



**ALASKA: CLIMATE CHANGE AND SPECIES  
ADAPTATION  
SUMMER 2019  
JUNE 28 – AUGUST 11**

**ACADEMIC SYLLABUS**

**Faculty:**

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**Contact Hours:** We will all be in close contact, meeting every day throughout the course. There will be a number of “check-in days” where we will schedule student-faculty meetings. If you would like to have a meeting outside of those times, you can certainly make an appointment or find an appropriate available time, and we are happy to oblige.

**Class Meetings:** This Wildlands Studies Program involves seven days per week of instruction and field research, with limited unstructured time during the program. 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. Typically, scheduled activities each day begin at 9am, with breaks for meals. 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.

**Course Credit:** Students enrolled in this Wildlands Studies Program receive credit for three undergraduate courses. These three courses have distinct objectives and descriptions, and we integrate teaching and learning through both formal learning situations (lectures and seminars) and field surveys. Academic credit is provided by Western Washington University. Extended descriptions follow in the course description section of this syllabus.

1. **ESCI 437A, Environmental Wildlands Studies (5 quarter credits)** – Field study of environmental problems affecting the natural and human-impacted ecosystems of our study region, including the role of human interactions.
2. **ESCI 437B, Environmental Field Survey (5 quarter credits)** – In this field-based course we conduct on-site examinations and analyses of environmental problems affecting wildlands and wildlife in our study region.
3. **ESCI 437C, Wildlands Environment and Culture (5 quarter credits)** – Field studies course involving on-site research in our field location, studying the relationships among cultural groups and the environment. Using region- and culture-specific case studies, students assess historical and current cultural and environmental uses of wildland and/or wildlife communities. Course examines outcomes of environmental policies and wildland/wildlife management, including both sociological and natural consequences.

**Readings:** A Course Reader is established for this program and will be provided to students in advance of the program or upon arrival. Readings include selections from academic primary literature, technical reports, book chapters, and environmental impact assessments and planning documents. Field guides and textbooks supplement our field activities and are an integral part of our program. We will carry a shared reference library of these on all activities and backcountry field studies.

## **Contents of this Syllabus:**

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### **I. Program Overview**

This program introduces students to Alaskan native flora and fauna, its unique and diverse ecosystems, and the conservation challenges of this part of the world. We will learn about Alaskan native history and geography, practice biological sampling techniques, understand how species have adapted to the challenging environments they live in and explore how changes in climate threatens ecosystems. Through interacting with local community members and meeting professionals, including researchers and resource management personal, we will discuss the challenges of sustainable resource use and development in the state. We will travel through Alaska, by road, boat and on foot as we conduct our field studies.

Students will study three main inter-related academic domains, including: principles of habitat specialization and climate change; ecological field sampling techniques, and; the unique culture of native Alaskans. Teaching will be done through field work, lectures and seminars by visiting scientists, and through participation on research projects. The beginning of the course will focus on the geography and climate of Alaska, providing students with a strong background of the local natural history. We will then use this new knowledge to examine how species have adapted to their specific environments and discover how climate change impacts our focal species.

As one of the last great frontiers, Alaska offers a wilderness and remoteness unlike anywhere else on earth. The State's vast national parks and protected areas provide refuge for a multitude of wildlife: Bears, wolves and moose roam across the expansive mountain ranges and forests, and whales, sea lions and otters reside in the icy waters close to shore. The severe winter and short summer seasons provide a challenging environment for even the hardiest animals to survive. Through our field studies, we will examine a number of different habitats, including marine ecosystems, intertidal zones, boreal forests, alpine meadows and high elevation mountains. We will explore how the biota has adapted to the different environments and the survival strategies they adopt. We will focus on a number of species as case studies, including otters, orcas, bears, salmon and wolves, as well as look at whole communities and their interactions, such as the coastal intertidal zone and the pollinator community.

