



ACADEMIC SYLLABUS

Faculty:

Lead Instructor: Jennifer Verdolin, PhD

Co-instructor: Jessica Lodwick, PhD

Contact Hours: We will be in close contact, meeting every day throughout the course with daily evening group discussions. There will be days where we will also have one on one student-faculty meetings. If you would like to have a meeting outside of those times, you can certainly approach us and find an appropriate available time, and we will be happy to oblige.

Class Meetings: This Wildlands Studies Program involves seven days per week of instruction and field research, with little time-off 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 (e.g., presentations, guest lectures, field activities) begin at 8:30am, with breaks for meals. Many evenings include scheduled activities, (e.g., group discussions, structured study time, or journal writing). When at a field site, our activities may start as early as 6am or end as late as 8pm. Flexibility is necessary to accommodate a variety of class times which maximize learning opportunities.

Course Credit: Wildlands Studies Program students 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 (i.e., 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 units)** – 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 units)** – 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 units)** – 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 prior to the start of the program. Readings include selections from academic primary literature, technical reports, book chapters, and other 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 field trips.

Contents of this syllabus:

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I. Program Overview

Iceland, the land of fire and ice, was settled by Viking explorers in the early 9th century. This seemingly inhospitable land is brimming with life while emerging as a global leader in renewable energy and sustainability. From the active volcanic zones that power geothermal systems to the glaciers and fjords, the diverse landscape of Iceland is breathtaking. In this program team members will learn firsthand about the wildlife of Iceland, the environmental processes that have shaped the biomes found here and their ecological importance, and the human dimensions of conservation and sustainability. We will also emphasize conservation and management of many of the marine and terrestrial species found in Iceland and the role of tourism in sustaining Iceland's economy.

Despite its role as a global leader in sustainability, climate change is creating changes to the landscape with rapidly melting glaciers that threaten the fragile tundra ecosystem and the hydropower the country relies on for energy. Our journey will take us from the capital of Reykjavik up to the northern fjords, to coastal regions teeming with seabirds and marine mammals, to Pingvellir where we will visit the ruins of ancient settlements, and to the rapidly disappearing glaciers. The wide-ranging field experiences and interaction with farmers, conservation organizations, and scientists will give us a deep understanding of the diversity and complexity of Iceland's ecosystems, conservation strategies, cultural relationship with nature, and how ecosystem services can drive an economy.

We will emphasize hands-on investigations of the ecology and conservation of Iceland's species and communities. Our first objective is to become familiar with the natural history of this country, its climate, geography, and flora and fauna. We will traverse the country beginning in Pingvellir National Park where we will focus on lake ecology, speciation, and habitat specialization. From there we will make our way to Snaefellsnes National Park, where seals and sea birds dominate the shoreline. Next, we head north, deep in the fjords and home of the arctic fox. Here we will work with the Arctic Fox Center to conduct ecological research on the ecology and behavior of one of Iceland's iconic species. After making our way through lakes, forests and waterfalls we will explore the glaciers in Skaftafell (Vatnajökull National Park) where we will also discover the unique geology of the area, study plant colonization in deglaciating fragile tundra terrains, as well as explore glacial lagoons. From there we will make our way westward to Hveragerdi, an important rift zone, and visit a geothermal farm to learn how the people of Iceland thrive in a seemingly inhospitable climate. Throughout this course we will study the behavior, ecology, interactions, patterns of diversity, and ecological niches of the species we encounter, and the challenges they are facing.

II. Learning Objectives

Our Iceland program gives students the opportunity for hands-on investigations of the ecology and conservation of its unique biomes and the marine and terrestrial species they harbor. We will commence with an initial examination of the natural and cultural history and biogeography of Iceland. We will then draw upon this knowledge as we delve deeper into the wild and spectacular places this area has to offer, familiarizing ourselves with current coastal and inland research, environmental success stories and persistent challenges, and opportunities facing conservation and sustainability in this region in the face of climate change.

Key goals and activities include:

- i. **Natural history, dynamics and naturalist skills:** What climatic and geological factors underpin Iceland's ecosystems? What resident and transient species rely on the coastal and inland regions? What key habitats and flora and fauna are present in the area and how would a scientific naturalist identify, investigate and document these features? What naturalist skills and competences need to be cultivated in order to become an effective field biologist, both in this region and in other contexts? We will engage in a number of field walks to explore these questions for ourselves.
- ii. **Biodiversity conservation and ecological restoration:** What are some of the major conservation pressures and threats to biodiversity? What strategies are being used to tackle these threats? What role can landscape restoration play and how might we improve its effectiveness? Our team will conduct terrestrial field surveys to understand species biology, monitor populations, and evaluate the impact of specific management actions.
- iii. **Wildlife and protected area management:** How has Iceland's approach to conservation through "sustainable utilization" affected the social and ecological landscape? What are the impacts of commercial hunting? When are these activities justifiable? From protecting the arctic fox to eider sea duck populations, we will discuss these issues with researchers and community members.
- iv. **Icelandic society, culture and politics:** *The ancient:* As an area with the oldest form of Parliament *Althing*, Iceland was fiercely independent until it fell under Norwegian rule, then Danish governance until regaining its independence after WWI. Facing many ecological and economic crises during its young history, what can we learn from the way in which the people of Iceland cope with change and interact with the land and sea? What are their legacies and lessons for today? We will visit places of archaeological and cultural significance in order to explore such questions. *The contemporary:* How would one characterize modern-day Icelandic culture? How have livelihoods in the country changed and to what extent have the historical transitions been integrated into modern society? Are traditional cultural practices being sustained or eroded and how does all this affect biodiversity conservation? *The environment:* Geologically, Iceland is young and current volcanic activity continues to create new land. How has their relationship to the environment changed? A difficult landscape presents unique challenges reflected in human diets over time. Today, Iceland is committed to sustainability and harvesting natural resources responsibly. Facing increasing pressures from tourism, how is Iceland addressing access to its remaining wilderness areas? What are the challenges for sustainable tourism and how do the people of Iceland feel about the increasing visibility of Iceland on the conservation frontline and popularity as a tourist destination? We will seek answers to these questions as we visit areas and peoples who are best placed to help inform our perspectives.
- v. **Champions for sustainability, resilience and action:** What prospects are there for sustainable and resilient futures in Iceland in the face of climate change? What motivates these people and what are their defining qualities? What can we learn from them and how might society support them? Our search will take us to a number of fascinating locations to meet some inspiring people doing work to ensure Iceland's role as a global leader in conservation and sustainability.

