



## GPGN 438: Geophysics Project Design

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### Course Overview

**Semester Year:** Spring 2024 semester

**Credit Hours:** 3

**Class Meeting Times:** 3:00 – 3:50 pm, Wednesday

**Class Location:** Green Center 228 (Geomaker Space)

**Instructor:** Ilya Tsvankin

**Email:** itsvanki@mines.edu

**Office Phone:** 303-273-3060

**Office Location:** Green Center 247

**Office Hours:** TBD

**Office Hours Location:** GC247

### Prerequisites

GPGN 328, GPGN 329, GPGN 404

### Required Technology

Instructor will work with student(s) to make sure all technology is available to complete design project.

### Welcome to Geophysics Project Design

- Welcome to GPGN 438! I am excited to work with you this semester as you integrate your geophysics capabilities to design and carry out your project.
- My approach to senior design is that we work together in a friendly and supportive environment and that we maintain the highest levels of respect for each other at all times. My goal is that we all get more exposure to learning and working cooperatively. Additionally, I want you to leave the course with the skills and confidence to advance your career in geophysics. I am committed to help you and provide feedback in assessments and during office hours. If you have any questions at any time, just let me know.

### Course Description

- Students employ their geophysical knowledge and skills working on a topic that interests them to develop and complete a senior design project.
- Students work on projects either individually or in teams, present their intermediate and final results in class, and describe them in a final report.
- Students engage in activities to help improve their writing skills and provide effective, constructive comments on written reports and oral presentations.



## Learning Outcomes

This course contributes to the achievement of the ABET outcomes listed below.

1. Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. Communicate effectively with a range of audiences.
4. Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. Acquire and apply new knowledge as needed, using appropriate learning strategies.

## Assessments

The assessments for this course include the following:

- Class engagement and participation
- Initial project plan
- Presentations
- Final report

## Required Text

None. Any supplemental materials will be provided in electronic format through Canvas.

## Policies and Campus Resources

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### COVID-Smart Classroom

As new variants of COVID-19 continue to evolve, all campus community members are asked to make thoughtful choices about their health and be mindful that those choices will affect our whole community.

- Anyone experiencing [COVID-19 symptoms](#) should wear a mask, not report to work or attend classes, and get tested as soon as possible.
- Anyone experiencing respiratory symptoms – even after a negative COVID test – should remember there are many respiratory viruses circulating in our community. Please be considerate of others and wear a mask whenever you have any cold-like symptoms.



- Masking is one of the most effective ways to protect yourself and others, especially in indoor settings when [community transmission levels are high](#). Please continue to respect an individual's decision to wear a mask even if it is not required. Masks are still required in the Student Health Center.
- Wash your hands frequently using soap and water or hand sanitizer.

If you test positive for COVID-19 (rapid antigen or PCR test):

- **Stay home for the period of time specified in the current CDC guidelines.**
- **Communicate with your professors via email or the excused absence form** that you are ill or have tested positive for COVID-19. You should communicate this 5 day absenteeism to you faculty OR through the Student Life Excused Absence Process. Students can complete the Excused Absence here: <https://www.mines.edu/student-life/forms/personal-excused-absence/>.
- For additional support, please reach out to one of the many resources on campus:
  - Academic support: Email CASA at [casa@mines.edu](mailto:casa@mines.edu).
  - Student Life Office: [Excused absence](#) (only if you must be away from class for more than three days).
  - Experiencing a mental/emotional challenge? Email Student Outreach & Support (SOS) at [care@mines.edu](mailto:care@mines.edu) or fill out a [SOS Referral](#).

## Class Absences

The Mines default position is to trust students unless they give us a reason not to. Please think carefully before attempting to abuse this trust. As long as your number of short-term illnesses is low, we will not require anything beyond the answers to the questions below to mark you as excused, and you can work through what you missed. However, if you end up requesting a large number of excused absences, suspicious absences, or opportunistic absences, then we may follow-up and require you to submit proof that you have worked through the missed material before excusing you (in part, to make sure you are not falling behind). If we determine that you are violating the intent of this policy, then we will treat it as Academic Misconduct or a Code of Conduct matter.

### ***Information to provide in email to instructor:***

1. *Name*
2. *Course Name*
3. *Class day missed*
4. *Do you certify that you are indeed not feeling well and that after submitting this request will be limiting your activity to recover and/or lessen exposure to others as much as possible until you feel better?*

## Diversity and Inclusion

At Colorado School of Mines, we understand that a diverse and inclusive learning environment inspires creativity and innovation, which are essential to the engineering process. We also know that in order to address current and emerging national and global challenges, it is important to learn with and from people who have different backgrounds, thoughts, and experiences.