The effects of climate change are especially visible in Alaska and have started to impact local people as well as wildlife. Rising sea level and ice melt has caused villages to relocate, and changes in temperature is causing range shifts for many species. We will investigate in detail how climate change is affecting the native people and the wildlife. We will discuss the effectiveness of current policies and protective measures and options to minimize future damage. We may also have the opportunity to participate in current conservation initiatives.

The final part of our program will focus on the rich and unique culture of native Alaskans. We will learn how the local people have lived for millennia in some of the harshest environmental conditions on earth, discovering how they interact with the land and sea. We will gain insight on how the traditional way of life is intertwined with nature, living closely with the environment.

We begin the Alaska Program in Anchorage, where we will orient you to the program and our expectations during the first few days of the program. Here we will learn about the native history and geography of Alaska by visiting the Alaska Native Heritage Centre and Anchorage Museum. Reading discussions, seminars and faculty presentations will continue throughout the course. From Anchorage, we will begin our descent towards the Kenai Peninsula. We will stop in the

Chugach State Park to embark on our first multi-day backcountry trip. We will be guided by a local expert who will train us in backcountry skills, including navigation, river crossings and bear safety. As we hike we will start to study the local flora and fauna.

From Chugach we will continue to the Kenai Peninsula, an area busting with wildlife, including, whales, otters, eagles, moose and bears. Here we will spend time on the ocean, learning about Artic marine ecosystems and intertidal zones. We will explore how tourism is impacting the local wildlife and discuss the ecotourism options that are being undertaken. A hike to the Harding Icefield via Exit Glacier will facilitate our learning of glaciology and how the climate has shaped Alaska's geography.

Our next stop will be Wrangell St. Elias National Park, where we will meet with local scientists and staff members to learn about the research and monitoring that is being undertaken in the park. We will come to understand park management practices and the challenges faced when managing a park that has a permanent human settlement; the balance between human intervention and conservation. Through undertaking day hikes, we will study a number of focal species in the park, gaining a deeper understanding of their ecology. We will explore the rich mining history of the area, further discussing in general the environment impact of mining, fracking and oil drilling.

Our final site will be Denali where we will embark on our final multi-day backpacking trip through the K'esuhi Ridge Trail System in Denali State Park, an area of outstanding natural beauty. We will spend a number of nights at the Murie Science and Learning Centre, deep within Denali National Park, meeting with biologists and resource specialists to learn about climate change in Denali, large mammals and park management issues. This will be facilitated through focused group discussions, presentations and themed hikes. In Denali, students will complete their independent research projects, with an emphasis on field research methods and conservation studies. From Denali we will return to Anchorage where the program concludes.

## II. Learning Objectives

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

**The ecosystems of Alaska in terms of flora, fauna, and ecological processes, including threats, conservation, and ongoing change.** Species identification is essential to managing and understanding the communities in this region and for identifying any change over time. Through a series of lectures, workshops, and journal assignments students will learn techniques for keying out and confirming identification of plant and animal species using field guides and taxonomic keys. In a series of field excursions, lectures, readings and discussions, students will learn basic ecological concepts, and be able to identify community types and the processes that underlie community development and change.

**The geologic history and processes at work in Alaska on multiple spatial and temporal scales, including glacial processes and range formation.** Glaciation, erosion, and volcanism are all exposed and active in the Alaskan Mountains, making these mountains a natural field laboratory for learning geologic concepts and processes. Through lectures, field observations, and workshops using field guides and geologic maps, students will become familiar with common rock types found Alaska and their origin. Other topics covered in lectures, field excursions, readings, and discussions include: glacial processes, glacial formations, plate tectonics, geologic history and timeline in the region, and erosion processes. Students will see examples of all these processes in action during our backcountry field studies, giving students insights into the dynamic nature of geologic processes over time and across spatial scales.

**The cultural, political, and management history within Alaska, especially within the different parks we visit.**

Emphasis includes native Alaskan perspectives, policies governing conservation, management, and resource use, potential problems associated with these policies, and local community involvement. Following introductory lectures and readings on the cultural, political, and management history in the region, students will have the opportunity to meet with land managers who can relay their experiences with conservation and land use.

