

GeoSPACE Planetary Geoscience Field Course

GLY 4930, 2024 Summer Session A



COURSE DESCRIPTION AND GOALS

GeoSPACE provides an opportunity to develop and apply skills in field geology, planetary geoscience and volcanology in Northern Arizona. You can learn more about the course here: <https://sites.google.com/ufl.edu/geospace-field-program>. This course gives students the opportunity to:

- Practice rock and landscape description and interpretation in volcanic and sedimentary landscapes; and apply those skills to interpret features on Earth and other places in the solar system.
- Apply tools and techniques for digital mapping, including digital stratigraphic sections, high precision GPS, and photogrammetry.
- Learn to access and interpret remote sensing data, and how to integrate satellite data into field studies.
- Understand the human and environmental context of field research and develop good habits of field safety, sustainability and geo-ethics.
- Develop project management skills including research question development, project planning, data collection, processing and analysis, and presentation of results.

Prerequisites:

Any three geoscience, planetary science or remote sensing courses, or instructor permission. A completed [application](#), and notification of acceptance is required prior to enrollment.

Class Format

Hybrid. All students complete online activities. In-person students attend the field component in Arizona, Virtual students participate remotely. Both cohorts work closely together.

Primary Instructors

Dr. Anita Marshall (she/her)
anita.marshall@ufl.edu

McKayla Meier (she/her), Virtual,
mckaylameier@ufl.edu

Assistant: Sarah Lynn Redding
(she/her), Virtual, s.redding@ufl.edu

Support Teaching Team

Dr. Lis Gallant (she/ella)
University of Hawaii, Hilo

Dr. Jen Piatek (she/her)
Central Connecticut State U.

Sean Thatcher (he/him), virtual
CUNY Staten Island

Assistant: Alex Bearden (he/him)
U. of California Berkeley

Prog Mn: Yesenia Arroyo (they/them)
NASA Goddard / U. of Florida

Tech Facilitator: Dr. Trevor Collins
(he/him) The Open University

Guest Instructors

Dr. Amy Williams (she/her), virtual,
U. of Florida

Dr. Steve Elardo (he/him), U. of Florida

Dr. Dave Williams (he/him) Arizona
State University

Plus more guest instructor/mentors for short visits throughout the course.

Contact any of us on the class Discord!

Astronauts and Mission Control

This unique course is run in two formats, simultaneously. This approach is inspired by the way space agencies like NASA run planetary missions. Some students will be participating in the field component **in-person**, and we often refer to them as **Astronauts**. Some students will be participating in the field component **virtually**, and we refer to them as **Mission Control**. As with actual planetary science missions, one can't operate without the other. You need both cohorts, working closely together, to have a successful mission.

All students will have a chance to learn every skill, but the time spent practicing each skill will be different for virtual and in-person students. For example, virtual students get more time to learn remote sensing techniques, while in person students have more time to practice field observation techniques. Regardless of which cohort you are in, you will get a rich, hands-on, experiential learning opportunity that will include all learning objectives.

Course Instructors

On the front page, you will see the instructors for the course. The following key can help you make sense of this big list of people.

Primary Teaching Team: These are the folks who are able to access the Canvas page and are responsible for submitting grades. Any questions about assignments, formal accommodation requests, grades or course mechanics should be addressed to one of these people.

Support Teaching Team: These people are significantly involved in teaching and/or facilitating the course, but do not have access to the Canvas page. They can answer most of your questions, just nothing about grades or Canvas.

Guest Instructors: We are very fortunate to have instructors and researchers from UF and all over the world participate as guest instructors and facilitators for parts of the course. See the GeoSPACE website for [bios](#) and a full list of collaborators. None of these people have access to the Canvas page or gradebook. You can message them on Discord, They love to talk about science and careers so don't let this amazing roster of scientists go under-utilized!

Credit Hours

2 credit hours. Full participation includes two pre-field trip meetings online and one post-course debrief meeting online.

Students needing 3 credit hours to fulfil degree requirements may choose to enroll in Undergraduate Research for an additional credit hour for completing a research project after the field course with data collected and/or techniques learned from the field course. This credit hour should be during the Summer B or Fall semester following the field course. Ask the instructor for more details.