These topics will be addressed through lectures, discussions, course readings, field activities, visits with local experts, exposure to ongoing research, hiking excursions, and field research projects. The course generally progresses from faculty-led instruction in the beginning to student-led critical evaluation, analysis, and synthesis toward the end of the program. **Please note that prior field research experience is not required. All necessary skills of data acquisition will be taught on-site in Iceland.**

Overall, our goal is to develop your skills as a field ecologist and scientific naturalist who can interface between diverse environments and communicate with people from a variety of backgrounds (e.g., from laypersons to researchers). We will spend time sharpening our observational, sensory, interrogative and analytical skills by becoming intimately acquainted with our surroundings. Aided by the use of field guides, we will learn to identify resident wildlife species through various techniques: from physical characteristics to calls and nuances in behavior. We will then learn how to observe 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. We want to foster a sense of

curiosity, demonstrate ways to transform your observations into research questions, and guide you in answering those questions. Ultimately, we will expose you to an integrated approach to ecology: one that instills a deep appreciation for how to identify, address and unite 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, introduced on page 1:

ESCI 437A, Environmental Wildlands Studies (5 quarter units) – Field study of the natural history as well as the environmental challenges and opportunities for the ecosystems of Iceland, including human dimensions.

Experiences/Activities: Students will become familiar with the flora, fauna, ecology, geography and natural history of Iceland. Students will be instructed in methods of data recording and critical reflection and will learn directly through observation and experience, as well as through guidebooks, lectures, stakeholder and community interactions, technical keys, and scientific and popular literature. Using principles of conservation ecology, the course will introduce conservation issues that Iceland faces, such as habitat degradation, climate change, and sustainable use.

Our program will explore the steps that governmental and non-governmental agencies are taking to address and combat current issues through actions tied to ecological restoration and land management. Students will interact with researchers to gain insight into current trends. Students will participate in various projects led by researchers and/or land managers to further experiential understanding of challenges and opportunities faced. We will participate in conservation field research and evaluate environmental policy options, focusing on concepts, principles, and the role of environmental research, wildlife management, and conservation planning.

Students will complete an in-depth field journal with detailed scientific naturalist observations, field surveys and nature writing. They will be required to participate in activities and discussions, sharing viewpoints and critiquing arguments or topics encountered. Discussions and role playing are some of the tools used to facilitate these processes. Additionally, students will be assigned readings from recent scientific literature and will be responsible for participating and leading seminar discussions. Students will prepare a pre-assigned research topic that will address the natural and cultural history pertaining to an area scheduled to be visited. Students will give an oral presentation summarizing their research for peers. Students will undertake an independent research topic, collect data, and present the results to the group.

Outcomes: Students will demonstrate knowledge of ecosystems, natural history, and flora and fauna of Iceland. Students will be able to critically analyze and reflect upon the relevance and significance of scientific research presented, projects participated in, and research or management organizations visited. Across these diverse contexts, students will demonstrate their own process of learning by developing skills in field observation and documenting, and communicating observations in multiple formats. Students will employ various techniques to present and record their observations, including natural history sketching, narrative writing and mapping.

Evaluation/Assessment:

Field Journal	50%
Oral Presentation	10%
Independent Project	10%
Midterm Exam	20%
Participation and Discussions	10%

ESCI 437B, Environmental Field Survey (5 quarter units) – Field studies course focusing on field survey methods and on-site biodiversity analysis and assessment as part of individual and group research.

Experiences/Activities: Students will be taught methods of field data collection, analysis and environmental report writing. Students will build species identification lists by using field guides and identification keys, which will be introduced in conjunction with taxonomic concepts. Students will be introduced to research projects and participate in related practical research-implementation efforts, such as biodiversity monitoring. Workshops and field activities will introduce methods of species identification, data collection and analysis. Students will design and complete a number of short field assessments to capture their understanding of how techniques may be applied in the field, as well as how to identify testable questions for research projects and what elements need to be measured to answer those questions. Students will discuss their results in light of current management or conservation issues and should be able to demonstrate how their results compare with or add to current knowledge of their study subject. Students should be able to demonstrate their understanding of the ecological and/or social science processes and concepts that underpin their research, including ethical dimensions. Attention will be given to evaluation, analysis and presentation, including formats for scientific writing and illustration.