**Designing a field research project, collecting field data, managing, synthesizing, and presenting interpretations of this data to peers, faculty, and the public both in writing and in presentation.** Students gain significant experience in conducting research through a final field project that is the culmination of this course. Students are mentored through the research process by a faculty advisor, through workshops, and through working with a small group of their peers. The skills learned in this project are transferable to other fields (and to their future careers): working well within a group, taking and using feedback, managing, synthesizing and interpreting information, presenting interpretations in oral presentation and in written form.

**Critical reading, discussion, and evaluation of primary literature in ecology, geology, and social science.** Throughout this course we rely on primary literature in lieu of a textbook, therefore, students gain a significant amount of experience reading and critically discussing primary literature. Following an introductory lecture and workshop on “how to read a scientific paper,” students read at least one piece of primary literature each day during our backcountry segments, learning over time and with practice where to focus their attention to be able to critically evaluate the work. Each reading is debriefed with a group discussion, insuring that students have understood the work and are able to critically evaluate it. By the end of the course when students are well-practiced in reading primary literature, less time in discussion is devoted to comprehension and more discussion is devoted to critical evaluation.

**Basic theoretical concepts of wildness vs. wilderness, management vs. preservation, sustainable development and environmental sustainability, and the practical applications of these concepts in conservation and human experience.** Students will gain knowledge and appreciation for the differences among these concepts and their usage in the popular and the primary literature. These concepts are frequently encountered throughout this course in readings, discussions, and visits with local experts. Issues surrounding their influence on conservation and management are discussed frequently throughout the course.

**Field observation skills, including methods for documenting and sharing findings in multiple formats.** Field observation skills are an integral part of good science and promote understanding of the world around you. Through directed learning of geology and ecology in the region, students will gain experience observing the world around them and become able to identify changes (e.g., in community, in erosion potential, etc.). Following an introduction to skills of observation and various techniques of recording and presenting information (e.g., natural history sketching, Grinnell trip log and species account techniques), students will gain experience in presenting natural history observations and utilizing observations as a basis for scientific inquiry.

These topics will be addressed through classroom lecture and discussion, course readings, field activities, visits with local experts, exposure to ongoing research, extended backcountry excursions, and field research projects. The course generally progresses from faculty-led instruction in the beginning (i.e., more lectures and readings) to student-led critical evaluation, analysis, and synthesis in the end of the course.

Overall, our goal is to develop your skills as a field ecologist and scientific naturalist who can interface between diverse environments. We will spend time sharpening our observational and interrogative skills by becoming intimate with our surrounds. Aided by the use of field guides, we will learn to identify resident wildlife species through various techniques: from physical traits to track and sign, to calls and nuances in behavior. We will then learn about on-going efforts to monitor wildlife, focusing on techniques that form an important part of the conservation ecologist’s skill set and which can be used to address relevant research questions along the social-ecological spectrum. Ultimately, we will expose you to an integral ecology that instills a deep appreciation of the multiple perspectives available for understanding the natural world. Our primary requirement is that you are enthusiastic, adaptable, genuinely open-minded and ready to learn. We look forward to you joining us and sharing this once-in-a-lifetime experience together.

### III. Course Descriptions

We teach these three courses in an integrated format in the field. However, students will receive transcript credit for the following three courses:

**ESCI 437A, Environmental Wildlands Studies (5 quarter credits)** – In this field-based course we will learn about species adaptation and climate change, through practical, theoretical and analytical means.

Experiences/Activities: Extended field study of flora, fauna, biotic communities, and ecological relationships within the study region. Students participate in field research that will cover species adaptation and climate change as well as some of the following topics: wildlife, plant, and community ecology, conservation biology, natural history, surveys of key plant and animal species, monitoring of populations of rare species, assessment of management approaches. Various ecological and other biological research techniques will be taught through firsthand experience or through review of literature—historical and current techniques—including their advantages and disadvantages. Students will gain an understanding of good note taking through daily field journal entries in which they will document their expectations and experiences. They will synthesize what they have learned through hands-on individual and group activities and assignments. The field journal will also be used to document natural history observations and site-specific species lists. Students will learn to observe, identify, and catalogue biodiversity in a format useful in future studies and by other field workers. Taught in conjunction with ESCI 437B and ESCI 437C.

