



**French Polynesia Program
Marine Ecosystems & Climate Change**

June 21 – August 3, 2024

ACADEMIC SYLLABUS

Faculty:

Nans Bujan, Ph.D.

Contact Hours: We will be in close contact for the duration of the course, and there will be plenty of opportunities for students to meet with the faculty. Students are encouraged to engage with faculty to discuss classes, assignments or any other personal issues or concerns as needed.

Class Meetings: This Wildlands Studies Program involves seven days per week of instruction and field research with little time-off. Faculty and staff work in close contact with students for 6-10+ hours a day and are available for tutorials and coursework discussion before and after scheduled activities. Typically, scheduled activities begin at 8 am and finish at dusk. Most evenings, students are expected to review class material or work independently on class projects. We may have scheduled activities or class some evenings. When in the backcountry or at a field site, our activities may start as early as 4 am or end as late as 10 pm (e.g., for wildlife observation). Scheduled activities will include a variety of things including but not limited to lectures, discussions, hikes, and field research. Students should also expect to spend a few hours a day studying, writing in their journals, and completing readings. It is necessary for students to have a flexible mindset and to be able to accommodate a variety of class, activity, and independent study times.

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 / 3.35 semester 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 units / 3.35 semester 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 units / 3.35 semester credits)** – On-site field studies concerning the relationship between local cultural groups and the environment. Using region- and culture-specific case studies, students assess ways in which local people utilize natural resources, according to both local tradition and modern ‘developed’ norms. Course examines the social and biological consequences of environmental and wildland/wildlife management policies.

Readings: We’ve compiled a Course Reader for this program. It will be available to students a couple of weeks before the class starts. Readings can include selections from academic primary literature, technical reports, book excerpts, and environmental working papers. Students are required to bring their own printed copy of the Course Reader with them (it’s easiest to print it double sided and have it bound). We will also carry a shared reference library of field guides and texts to supplement the field activities that are an integral part of the program.

Contents of this syllabus:

- I. Program Overview
- II. Learning Objectives
- III. Course Descriptions
- IV. Assessment
- V. Grading Scheme
- VI. General Reminders
- VII. Required Materials
- VIII. Academic Schedule & Course Content
- IX. Reading List

I. Program Overview

Prepare to explore awe-inspiring environments characterized by coral lagoons, rugged rainforest valleys and steep summits with spectacular views. Our French Polynesia Program occurs on one of the most isolated island archipelagos on the planet to conduct studies to understand the ecology, conservation issues, and culture that are unique to this majestic place. Our field study will take us to the geologically young islands of Tahiti and Moorea, names that tourists often associate with the word 'paradise' due to the beauty of their landscapes, beaches, and marine life.

Our overarching goal on this program is for students to learn key field research skills designed to support the environmental sustainability of these islands, participate in local conservation projects, become acquainted with the region's diverse ecology and cultural history, and learn how this region is being impacted by climate change. Where possible, we will connect with local conservation groups and discuss current management challenges with local researchers.

We will start in Tahiti, the largest island of French Polynesia that hosts most of its population. As the place with the most terrain diversity, across its two shield volcanoes, Tahiti has a unique biodiversity that will allow us to discuss the theories of biogeography. This diversity is, however, very vulnerable to invasive species brought by the globalized economy, connecting a resource-limited French Polynesia to the rest of the world. We will become familiar with the history and culture of French Polynesians, while exploring and connecting the land to the sea, from the barrier reef to the deep valleys inland. We will establish our own protocols to monitor environmental health as the pressure from anthropogenic change intensifies through not only global heating but also with the development of roads, fisheries, and the surfing leg of the 2024 Olympic games that will take place in one of the most remote villages of the island during our stay.

The second half of the program will take place in Moorea, a smaller island hosting 18,000 inhabitants and two research stations (one French: CRIOBE, the other belonging to the University of California, Berkeley: GUMP Station) that are major contributors to the research on coral reefs thanks to a monitoring program established 40 years ago. Such monitoring has shown that, in the last twenty years, the reefs of Moorea have successfully recovered from a massive corallivore sea star outbreak, a major cyclone and a coral bleaching event. We hope to have discussion and exchange with scientists and organizations present on the island, followed by an opportunity for our student team to undertake their own research project using the rich environment of Moorea to answer scientific questions.

As we conclude our program, we will undertake one final group project that integrates our field learning with local cultural needs. In 2022, the remains of an ancient fishpond made of stones were restored on the West coast of Tahiti. Although the memory of such structure persists in the local culture, today this pond might be the only one in existence on the island. After decades of abandon, its function and impact will have to be re-discovered. When returning to Tahiti for our departing flights, students will be asked to use the skills and knowledge acquired during the program to design a monitoring protocol that can answer questions that the local community has about the fishpond ecology and evolution.

II. Learning Objectives

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

1) Island Biogeography and Natural History

How did the islands of French Polynesia form? What flora and fauna exist on Tahiti and Moorea? Why are these islands the perfect setting for the evolution of endemic species? Students will answer these questions and more by exploring valleys, rainforests, lagoons, and ridges to identify key species. Through field investigations, students will gain an in-depth understanding of the interconnectedness between geology and ecology, and how islands change over time and facilitate the evolution of unique species.

2) Changing Seas, Coral Reefs, and Climate

Why do some corals appear white, while others are more colorful? What does the synergy of anthropogenic stressors mean to coral reefs? Students will learn how coral reef ecosystems develop over thousands of years and why these delicate ecosystems are so sensitive to change. Students will have the opportunity to snorkel and complete studies on coral reefs, and investigate how warmer seawater, ocean acidification, pollution, and rising sea level may alter the marine environment.