Outcomes: Students will develop skills in field observation, data collection, and data interpretation. They will gain the ability to undertake field projects and be able to synthesize, organize, analyze, and present final data in a way that is appropriate for peers and other interested researchers/stakeholders. Students will be able to clearly describe what study they are carrying out, why they are carrying out this study, what methods they are using to carry out this study, and what they expect to learn by conducting this study. Students will display competency using all tools provided to them. Students will be able to discuss their results in light of current management or conservation issues, and demonstrate how their results compare with or add to current knowledge of their study subject. Students will be able to demonstrate proficiency with keys and manuals as well as the methods, principles, analysis, and applications of conservation ecology.

Evaluation & Assessment: Demonstrate synthesized knowledge of field research, analysis, presentation, and application.

Species List	25%
Mid-term Assessment	20%
Field Survey Report	10%
Final Project	15%
Nature Photo Essay	10%
Data Collection Effort	10%
Participation and Leadership	10%

ESCI 437C, Wildlands Environment and Culture (5 quarter units) – 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 uses of land, ecosystems and biodiversity, and related social-ecological consequences.

Experiences/Activities: From the Viking explorers, to the Sagas of Icelanders, to the arrival of Christianity and loss of independence to Norway in the 13th century, to reclaiming their independence after WWI, students will gain familiarity with the social-cultural dimensions of conservation in Iceland. The entanglement of these cultural traditions and historical legacies will be addressed throughout the course. Students will visit a number of communities and conduct a research project that examines the sensitive and complex interplay between environmental issues and social-cultural well-being in the region. Students will learn about the various ways that local traditions, diet, and culture intersect with land management and conservation programs. Throughout the program students will maintain a cultural dictionary to familiarize themselves with local language, customs and colloquialisms. This course incorporates lectures, talks from community representatives, and visits to culturally significant field sites. Students will be required to undertake a research project that examines the role of diet in Icelandic culture, compares dietary practices across urban and rural environments, incorporates historical components, and is tied to issues of conservation and sustainability. This project will include reflections on issues, strategies, policies, successes and failures, and of how communities have utilized, impacted and interacted with their natural resources over time.

Outcomes: Students will become acutely aware of how social-cultural dimensions shape conservation and natural resource management in Iceland. They will be responsible for reading relevant literature and for presenting and leading seminar discussions. Students will participate in all activities, discussions and lectures, and demonstrate proficiency in

the cultural history of the region. They will reflect upon components on ESCI 437A and ESCI 437B and across changing cultural contexts. Where appropriate, students will familiarize themselves with relevant Local Ecological Knowledge (LEK). They will engage with local stakeholders and community members, as required, to deepen their understanding of the inter-linkages between cultural and natural histories and the tensions between ecological, social-cultural, economic and political objectives. Students will also be expected to be enthusiastic about learning the proper pronunciation of Icelandic words, meaning of common words (e.g., foss, fell, jokull), and an appreciation for Icelandic culture should be something that students aim to achieve—especially when interacting with local experts, rangers, guest speakers, and shop owners!

Evaluation & Assessment:

Learning Journal	35%
Local Dictionary	15%
Cultural Photo Essay	10%
Diet Project	15%
Final Exam	15%
Participation & Discussions	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 (e.g. presentations, projects, research papers). Due dates are subject to change in response to local variables and final confirmations. Grades for ESCI 437A, 437B, 437C will be based on the following items:

Course Number	Assessment Item	Date due	Percent of grade
ESCI 437A	Field Journal (Initial Review)	July 4 th	15%
	Field Journal (Final Review)	July 23 rd	35%
	Oral (Area) Presentation	See Schedule	10%
	Independent Project	June 30 th	10%
	Midterm Exam	July 12 th	20%
	Active Participation & Discussion	Entire Program	10%
ESCI 437B	Mid-term Assessment (Project Proposal)	July 5 th	20%
	Field Survey Report (Group)	July 20 th	10%
	Nature Photo Essay	July 18 th	10%
	Species List Midterm check	July 4 th	10%
	Species List Final check	July 23 rd	15%
	Final Project-Sibly Book (Group)	July 25 th	15%
	Data Collection Effort	Entire program	10%
	Active Participation & Leadership	Entire program	10%
ESCI 437C	Learning Journal (Initial Review)	July 4 th	10%
	Learning Journal (Final Review)	July 23 rd	25%
	Final Exam	July 26 th	15%
	Local Dictionary	July 20 th	15%
	Diet Project (Group)	July 25 th	15%
	Cultural Photo Essay	July 27 th	10%
	Active Participation & Engagement	Entire Program	10%

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

1) Field Journal – 50%

The field journal is an integral part of the Wildlands Studies Iceland program – it serves as a learning tool and an opportunity to closely attend to the environment, document and codify observations and reflect on experiences. The field journal will be an ongoing assignment throughout the course. Several activities will be designed at the beginning of the course which will help outline what characterizes a thorough, well-written, detailed, observation-based field journal. We will focus on various techniques and styles for recording observations in the field journal.