Outcomes: Students will develop skills in field observation and documenting and sharing observations in multiple formats, including critically discerning appropriate formats for each subject or audience.

Evaluation/Assessment:

Field Journal	40%
Group Activities	10%
Mid-term Exam	20%
Final Exam	20%
Participation & Involvement	10%

**ESCI 437B, Environmental Field Survey (5 quarter credits)** - Field study of environmental problems affecting Alaskan wildlands and wildlife populations through conducting on-site examinations and analyses, using research-based methods.

Experiences/Activities: Students will learn the concepts and principles of environmental studies, wildlife and natural resource management, and field-based ecological and biological research. A number of individual and group assignments will test students' ability to work individually and as a team to explore topics ranging from plant-insect interactions and animal behavior. This will be done through the use of a variety of suitable field methods including point counts to monitor bird populations and carbon-storage potential of boreal forests. Other skills to be taught include backcountry navigation and proper use of map, compass, and GPS, wildlife observational skills and species identification of key groups of plants and animals, critical assessment of key ecosystem features, and indicators of environmental quality. After studying various methods for conducting field-based research in the Alaskan ecosystems, as well as examining an array of possible research topics, students will carry out a research project. The proposed project should be feasible given the time allotment and materials available. Students will learn the importance of proper experimental design, data collection techniques, analysis of field data, and report writing. Taught in conjunction with ESCI 437A and ESCI 437C.

Outcomes: Students will gain the ability to undertake a substantial, complex field project and will be able to gather, organize, analyze, interpret, and present data in a way that is appropriate to the audience and subject matter.

Evaluation & Assessment:

Assignments	30%
Project Proposal	20%
Final report	20%
Oral Presentation	20%
Participation & Involvement	10%

**ESCI 437C, Wildlands Environment and Culture (5 quarter credits)** - Field studies course studying the relationships among cultural groups and the environment. Using region- and culture-specific case studies, students assess historical and current cultural and environmental uses of wildland and/or wildlife communities. Course examines outcomes of environmental policies and wildland/wildlife management, including both sociological and natural consequences.

Experiences/Activities: In conjunction with material from ESCI 437A and ESCI 437B, this course includes analysis of past and current legislative public land planning mandates and how they affect the region; survey of the role of wildlands in regional thought and culture; historical and contemporary resource use and issues of sustainability; concepts and principles of environmental research, management, and public land planning methods; roles of culture in wildland management.

Outcomes: Students will gain the ability to critically read and evaluate primary scientific and policy literature. Students will gain a knowledge base in wildlands natural history and policy, with specific emphasis on Alaska. Students will discuss and critique the literature in light of other information they have learned in this program from local experts, lectures, their observations, and other relevant readings. Students should be able to demonstrate understanding of basic ecological, geological, and management and policy concepts in Alaska, including glacial processes, geologic history and processes, community ecology and species interactions, effects of climate change, different management designations (e.g., park vs. wilderness), and subsistence. Students will be able to apply their knowledge of geology, ecology, and social science to new scenarios (as presented in the final exam) and clearly demonstrate understanding of the material through their narratives.