Our students represent every state in the nation and more than 90 countries around the world, and we continue to make progress in the areas of diversity and inclusion by providing [Diversity and Inclusion programs and services](#) to support these efforts.

## Disability Support Services

The Colorado School of Mines is committed to ensuring the full participation of all students in its programs, including students with disabilities. If you anticipate or experience any barriers to learning in this course, please feel welcome to discuss your concerns with me. Students with disabilities may also wish to contact Disability Support Services (DSS) to discuss options to removing barriers in this course, including how to register and request official accommodations. Please visit their [website](#) for contact and additional information. If you have already been approved for accommodations through DSS, please meet with me at your earliest convenience so we can discuss your needs in this course.

## Accessibility within Canvas

Read the [Accessibility Statement](#) from Canvas to see how the learning management system at the Colorado School of Mines is committed to providing a system that is usable by everyone. The Canvas platform was built using the most modern HTML and CSS technologies, and is committed to W3C's Web Accessibility Initiative and Section 508 guidelines.

## Discrimination, Harassment, and Title IX

All learning opportunities at Mines, including this course, require an environment that allows each student to be able to learn without fear of discrimination or harassment based on any protected class. Mines' core values of respect, diversity, compassion, and collaboration will be honored in this course, and the standards in this class are the same as those expected in any professional work environment. (More information can be [found here](#).) Discrimination or harassment of any type, including sexual harassment, sexual assault, dating violence, domestic violence, and stalking, are prohibited under the Policy Prohibiting Unlawful Discrimination and the Policy Prohibiting Sexual Harassment, Sexual Assault, and Interpersonal Violence. As a participant in this course, we expect you to respect your instructor and your classmates. As your instructor, it is my responsibility to foster a learning environment that supports diversity of thoughts, perspectives and experiences, and honors your identities. To help accomplish this:

1. Course rosters are provided to the instructor with the student's legal name. I will honor your request to address you by a preferred name and I will use your identified pronouns. Please advise me of this preference early in the semester so that I may make appropriate changes to my records.
2. If something is said or done in this course (by anyone, including myself) that made you or others feel uncomfortable, or if your performance in the course is being impacted by your experiences outside of the course, please report it to me (if you are comfortable doing so), to the <https://www.mines.edu/institutional-equity-title-ix/reporting/>, and to <https://www.mines.edu/institutional-equity-title-ix/submit-report/> (an anonymous option).

In this course, we will cultivate a community that supports survivors, prevents interpersonal violence, and promotes a harassment free environment. Title IX and Colorado State law protects individuals from discrimination based on sex and gender in educational programs and activities. Mines takes this



obligation seriously and is committed to providing a campus community free from gender and sex-based discrimination. Discrimination, including sexual harassment, sexual violence, dating violence, domestic violence, and stalking, is prohibited and will not be tolerated within the Mines campus community. If these issues have affected you or someone you know, you can access the appropriate resources here: <http://www.mines.edu/title-ix/>. You can also contact the Mines Title IX Coordinator, Carole Goddard, at 303.273.3260 or [titleix@mines.edu](mailto:titleix@mines.edu) for more information. It's on us, all of the Mines community, to engineer a culture of respect.

## CARE @ Mines

If you feel overwhelmed, anxious, depressed, distressed, mentally or physically unhealthy, or concerned about your wellbeing overall, there are resources both on- and off-campus available to you. If you need assistance, please ask for help from a trusted faculty or staff member, fellow student, or any of the resources below. As a community of care, we can help one another get through difficult times. If you need help, reach out. If you are concerned for another student, offer assistance and/or ask for help on their behalf. Students seeking resources for themselves or others should visit [care.mines.edu](http://care.mines.edu).

Additional suggestions for referrals for support, depending on comfort level and needs include:

- CARE at Mines: [care.mines.edu](http://care.mines.edu) for various resources and options, or to submit an online "CARE report" about someone you're concerned about, or email [care@mines.edu](mailto:care@mines.edu)
- CASA - <https://www.mines.edu/casa/> for academic advising, tutoring, academic support, and academic workshops
- Counseling Center – <https://www.mines.edu/counseling-center/> or students may call 303-273-3377 to make an appointment. There are also online resources for students on the website. Located in the Wellness Center 2nd floor. Located at 1770 Elm St.
- Health Center - <https://www.mines.edu/student-health/> or students may call 303-273-3381 for appointment. Located in Wellness Center 1st floor.
- Colorado Crisis Services - For crisis support 24 hrs/7 days, either by phone, text, or in person, Colorado Crisis Services is a great confidential resource, available to anyone. <http://coloradocrisiservices.org>, 1-844-493-8255, or text "TALK" to 38255. Walk-in location addresses are posted on the website.
- Food and/or Housing - Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact the Dean of Students for support. Furthermore, please notify your professor if you are comfortable in doing so. This will enable your professor to provide resources that may be available.