3) The Importance of Monitoring, Research, Collaborations, and Critical Thinking

How has the long-term research efforts on Moorea influenced global knowledge about reefs? Why do scientists need community support for the success of their projects? Students will critically analyze scientific manuscripts and collaborate as small groups to design their own research project, fostering an understanding of scientific collaboration. Through active participation in the scientific process, coupled with field observations, unique wildlife encounters, and engaging with experts, students will learn to think critically about complex environmental issues.

4) Polynesian Culture and Society: Past, Present, and Future

How did a culture of expert seafarers accomplish the greatest human migration on earth? How have the resource limitations of small Pacific islands influenced the traditions and beliefs of the Polynesians? From the early settlement to modern society, students will gain an in-depth understanding of the rich culture that exists in French Polynesia, its deep connection to the environment, and the struggles of Polynesians to preserve their culture and identity.

5) Environmental Policy, Sustainability, Conservation, and Social Science

How has the traditional practice of rotating and closing productive areas allowed local communities and conservationists to work together around common goals of sustainability? Conservation challenges, environmental pressures, economic growth, and sustainable methods of farming and fishing will be discussed and analyzed. Students will engage with stakeholders, critically analyze environmental policy case studies, and investigate the human element of environmental science.

6) Critical reading, discussion, and evaluation of primary literature in natural and social sciences.

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. Students read primary literature most days, learning over time and with practice where to focus their attention to be able to critically evaluate the work. Many readings are debriefed with a group discussion, ensuring 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.

These topics will be addressed through lectures, group discussion, course readings, field activities, interacting with local experts, participating in ongoing monitoring efforts, and field research projects. Students will leave the course with an extensive knowledge of our region, a set of broader skills, and an understanding of various aspects of ecology, geology, oceanography, environmental science, and social science. The knowledge and skills that are gained during the program will allow students to critically evaluate information in other settings in their future lives and careers. Our primary requirement is that you are enthusiastic, adaptable, genuinely open-minded, and ready and willing to learn and help. 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 (these were introduced on page 1):

ESCI 437A, Environmental Wildlands Studies (5 quarter units / 3.35 semester credits) – Field study of the flora, fauna, ecology, geology, geography, and natural history that characterize French Polynesia, including historical, current, and future environmental challenges associated with humans.

Experiences/Activities: In this course, students will learn about different geologic features and the dominant flora and fauna that are found throughout Tahiti and Moorea. Several complicated environmental issues will be analyzed during the program, and students will learn directly through attentive observation, hands-on experience, as well as through guidebooks, lectures, peer presentations, discussions, and stakeholder interactions.

Students will complete an in-depth course-long field journal with detailed scientific observations, field inventories, analysis of environmental issues and the role of various stakeholders that they will interact with throughout the course. They will be required to participate in activities and discussions, sharing viewpoints and critiquing arguments or topics encountered. Debates, roundtables, 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.

Outcomes: Students will develop their skills as naturalists and be able to demonstrate an understanding of the ecology and geology of French Polynesia and the human impacts that have shaped the region over time. Students will be able to critically analyze environmental challenges pertinent to Tahiti, Moorea, and tropical island ecosystems as a whole.

Evaluation and Assessment:

Field Journal	40%
Oral Presentations	15%
Short Assignments	15%
Midterm and Final Exam	20%
Participation & Discussions	10%

ESCI 437B, Environmental Field Survey (5 quarter units / 3.35 semester credits) – Field studies course focusing on field survey methods and on-site biodiversity analysis and assessment as part of individual and group research on environmental issues.

Experiences/Activities: Students will learn the essentials of conducting research in the field. This course will teach some common techniques and methodologies that are used by scientists to monitor ecosystem structure and function, particularly with respect to coral reefs and tropical ecosystems. Students will identify species and geologic features, conduct surveys along transects, complete population counts of certain species, and study marine debris. Students will gain an understanding of how citizen science can assist with long-term research efforts, and how observatories are critical for scientific advancement.

Observation logs, participation in data collection and analysis, and completion of student research projects will be evaluated for effort, critical analysis, concept, and clarity. Students will complete a research project and work in small groups to design a research proposal and monitoring protocol.

Outcomes: Students will develop skills in field observation, research methodologies, data collection, and data interpretation. Students will be able to critically read, evaluate, and discuss primary literature and reports, and gain a thorough understanding of designing, implementing, and conducting research. Through assisting researchers with monitoring and conservation efforts, and by designing their own research projects, students will become familiar with the process of scientific investigation and collaboration.

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

Field Data Notebook	20%
Data Collection and Analysis	15%
Research projects	35%
Mid Term and Final Exam	20%
Participation & Discussions	10%

ESCI 437C, Wildlands Environment and Culture (5 quarter units / 3.35 semester credits) – Study of social-ecological systems of French Polynesia, drawing on locally relevant cultural perspectives and historic and present-day human relationships with the landscape, the environment, and wildlife. Includes group readings and dialogue and personal reflection to track one’s own learning.

Experiences/Activities: In this course, students will learn about Polynesian culture and history and how it is deeply tied to the environment, the land, and the Pacific Ocean. Students will become aware of the unique challenges the people on Tahiti and Moorea face from globalization, climate change, and the complexities associated with cultural preservation and revival.