The field journal will consist of natural history journal entries, based on both the Grinnell Method and other nature writing approaches which incorporate the student's personal experiences and observations (see Parker article). The focus of journal entries is a detailed record of observations from an explicit time period in a specific location written in a coherent, readable, and sometimes creative way. It is an in-depth descriptive natural history record. The journal uses different formats: silent observation in a single spot; an ongoing description along a prescribed route; a theme observed several times; a landscape description and the forces that influence it; a focus on relationships among species observed (food webs; other interactions); geological history as seen by the observer; and/or solely on what is encountered with the full and exacting use of the senses. The emphasis is therefore on the phenomena that the student actually senses and experiences, not on what they did, were told or read that day – even though parallels or comparisons may be drawn with this information.

Class notes and personal notes are not included as formal journal entries, although we do encourage students to take notes, as they will be useful for other assignments or examinations. When journals are handed in for review, please ensure that assessable items are clearly indicated. The journal will be collected at three different times during the program – after 1 week to ensure students are on track (non-assessable), after 2-3 weeks (initial review) and after 5.5 weeks (final review).

Field journals will consist of:

i) Grinnell Trip Logs (25%) 4 entries from locations as prescribed by the Instructors. This (adapted) Grinnell Trip Log is a structured, descriptive narrative record of field walks (not in table/gird format). It includes the following essential elements:

1. Date & Time: Head your trip log entry with the date and the start and end time of your trip.	6. Flora: Descriptions of characteristic/notable vegetation seen, i.e. names and habit of plant and tree species, incl. interactions.
2. Location: Give the name of the area and the name of the hiking trail/route. Include start/end GPS coordinates if available.	7. Fauna: Record and description of sightings of any animals seen (incl. behavior) and/or evidence of their tracks, calls and signs.
3. Weather: Start/end conditions and notable weather changes, e.g. temperature, % cloud cover, wind speed, wind direction.	8. General Commentary: A brief personal summary reflection on the walk and/or other notable observations, e.g. geology, soils.
4. Route Description & Map: Concise description of the route travelled, with distances, times, notable markers or changes in direction. On a left page, sketch route map with key features.	9. Species Record & Sketches: Descriptions of 3-5 species observed (e.g. flora, fauna, tracks, signs). Use field guides to support observations. On left page, sketch species and label well.
5. Habitat(s): Description of the area's ecology, general vegetation type and changes in habitat, including ecotones.	10. Two Questions: Conclude with two detailed questions about ecological phenomena encountered 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. All entries must include the 10 elements as outlined above.

Grinnell Trip Log entries will be **graded** according to:

- a) *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.
- b) *Completeness*: Includes essential elements of a field journal and prescribed entries have been completed.
- c) *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).
- d) *Neatness/Readability*: Other readers should be able to use your journal as a reference.
- e) *Effort*: The entries should reflect the serious effort has been invested, and improvement made, throughout the program.

ii) "Today I noticed..." (10%): at least 5 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 reflection on specific ecological phenomena observed (e.g. species interactions) that ignited a sense of curiosity or newfound learning. The reflection should try and 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) Nature writing (10%): from locations as prescribed by the Instructors, approximately 5 entries.

These entries involve deeper and more creative reflection and require students to focus in on the ecological aspects of their sensory experiences. Entries should be inspired by and related to the specific place and will be graded according to:

- *Use of language*: Using rich creative language (e.g. metaphor, simile, alliteration, onomatopoeia).
- *Diversity of expression*: Employing a diversity of writing/journaling techniques (e.g. poetry, dialogue).
- *Sensory detail*: Encapsulating a range of sensory detail (sight, sound, smell, touch, etc.).
- *Presence of the narrator*: Writing in a way that shows how you the narrator are interfacing with your surrounds.
- *Natural descriptions*: Making clear links to ecological observations with your writings.
- *Wider reflection*: Using the scene and your observations to generate wider reflections on nature.

iv) Other assignments/field activities as assigned (5%)

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

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

2. Oral Presentation (Individual) – 10%

Students will be assigned a topic a minimum of two weeks before arriving to Iceland. During this time, students will carry out bibliographic research and then complement it with the activities and experiences during the program, if appropriate. An oral presentation of 15 minutes presentation and a 20 minutes facilitated discussion. Oral presentations are graded according to:

- *Content*: coverage, relevance, accuracy, depth, originality, creativity
- *Structure*: logical and ordered flow of information, adhering to the 10 minute time limit
- *Style*: engagement/participation of the audience, clarity, demeanor (interested, enthusiastic, good eye contact)
- *Discussion*: ability to lead and present questions about the topic designed to generate/facilitate discussion around key points
- *Summary and Reference List*: 1-2 page overview of key points - can be legibly handwritten or typed up. This is a summary and not just your personal notes. Must include your reference list, i.e. articles/books/websites/personal sources used (at least three different sources). Cut/paste plagiarism (i.e., verbatim unreferenced material) will not be accepted.

3. Independent Project – 10%

Students will write a report or present their findings of a particular research question they investigated to demonstrate their understanding of the key themes addressed throughout the course.

4. Midterm Exam – 20%

Students will take a written exam to evaluate their understanding of the key themes addressed throughout the course. Some 'facts' may be examined; however, the emphasis is more on critical reflection and application of core concepts to scenarios. Students will be assessed on material and species covered in field exercises, workshops, and natural history walks.