All of these options are available for free for students. The Counseling Center, Health Center, and Colorado Crisis Services are confidential resources. The Counseling Center will also make referrals to off-campus counselors, if preferred.

In an emergency, you should call 911, and they will dispatch a Mines or Golden PD officer to assist.

## Writing Center

The Writing Center is a free academic support service available to all members of the campus community including undergraduate and graduate students. We can assist you at any stage of the



writing process, from brainstorming to final revisions. You do not need a complete draft to make an appointment. Our consultants are experts in a variety of composition and communication fields, providing support as you work on projects such as lab reports, essays, collaborative papers, scholarly publications, thesis chapters, and oral presentations. Whether you are focusing on organization or sentence structure, the Writing Center can evaluate your individual needs and tailor each appointment so that you become a more effective and efficient communicator. The Writing Center is open Sunday-Friday for in-person and online appointments. To learn more about our services and to make an appointment, please visit [writing.mines.edu](http://writing.mines.edu). For questions, please e-mail [writing@mines.edu](mailto:writing@mines.edu)

## **Policy on Academic Integrity/Misconduct**

Colorado School of Mines affirms the principle that all individuals associated with the Mines academic community have a responsibility for establishing, maintaining and fostering an understanding and appreciation for academic integrity. In broad terms, this implies protecting the environment of mutual trust within which scholarly exchange occurs, supporting the ability of the faculty to fairly and effectively evaluate every student's academic achievements, and giving credence to the university's educational mission, its scholarly objectives and the substance of the degrees it awards. The protection of academic integrity requires there to be clear and consistent standards, as well as confrontation and sanctions when individuals violate those standards. The Colorado School of Mines desires an environment free of any and all forms of academic misconduct and expects students to act with integrity at all times.

Academic misconduct is the intentional act of fraud, in which an individual seeks to claim credit for the work and efforts of another without authorization or uses unauthorized materials or fabricated information in any academic exercise. Student Academic Misconduct arises when a student violates the principle of academic integrity. Such behavior erodes mutual trust, distorts the fair evaluation of academic achievements, violates the ethical code of behavior upon which education and scholarship rest, and undermines the credibility of the university. Because of the serious institutional and individual ramifications, student misconduct arising from violations of academic integrity is not tolerated at Mines. If a student is found to have engaged in such misconduct sanctions such as change of a grade, loss of institutional privileges, or academic suspension or dismissal may be imposed.

The complete policy can be found in the [Mines' Policy Library](#).

## **Grading Policy**

All assignments (e.g., quizzes, homework, reports, projects) must be turned in no later than the due date – please plan ahead. Work submitted late will not be graded. Please let the instructor know ahead of time if you have good reasons for not completing an assignment on time (such as University sporting commitments, academic conference, multiple overlapping deadlines), and an extension might be granted. Extensions will not be granted retroactively.

Grades will be based on the items listed below. Weights are indicated in parentheses.

- Class participation and engagement (15%)
- Initial project plan (5%)
- Project intro presentation (15%)
- Final presentation (30%)



- Final report (35%)

Letter grades will be assigned based on the following breakdown:

90-100%	A
80-89%	B
70-79%	C
60-69%	D
<60%	F

## Coursework Return Policy

Evaluations of all graded work will be provided within two weeks of their completion.

## Course Issues and Concerns

As part of good professional practice, students are encouraged to speak with the faculty directly to raise issues and concerns with regards to the course professionally in compliance with the student code of conduct. Students can also reach out to Dr. Paul Sava (Head, Department of Geophysics). The department head can investigate and work with the faculty member to resolve course-related concerns. Students' final point of contact is the Dr. Terri Hogue (Dean, Earth and Society Programs) who can make any final decisions.

## Participating in this Course

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### Expectations for Participation

You are expected to engage in all course activities, tasks, and assignment as an emerging professional. You are expected to spend between 8-10 hours on this course each week during out-of-class time, in addition to actively participating during the class.

### Profile in Canvas

As part of the learning experience at the Colorado School of Mines, our class will be utilizing online learning resources and experiences through the Canvas learning management system. In order to help build community in this online learning environment, you are encouraged to upload your profile picture to Canvas. Photos should be similar to the photos taken for passports or state identification cards.

## Course Schedule

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The course schedule is provided in the Course Summary portion of the Syllabus tab on Canvas.