During this course, the learning journal will be used to record key information provided by guest speakers, and it will be a safe space for students to reflect on cultural interactions, think critically about the complex relationships that exists between humans and the environment, and where they can gain awareness of their personal worldview. Students will also build a log of culturally significant words that they learn during their time on the islands.

Outcomes: Students will gain a deep appreciation and respect for Polynesia and its people. They will understand how historical events and the landscape have shaped the way that French Polynesian society has evolved. They will become familiar with common Tahitian words and learn how these islanders are trying to preserve their culture amidst a developing world. Students will be able to critically assess the strategies that French Polynesia is practicing to minimize environmental impacts, manage its diverse ecosystems, and prepare for a future in the face of climate change. Students will also develop a heightened awareness of their own worldview through thoughtful reflections.

Evaluation and Assessment:

Learning Journal	40%
Short Assignments	20%
Final Reflection	10%
Mid Term and Final Exam	20%
Participation & Discussions	10%

IV. Assessment

Below is an overview of the academic requirements for the program. Some of the assignments are ongoing (e.g., journals, readings, presentations) and others have specific dates (e.g., exams, essays, projects). Specific due dates will be assigned during the program. Final grades will be based on the following items:

Course Number	Assessment Item	Due Dates* <small>*specific dates will be assigned during the course</small>	Percent of grade
ESCI 437A	Field Journal	Entire Program	40
	Oral Presentations	Entire Program	15
	Short assignments	Entire Program	15
	Mid-term and Final Exam	Halfway through and at the end	20
	Active Participation (esp. in Group Discussions)	Entire Program	10
ESCI 437B	Field data notebook	Entire Program	20
	Data Collection and Analysis	Entire Program	15
	Research projects	Entire Program	35
	Mid-term and Final Exam	Halfway through and at the end	20
	Active Participation (esp. in Group Project Work)	Entire program	10
ESCI 437C	Learning Journal	Halfway through and at the end	40
	Short assignments	Entire Program	20
	Final Reflection	Last week of course	10
	Mid-term and Final Exam	Halfway through and at the end	20
	Active Participation (esp. in Community/Group Dynamics)	Entire Program	10

ESCI 437A, Environmental Wildlands Studies (5 quarter / 3.35 semester credits)

1. Field Journal – 40%

The field journal is an integral part of the French Polynesia program and the ESCI 437A course. It serves as a learning tool and is an opportunity to closely become aware of the surrounding environment, document observations and places that we visit, and reflect on experiences. The field journal will be ongoing throughout the course, and students are encouraged to regularly keep up with entries. The field journal will consist of synthesizing their fellow students' presentations, creating natural history journal entries adapted from the Grinnell Method, and other nature writing approaches.

Class notes and personal notes are not included as formal journal entries, although students are highly encouraged to take notes, as they will be useful for crafting journal entries, for other assignments, and for studying for exams. Students will be instructed on the best way to organize their journal at the start of the program, and the journal will be collected periodically during the program for review and in the last week of the program for a final review.

Field journals will consist of the following components:

i) Grinnell Trip Logs (20%): A series of entries from locations as prescribed by the instructors. This adapted Grinnell Trip Log is a structured, descriptive narrative that documents select hikes and field walks. The log is a careful summary of observations and field notes taken throughout the day. The entry usually takes about 2 hours to write-up but may take longer depending on the length of the walk. Your entry should include the 9 essential elements outlined below:

1. Date & Time: Head your trip log entry with the date and the start and end time of your trip.	6. Flora and Fauna: Descriptions of characteristic/notable vegetation and animals seen (including tracks, call, sign, etc.). This section also includes interactions, behavior, or other ecological patterns (e.g., for a plant, what the fruiting/flowering stage was, pollinators present, aspect, interactions with epiphytes, birds present, etc.).
2. Location: Give the name of the area and the name of the hiking trail/route. Include start/end GPS coordinates if available.	
3. Weather: Start/end conditions, including temperature, % cloud cover, wind speed (e.g., leaves rustling), wind direction, and notable changes.	7. General Commentary and Landscape-scale Patterns: A brief personal summary reflection on the walk (a few sentences) and at least 2 larger scale observations linking flora or fauna to geology, soils, fire or storm evidence, land use history, aspect, succession, etc.
4. Route Description & Map: Concise description of the route traveled, with distances, times, and notable markers or changes in direction. Sketch a route map with key features including scale and north arrow.	8. Species List & Sketches: A list of 10 plant and 10 animal species, observed (e.g., flora, fauna, tracks, calls). For 3-5, a more detailed description and sketch with labels and scale is required. Use field guides to support observations.
5. Habitat(s): Description of the area's general habitat types (e.g., cloud forest), a few dominant plant species and changes that occurs along the trip.	9. Two Questions: Conclude with two detailed questions about ecological phenomena encountered that got you wondering.

Grading of Grinnell Trip Log entries will use the following criteria:

- **Organization:** Entries are written in an organized way and should follow a logical format that is consistent with the established criteria listed above.
- **Completeness:** Includes the essential elements and prescribed entries have been completed.
- **Accuracy of Content:** Provides an accurate and comprehensive reflection of phenomena encountered during the trip (e.g., correct descriptive data, features seen, species encountered).
- **Clarity:** The entry should be well-written, easy to read, and should be prepared so that others can use it as reference.
- **Effort:** The entries should demonstrate that concerted effort has been invested into the process.

ii) Nature Writing (15%): From several locations as prescribed by the instructors. These entries involve deeper and more creative reflection and require students to focus on the ecological and physical aspects of their sensory experiences. The emphasis is on the phenomena that the student actually senses and experiences, it is not meant to be a summary of information that they learned or read that day. Entries should be inspired by and related to the specific place and will typically be completed on site (e.g., silent observation while sitting in a single spot).