UF Geology Capstone Student Learning Outcomes (CSLO)

This course satisfies the requirements for a [Capstone Course](#) for the geology major at the University of Florida, meaning the following will be practiced and assessed:

Content

1. Identify, describe, and define the basic concepts related to earth materials and processes.
2. Identify and describe minerals and rocks.
3. Define geologic time, stratigraphy, and landforms.

Critical Thinking

4. Analyze data in the published literature.
5. Synthesize analog and digital datasets to produce geologic maps.
6. Apply the scientific method to the analysis of published and self-generated data.

Communication

7. Use computers for the presentation of geologic maps and data.
8. Solve geologic problems in teams and present the result of such collaboration effectively.

Student Learning Objectives (SLOs)

These are the overall Learning Objectives for GeoSPACE. Numbers below indicate where UF Geology CSLOs (listed above) align with course-specific objectives.

- Access and interpret remotely sensed planetary datasets of Earth and other terrestrial bodies in the solar system via commonly used techniques (e.g., band ratios or mineral indices). [CSLO 1,3]
- Develop hypotheses, supported by published literature, to explain features observed remotely and/or in the field and the means or questions that could be used to test these hypotheses in the field. [CSLO 4,6]
- Produce detailed, coherent project notes and daily summaries that document tasks, observations, interpretations and synthesis of ideas and information. [CSLO 1,2,3,4]
- Practice collaborating with complex, geographically disbursed teams to make observations via remote sensing and in-field techniques, and synthesize data results from both in-field and remote perspectives. [CSLO 2,3,8]
- Gain experience planning kinematic GPS and photogrammetry surveys and processing the resulting data sets. [CSLO 5,6,7,8]
- Synthesize, interpret and communicate results of remote and field data via oral and written presentations. [CSLO 1,2,3,4,5,6,7,8]

YOUR COURSE RESPONSIBILITIES

- Fully participate in the course. See “Participation” under the Course Activities heading for details on what that means.
- Check the class page and Discord multiple times a day during the field course and check your emails at least once per day during the course.
- Abide by UF’s [Academic Honor Code](#).
- Treat your fellow class members with respect by abiding by the GeoSPACE Code of Conduct (collaboratively constructed as a class activity in the Orientation Module).
- Encourage a Community of Care. If you are struggling, ask for help! If you see someone else struggling, offer to help.

Technology Requirements and Other Supplies

Computing: Virtual and in-person students will need regular access to a computer for data processing and collaborative work. You will need a device with a functioning webcam and speaker/mic. If you do not have a computer that meets these specifications, please let the instructor know asap.

Staying Connected: Communication during this course heavily relies on Discord, which enables everyone to keep up with announcements, chat, stream and share data from the field all in one place. Please create a free [Discord account](#) if you don't have one and we will send an invite link to the GeoSPACE server. We use Zoom for our morning and evening meetings, and YouTube to livestream from the field.

Digital Data Collection: You are welcome to use your own devices (tablets, cell phones) for digital data collection in the field or use ours. We have iPads available to collect digital data, photos, notes, etc. in the field. We also have GoPro cameras available for those that would like to document with video. We will fly our UAVs (drones) in locations where it is permitted.

Rock Kits: Virtual Students will receive a physical set of rocks from the locations we will visit during the field course. This is not a gift (although we will include some things you can keep). Kits are shipped with a return label, and we must have confirmation you dropped your kit off for return shipping before final grades are assigned.

COURSE ACTIVITIES [MISSIONS]

Participation (100 points): You will need to demonstrate consistent engagement in the field course. Field students will need to be in regular communication with virtual students and vice versa. But participation is not defined by a rigid set of rules. Full participation will look different depending on your access needs, and if you are participating virtually or on-site. For many students, timely and consistent attendance for all activities and regular communication with the other cohort is the most straightforward way to demonstrate participation. For those that can't regularly participate in events in real time, please work with the faculty to develop alternate plans to stay engaged. Together we can work out what full participation looks like for you. The Participation grade also reflects your demonstration of a collegial, collaborative approach to your interactions with others.

