

Department of Civil, Geological, and Environmental Engineering
Geological Engineering Program

GE F381/F382 W, 4.0 credits combined (Required)
Summer 2021

Field Methods and Applied
Design I and II

2020-21 Catalog Description: Techniques and geologic mapping, and geotechnical instrumentation applied to engineering design and resource evaluation. (Prerequisites: WRTG F111X; one of the WRTG F21XX series; GE F261, GEOS F213; GEOS F214; GEOS F320; GEOS F314) (1+0+40)

Texts: Required course materials will be provided, including an extensive field manual.

Course Objectives: **1)** To provide students with practical experience in a variety of field settings collecting and presenting basic geologic field data, including field mapping of stratigraphic and structural problems using topographic maps, and airborne and/or satellite images; **2)** to train students in the preparation of geologic maps in a variety of tectonic and lithologic settings, and in the development of written reports detailing the geologic history for several study areas; **3)** to expose students to the use of geophysical data as an aid to geologic mapping; and **4)** to apply the mapping techniques to typical geological engineering problems, such as slope stability analysis.

Type of Course: Field course

Schedule: We will meet daily for the duration of the course. Approximate work hours are between 8:00 am and 6:00 pm.

Office Hours: As this is a field course, traditional office hours are not applicable; however, the instructors will be accessible for several hours each day.

Instructors: Dr. Darrow (Office: ELIF 364; mmdarrow@alaska.edu; 474-7303); Dr. Kidanu (Office: DU309; stkidanu@alaska.edu; 474-5988)

Grading Policy:

- Grades will NOT be curved. Grades will be based on the final percentage earned in the course, and grades will be rounded to the nearest whole percent, following standard mathematical rules. The grading system follows the plus/minus system in the UAF catalog, and is as follows:

| Letter Grade Per Credit | Percentage Range | Grade Point Per Credit | Letter Grade | Percentage Range | Grade Point |
|----------------------------|------------------|------------------------|--------------|------------------|-------------|
| A+ | 97-100 | 4.0 | C+ | 77-79 | 2.3 |
| A | 94-96 | 4.0 | C | 73-76 | 2.0 |
| A- | 90-93 | 3.7 | C- | 70-72 | 1.7 |
| B+ | 87-89 | 3.3 | D+ | 67-69 | 1.3 |
| B | 84-86 | 3.0 | D | 63-66 | 1.0 |
| B- | 80-83 | 2.7 | D- | 60-62 | 0.7 |
| | | | F | <60 | 0.0 |

- Weighting of course components:

| | |
|-----------------------------------|---|
| Geologic and Geotechnical Reports | 100% (Total of 500 points) |
| Attendance and Participation | REQUIRED (See Course Policies for more information) |

Computer Use: MS Word, MS Excel, ArcMap, Stereonet or equivalent, and Blackboard.

Physical and Learning Disabilities: If you have a physical or learning disability, please advise the course instructors of any special consideration necessary by the beginning of the second class so that attempts to accommodate you according to the American Disabilities Act can be made. Your request for accommodation must be accompanied by a written statement of your disability from an appropriate authority. For information on the disability services on campus, please visit the following web site: <http://www.uaf.edu/chc/disability.html>.

Student Protections Statement: UAF embraces and grows a culture of respect, diversity, inclusion, and caring. Students at this university are protected against sexual harassment and discrimination (Title IX). Faculty members are designated as responsible employees, which means they are required to report sexual misconduct. Graduate teaching assistants do not share the same reporting obligations. For more information on your rights as a student and the resources available to you to resolve problems, please go to the following site :
<https://catalog.uaf.edu/academicsregulations/students-rights-responsibilities/>.

COVID-19: Student should keep up-to-date on the university's policies, practices, and mandates related to COVID-19 by regularly checking this website:
<https://sites.google.com/alaska.edu/coronavirus/uaf/uaf-students?authuser=0>
 Further, students are expected to adhere to the university's policies, practices, and mandates, and are subject to disciplinary actions if they do not comply.