Grading of Nature Writing entries will use the following criteria:

- **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.).
- **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.

iii) Peer Oral Species Presentation Summary (5%): During the program, students will be learning from their peers about various species present on the islands. Students will be responsible for writing a short (a few journal pages), comprehensive essay in their journal that compiles key concepts that describes what they have learned from their peers and emphasizes adaptations, behaviors, threats, etc. that are similar/contrasting between the organisms that they learned about. The summary does not need to describe every organism that was presented, but it should be sure to include concrete examples that demonstrate that the student has paid attention during presentations and is able to draw connections between overarching concepts and themes.

Grading of the peer oral presentation summary will use the following criteria:

- Concept: Information delivered is relevant, accurate, and coverage is appropriate.
- Synthesis: The essay is comprehensive and able to synthesize information learned.
- Clarity: The essay should be well-written, easy to read, and flows smoothly.
- Effort: The essay should demonstrate that the student paid attention during the presentation.

2. Oral Presentations – 15%

i) Topic presentation (10%)

Students will be assigned a topic a few weeks before arriving in French Polynesia. During this time, students will carry out bibliographic research and then complement it with the activities and experiences that occur during the program, if appropriate. An oral presentation of 10 minutes (+5 minutes discussion) and a summary of bulleted information and references will be evaluated for this project.

Oral presentations are graded according to:

- Content: Information delivered is relevant, accurate, original, creative, and coverage is appropriate.
- Structure: Presentation has a logical flow and adheres to the time limit.
- Delivery: Student gives presentation in an engaging manner with good posture and is well spoken.
- Discussion: Student is able to answer questions and facilitate discussion around the key points.
- Bullet Point Summary: Presentation should be summarized in 3 to 5 bullet points (85 characters maximum per bullet point). The summary can be handwritten or typed/printed out. The summary must also include a reference list (e.g., articles, books, websites, personal sources, etc.), and students must use a minimum of three different primary sources. Plagiarism (i.e., cut/paste verbatim) will not be accepted.

ii) Species presentation (5%)

Students will also be assigned a species or taxon, for which they will give a 3 minute oral presentation on its identification and ecology.

3. Short assignments – 15%

Throughout the program, short assignments such as one-sheet worksheets, brainstorming activities, informal writing, such as field surveys, ethology exercises, tracking etc. will be given to students to expand their knowledge and integrate their scientific skills into applied research and learning. This may also include one-page proposal outlines for experiments or case study report.

4. Mid-term and Final Exam – 20%

Students will take written exams to evaluate their understanding of the key themes addressed throughout the course. The exams may include some multiple-choice questions; however, a larger emphasis will be on critical analysis and the student's ability to demonstrate thorough comprehension of themes covered during the program.

5. Participation & Discussions – 10%

Includes general engagement with the subject matter, attentiveness during peer presentations, and active participation and attendance during lectures and discussions.

ESCI 437B, Environmental Field Survey (5 quarter / 3.35 semester credits)

1. Field Data Notebook – 20%

The field data notebook is an integral part of the French Polynesia program and the ESCI 437B course. It is used to document our various field activities, and as a way to keep track of the different flora, fauna, and geological features that we encounter along our journey.

Students will be instructed on the best way to organize their notebook at the start of the program, and it will be collected periodically during the program for review and in the last week of the program for a final review.

The field data notebook will consist of the following components:

i) Field Study Log (10%): The field study log will be used to keep track of one of the regions that we visit during our time in Tahiti and Moorea, to note interesting observations, and to document notable flora, fauna, and geographical features. The log is not meant to include everything that we see. It is a tool to describe, hone our observation skills, and document species that are dominant, that you find interesting, or are rare sightings (e.g., whales, sea turtles, etc.). The log should list the date(s) that we stayed at the location with a description of the region, an “In this region I noticed...” entry, and species that were encountered in the area. Approximately 5 species should be included, and some students find that sketches and/or pressing plants into the notes section is useful.

The log should follow the example template below:

Region:	Dates:						
<p>Description: <i>Brief overview of the region. Where is this region located? Are there any prominent ecological or geographical features that characterize the region?</i></p> <ul style="list-style-type: none">• “In this region I noticed...” This is a short description of specific ecological or geological phenomena observed (e.g., species interaction) that ignited a sense of curiosity or newfound learning.							
<p>Species from the Region</p> <table border="1"><thead><tr><th><u>Species Name</u></th><th><u>Specific Site</u></th><th><u>Notes</u></th></tr></thead><tbody><tr><td>Include Latin name if available</td><td>If known, include the specific site within the general region</td><td>Relevant notes about the observation (e.g., behavior, appearance, key characteristics, etc.). You may include a sketch if you’d like.</td></tr></tbody></table>		<u>Species Name</u>	<u>Specific Site</u>	<u>Notes</u>	Include Latin name if available	If known, include the specific site within the general region	Relevant notes about the observation (e.g., behavior, appearance, key characteristics, etc.). You may include a sketch if you’d like.
<u>Species Name</u>	<u>Specific Site</u>	<u>Notes</u>					
Include Latin name if available	If known, include the specific site within the general region	Relevant notes about the observation (e.g., behavior, appearance, key characteristics, etc.). You may include a sketch if you’d like.					