- Participation point assessment: Everyone starts with full credit (100 points). If you are regularly showing up and participating and not being a jerk to people, these points are easy to maintain. You can lose points for violating the Code of Conduct, frequent unexplained absences, or being consistently late to meetings and rendezvous points, or rarely/never engaging with cross-cohort communication in the field. This grade will be assigned at the end of the field course, but we will check in with you if you are at risk of losing points during the course so you can address the issue before points are deducted.

Activities (8 total, 290 points total): You will need to demonstrate that you are keeping up with the concepts presented during the course and are taking in the information and landscapes we visit (in person or virtually) throughout the course. Activity types include:

- Orientation activities (3 total, 10/10/20): This class is a collaborative endeavor. To facilitate that collaboration, we need to hear your voice. At the start of the course, you will introduce yourself on the class Discord server, and provide your input on the Collaborative Code of Conduct. There is a 10-point syllabus quiz to make sure you read and understand it.
- Discussions (2 total, 40 points each): Introductory discussions completed prior to the field portion of the class help to get everyone up to speed on key ideas and concepts. Discussions require some preliminary reading/research in order to construct your initial posts, but are not designed to be time-consuming. Rubrics vary

based on the requirements of each discussion, see Canvas for full instructions and rubrics.

- Read/Watch/Quiz: (1 total, 20 points): We will be using a lot of volcanology terminology during the field course. A quiz on volcano basics will help everyone start out with a basic vocabulary foundation.
- Daily Notes (3 total, 50 points each): All students will need to take daily notes. These daily notes also help us see what concepts or ideas we may need to clarify or review. The mode of notetaking is up to you, but digital notes are preferred. You are welcome to use a paper field notebook for notes, but you will need to either take pictures of your pages or (for in-person students) hand in your notebook to an instructor in the evenings for review. Each day of the field course you should be documenting:
 - *Field Notes:* The primary way you will document observations and data collected at field sites. There is a real art to field documentation and we will provide guidance, helpful resources, and timely feedback to help you improve your field observation skills. Your notes should also include any notable connections between field data and observations you made with remote data or the planetary analogs we introduce throughout the course. *Virtual students:* You will generate field notes through your virtual engagement with field locations through livestreaming, photo and video sharing, and live chats with the in-person students. If you aren't getting enough information for meaningful notes from field sites – make sure your field partners and instructors know that so we can get you what you need!
 - *Work summaries:* When working through equipment training sessions or projects/presentations, you need to clearly demonstrate your participation and progress. What specifically did you do to make progress today? This documentation will be very handy as it will enable you to easily pick up where you left off the previous day, and when compared to your team, will assure that sub-parts of larger projects are moving forward
 - *Daily summary:* At the end of each day, include a summary of the day's activities. You may also wish to include a reflection on your own personal experience. Was there an event or moment that really stood out that wasn't captured in your field notes or work summary? How are you feeling, what you are proud of, challenges – all of this can be healthy and helpful to note.

Assigning points for Daily Notes: You will not receive an individual grade on each day's notes. Instead, we will do a quick daily review and offer feedback. At the end of Modules 3, 4 and 5, you will receive a grade for your notes from that module based on the following criteria:

Excellent (50 pts)	Following best practices for field notes, well organized and informative. Consistently excellent, or showed consistent improvement by incorporating feedback.
Good (40 pts)	Good note-taking overall, but missing a day of notes, occasionally fails to incorporate feedback for improvement, or sometimes omits key information.
Needs Improvement (30 pts)	Missing two or more days of notes, or regularly fails to incorporate feedback and best practices.

Does not meet expectations (20 or less)	Sporadic, infrequent notes; or regular but significantly incomplete. Does not incorporate feedback to improve.
No notes (0 pts)	No notes submitted.

