

Syllabus

ERS 499: Wrangell Mountains Field Studies Program

University of Maine Summer 2024

Course Information

Course description: Field Experience in Earth and Climate Sciences Students will attend a four- to six-week earth or climate science field camp or engage in equivalent field-based research activities. The experience (a) draws together the various threads of the School's undergraduate program, (b) typifies the work of professionals within Earth and Climate Sciences, (c) develops problem-solving skills while working within a natural system, and (d) develops spatial cognition and reasoning.

Number of credit hours: 6

Prerequisites: Acceptance into the course

Location: Wrangell Mountains Center, McCarthy, Alaska

Course dates: June 22 – August 10, 2024

Course website

wrangellmountainsfieldstudies.org

Faculty Information

Benjamin Shaine

Instructor and academic coordinator

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Joseph Boots-Ebenfield

Instructor and program coordinator for the Wrangell Mountains Center

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Kristin Link

Instructor - art and scientific illustration

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Inga Kindstedt

Instructor - glaciology

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Course Delivery Method

Mode of Instruction:

In-Person, synchronous

Contact Hours:

Faculty and staff work directly with students 6-10+ hours a day and are available for tutorials and coursework discussion before and after scheduled activities, as well as individual appointments on request.

Class Meetings:

The program involves seven days per week of instruction and field research, with 2 days off during the summer. Most evenings include scheduled activities, including guest lectures, structured study time, and workshops. When in the backcountry or at a field site, our activities may start as early as 4am or end as late as 10pm (e.g., for wildlife observation). It is necessary to be flexible and able to accommodate a variety of class times.

Instructional Materials and Methods

- Course is conducted at the Wrangell Mountains Center, in the field near McCarthy, and on backpacking trips up the Kennicott Glacier and into surrounding mountains and valleys.
- Students receive a course reader on arrival. Readings include primary literature in science and humanities, book chapters, technical reports, and environmental planning documents. Field guides and textbooks supplement our field activities and are an integral part of our program. We carry a shared reference library of these on all activities and backcountry trips.
- There is no formal textbook for this course.
- Students are expected to engage in active learning (group and team work, discussions) throughout their time in McCarthy and in the backcountry.
- Curriculum combines field exercises and lectures by professionals, including our faculty and visitors who are engaged in local ecological and Earth science research, resource management, and related social sciences and humanities; seminar discussion of the primary literature, often on-site at the location where the research is conducted; and daily field journaling, including Grinnell technique, scientific illustration, and species accounts.
- The program culminates in student small group projects, on topics defined by faculty, with potential for original contribution to research or public understanding, requiring detailed field observations, with attention to methodology and to literature review, leading to oral presentation and written reports, with faculty and peer evaluation of drafts prior to completion.

Course Goal

Studying together with faculty in challenging Alaska wilderness, students should attain basic understanding of

- information, methods and techniques used by field scientists, interpreters and resource managers in subarctic glaciated high mountains;
- functioning and evolution of complex biophysical and social systems;
- roles and methods of science, art, religion and philosophy in understanding situations and places;
- seeing from multiple perspectives and in multiple time and space scales;
- energy and material flows, their causes and effects;
- collaborative team working methods;
- living healthfully and effectively through transitions of transformative change in unstable circumstance, including contemporary global warming.

Glaciers, mountains and human community of McCarthy are the place for this learning, accessible to undergraduate students developing skills appropriate for Earth science or environmental studies field camp.

Student Learning Outcomes

Following this program, students should have working knowledge of and experience in:

Evolution of complex biophysical systems, including material and energy flow at multiple spatial and temporal scales; uplift, erosion, glaciation, sediment transport and volcanism exposed in Wrangell Mountains far from equilibrium conditions. Through lectures, observations, and workshops using field guides and geologic maps, students become familiar with local geomorphic history, tectonics, rock types and their origin, glacier behavior and its effects on records of past climate, meltwater processes, ice and sediment transport, ecosystem interactions, periglacial features, ecological sequences along transects from melting ice, moraine identification and dating, and long-term and contemporary climate change. Students observe and record examples of these processes in the backcountry and engage in related research working in small groups on term projects in the field with faculty support.