Grading of the Field Study Log will use the following criteria:

- **Organization:** Log is neat and is organized according to the above format.
- **Consistency of Use:** Includes each region that we visit and demonstrates attention to key species and features that we see.
- **Effort:** Reasonable effort has been invested into the process (i.e., Latin names are included when possible and thoughtful, detailed descriptions, observations, and notes are provided)

ii) Other Assignments (10%): Refers to any other specific journal activity or assignment given by the instructors throughout the program, and may include field survey exercises, ethology exercises, sketches, and opportunistic observation activities.

2. Data Collection and Analysis – 15%

Students will demonstrate their ability to collect field data using various scientific methods. Students will be assessed on their data sheets, such as habitat assessments, reef surveys and transects and their ability to utilize these data for analytical and statistical processes such as species diversity indices, regression and graphing results.

3. Research Projects – 35%

The importance of establishing research/monitoring projects and protocols is one of the themes that we will be focused on during our time in French Polynesia.

i) Research Proposal (5%): In groups of two to four, students will develop a research proposal based on natural resources management of a local impaired ecosystem. The proposal will be presented to the examiners during 5 minutes as if the students are 'pitching' to prospective funders. The proposal must include: research questions, general and specific objectives, (field) methods, anticipated outcomes, and evaluation criteria. Ethical and community considerations must be integrated into the research topic and methodology.

ii) Small-scale Research Project (20%): In a group, students will create a research project to answer a small-scale question by collecting and analyzing their own data.

The research project will need to be:

- Centered on a core ecological question that has been developed throughout the program.
- Demonstrate understanding of the relevant field techniques learned and practiced during the program.
- Justified (theoretically and practically) with rationale/links to the 'bigger picture' (e.g., conservation outcomes).
- Accompanied by an oral presentation (10 minutes).

iii) Monitoring project (10%): As a group, students will design and implement a monitoring project to help the local community with the restoration of a traditional fishpond.

The monitoring project will need to:

- Develop a survey protocol to address the questions asked by the local community.
- Make use of the relevant field techniques learned and practiced during the program.
- Be supported with stepwise guidance for the persons who would continue this monitoring program in the future.

4. Mid-term and Final Exam – 20%

Students will take exams to assess their understanding of key themes and concepts related to research methodologies, the process of undertaking scientific investigations, data analysis and interpretation, and the role that science plays with informing policy and management decisions. The exams may include some multiple-choice questions; however, a larger emphasis will be on critical analysis and the student's ability to demonstrate thorough comprehension of themes covered during the program.

5. Participation & Discussions – 10%

Students will be evaluated based on their general engagement and enthusiasm with all field activities, their contribution to group projects and adhesion to safety guidelines. It is important for students to have a positive attitude and to be respectful to each other and anybody else who they are working with in the field. Students will also be evaluated based on their willingness to participate and engage in discussions regarding the scientific literature that we read. During the course, students may be assigned certain papers where they will assume the leader role of the discussion.

ESCI 437C, Wildlands Environment and Culture (5 quarter / 3.35 semester credits)

1. Learning Journal – 40%

The learning journal is an integral part of the French Polynesia program and the ESCI 437C course. It is used to document interactions with local experts, and as a way to keep track of one's own personal development, awareness, and socio-cultural insights that are gained during the program. It will also include a dictionary of Tahitian and French words.

Students will be instructed on the best way to organize their Learning Journal at the start of the program, and it will be collected periodically during the program for review and in the last week of the program for a final review.

The Learning journal will consist of the following components:

i) Guest Speaker Summaries (10%): We expect to be learning from local researchers and experts during the program. For certain interactions, students will be instructed to complete a guest speaker summary in their learning journal. These entries are not meant to be time consuming and should only take 5-10 minutes to complete. The summary should include the following elements:

Name of Presenter:	Date:
Topic:	Location:
□ Provide 3 - 4 bullet points describing key information that you learned during the presentation.	
Question: Write one question that came to your mind related to the presentation topic.	

Grading of the guest speaker summaries will use the following criteria:

- **Organization:** Entries follow the format established above.
- **Completeness:** Includes a completed entry for all instructed guest speakers.
- **Accuracy of Content:** Provides an accurate overview of the presentation.
- **Clarity:** The entry should be well-written, easy to read, with concise bullet points, and a clear question.
- **Effort:** The entries should demonstrate that the student paid attention during the presentation.

ii) Reflections/Creative Entries (20%): Students will develop a “social-ecological autobiography” (See Hayes manuscript) in their learning journal. This includes regular insightful reflections on learning experiences embedded within specific contexts, which can include but is not limited to interactions with guest speakers, local communities, other travelers, your peers, and the course readings. These entries are meant to challenge the student to tap into their creative side and to find awareness of how their own views and values have been brought into focus or shaped by the experience. Examples of themes that can be highlighted include 1) changes in personal beliefs, perceptions, worldviews and learning, possibly as part of comparative reflection to past experiences/knowledge/places encountered back in your homeland, 2) key elements and information that finds resonance (appeal) or dissonance (conflict) within you, 3) creative writing about a location/experience that incorporates Polynesian cultural beliefs and traditions. Poetry and art are welcomed as individual shorter entries or to complement longer entries. 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 does not need to be related to your “*Right now I feel...*” statement).