5. Active Participation & Discussion – 10%

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

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

1. Species Sightings List – 25%

Starting at the back of their field journals, students will prepare columns with the following headings:

<i>Place</i>	<i>Date & Weather</i>	<i>Classification (Taxa)</i>	<i>Species Name (Common & Taxonomic)</i>	<i>Habitat</i>	<i>Field Notes</i>	<i>Count</i>
Hvammstangi	7/5: 25% cloud, light SW breeze	Harbor seal (Mammal)	1. Harbor seal (<i>Phoca vitulina</i>)	Inshore rocky coast	Resting, juveniles present	15-20

Species list (one for flora and one for fauna) will be ordered chronologically and separated (i.e. ruled off) according to each area visited.

Species lists will be graded according to:

- *Consistency of use*: it is used continuously throughout the program
- *Accuracy*: information entered is accurate
- *Representation*: contains a fair representation of key species encountered per area visited
- *Detail*: brief field notes are expected for each entry and may include notable traits, behavior and interactions.
- Remember that species can and should be entered multiple times across each distinct location, particularly if that reflects the range of a particular species; in other words, the species list is more than just a 'tick box' ("seen this") list.

2. Mid-Term Assessment - 20% (Group work)

Students will develop a research and/or monitoring project proposal with the vision that this will be implemented and continued by other students or citizen scientists in years to follow. The project needs to be:

- Centered around a core social-ecological question
- Demonstrate understanding of the relevant field techniques learned and practiced and/or demonstrate creativity in proposing new or alternative techniques as relevant to the question/problem
- Structured according to research proposal format: Introduction/Rationale/Relevance; Research Questions; Methods & Materials; Ethical Considerations; Preliminary Findings/Results; and Discussion/Recommendations.
- Justified (theoretically and practically) with rationale/links to the 'bigger picture' (e.g. conservation outcomes).
- Supported with stepwise guidance for persons wishing to implement this monitoring program in the future.
- Accompanied by an oral presentation graded according to the same criteria as used for the individual oral presentation.

3. Field Survey Report – 10%

Students will write a detailed field report covering the methods and outcomes of their field survey activities conducted as assigned by the instructors. Grading will be according to:

- *Structure*: Clear logical structure that follows a general, prescribed or adapted format of: Introduction; Area Description(s); Objectives; Methods & Materials; Results; Discussion and that these are outlined in a neat and readable way.
- *Thoroughness*: Each of the above sections is completed with sufficient effort, detail and is easy-to-follow.

- *Reflection*: The report critically reflects on methods and results and identifies limitations and recommendations. (Note that the above criteria may be adapted according to the wishes of the stakeholders involved)

4. Nature Photo Essay – 10%

The purpose for this assignment is to challenge you to develop your visualization skills and build a story depicting an ecological, geological, or conservation issue. Output: A thoughtful photo essay composed of 6-10 photo. You will also submit an accompanying 'artist's statement' detailing (a) what design/visual communication principles you used and for what intended purpose, (b) who your intended audience was, and (c) what science content you aimed to communicate. See rubric for complete details.

5. Final Project – 15%

Students will work together to produce an e-book detailing the flora, fauna, and landscape observed in each location, including trail guides.

Data Collection Effort– 10% A portion of the grade for this course will be earned by collecting the data. Students should be self-motivated and should display consistency, dedication, quality, and integrity in their data collection effort. Instructors will periodically check in with groups to ensure that data is being collected and recorded. This is similar to a "participation" grade.

6. Active Participation & Involvement – 10%

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

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

1. Learning Journal – (35%):

This social-cultural journal is central to your personal development and learning throughout the program. It provides an open non-judgmental space for you to engage in thoughtful reflection, critical insight, creative expression and deepening discussion of your own and others' language, perceptions and worldviews. It is a place for exploring social-cultural-ecological interactions and dynamics.

It must include *least 6 thorough entries or more if shorter - more regular entries are preferred.*

Similar to the "social-ecological autobiography" described by Hayes (2008) in your first mandatory reading, these entries will include regular insightful reflections on learning experiences embedded within specific contexts, particularly concerning interactions with course material, guest speakers, local communities and your peers. Entries should track questions and changes in personal beliefs, perceptions, worldviews and learning, possibly as part of comparative reflection on past experiences/knowledge/places encountered back in your homeland. The entries highlight key learning moments and document information that finds resonance (appeal) or dissonance (conflict) within you. Entries can include poetry, art, or free-writes. **The journal will conclude with a final reflective summary (as the 7th entry, minimum)** which synthesizes your "autobiography" during the program, in terms of reflection on course intentions and identifying how pivotal learning moments have shaped you. **Each entry begins with the phrase: "Right now I feel..."** before continuing on to whatever it is you wish to write about (the theme of the entry itself does not need to be related to your "Right now I feel..." statement).

Mandatory: Include a table of contents on the first page of the Learning Journal so entries can be easily located.

Grading criteria is as follows:

- *Depth*: Reflections make an effort to explore, probe, question, query and mine the topic, possibly even returning to the issue again in subsequent entries with a fresh perspective or different angle. Feel free to engage in philosophical discussion.
- *Wider Reflection*: Entries may take the specific topic and put into a broader context and draw comparisons with elsewhere.