Sediment covered ice as an example of a complex biophysical system, benefitting from the program's access to rock glaciers and moraine-covered Kennicott Glacier, including vegetated ice-cored surfaces. Methods of observing this system, prognosticating its future with global warming, hypothesizing mechanisms for its evolution, and testing those hypotheses are considered as skills applicable in other contexts. Geophysical, ecological and social processes are compared.

South-central Alaska flora, fauna, and ecosystems, including effects of human activities, climate change and conservation policies. Through lectures, workshops, and portfolio assignments, students learn to identify plant and animal species using field guides and taxonomic keys, learning habitat types and processes underlying ecosystem evolution. Emphasis is on interactions between biological, geophysical and social systems.

Cultural and political issues in the Wrangell-St. Elias region, including Native and Euro-American settler perspectives; federal and state management, and local community involvement. Conversations with managers and residents accompany introductory classes on laws, regulations and land ownership complexities affecting Wrangell-St. Elias National Park and Preserve and the town of McCarthy at its center.

Field research project design, hypothesis generation and testing, data collection, synthesis and interpretations of data for peers, faculty, and the public, orally and in writing. In small groups students conduct term projects on topics defined by faculty, with opportunities within those for emphasis on subjects of their choice. Students are mentored faculty advisors, with workshops teaching required skills.

Reading and discussion of primary literature in ecology, geology, social science, public policy and related philosophy and theory. Students seminar on primary literature with faculty, often on-site where the research was done.

The field journal as a primary tool for field observation and research, a place for reflection and a record of experience, in the classic natural history tradition. Students journal daily using an array of entries, including Grinnell-style trip logs; extended entries which can include drawings, free-writing, poetry, and detailed description; species accounts; and structured in-depth studies of places and processes; along with recording data for the term project.

Development and comparison of methods and skills of art and science, emphasizing practice of focused attention in these disciplines, so that this practice is of benefit for careers in both sciences and arts. Art techniques including sketching, scientific illustration and watercolor are taught, along with scientific hypothesis generation, data collection and evaluation. Classes address the similarities and differences between scientific and artistic method.

Conscious use of technology, so that it contributes to ability for attention on place and on communication within the program group. To achieve this focus, access to Internet and telecommunication is defined and specified regarding time and location. Reflections on the personal, social and professional issues and implications are discussed in classes and included as topics for journal entries. Both because of physical limits – outside of cell tower range – and for curriculum purposes, participants will be away from digital communications for periods during the program.

Grading and Course Expectations

- Students will be expected to be prepared for all course activities, which, because this is a travel course, will span a range of professional biophysical settings. In short, this means that students will be asked to do many things during the course, whether we are in the classroom, at symposia, traveling, or working in the field. Activities range from thinking about a problem, discussing ideas, proposing solutions, designing and conducting field experiments, collecting, processing, interpreting and presenting data, dealing with travel logistics and problems, and managing personal health and the health of the group. This style of learning replicates how scientists work, collaborating together on increasingly complex interdisciplinary topics. Comfortable functioning in a collaborative, diverse learning environment is crucial in order to connect unique regional problems with global research expertise. Participants join the scientific community by learning how to work in a group, share results of a project, and participate in rigorous debate.
- Assigned readings and viewing of material should be completed by the provided deadlines
- The final course grade will be based on the following three components:

Participation and collaboration: {30%}

Field journal: {30%}

Final oral and written presentation: {30%}

Course reflection: {10%}

Course Schedule

Dates approximate, subject to environmental and social stochasticity. Students will be provided a more detailed schedule on arrival in McCarthy.

Week	Date	Location	Curriculum	Assignments Due
Week 1	June 23 June 29	In town	Introduction to cooperative living. Safety protocols,. Trust exercises. Introduction to the academic program. Introduction to field journaling Classes and structured academic exercises at the glacier edge and near McCarthy.	