Grading of reflections/creative entries will use the following criteria:

- **Consistency of Use:** Entries are completed regularly throughout the program
- **Concept:** Entries are creative and demonstrate a high level of contemplation. The theme or experience is explored in depth, from different angles, and incorporates philosophical, social, or creative reflection. Entries use learning experiences to make insightful links between themes, readings, and experiences prior, during, and beyond the program.
- **Style:** Entries are well-written, and make use of narrative, prose, poetry, art, etc.
- **Effort:** A genuine effort to write thoughtful, creative reflections is demonstrated.

iii) Cultural Dictionary – 10%

The cultural dictionary is a list of local words and phrases as well as unique cultural elements (symbols, names, concepts, etc.) that are commonly encountered during the program. Language will be mostly Tahitian, but French, other Polynesian or even Austronesian languages might be heard. When possible, students should include either a direct translation of the word or describe the cultural significance of the element. Several words do not have a direct English translation and will require a more thorough description to convey the meaning of the word. The dictionary should be organized using the table format below.

*Cultural element (word, symbol, concept) // Language Group // English Translation and/or Cultural Significance
E.g., Vahine // Tahitian // Woman*

Grading of the cultural log will use the following criteria:

- **Accuracy:** Student makes an effort to spell accurately and appropriately identifies the significance.
- **Consistency of Use:** Student demonstrates an attention to new words/phrases/cultural elements that are encountered throughout the program.
- **Effort:** Reasonable effort has been invested throughout the program.

2. Short Assignments – 15%

Throughout the program, short assignments such as one-sheet worksheets, brainstorming activities, informal writing etc. will be given to students to expand their knowledge about cultural and social links to ecosystems, climate change and local flora and fauna.

3. Final Reflection – 15%

Students will prepare a final reflection (3-4 pages) on the development of their worldview throughout the program that serves as a synthesis of elements included in their learning journal. Students will detail their worldview and place it in context alongside other (cultural and ecological) worldviews studied or encountered during the program. Students may integrate their ideas about where and how their own perceptions and beliefs were challenged, dislodged, or reinforced. Students are encouraged to make links with ideas about their own evolving naturalist intelligence and/or social-ecological connectedness, and to refer to the people (i.e., from peers, presenters, locals, researchers, travelers, etc.), relevant readings, landscapes, and personal experiences that have been of significant influence throughout the program. The final reflection serves as an additional and final entry for the learning journal.

Grading of the Final Reflection will use the following criteria:

- **Organization and Structure:** Ideas are logically ordered and cohesive.
- **Analysis:** Clearly identifies key contrasting perspectives encountered during the program and explains the role they have played in contributing to one's own worldview.
- **Synthesis:** Integrates different perspectives and articulates a distinct set of values or way of looking at the world.
- **Style:** Reflection is well-written, writing is succinct and engaging, and key points are effectively conveyed.
- **References:** If literature was used, it needs to be cited.

4. Mid-term and Final Exam – 20 %

Students will take written exams to assess their understanding of key themes and concepts related to Polynesian culture, history, traditions, and how the landscape has shaped the Polynesian way of life. The exams may include some multiple-choice questions; however, a larger emphasis will be on the student's ability to thoughtfully reflect and demonstrate thorough comprehension of themes covered during the program.

5. Participation & Discussions – 10%

Students will be evaluated according to active participation in cultural discussions as well as their attitude and involvement when engaging with guest speakers, local experts, and the community. In this particular course, it is important that the student demonstrates a genuinely open mind, a willing attitude, and a respectful etiquette when interacting with team members. Finally, the student's consistent and positive contribution to the team dynamic (e.g., by embracing assigned roles, helping around camp, being kind to everyone, being on time) 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:

Letter grade	Percentage
A	92.5- 100+
A-	90.0- 92.4
B+	87.5- 89.9
B	82.5- 87.4
B-	80.0- 82.4
C+	77.5- 79.9

Letter grade	Percentage
C	72.5- 77.4
C-	70.0- 72.4
D+	67.5- 69.9
D	62.5- 67.4
D-	60.0- 62.4
F	< 60.0

VI. General Reminders

Academic Integrity is as relevant during our 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 out of fairness to other students and to allow enough time for instructors to grade student work. Therefore, deadlines are firm and late assignments will be penalized. If you believe that extenuating circumstances have prevented you from completing your work on time, make sure to discuss this with your instructor 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 may affect your final grade. Hence, it is important to be prompt and prepared with the needed gear for all activities.

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

VII. Required Materials

- **Two larger (sheet size ~8.25" x 11") durable notebooks:** one for ESCI 437A and ESCI 437B assignments (i.e., for your field journal and field data notebook assignments) and one for ESCI 437C (i.e., for your learning journal assignments). We recommend Rite in the Rain notebooks: for example, hardcover products ([#770F-MX](#)) or softcover products ([#373-MX](#)). These notebooks will be periodically turned in to be graded.

- **One large notebook** for taking notes during lectures.

- **Smaller durable notebooks** for taking notes during lectures outside and while in the field. For your smaller notebooks, we recommend Rite in the Rain pocket-sized books. Up to you how many to bring. If you tend to write large, or take a lot of notes, consider bringing a few small notebooks. You will use your field notes to complete the graded assignments in the larger notebooks. All notebooks are available directly from Rite in the Rain or Forestry Suppliers or other channels.