- *Connections*: Insightful links are made with: present or past experiences, knowledge, discussions, course themes, literature, etc.
- *Style*: Entries are readable, articulated and make good use of first-person narrative, prose, dialogue, poetry or art.
- *Effort*: Entries are completed regularly throughout the program (at least twice a week) and improve as the course progresses.

2. Diet Project Presentations – 15%

Details provided at the beginning of the course.

3. Local Dictionary – 15%

The local dictionary is a list of cultural-specific words/phrases (i.e. Ethnic words and Icelandic English slang/colloquialisms) encountered during the program that are unique to Iceland. Begin the dictionary on the **back page of your cultural journal** and create a table with the following three columns:

<i>Word or Phrase</i>	<i>Language</i>	<i>Translation</i>
XX	XX	XX

Grading will look for:

- *Accuracy*: Spelling, translation and language groups are correct.
- *Attentiveness*: Demonstrates an attention to new words/phrases encountered during the program.
- *Representative*: The dictionary is used consistently throughout the program and at key cultural exchanges/opportunities.
- *Effort*: Reasonable effort has been invested throughout the program.

4. Cultural Photo Essay – 10%

The purpose for this assignment is prepare a Cultural Photo Essay that reflects some aspect of the food, traditions, or culture in Iceland. This assignment is a visual reflection about *culture* and its various impacts upon our personal lives, history, traditions, politics, and economies. A thoughtful photo essay composed of 6-10 photos. You will also submit an accompanying ‘artist’s statement’ detailing (a) background information describing the intended purpose, (b) who your intended audience was, and (c) what cultural aspect you aimed to communicate. See rubric for details.

5. Final Exam – 15%

Students will take a written exam to evaluate their understanding of the key themes addressed throughout the course. Some ‘facts’ may be examined; however, the emphasis is more on critical reflection and application of core concepts to cultural elements discussed and encountered during the course including readings, guest lectures, and observations.

6. 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 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 necessary so course instructors can get the grading done on time. These deadlines need to be enforced so that diligent students aren't penalized for being punctual. Therefore, work submitted late may receive a lower grade than equivalent work submitted on time. If you think circumstances may keep you from completing your work on time, talk to the instructor before the assignment 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.

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

VII. Academic Schedule & Course Content

The anticipated daily itinerary is outlined in the following table, but scheduling is subject to change according to local conditions (e.g. weather, availability of guest researchers/managers/community members, and 'strategic opportunism'). We seek your cooperation in allowing for flexibility with the programming.

Date 2018		Location	Lecture Topics & Activities	Assessment Due	Readings Due
Saturday	AM		Arrival Keflavik Airport	437A: Oral Presentations (OP) as scheduled	R1 Hayes 2009 - Into the Field R2 Parker nd - Natural History ***Prior to arrival
16-Jun	PM	Reykjavik City (R)	Overview / Safety Briefing / Logistics / Welcome Dinner		R3 Geyer et al. 2017
Sunday	AM		09:00: Orientation / Syllabus / Guest Lecture		
17-Jun	PM	Reykjavik City (R)	Area Introductions / Literature Discussion / Field & Cultural Journals Group dinner in Reykjavik City		R4 Amilien 2012
Monday	AM		Conservation/Culture Introduction/Shopping		
18-Jun	PM	Pingvellir National Park	Student Check-In / Responsibilities/ Evening Hike	437A: OP – World Heritage Areas (WHA) and Ecological Thingvellir	R5 Sadler, J.P., 1999. Biodiversity on oceanic islands R6 Jonsson 2001
Tuesday	AM		Morning Walk / Area Introduction/ Island Biogeography Intro		
19-Jun	PM	Pingvellir National Park	Ranger Led Hike / Grinnell Intro/ Asking Testable Questions		
Wednesday	AM		Birding Introduction/Birding		
20-Jun	PM	Pingvellir National Park	Measuring Biodiversity/Plant Survey Techniques/Reflective Hike	437A: OP - Pingvellir (Cultural)	R7 Kristinsson, A., 2003. Lords and literature
Thursday	AM		Geothermal Farm Tour		
21-Jun	PM	Pingvellir National Park	Gullfoss/Haukadalur Valley (Geysirs)		R8 Chapman- Outline of Iceland Geology
Friday	AM		Travel to campsite (Tradir Guesthouse)/Laufey lecture		
22-Jun	PM	Borgarnes	Grinnell Practice/ Succession and Restoration Ecology Introduction		
Saturday	AM		Hafnarfjall Mountain/Birch		
23-Jun	PM	Borgarnes	Salmon Ecology/Ecohydrology/Glanni and Troll Waterfalls	437A: OP - Volcanic Activity	R9 Aradottir et al. 2013