Presentations (12 total, 460 pts): Presentations will be used to determine how well you are meeting the course's learning goals. Some presentations are smaller, some are more involved. There are 3 types:

- **Briefs/Debriefs (7 total, 30 points each):** Most field days start and end with full group meetings, which enable remote and in-field students to share information. Remote students will lead Morning briefings by sharing what they have learned from analysis of the day's field location from space, and any interesting ties to locations off-planet. This information is used to collaboratively develop the questions to pursue during the day's field activities. At the end of the day, in-field students will share what information they gathered in the field that can help answer the questions developed with the virtual students.
- **Collaborative Presentations (5 total, 50 points each):** 3 Group presentations will give students an opportunity to show how well they are meeting the course's learning goals. Presentation teams will be comprised of in-person and remote students. Presentations during the field course will be delivered via Zoom so everyone can be part of the presentation regardless of location. You are welcome (and encouraged) to run your presentation by a faculty member for feedback before presenting.
Remote students: if you cannot present in real time, please make sure your work is evident in the final presentation. There are many ways to do this. For example, pre-recording your part of the presentation, or helping with data processing, slide creation or other aspects of the presentation. Teams should be actively working to ensure everyone can contribute. Learning how to effectively collaborate, regardless of challenges (like distance or time zones) is an important part of this course.
- **Proposal for Additional Research (optional):** For students taking the additional research credit, you will turn in a research proposal outlining the work you propose to do, and how it builds on the skills and ideas from the field course. Rubric and detailed instructions will be posted on Canvas. If you have enrolled for this option, the research proposal grade will be split with your Final Reflection Essay grade (50 points for each).

Final Reflection Essay (50 points): At the end of the course, you will write a reflection essay with a minimum of 500 words about your experience during the field course. This is your chance to gather your thoughts on what you learned and how you grew academically and personally during your time with the GeoSPACE project.

ASSGNING GRADES:

Expectations: This course is focused on improving your skills – not that you show perfection in any one skill. When grading assignments, we are looking for the components we asked for, but more importantly we are looking for progress and growth from one assignment to the next.

Plagiarism: Claiming any part of another student’s work or published materials as your own is not allowed (see UF Policy section at the end of this document for details). However, collaboration with other students is a fundamental part of this course. You can and should be working together on assignments, but you are responsible for your own assignments or your part in a group assignment. Use your own words, and when appropriate to quote others, give credit and cite your sources.

Citations: APA is the preferred format for references and citations. If you have a legitimate reason to use a different format, please let us know.

Late Policy & Missed Work: We will do our best to work with you if you start to fall behind or need more time on an assignment. However, the short duration of this course, and the fact that most assignments are collaborative, makes late work difficult to accommodate. Notify the instructors right away if you are struggling so we can work out a plan.

Assigning Final Grades

Final grades will be assigned based on total point earned with the following criteria: See <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx> for UF grading policies.

Total Points	Letter Grade	GPA Value
800 - 900	A	4.0
700 – 799.9	B	3.0
600 - 699.9	C	2.0
500 – 599.9	D	1
< 500	E	0

COURSE SCHEDULE

The following is a general overview schedule. Any changes will be announced on Canvas and Discord. The class opens May 13th. The field portion starts and ends in Phoenix, Arizona May 26 – June 8, 2023. The class officially ends June 20th. You will have a few introductory activities that open May 13th and are due before the start of the field course.

Field Course Schedule: Most days start with a morning meeting at 8:00 am, and end with a debrief at 5:00pm PST. Dinner will be served around 6:30 pm, unless stated otherwise. The schedule is paced to enable a rich learning experience while including time for breaks and rest. We build in time to work on activities and presentations, but you may work on these in your unscheduled time as well. A very detailed daily schedule is provided at least two weeks prior to the start of the course that articulates exactly what each group (in-person and remote) will be doing throughout the day during the field course.

