training and volunteer for additional responsibilities (e.g., driving or formatting the field trip guide) will be eligible for a Superior (S) pass.

Assignments and Examinations: Schedule/Due Dates

Research Report: Students are expected to prepare a 3–5 page report related to their choice of topic prior to the field trip. A list of suggested topics will be posted on D2L on Monday, August 30. However, students are also encouraged to propose their own topic (with instructor approval). Completed reports are due on or before class on October 11.

Report Presentation: The field report will be presented by in the field by each student are expected to be 10 to 15 minutes in length.

Alternative Report/Presentation Formats: To encourage more in-depth consideration of field sites, students will have the opportunity to develop a field-observation plan for either the McCartys or Twin Craters lava flow-field. In the field, students pursuing this option will work with their peers to collect field-based observations to evaluate testable hypotheses regarding the emplacement of either of these two volcanic units. Students pursuing these options will be assigned additional reading and make longer interactive presentations and will be eligible for a Superior (S) pass

Field Notebooks: Field notebooks will be collected and evaluated at the end of the field trip.

Policy on revision and resubmission of assigned papers: Late assignments will not be accepted.

Final Examination or Project

This course does not have a final examination, but it does include a final project, which is due on or before class on October 11 (see above).

Grading Scale and Policies

Grading for this course will be: S, P, F (Superior, Pass, Fail) based on:

In-Class Participation	10%
Field Trip Report	40%
Field Trip Presentation	25%
Field Notebook	25%

Grades are assigned as follows: $S \geq 90\%$, $90\% > P \geq 50\%$, and $F < 50\%$.

Note: All assignments will be graded by the Instructor; students must participate in the field trip to obtain a passing grade; and late work will generally not be accepted. See "Absence and Class Participation Policy" Section for more details.

Requests for incomplete (I) or withdrawal (W) must be made in accordance with University policies, which are available at <http://catalog.arizona.edu/policy/grades-and-grading-system#incomplete> and <http://catalog.arizona.edu/policy/grades-and-grading-system#Withdrawal> respectively.

Scheduled Topics/Activities

Friday, August 30:	Introduction and initial planning meeting.
Friday, October 4:	Technical introduction to instrumentation.
Friday, October 11:	Final pre-trip planning meeting. Project Reports due.
Friday, October 18:	Field trip departure (7:00 am from LPL).
Tuesday, October 22:	Return to LPL. Field notebook submission.
Friday, October 25:	Post-trip discussion. Last day of instruction.

Bibliography

Suggested reading materials will be posted electronically on the D2L website.

Classroom Behavior Policy

To foster a positive learning environment, students and instructors have a shared responsibility. We want a safe, welcoming, and inclusive environment where all of us feel comfortable with each other and where we can challenge ourselves to succeed. To that end, our focus is on the tasks at hand and not on extraneous activities (e.g., texting, chatting, reading a newspaper, making phone calls, web surfing, etc.).

Students are asked to refrain from disruptive conversations with people sitting around them during lecture. Students observed engaging in disruptive activity will be asked to cease this behavior. Those who continue to disrupt the class will be asked to leave lecture or discussion and may be reported to the Dean of Students.

Some learning styles are best served by using personal electronics, such as laptops and iPads. These devices can be distracting to other learners. Therefore, students who prefer to use electronic devices for note-taking during lecture should use one side of the classroom.

Use of personal electronics such as laptops, iPads, and other such mobile devices is distracting to the other students and the instructor. Their use can degrade the learning environment. Therefore, students are not permitted to use these devices during the class period.

Threatening Behavior Policy

The UA Threatening Behavior by Students Policy prohibits threats of physical harm to any member of the University community, including to oneself. See <http://policy.arizona.edu/education-and-student-affairs/threatening-behavior-students>.

Accessibility and Accommodations

At the University of Arizona, we strive to make learning experiences as accessible as possible. If you anticipate or experience barriers based on disability or pregnancy, please contact the Disability Resource Center (520-621-3268, <https://drc.arizona.edu/>) to establish reasonable accommodations.

Code of Academic Integrity

Students are encouraged to share intellectual views and discuss freely the principles and applications of course materials. However, graded work/exercises must be the product of independent effort unless otherwise instructed. Students are expected to adhere to the UA Code of Academic Integrity as described in the UA General Catalog. See: <http://deanofstudents.arizona.edu/academic-integrity/students/academic-integrity>.

The University Libraries have some excellent tips for avoiding plagiarism, available at <http://new.library.arizona.edu/research/citing/plagiarism>.

Selling class notes and/or other course materials to other students or to a third party for resale is not permitted without the instructor's express written consent. Violations to this and other course rules are subject to the Code of Academic Integrity and may result in course sanctions. Additionally, students who use D2L or UA e-mail to sell or buy these copyrighted materials are subject to Code of Conduct Violations for misuse of student e-mail addresses. This conduct may also constitute copyright infringement.

UA Nondiscrimination and Anti-harassment Policy

The University of Arizona is committed to creating and maintaining an environment free of discrimination; see <http://policy.arizona.edu/human-resources/nondiscrimination-and-anti-harassment-policy>

Our classroom is a place where everyone is encouraged to express well-formed opinions and their reasons for those opinions. We also want to create a tolerant and open environment where such opinions can be expressed without resorting to bullying or discrimination of others.

Additional Resources for Students

UA Academic policies and procedures are available at:
<http://catalog.arizona.edu/policies>

Student Assistance and Advocacy information is available at:
<http://deanofstudents.arizona.edu/student-assistance/students/student-assistance>

Confidentiality of Student Records

<http://www.registrar.arizona.edu/personal-information/family-educational-rights-and-privacy-act-1974-ferpa?topic=ferpa>

Subject to Change Statement

Information contained in the course syllabus, other than the grade and absence policy, may be subject to change with advance notice, as deemed appropriate by the Instructor.