Alternative compact hardback or tough softback bound notebooks may be suitable for all the above. Whatever your choice, ensure the larger notebooks to be handed contain at least **80 pages**, are durable, and can fit in a large Ziploc bag. Avoid cubic grid line formats. Your smaller notebook(s) should be small, weather resistant, and durable. For all books, avoid flimsy wire spiral bound notebooks and soft cardboard covers. They deteriorate quickly and frustrate you when writing in them and us when grading them.

- **Writing materials:** Pencils are recommended for writing in the field notebook (include at least one 4B pencil). They are the only way to keep your notes waterproof when using Rite in the Rain. In addition, an eraser, extra lead or a small sharpener is advisable. Pens for other situations. You may also want to use a highlighter when going through articles in our course reader. We will draw: colors are optional but if you like colors then bring some in the form of crayons or watercolors.

- **Folder:** To safely store any handouts or pamphlets. Bring some loose leaf sheets of paper in your folder for field quizzes and to use as scratch paper.

VIII. Academic Schedule & Course Content

This outline is provisional and subject to change. Activities and reading assignments may be updated. The exact schedule will be reviewed with students 1-3 days ahead of time. (Sp: species presentation, Tp: topic presentation)

Location	Lecture Topics & Activities
Punauia	Introductions Gear Checks and Prep Introduction to French Polynesia
Te Faaiti	Valley Trip
Taravao	Field Survey Methods Island Biogeography Midterm Exam
Te Pari	Backpacking Trip
Moorea cultural center	Sustainable Agriculture Conservation Strategies
CRIOBE station	Marine Research Methods Research Project Proposals
Maatea	Marine Conservation Research Project Data Collection Research Project Presentations
Punauia	Monitoring Project Final Exams Goodbyes

IX. Reading List (this list is provisional and may change before the program starts)

The course reader, including the readings listed below, will be compiled, and emailed to students in advance of the program. Additional readings and guidebooks will be carried in a shared library.

[R1]Purugganan, M. and Hewitt, J. (2004)
'How to Read a Scientific Article', p. 6.

[R2a]Hayes, M.A. (2009)
'Into the Field: Naturalistic Education and the Future of Conservation', *Conservation Biology*, 23(5), pp. 1075–1079.
Doi:[10.1111/j.1523-1739.2009.01302.x](https://doi.org/10.1111/j.1523-1739.2009.01302.x).

[R2b]Parker, A. (2015)
'Natural History and Naturalist Skills', p. 16.

[R3]Grayzel, J. (2019)
'Polynesian Civilization and the Future Colonization of Space', *Comparative Civilizations Review*, 80(80), p. 31.

[R4]Brown et al. (2020)
Communities, conservation, and development in the age of COVID: Time for rethinking approaches (commentary).
Available at: <https://news.mongabay.com/2020/08/communities-conservation-and-development-in-the-age-of-covid-time-for-rethinking-approaches-commentary/> (Accessed: 19 May 2021).

[R5]Whittaker, R.J. *et al.* (2017)
'Island biogeography: Taking the long view of nature's laboratories', *Science*, 357(6354).
Doi:[10.1126/science.aam8326](https://doi.org/10.1126/science.aam8326).

[R6]Blanvillain, C. *et al.* (2020)
'Rat and invasive birds control to save the Tahiti monarch (*Pomarea nigra*), a critically endangered island bird', *Journal for Nature Conservation*, 55, p. 125820. Doi:[10.1016/j.jnc.2020.125820](https://doi.org/10.1016/j.jnc.2020.125820).

[R7]Hughes, T.P. *et al.* (2018)
'Spatial and temporal patterns of mass bleaching of corals in the Anthropocene', *Science*, 359(6371), pp. 80–83.
Doi:[10.1126/science.aan8048](https://doi.org/10.1126/science.aan8048).

[R8]Vermillion, S. (2021)
'Polynesia's master voyagers who navigate by nature', p. 6.

[R9]Meyer, J.-Y. *et al.* (2021)
'Introduced mangroves in the Society Islands, French Polynesia (South Pacific): invasive species or novel ecosystem?', *Biological Invasions*, 23(8), pp. 2527–2539. Doi:[10.1007/s10530-021-02520-9](https://doi.org/10.1007/s10530-021-02520-9).

[R10]Lenton, T.M. *et al.* (2019)
'Climate tipping points — too risky to bet against', *Nature*, 575(7784), pp. 592–595. Doi:[10.1038/d41586-019-03595-0](https://doi.org/10.1038/d41586-019-03595-0).

[R11a]Dowie, M. (2009)
'Conservation: Indigenous People's Enemy No. 1?', *Mother Jones*. Available at:
<https://www.motherjones.com/environment/2009/11/conservation-indigenous-peoples-enemy-no-1/> (Accessed: 27 October 2019).