Graded assignments: A: Activity, P: Presentation, R: Reflection

5/13 – 5/24	<p>Orientation</p> <ul style="list-style-type: none"> • A: Syllabus and Orientation Quiz (10 pts) • A: Discord introductions (10 pts) • A: Collaborative Code of Conduct (20 pts)
5/13 – 5-16	<p>Module 1: Intro to Planetary Geology and volcanology.</p> <p>Pre-trip:</p> <ul style="list-style-type: none"> • A: Discussion - What is Planetary Geology? (40 pts)

	<ul style="list-style-type: none"> • A: Read/Watch/quiz - Volcanology basics (20 pts) 	
5/20 – 5/24	Module 2: Intro to Remote Sensing Pre-trip: <ul style="list-style-type: none"> • A: Discussion - Remote Sensing Data Sets (40 pts) 	
Sat 5/25	Travel Day to Phoenix for Astronauts	
	Astronauts	Mission Control
Sun 5/26	Day: Field orientation, Remote sensing mini-workshop. Evening: Tour of ASU's planetarium and meteorite collection. <ul style="list-style-type: none"> • A: Collaborative Remote Sensing Mini-Project (50 pts) 	Day: Field Orientation, Remote Sensing mini-workshop. Evening: (Optional) Virtual tour of ASU facilities. <ul style="list-style-type: none"> • A: Collaborative Remote Sensing Mini-Project (50 pts)
Module 3: The Holey Tour – Geologic Introduction to N. Arizona.		
Mon 5/27	Travel to Flagstaff with stops at Sunset Point, Montezuma's Castle, and Montezuma's Well to examine geologic holes and the processes that form them. <ul style="list-style-type: none"> • Daily Notes – Holey Tour day 1 • P: Evening Debrief -share out from site visits (30 pts). 	Follow along w in-person group via livestreams. Work on JMARS data sets. <ul style="list-style-type: none"> • Daily Notes – Holey Tour Day 1 • P: Evening Debrief – share out on the unique sites remote students visited (30 pts).
Tue 5/28	Morning: Stratigraphy tour with stops at type localities for local rock units. Learn to describe and build stratigraphic sections. Afternoon: Continue the "Holey Tour" with a visit to Meteor Crater in the afternoon. <ul style="list-style-type: none"> • Daily notes – stratigraphy and meteor crater. • P: Evening Debrief (30 pts) 	Morning: Practice remote sensing skills, prep Sunset Crater briefing Afternoon: Livestream activities at Meteor crater rim tour and museum tour. <ul style="list-style-type: none"> • P: Morning Briefing – Meteor Crater (30 pts) • Daily Notes – engagement w field activities, work summary for virtual team activities.
Wed 5/29	Morning: Volcanic mapping exercises at Sunset Crater National Monument. Afternoon: Stratigraphy practice at Walnut Canyon National Monument. <ul style="list-style-type: none"> • Daily notes – Sunset Crater & Walnut canyon stratigraphy practice. • P: Evening Debrief (30 pts) 	Morning: Present Sunset Crater briefing. Build on remote sensing and communications skills in prep for SP Crater briefing. Afternoon: Stratigraphy practice virtually at Walnut Canyon. <ul style="list-style-type: none"> • P: Morning Briefing – Meteor Crater (30 pts)

		<ul style="list-style-type: none"> Daily Notes – engagement w field activities, work summary for virtual team activities
Thu 5/30	<p>Morning: Continue Holey Tour at SP Crater for collaborative field work. Practice with UAVs.</p> <p>Lunch and time to wander at Wupatki National Monument.</p> <p>Afternoon: Field Equipment Training – Kinematic GPS, time to work on assignments.</p> <ul style="list-style-type: none"> Daily notes – SP Crater, Wupatki & equipment training. P: Evening Debrief (30 pts) 	<p>Morning: Present SP Crater briefing. Check in and livestreams with field team during SP Crater field work.</p> <p>Afternoon: Open work time. Watch field equipment orientation sessions (live or recorded).</p> <ul style="list-style-type: none"> P: Morning Briefing – SP Crater (30 pts) Daily Notes – engagement w field team, work summary for virtual team activities.
Fri 5/31	<p>All Day: Grand Canyon. Morning: Yavapai Geology Museum, Stratigraphy exercise at Trail of time.</p> <p>Afternoon: Geomorphology observations at Desert View. Geo ethics discussion. time to work on assignments.</p> <ul style="list-style-type: none"> Daily notes – Grand Canyon trail of time/stratigraphy, geology observations, geo ethics (30 pts) 	<p>Grand Canyon and Valles Marineris.</p> <p>Livestreams from Grand Canyon at Yavapai Geology Museum, Trail of Time.</p> <ul style="list-style-type: none"> Daily Notes – Grand Canyon and Valles Marineris
Sat 6/1	<p>Rest and Reset Day. Open work time, do laundry, nap, etc.</p> <p>Evening (after dinner): Group Presentations on topics from the Holey Tour.</p> <p>Night: Optional Stargazing activity.</p> <ul style="list-style-type: none"> P: Holey Tour Collaborative Presentation (50 pts) A: Grades assigned for Mod 3 notes (50 pts) 	<p>Rest and Reset Day. No briefing prep.</p> <p>Evening: Group Presentations on topics from the Holey Tour.</p> <p>Night: Optional virtual stargazing activity with in-person group.</p> <ul style="list-style-type: none"> P: Holey Tour Collaborative Presentation (50 pts) A: Grades assigned for Mod 3 notes. (50 pts)
	Module 4: Hybrid Field Studies	Module 4: Hybrid Field Studies