Sunday	AM		Mineral Springs/Basalt Formations/ Lýsuhólslaug Hot Springs/Grinnell #1 Hellnar to Arnastapi		
24-Jun	PM	Olafsvik	Wildlife Survey Techniques/Constructing Ethograms	437A: OP - Snæfellsnes Peninsula	R10 Altmann 1974 R11 Vigfusdottir et al. 2013
Monday	AM		Ethogram construction on Seabirds		
25-Jun	PM	Olafsvik	Behavioral Observations/Plan Projects/Discussion		R12 Granquist et al. 2016
Tuesday	AM		Tidal Pool Biodiversity	437A: OP - Breiðafjörður Bay	
26-Jun	PM	Olafsvik	Ranger Led Hike/Data Collection		
Wednesday	AM		Data Collection/Guest Lecture	Marine Research Center	
27-Jun	PM	Olafsvik	Caving/ Sensory Activities/Discussion	437A: OP -Whaling	R13 Bertulli et al. 2016
Thursday	AM		Laki Whale Tour		
28-Jun	PM	Olafsvik	Reflective Hike/Biomes Introduction		R14 Einarsson 2011
Friday	AM		Travel to Isafjordur		
29-Jun	PM	Isafjordur	Group Dinner		
Saturday	AM		Grinnell Naturalist Trip Log #2/Arctic Tundra Botany		
30-Jun	PM	Isafjordur	Project Presentations/Discussion	437A: Independent Project Due	R15 Dey et al. 2018
Sunday	AM		Arctic Fox Centre / Wildlife Research & Captive Breeding (Devils@Cradle)		
1-Jul	PM	Isafjordur	Afternoon Hike/Photo Essay	437A: OP -Isafjordur	R16 Mills et al. 2013
Monday	AM				
2-Jul	PM	Isafjordur	Ethology & Interactions- Project Proposal Discussion (Seals)		
Tuesday	AM		Natural History Museum & Ósvör Maritime Museum		
3-Jul	PM	Isafjordur	Thematic Discussion: Nature Connectedness & Wilderness		R17 Silvertown 2009- Citizen Science
Wednesday	AM		Eider Farm		
4-Jul	PM	Isafjordur	Photo Essays/Reflection Hike	437A: Field & 437C: Learning Journals (Mid-Review)	
Thursday	AM		Travel to Hvammstangi		
5-Jul	PM	Hvammstangi	Self-study and Review	437B: Mid- Assessment Project Proposals Due	

Friday	AM		Kolugljúfur Canyon		
6-Jul	PM	Hvammstangi	Seal Center	437A: OP - Vatsnes Peninsula	
Saturday	AM		Ethology & Interactions		
7-Jul	PM	Hvammstangi	Group Projects/ Discussions		R18 Marschal 2017
Sunday	AM		Ethology & Interactions		
8-Jul	PM	Hvammstangi	Farming/ Group Projects/ Literature Discussion	437A: OP - Cultural	
Monday	AM		Borgarvirki Hike/ Blönduós River		
9-Jul	PM	Akureyri	Group Dinner		
Tuesday	AM		Kjarnaskógur Forest Ecology		
10-Jul	PM	Akureyri	Group Project and Presentations	437A: OP - Akureyri Natural History	
Wednesday	AM		Súlur Mountain Hike		
11-Jul	PM	Akureyri	Akureyri Botanical Gardens	437A: OP - Lake Mývatn	
Thursday	AM		Lake Mývatn		
12-Jul	PM	Akureyri	Dettifoss Hike	437A: Midterm Exam	R19 Elmarsdottir, A. 2008 Effects of afforestation on biodiversity.
Friday	AM				
13-Jul	PM	Egilsstaðir	Group Dinner	437A: OP - Egilsstaðir	
Saturday	AM		Guest Lecture- Forest Restoration		
14-Jul	PM	Egilsstaðir	Skriðuklaustur farmstead / Cultural Discussions		R20 Jóhannesdóttir et al. 2017
Sunday	AM		Hallormsstadur Forestry Reserve		
15-Jul	PM	Egilsstaðir	Fardagafoss Hike/Photo Essays		
Monday	AM		Ethology & Interactions in Borgarfjörður Eystrí		
16-Jul	PM	Egilsstaðir	Group Presentations/ Literature Discussions	437B: Group Projects Due	R21 Jóhannesdóttir, L., 2013. Comparing biodiversity of birds
Tuesday	AM		Hornafjörður		
17-Jul	PM	Skaftafell	Glacier Ecology		
Wednesday	AM		Skaftafell NP	437A: OP - Vatnajökull National Park	
18-Jul	PM	Skaftafell	Glacier Horses	437B: Nature Photo Essay Presentations	R22 Thordarson & Hoskuldaaon 2008 R 23 Morgan 2000

Thursday	AM		Ethology & Interactions		
19-Jul	PM	Skaftafell	Group Projects/ Literature Discussion	437A: OP-- Surtsey Volcanic Island	
Friday	AM		Glacial Lagoon	437B: Field Survey Report 437C: Local Dictionary	
20-Jul	PM	Skaftafell	Reflective Hike	437A: OP -Climate Change	R24 Gilg 2010
Saturday	AM		Travel to Vik		
21-Jul	PM	Vik	Fjaðrárgljúfur Canyon		R25 Beale 2007
Sunday	AM		Puffin Ecology & Behavior		
22-Jul	PM	Vik	Skogafoss		
Monday	AM		Reflective Hike	437A: Field & 437B: Learning Journals (Final Review)	
23-Jul	PM	Vik	Dyrhólaey	437B: Species Sighting List	
Tuesday	AM		Travel to Hvergerdi/ Lava Museum		
24-Jul	PM	Hveragerdi	Guest lecture/ Gullfoss Hike		R26 Foulger, G.R., 2002. Plumes, or plate tectonic processes R27 Cook et al. 2018
Wednesday	AM		Hveragerdi Hot Spring River		
25-Jul	PM	Hveragerdi	Sibly E-Book	437B, 437C: Final Project	
Thursday	AM		Geothermal Power Plant		
26-Jul	PM	Lava Hostel	Guest lecture	437C: Final Exam	
Friday	AM				
27-Jul	PM	Lava Hostel	Final Dinner and Reflections	437C: Cultural Photo Essay	
Saturday	AM		Students Depart		
28-Jul	PM				