- [R11b]Martinez, D. (2003)
'Protected Areas, Indigenous Peoples, and The Western Idea of Nature', *Ecological Restoration*, 21(4), pp. 247–250.
doi:[10.3368/er.21.4.247](https://doi.org/10.3368/er.21.4.247).
- [R12]Magazine, H. (2021)
Scooping Plastic Out of the Ocean Is a Losing Game, *Hakai Magazine*. Available at:
<https://hakaimagazine.com/features/scooping-plastic-out-of-the-ocean-is-a-losing-game/> (Accessed: 16 February 2022).
- [R13]Smith, G.C., Covich, A.P. and Brasher, A.M.D. (2003)
'An Ecological Perspective on the Biodiversity of Tropical Island Streams', *BioScience*, 53(12), p. 1048. Available at:
[https://doi.org/10.1641/0006-3568\(2003\)053\[1048:AEPOTB\]2.0.CO;2](https://doi.org/10.1641/0006-3568(2003)053[1048:AEPOTB]2.0.CO;2).
- [R14]Schultz, P.W. (2011)
'Conservation Means Behavior', *Conservation Biology*, 25(6), pp. 1080–1083. doi:[10.1111/j.1523-1739.2011.01766.x](https://doi.org/10.1111/j.1523-1739.2011.01766.x).
- [R15]Fabre, P. *et al.* (2021)
'Contemporary Rāhui: placing Indigenous, conservation, and sustainability sciences in community-led conservation', *Pacific Conservation Biology*, 27(4), pp. 451–463. doi:[10.1071/PC20087](https://doi.org/10.1071/PC20087).
- [R16]Ibisch, P.L. *et al.* (2016)
'A global map of roadless areas and their conservation status', *Science*, 354(6318), pp. 1423–1427.
doi:[10.1126/science.aaf7166](https://doi.org/10.1126/science.aaf7166).
- [R17]Oodendijk, W. *et al.* (2020)
'SARS-CoV-2 was Unexpectedly Deadlier than Push-scooters: Could Hydroxychloroquine be the Unique Solution?', p. 9.
- [R18]Thiault, L. *et al.* (2019)
'Ecological evaluation of a marine protected area network: a progressive-change BACIPS approach', *Ecosphere*, 10(2), p. e02576. doi:[10.1002/ecs2.2576](https://doi.org/10.1002/ecs2.2576).
- [R19]Adam, T.C. *et al.* (2014)
'How will coral reef fish communities respond to climate-driven disturbances? Insight from landscape-scale perturbations', *Oecologia*, 176(1), pp. 285–296. doi:[10.1007/s00442-014-3011-x](https://doi.org/10.1007/s00442-014-3011-x).
- [R20]Séguigne, C. *et al.* (2022)
'Effects of a COVID-19 lockdown-induced pause and resumption of artificial provisioning on blacktip reef sharks (*Carcharhinus melanopterus*) and pink whiprays (*Pateobatis fai*) in French Polynesia (East-Pacific)', *Ethology*, 128(2), pp. 119–130. Available at: <https://doi.org/10.1111/eth.13246>.
- [R21]Madi Moussa, R. *et al.* (2019)
'Long-term coastline monitoring on a coral reef island (Moorea, French Polynesia)', *Ocean & Coastal Management*, 180, p. 104928. doi:[10.1016/j.ocecoaman.2019.104928](https://doi.org/10.1016/j.ocecoaman.2019.104928).
- [R22]Poray, A.K. and Carpenter, R.C. (2014)
'Distributions of coral reef macroalgae in a back reef habitat in Moorea, French Polynesia', *Coral Reefs*, 33(1), pp. 67–76. doi:[10.1007/s00338-013-1104-3](https://doi.org/10.1007/s00338-013-1104-3).
- [R23]Claudet, J., Amon, D.J. and Blasiak, R. (2021)
'Opinion: Transformational opportunities for an equitable ocean commons', *Proceedings of the National Academy of Sciences*, 118(42). doi:[10.1073/pnas.2117033118](https://doi.org/10.1073/pnas.2117033118).

- [R24]Holbrook, S.J. *et al.* (2016)
'Coral Reef Resilience, Tipping Points and the Strength of Herbivory', *Scientific Reports*, 6(1), p. 35817.
doi:[10.1038/srep35817](https://doi.org/10.1038/srep35817).
- [R25]Cook, J. (2019)
Understanding and Countering Misinformation About Climate Change, Handbook of Research on Deception, Fake News, and Misinformation Online. Available at: www.igi-global.com/chapter/understanding-and-countering-misinformation-about-climate-change/230759 (Accessed: 12 January 2021).
- [R26]Bradshaw, C.J.A. *et al.* (2021)
'Underestimating the Challenges of Avoiding a Ghastly Future', *Frontiers in Conservation Science*, 1. Available at: <https://www.frontiersin.org/article/10.3389/fcosc.2020.615419> (Accessed: 29 April 2022).
- [R27a]Jensen, D. (2006)
'Beyond Hope | Essays', p. 5.
- [R27b]Swaisgood, R.R. and Sheppard, J.K. (2010)
'The Culture of Conservation Biologists: Show Me the Hope!', *BioScience*, 60(8), pp. 626–630.
doi:[10.1525/bio.2010.60.8.8](https://doi.org/10.1525/bio.2010.60.8.8).
- [R28]Kolbert, E. (2016)
'A Radical Attempt to Save the Reefs and Forests', *The New Yorker*, 11 April. Available at: <http://www.newyorker.com/magazine/2016/04/18/a-radical-attempt-to-save-the-reefs-and-forests> (Accessed: 29 April 2022).
- [R29]Tanner, J.T. (1975)
'Population Limitation Today and in Ancient Polynesia', *BioScience*, 25(8), pp. 513–516. doi:[10.2307/1296964](https://doi.org/10.2307/1296964).
- [R30] Kingsnorth, P. (2010)
'Confessions of a recovering environmentalist', p. 12.
- [R31]Wiedmann, T. *et al.* (2020)
'Scientists' warning on affluence', *Nature Communications*, 11(1), p. 3107. doi:[10.1038/s41467-020-16941-y](https://doi.org/10.1038/s41467-020-16941-y).