Sun 6/2	<p>Morning: Equipment training – GPS, geodesy and RTK surveys</p> <p>Afternoon: ground-based photogrammetry training using outcrops around hotel, no travel today.</p> <ul style="list-style-type: none"> • Daily notes – equipment training. • P: Photogrammetry model (presented at evening debrief) (50 pts) 	<p>Morning: Prep briefing for phreatomagmatic crater (specific crater TBD)</p> <p>Afternoon: ground-based photogrammetry and related data processing (virtual students will use provided rock kits for their models).</p> <ul style="list-style-type: none"> • Daily notes – equipment training. • P: Photogrammetry model (presented as a working group at evening debrief) (50 pts)
Mon 6/3	<p>Morning: Visit a phreatomagmatic crater to practice volcanic stratigraphy, scope out photogrammetry survey targets.</p> <p>Afternoon: Visit to the USGS Astrogeology Center.</p> <ul style="list-style-type: none"> • Daily notes – field notes, USGS visit. • P: Evening debrief (30 pts) 	<p>Morning: Present briefing on location for the day (TBD). Planetary geology activity between contact w field team.</p> <p>Afternoon: Virtual visit to the USGS Astrogeology Center</p> <ul style="list-style-type: none"> • P: Morning Briefing – TBD (30 pts) • Daily notes – virtual field observations, planetary geo activity summary, USGS visit.
Tues 6/4	<p>Morning: Additional time at phreatomagmatic crater for photogrammetry survey.</p> <p>Afternoon: open work time, data processing, work on report-out for evening debrief.</p> <ul style="list-style-type: none"> • Daily notes – field notes, USGS visit. • P: Evening debrief (30 pts). • A: Grades assigned for Module 4 notes (50 pts) 	<p>Morning: Present planetary analog at briefing. Prep mystery site briefing.</p> <p>Afternoon: open work time, photogrammetry and field data processing, work on collaborative presentations.</p> <ul style="list-style-type: none"> • P: Morning Briefing (30 pts) • Daily notes – work summary • A: Grades assigned for Module 4 notes (50 pts).
	Module 5: The Mystery Site – Collaborative Research Project	Module 5: The Mystery Site – Collaborative Research Project
Wed 6/5	<p>Morning: Introduce the research location for final projects through remote access and satellite data.</p>	<p>Morning: Present Mystery site briefing.</p> <p>GPR data processing and analysis training.</p>