VIII. Mandatory Reading List: Readings to be covered and discussed during the program (provided prior to arrival)

- Altmann, J., 1974. Observational study of behavior: sampling methods. *Behaviour*, 49(3), pp.227-266.
- Amilien, V., 2012. Icelandic food culture. Interview with Professor Laufey Steingrimsdottir, Reykjavik, Iceland. *Anthropology of food*, (S7).
- Aradóttir, Á., Petursdóttir, T., Halldorsson, G., Svavarsdóttir, K. and Arnalds, O., 2013. Drivers of ecological restoration: lessons from a century of restoration in Iceland. *Ecology and Society*, 18(4).
- Beale, C.M., 2007. The behavioral ecology of disturbance responses. *International Journal of Comparative Psychology*, 20(2).
- Bertulli, C.G., Leeney, R.H., Barreau, T. and Matassa, D.S., 2016. Can whale-watching and whaling co-exist? Tourist perceptions in Iceland. *Journal of the Marine Biological Association of the United Kingdom*, 96(4), pp.969-977.
- Cook, D., Eiríksdóttir, K., Davíðsdóttir, B. and Kristófersson, D.M., 2018. The contingent valuation study of Heiðmörk, Iceland—Willingness to pay for its preservation. *Journal of environmental management*, 209, pp.126-138.
- Dey, C.J., Semeniuk, C.A., Iverson, S.A., Richardson, E., McGeachy, D. and Gilchrist, H.G., 2018. Forecasting the outcome of multiple effects of climate change on northern common eiders. *Biological Conservation*, 220, pp.94-103.
- Einarsson, N., 2011. Culture, conflict and crises in the Icelandic fisheries: An anthropological study of people, policy and marine resources in the North Atlantic Arctic. *Acta Universitatis Upsaliensis*.
- Elmarsdóttir, A., Fjellberg, A., Halldorsson, G., Ingimarsdóttir, M., Nielsen, O.K., Nygaard, P., Oddsdóttir, E.S. and Sigurdsson, B.D., 2008. Effects of afforestation on biodiversity. *AFFORNORD. Effects of afforestation on ecosystems, landscape and rural development. TemaNord*, 562, pp.37-47.
- Foulger, G.R., 2002. Plumes, or plate tectonic processes?. *Astronomy & Geophysics*, 43(6), pp.6-19.
- Gilg, O., Kovacs, K.M., Aars, J., Fort, J., Gauthier, G., Grémillet, D., Ims, R.A., Meltofte, H., Moreau, J., Post, E. and Schmidt, N.M., 2012. Climate change and the ecology and evolution of Arctic vertebrates. *Annals of the New York Academy of Sciences*, 1249(1), pp.166-190.
- Granquist, S.M. and Hauksson, E., 2016. Seasonal, meteorological, tidal and diurnal effects on haul-out patterns of harbour seals (*Phoca vitulina*) in Iceland. *Polar Biology*, 39(12), pp.2347-2359.
- Hayes, M. A. 2009. Into the field: Naturalistic education and the future of conservation. *Conservation Biology* 23:1075–1079.
- Jóhannesdóttir, L., 2013. Comparing biodiversity of birds in different habitats in South Iceland.
- Jóhannesdóttir, L., Alves, J.A., Gill, J.A. and Gunnarsson, T.G., 2017. Reconciling biodiversity conservation and agricultural expansion in the subarctic environment of Iceland. *Ecology and Society*, 22(1).
- Jonsson, B. and Jonsson, N., 2001. Polymorphism and speciation in Arctic charr. *Journal of Fish Biology*, 58(3), pp.605-638.
- Kristinsson, A., 2003. Lords and literature: The Icelandic sagas as political and social instruments. *Scandinavian Journal of History*, 28(1), pp.1-17.
- Marschall, S., Granquist, S.M. and Burns, G.L., 2017. Interpretation in wildlife tourism: Assessing the effectiveness of signage on visitor behaviour at a seal watching site in Iceland. *Journal of Outdoor Recreation and Tourism*, 17, pp.11-19.

- Mills, L.S., Zimova, M., Oyler, J., Running, S., Abatzoglou, J.T. and Lukacs, P.M., 2013. Camouflage mismatch in seasonal coat color due to decreased snow duration. *Proceedings of the National Academy of Sciences*, 110(18), pp.7360-7365.
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- Parker, A. (n.d.). Natural history and naturalist skills.
- Sadler, J.P., 1999. Biodiversity on oceanic islands: a palaeoecological assessment. *Journal of Biogeography*, 26(1), pp.75-87.
- Silvertown, J., 2009. A new dawn for citizen science. *Trends in ecology & evolution*, 24(9), pp.467-471.
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- Thordarson, T. and Höskuldsson, Á., 2008. Postglacial volcanism in Iceland. *Jökull*, 58(198), p.e228.
- Vigfusdottir, F., Gunnarsson, T.G. and Gill, J.A., 2013. Annual and between-colony variation in productivity of Arctic Terns in West Iceland. *Bird study*, 60(3), pp.289-297.