Evaluation & Assessment:

Reading Discussions:	30%
Assignments:	30%
Final Exam:	30%
Participation & Engagement	10%

**IV. Assessment**

The following is an overview of the academic requirements for the program. Some of the assignments are ongoing (journal and readings) and some have specific dates (Final Exam). Due dates are subject to adjustment in response to environmental and demographic stochasticity. Final grades for each course listed above will be based on the following items:

Course number	Assessment item	Date due <sup>1</sup>	Percent of grade	
ESCI437A	Field Journal	9 Aug	40%	
	Group Activities	Ongoing	10%	
	Mid-term Exam	18 July	20%	
	Final Exam	9 Aug	20%	
	Active Participation & Discussion	Entire Program	10%	
ESCI437B	Assignments	18 July	30%	
	Research Project	Proposal	21 July	20%
		Final Report	7 Aug	20%
		Oral Presentation	7 Aug	20%
	Active Participation & Involvement	Entire Program	10%	

ESCI437C	Reading Discussions	Entire Program	30%
	Assignments	Ongoing	30%
	Final Exam	9 Aug	30%
	Active Participation & Engagement	Entire Program	10%

### ESCI 437A, Environmental Wildlands Studies (5 quarter credits)

#### 1. Field journal – 40%

The field journal is an integral part of the Wildlands Studies Alaska Program experience. All scientists who work in the field keep a field journal in which they record everything they find, observe, and collect. Observations at all levels of organization from the individual organism to the ecosystem, including behavior, natural history and life history traits, distribution, abundance, habitat, landscape, human dimensions, and how all of these might be interrelated go in the field journal. The journal is a permanent record of observations and, no matter what the purpose of the field trip, the journal contains all the evidence on which all subsequent work will be based. It is also a place where your observational skills are repeatedly and continuously tested and sharpened. The field journal will contain scientific evidence that might one day be used as a reference to others and in order to fulfill its purpose, it should be useful and comprehensible to others, perhaps long after the author is dead (hint: especially to Wildlands faculty, who will read and grade the journal). We will introduce journal-writing style and our expectations during the first few days of the program. Important: Do not lose your field journal! Make sure to put your name, address, phone number, and email address in a conspicuous spot. The data contained within your journal cannot be reconstructed and losing it will be disastrous! There will be a number of group assignments that will be recorded in the field journal. These entries should be easily located (i.e., in a separate section of the journal and easy for the course instructor to find).

Requirements:

##### i. Grinnell Trip Logs – 25%

Three to four entries from locations as prescribed by the Instructors. This (adapted) Grinnell Trip Log is a structured, descriptive narrative record of field walks. It includes the following essential elements:

<b>1. Date &amp; Time:</b> Head your trip log entry with the date and the start and end time of your trip.	<b>6. Flora:</b> Narrative description of characteristic / notable vegetation seen, i.e. species, habit, incl. interactions.
<b>2. Location:</b> Name of the area and the hiking trail/route. Include start/end GPS coordinates if available.	<b>7. Fauna:</b> Narrative description of animal sightings (incl. behavior) and evidence of their tracks, calls and signs.
<b>3. Weather:</b> Start/end conditions and weather changes, e.g. temperature, % cloud cover, wind speed / direction.	<b>8. General Commentary:</b> A brief personal summary of the walk & other notable observations, e.g. geology, soils.
<b>4. Route Description &amp; Map:</b> Concise description of route travelled, incl. distances, times, markers and directions. On the left page, sketch route map & label key features.	<b>9. Species Record &amp; Sketches:</b> Descriptions of 3-5 species recorded. Use field guides to support observations. On the left page, sketch species & label.
<b>5. Habitat(s):</b> Description of the area's ecology, general vegetation type and changes in habitat, incl. ecotones.	<b>10. Two Questions:</b> Conclude with two detailed questions about ecological phenomena that got you wondering.

This log is a careful summary of observations and field notes taken throughout the day. This entry usually takes 2 hours to write-up, but can take longer depending on the day of record. Entries must include the 10 elements above.