Week 2	June 30 – July 7	Backcountry	On-site classes overviewing Wrangells geomorphology, including glaciation and tectonics; ecosystems; climate; cultural history; land use; management issues. Classes on alpine ecology and climate change. On-site study of rock glaciers. Seminars on associated readings. Field journaling.
Week 3	July 7 – July 14	In town	Preparation for group term projects, including faculty-taught skills classes
Weeks 4-6	July 14 – August 3	Backcountry	Term project research backpacking up the Kennicott Glacier and into surrounding mountains and valleys. Routes and agenda determined by project needs and group backcountry travel abilities. Multidisciplinary field observations and seminars. Weekly aerial resupplies. Program typically divided into two travel groups.
Week 7	August 4 – August 10	In town	Term project completion. Oral and written project presentations. Program evaluation.

Course Policies

- Attendance at all course activities is required unless other arrangements have been made
- Late policy: By turning assignments in on time, you are eligible for full credit. Late assignments forfeit the right to any credit; any partial credit for late assignments will be up to faculty discretion.

- Appropriate use of electronic devices and digital communication is a topic of the curriculum. Students are expected to respect policies established for this purpose.

Academic Honesty Statement: Academic honesty is very important. It is dishonest to cheat on exams, to copy term papers, to submit papers written by another person, to fake experimental results, or to copy or reword parts of books or articles into your own papers without appropriately citing the source. Students committing or aiding in any of these violations may be given failing grades for an assignment or for an entire course, at the discretion of the instructor. In addition to any academic action taken by an instructor, these violations are also subject to action under the University of Maine Student Conduct Code. The maximum possible sanction under the student conduct code is dismissal from the University. Please see the University of Maine System's Academic Integrity Policy listed in the Board Policy Manual as Policy 314 (*Date Issued: September 1, 2020):
<https://www.maine.edu/board-of-trustees/policy-manual/section-314/>

Students Accessibility Services Statement: If you have a disability for which you may be requesting an accommodation, please contact Joseph Boots-Ebenfeldt, fieldstudies@wrangells.org, prior to enrollment..

Course Schedule Disclaimer (Disruption Clause): In the event of an extended disruption of normal program activities (due to COVID-19 or other long-term disruptions), the format for this course may be modified to enable its completion within its programmed time frame. In that event, you will be provided an addendum to the syllabus that will supersede this version.

Observance of Religious Holidays/Events: The University of Maine recognizes that when students are observing significant religious holidays, some may be unable to attend classes or labs, study, take tests, or work on other assignments. If they provide adequate notice (at least one week and longer if at all possible), these students are allowed to make up course requirements as long as this effort does not create an unreasonable burden upon the instructor, department or University. At the discretion of the instructor, such coursework could be due before or after the examination or assignment. No adverse or prejudicial effects shall result to a student's grade for the examination, study, or course requirement on the day of religious observance. The student shall not be marked absent from the class due to observing a significant religious holiday. In the case of an internship or clinical, students should refer to the applicable policy in place by the employer or site.

Sexual Violence Policy

Sexual Discrimination Reporting

The University of Maine is committed to its programs being a safe place for students. Because of this commitment, if you tell a teacher about an experience of **sexual assault, sexual harassment, stalking, relationship abuse (dating violence and domestic violence), sexual misconduct or any form of gender discrimination** involving members of the campus, **your teacher is required to report** this information to Title IX Student Services or the Office of Equal Opportunity.

If you want to talk in confidence to someone about an experience of sexual discrimination, please contact these resources:

For *confidential resources off campus*: **Rape Response Services: 1-800-871-7741** or **Partners for Peace: 1-800-863-9909**.

Other resources: The resources listed below can offer support but may have to report the incident to others who can help:

For *support services on campus*: **Title IX Student Services: 207-581-1406, Office of Community Standards: 207-581-1409, University of Maine Police: 207-581-4040 or 911**. Or [see the OSAVP website for a complete list of services](#)