	<p>GPR data processing and analysis training.</p> <p>Afternoon: Collaborative work time to develop research questions and plan for the mystery site.</p> <ul style="list-style-type: none"> • P: Morning Briefing - Phreatomagmatic Crater data and models (collaborative teams, but field members will lead presentations). (30 pts) • Daily notes – mystery site planning. • P: Evening - Present team plan for work at Mystery Site (50 pts). 	<p>Afternoon: Collaborative work time to develop research questions and plan for the mystery site.</p> <ul style="list-style-type: none"> • P: Mystery site briefing (30 pts). • Daily notes – mystery site planning. • P: Evening - Present team plan for work at Mystery Site (50 pts)
Thu 6/6	<p>Morning: Execute Field work at the Mystery Site.</p> <p>Afternoon: Open work time for data processing and analysis, etc.</p> <ul style="list-style-type: none"> • Daily notes – mystery site. • P: Evening Debrief - Group updates on Mystery Site Analysis, plan for tomorrow (50 pts) 	<p>Morning: Participate in field activities at mystery site virtually. via Discord and Livestreams from the field.</p> <p>Afternoon: Open work time on mystery site data.</p> <ul style="list-style-type: none"> • Daily notes – mystery site. • P: Evening debrief - Group updates on Mystery Site Analysis, plan for tomorrow (50 pts)
Fri 6/7	<p>Day: TBD based on previous day's outcomes. Work time on final projects.</p> <p>Pack and prep to depart Flagstaff.</p> <p>Time TBA: Final mystery site presentations.</p> <ul style="list-style-type: none"> • Daily notes – TBD. • P: Final Collaborative Presentation – Mystery Site Report.(50 pts) 	<p>Day: TBD based on previous day's outcomes. Work time on final projects.</p> <p>Time TBA: Final mystery site presentations.</p> <ul style="list-style-type: none"> • Daily notes – TBD. • P: Final Collaborative Presentation – Mystery Site Report.(50 pts)
Sat 6/8	<p>Morning: Depart Flagstaff. Drive to Sedona via Oak Creek Canyon and observe landscape changes. Free explore time and lunch in Sedona.</p> <p>Afternoon: Pheonix bound. Check into Pheonix hotel. Participate in education</p>	<p>Day: Virtual team end-of-course meet-up. (Optional) Participate virtually with road trip to Sedona on Discord [no livestreams – gear will be packed].</p> <p>Participate in education research focus group interviews and surveys.</p>

	<p>research focus group interviews and surveys.</p> <ul style="list-style-type: none"> • A: Grades assigned for Module 5 notes (50 pts) 	<ul style="list-style-type: none"> • A: Grades assigned for Mod 5 notes (50 pts).
Sun 6/9	Travel home from Pheonix	
Module 6: Wrap Up		
6/10 - 6/20	<p>Module 6 Deliverables:</p> <ul style="list-style-type: none"> • R: Final Reflection Essay (100 pts) • P: Optional Proposal for additional research (due June 12) <p><i>Last day to submit assignments 6/20</i></p>	

REQUIRED READINGS

There is no required textbook. All reading material will be provided as pdfs or available online. The following resources will be used in required assignments. A folder with supplemental resources will also be provided for those who wish to dive deeper into course topics.

- Garthwaite, Josie, 2020. [What other planets can teach us about Earth: Stanford researchers explain](#). Stanford University Publications, online March 4, 2020.
- [How Scientists Use Earth as a Test Lab for Other Worlds](#). NASA Solar System Exploration, accessed 5/19/23
- Earle, S. (2019). Chapter 4, Physical Geology (2nd ed.). BCcampus. <https://opentextbc.ca/physicalgeology2ed/>
- Thatcher, S. Google Earth Pro Quickstart Guide; GeoSPACE Edition (not published, used with permission, pdf provided)
- Meier, M. Introduction to JMars (instructor created document, pdf provided).
- Field Guide to the Holey Tour, GeoSPACE Edition. Adapted from: Greeley, R., 2011. The "Holey Tour" planetary geology field trip, Arizona. GSA Special Paper 483, p. 377-391. (pdf provided)
- Change Detection with SfM and GPS/GNSS Handbook, 2022 UNAVCO (unpublished, used with permission, pdf provided).

ACCESSIBILITY, INCLUSION & RESPECT

Respect & Inclusion: In this course, everyone should feel welcome. You deserve to be called by the name and pronouns you prefer, so please correct us if we get it wrong! You will be treated with respect, and we expect you to treat others with respect including faculty (see the Code of Conduct for details). If something in the course material, instruction or class interactions make you feel excluded or uncomfortable, please let an instructor know right away so we can address it.

Field courses can be challenging, especially for those who are new to this kind of experience. There is a no-shame ethos encouraged in our field course – we don't shame others or ourselves over physical ability. You are not less of a geologist if you can't do a physical activity, just let us know so we can adapt. GeoSPACE encourages a culture of care, which means we take care of ourselves and each other. If you are struggling, speak up! If you see someone struggling, offer to help.