Grinnell Trip Log entries will be graded according to:

- Organization: Entries are written in an organized way and should follow a logical format that remains consistent with the established criteria. Information should be accessible and related to specific dates and locations.
- Completeness: Includes essential elements of a field journal and prescribed entries have been completed.
- Accuracy of content: Provides an accurate and comprehensive reflection of phenomena encountered during the trip (e.g. correct orientation information and habitats and species encountered).
- Neatness/Readability: Other readers should be able to use your journal as a reference.
- Effort: Entries should reflect the serious effort invested, and improvement made, throughout the program.

ii. **“Today I noticed...” – 10%**

At least five entries throughout the program as determined by the student. These are entries that begin with the above phrase (or, if done weekly, “This week I noticed...”) and leads into a short description of specific ecological phenomena observed (e.g. species interactions) that ignited a sense of curiosity or newfound learning. The entry should draw on additional information from field guides or lectures to support, refute, or deepen insight into the ecological observation. Sketches or other graphic representations are highly encouraged.

iii. **Other Assignments/Field Activities as Assigned – 5%**

Refers to the completion of any other specific journal activity or field assignment given by the instructors throughout the program, e.g. field surveys (bird counts), ethology exercises, and mapping.

NB: Include a table of contents on the first page of your field journal and number your pages so entries can be more easily located.

**2. Group Activities – 10%**

Refers to the completion of other specific activity or field assignment given by the instructors throughout the program.

**3. Mid-term Exam – 20%**

Students will take a written exam to assess their understanding of the key themes addressed throughout the course. ‘Facts’ may be examined; however, emphasis is more on critical reflection and application of concepts to scenarios.

**4. Final Exam – 20%**

This exam will be set up as a series of essay questions designed to test your understanding of the course material. For example, we may probe your understanding of the material by asking you to apply what you have learned about conservation strategies through the various course readings and activities by comparing them to a new scenario or location or by asking you to critically examine the conclusions of one of the readings compared to another which disagrees.

**5. Active Participation & Discussion – 10%**

Includes general engagement with the subject matter and participation in group reading and discussions.

**ESCI 437B, Environmental Field Survey (5 quarter credits)**

**1. Assignments – 30%**

The completion of other specific activity or field assignment given by the instructors throughout the program.

**2. Research Project – 60%**

The research project is a group project; after introductory lectures and investigations, students, in groups of 2-3, will propose projects that can be completed within the allowed time. Projects may also be assigned that are within the expertise of the instructors. Your final grade includes preparation, participation, field work, written report, and oral presentation. Students will be evaluated on participation during the collaborative field work as well as on specific contributions to the final written and oral products, both by instructors and by peers.

**Requirements:**

**i. Research proposal – 20%**

The proposal should include an Introduction that lays the foundation for the proposed questions/research topic. Introductions generally start broad and narrow towards the specific question to be addressed. The final sentence of the introduction should be a statement of the question to be addressed. Other components of the proposal include a Hypothesis, if relevant; a detailed Methods section, in which you will outline the study site(s), focal group(s), materials to be used, and observational/experimental techniques to be used; Expected Results, in which you outline your anticipated findings; and a Discussion, in which you will discuss the implications of your expected findings, as well as the implications of your arriving at different results. Pay close attention to the formulation of your proposal—this is a crucial component of your research project and the design of your observations/experiments at this stage will determine the

success of all your subsequent work. Make sure to think carefully about all possible shortcomings and contingencies of your research plan, including the inability to find your model organisms, what to do if inclement weather disrupts data collection, what to do if you collect insufficient data, etc. Make sure to propose a project that is feasible in the short time permitted and using the limited resources at our disposal.

**ii. Oral presentation – 20%**

The oral presentation is your chance to share your research with your peers. In a 10-minute presentation, each group should cover all the major components of the research project, including a brief introduction to the research topic and questions, brief overview of the methods used, results, and a discussion of the importance and implications of findings. After each presentation, 5 minutes will be allowed for questions from the audience.

**iii. Written report – 20%**

The written report, included at the back of the field journal, will be a detailed account of every component of the research project, including a detailed introduction to the study topic and questions addressed, detailed methods, results, and a thoughtful discussion of the importance and implications of all findings. Results should be conveyed using appropriate charts, graphs, and tables in a way that clearly presents major results.