Tentative Class Schedule:

| <u>Date</u> | <u>Topics</u> | <u>Assignments</u> |
|---------------|--|---|
| May 10-14 | Around-town bedrock exercises; preparation for independent field mapping | Geologic report with maps 50 points |
| May 17-21 | Elliott Highway bedrock exercise with semi-independent field mapping | Geologic report with maps 150 points |
| May 24-28 | Slope stability kinematic analysis with independent field mapping | Geologic report with maps 150 points |
| May 31-June 4 | Geophysics project with independent field mapping | Geologic report with maps 150 points |

Course Policies:

- 1) You are expected to follow the University of Alaska Fairbanks Student Code of Conduct. You may find this code at: http://www.uaf.edu/catalog/current/academics/regs3.html#Student_Conduct.
CHEATING AND/OR PLAGIARISM WILL NOT BE TOLERATED IN ANY SHAPE OR FORM.
 Should cheating and/or plagiarism occur, the student or students responsible will receive a failing grade for the assignment in question, and potentially for this course. Any form of cheating and/or plagiarism will be reported to UAF's Center for Student Rights and Responsibilities.
- 2) Geologic and/or geotechnical reports will be due at the time and date specified. **LATE WORK WILL NOT BE ACCEPTED.** Consider this as training for the future when you are required to submit a proposal or a final report on such and such a day at 5 pm. The same applies here. When the deadline rolls around, turn in what you have even if you do not think it is perfect (nothing is).
- 3) Successful completion of this intensive field course greatly depends on daily attendance and participation. If a student misses a day, it places an unfair burden on the rest of the students and the instructors, as the field location and material covered will vary from day to day. **YOU MUST ATTEND CLASS EVERY DAY.** Unexcused absences will result in a 10% reduction per day of the final grade for the relevant geologic report. Of course, we are in the midst of a pandemic. If you need to quarantine (or have a separate legitimate health issue for which you provide a doctor's note), contact your instructor immediately.
- 4) Your instructors will be available to you nearly all day every day of the field course. On "town days", your instructors will set office hours, during which you can contact them using the information supplied on page 1 of this syllabus.
- 5) Now, with all of "heavy" stuff laid out, during the next several weeks we will try our best to help you become intrepid field explorers and geological engineers extraordinaire! Please do not hesitate to ask us questions about the course content, assignment instructions, or how not to light your eyelashes on fire while starting a camp stove...

Student Learning Outcomes: This course is arranged towards meeting the educational outcomes set forth by the Geological Engineering program.

| Learning Outcomes and Performance Indicators | Role of GE F381/F382 |
|--|---|
| <p>(2) An ability to 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</p> <ul style="list-style-type: none"> <i>a) Understands the key components and parameters of a system or a process</i> <i>b) Demonstrates knowledge of diverse standards, regulations, and constraints applicable to Geological Engineering Practice</i> <i>c) Designs a solution to an engineering problem</i> | <p>Students will demonstrate the ability: to measure strike and dip with a Brunton; to locate themselves using traditional map and compass and modern GPS methods; to map geology in a variety of field settings; to use geophysical methods; to develop a stereonet for kinematic analysis of a slope.</p> |
| <p>(8) A knowledge of engineering applications as related to geological resources and geohazards in Alaska and an ability to practice engineering in Arctic-related projects</p> <ul style="list-style-type: none"> <i>a) Recognizes geologic characteristics of geohazards and geological resources in Alaska</i> <i>b) Identifies engineering issues associated with Arctic and sub-Arctic environments</i> <i>c) Uses skills and techniques to solve engineering problems related to frozen ground</i> | <p>Students will learn how to recognize the geologic expression of faults and areas prone to landslides. Students will apply skills learned during the course problems such as slope stability analysis, resource mapping, or thermokarst delineation and mapping.</p> |