We also respect the places we visit, the peoples who call those places home, and the students and researchers that will come after us. That means being mindful of the cultural traditions that constrain what we can and cannot do on tribal lands, respecting property owner's wishes when on private property, and considering sustainability when collecting samples. We will talk in detail about ethical field work practices during the course.

Safety: Safety has several facets. As for physical safety for the in-person section, multiple field instructors have wilderness first aid and CPR training. We do daily briefings on safe practices in the field and dangerous behaviors are not tolerated. Personal safety is another important aspect of a positive experience. Our Code of Conduct helps ensure that everyone understands what acceptable behavior entails. If anyone makes you feel unsafe in any way, let a staff member know immediately. At the hotel, we will have a designated staff member on-call as an emergency contact 24 hours a day. For our virtual students, if you are the target of online harassment, please reach out any time to report. We want everyone to have a safe and enjoyable field course!

UF Statement on Accommodating Students with Disabilities: Students with disabilities who experience learning barriers and would like to request formal academic accommodations should connect with the disability Resource Center. Click here to get started with the Disability Resource Center: <https://disability.ufl.edu/get-started/>. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

GeoSPACE Statement on Accessibility: This course is designed by and for people with disabilities. But everyone, whether you identify as disabled or not, learns differently and has unique needs. You don't have to have a formally recognized disability to find yourself having difficulty with some aspect of the college learning environment, especially a field course. We take accessibility seriously, so please let us know if something in the course material or format presents a barrier to your participation – *even if you don't have, or don't yet have, a formal accommodation letter.*

If you indicate a disability on your application for the course, we will follow up via email and/or meetings to determine what we need to do to facilitate your participation. We will adapt the course to your needs. Collaborative meetings are held on Zoom with automatic live captioning available. Please let us know if you have other access needs for the collaborative meetings or any other part of the course. The sooner you explain what you need, the better prepared we can be to assist. We take pride in offering a field course that can work for most people, but we do have limits on what we can offer. Please see the GeoSPACE website for more information on what we can and cannot accommodate.

UF POLICIES

University Policy on Academic Misconduct: Academic honesty and integrity are fundamental values of the University community. Students should be sure that they understand the UF Student Conduct Code: <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>, which includes the Honor Pledge.

UF Undergraduate Student Handbook: The student handbook has all the details on UF policies for students. <https://dso.ufl.edu/resources/student-handbook/>

NEED HELP?

Help with course material: GeoSPACE is a Capstone-level course. You may be challenged by some parts of the material, but don't let that discourage you! Posting on Discord lets us answer questions for everyone, which can be very helpful. For questions you don't want to post publicly, contact a member of the Primary Teaching Team.

Canvas Technical Support: For issues with technical difficulties on Canvas, please contact the UF Help Desk: <http://helpdesk.ufl.edu> or (352) 392-4357.

Mental Health and well-being: Field courses introduce many new situations, people and environments. If you find yourself struggling emotionally, please talk to a staff member about it. We are not mental health professionals, but if it's impacting your participation and performance in class, we can work with you on that.

If you are a UF student, you can contact the [Counseling and Wellness Center](#). They have one-click access to people who can help you connect to the right resources for your situation. If these struggles are significantly impacting your performance your courses, I encourage you to contact the [Dean of Students Care Area](#) to connect with a support team that can help with temporary accommodations, authorization to make up missing course work and medical petitions.

Financial Assistance: Scholarships to offset field course cost are available from various sources. Many departments offer need-based assistance to their students. There are also field course scholarships available through the Geological Society of America, Association for Women in Geoscience, and other professional societies.

UF students with small, immediate emergency needs can get assistance through the [Aid-A-Gator](#) program for things outside of academic life.

Resources for UF Online students: A variety of support resources for UF Online students are consolidated on this page: <http://www.distance.ufl.edu/getting-help>

STUDENT FEEDBACK & COURSE EVALUATION

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Whew - That was a lot of info! Thanks for reading all the way to the end.