**3. Active Participation & Involvement– 10%**

Students will be evaluated according to their active participation and involvement in all field activities, and their contribution to group/peer projects.

**ESCI 437C, Wildlands Environment and Culture (5 quarter credits)**

**1. Reading Discussions – 30%**

This is ongoing throughout the program and includes group discussions of many of the readings presented in the Course Reader, incorporating readings from biology and ecology, general natural history, biodiversity conservation, social sciences, and wilderness and management theory. We will tailor the discussions and reading choice to our backcountry location and current topic focus so that knowledge is developed in a logical progression. We will cover the basics of reading primary literature on one of the first days of the program, and then will expect you to read on average one primary literature piece each day while in the field. We will often discuss these readings as a group, typically at the end of the day, before having dinner, to maximize our time in the field. However, due to logistical considerations some discussions will be at other times; it is the responsibility of the student to make sure he or she is prepared for all group discussions. We suggest you leave yourself ample time to read the papers before we meet as some may take longer than others to digest. Your grade will be based on whether you participate in the discussions, whether it is obvious that you read and understood the reading, and your participation on other activities we do with readings (e.g., pre-discussion questions, student-led discussions, etc.).

**2. Assignments – 30%**

Assignments will be set periodically to evaluate your synthesis of the reading material. Assignments will include quizzes where questions will be drawn from the previous week's readings and will cover social-cultural issues. Assignments may also include cultural and nature writing.

**3. Final Exam – 30%**

This exam will be set up as a series of essay questions designed to test your understanding of the course material. For example, we may probe your understanding of the material by asking you to apply what you have learned about conservation strategies through the various course readings and activities by comparing them to a new scenario or location or by asking you to critically examine the conclusions of one of the readings compared to another which disagrees.

**4. Active Participation & Engagement – 10%**

Students will be evaluated according to active participation in everyday activities as well as their attitude and involvement when engaging with guests and local hosts. In this particular course, it is important that the student demonstrates a genuinely open mind, a willing attitude, and a respectful etiquette in interacting with team members and local groups. Finally, the student's consistent and positive contribution to the team dynamic (e.g. by embracing assigned directional roles and responsibilities) will be taken closely into account.

## V. Grading Scheme

To convert final grade percentages to letter grades for each course that will appear on your transcript, we will use the following grading scheme:

Grade	Percentage	Grade	Percentage	Grade	Percentage	Grade	Percentage	Grade%
		B+	82.5 - 87.4	C+	65.0 - 69.9	D+	52.5 - 57.4	
A	92.5 - 100	B	75.0 - 82.4	C	62.5 - 64.9	D	45.0 - 52.4	F < 40.0
A-	87.5 - 92.4	B -	70.0 - 74.9	C -	57.5 - 62.4	D -	40.0 - 44.9	

## VI. General Reminders

*Academic Integrity* is as relevant in this field course as it is at your home institution. Plagiarism, using the ideas or materials of others without giving due credit, cheating, or putting forth another student's work as your own will not be tolerated. Any plagiarism, cheating, or aiding another to cheat (either actively or passively) will result in a zero for the assignment. Cases of academic dishonesty may be reported to your home institution.

*Assignment deadlines* are established to promote equity among students and to allow for ample assessment time from faculty before other assignments are due or other activities are to occur. Therefore, deadlines are firm and late work will receive at a minimum a 10% loss of grade points for each day they are late. If you believe that extenuating circumstances have prevented you from completing your work on time, make sure to discuss this with the relevant faculty as soon as possible and certainly before the work is due.

*Participation and attendance* are crucial throughout this program. Because of the demanding schedule and limited time, all components of the program are mandatory (unless indicated) and missing even one lecture can have a proportionally greater effect on your final grade. Hence, it is important to be prompt and prepared (i.e., with required equipment) for all activities. The full schedule and integrated course work make time management an essential component to academic success.

Students with special needs should meet with the lead faculty member as soon as possible to discuss any special accommodations that may be necessary.

## VII. Academic Schedule & Course Content

Outlined in the following table, but subject to change; we will frequently change plans because of weather or because of opportunities that arise. The schedule is organized by location and is intended to produce realistic student expectations regarding the timing of course activities and schedule. Each day will be full, and all activities, readings, assignments, etc., listed will be completed at the locations they are listed under. However, the timing of these activities will be determined on arrival. Exact schedule will be reviewed with students 1-3 days ahead of time.

Date	Location	Lecture Topics & Activities	Reading discussion	Assignments due
28 June	Anchorage	Students arrive; introductions; essential safety and orientation briefings; supply food		
29-30 June	Anchorage	Bear safety; trip planning; equipment and health review Academic requirements; course overview; journal techniques		
1-2 July	Anchorage	<u>Activities:</u> Visit to Alaska Native Heritage Centre Visit to Anchorage Museum Visit to Public Lands Centre  <u>Lecture topics:</u> History of Alaska Land and resource management		
3 July	Anchorage – Crow Pass	Travel from Anchorage to Crow Pass  <u>Activities:</u> Backcountry skills workshop  Backcountry protocols; safety discussion		
4-6 July	Crow Pass	<u>Activities:</u> Backcountry hike Rock identification Glaciation Plant, insect and bird identification  <u>Lecture topics:</u> Geography and climate Ecological patterns and processes Alpine climate and ecology Alpine specialization		
7 July	Crow Pass - Moose Pass	Travel from Crow Pass to Moose Pass		

8 – 11 July	Moose Pass	<u>Activities:</u> Plant, insect and bird sampling techniques Forest ecology project  <u>Lecture topics:</u> Soil carbon dynamics Tundra ecology		8 July: Journals due 1 <sup>st</sup> revision
12 – 13 July	Moose Pass – Kenai Fjords National Park	Travel from Moose Pass – Kenai Fjords National Park  <u>Activities:</u> Floodplain and fresh water sampling techniques Hike to icefield  <u>Lecture topics:</u> Floodplain ecology Succession		
14 July	Kenai Fjords - Seward	Travel from Kenai Fjords – Seward  <u>Activities:</u> Whale watching		
15-19 July	Seward	<u>Activities:</u> Kayaking trip Intertidal zone projects  <u>Lecture topics:</u> Marine and intertidal zone ecology		18 July: Mid-term exam
20 July	Seward – Wrangell- St. Elias	Travel from Seward - Wrangell-St. Elias		
21-22 July	Wrangell- St. Elias	<u>Activities:</u> Glaciation and climate change workshop Glacier hike Historic walk Bush Medicine workshop  <u>Lecture topics:</u> Land use/management of Wrangell-St. Elias National Park History of Kennicott Valley Geography of the Wrangell Mountains Subsistence and sustainability lecture		21 July: Final project proposal due

23-24 July	Wrangell-St. Elias – Denali State Park	Travel from Wrangell-St. Elias – Denali State Park		
24-30 July	Denali State Park	<u>Activities:</u> Backcountry trip Final projects  <u>Lecture topics:</u> Elevational/altitudinal gradients in biodiversity Project design, data collection and analysis		
31 July	Denali State Park – Denali MSLC	Travel from Denali State Park to Murie Science and Learning Centre  <u>Activities:</u> Mammal ecology with AKGEO		
1 - 3 Aug	Denali MSLC	<u>Activities:</u> Mammal ecology with AKGEO		
4 Aug	Denali MSLC – Denali National Park headquarters	Travel from MSLC to Denali National Park headquarters		
5 Aug	Denali National Park headquarters	<u>Activities:</u> Park policy and management		
6 Aug	Denali National Park headquarters – Denali State Park	Travel from Denali National Park headquarters – Denali State Park		
7-9 Aug	Denali State Park	<u>Activities:</u> Final projects Final exams		7 Aug: Final projects report and oral presentation due  9 Aug: Final exams and journals due
10th	Denali State Park – Anchorage	Travel from Denali State Park - Anchorage		
11th	Anchorage	Course concludes		