THE BIG SUR WILDLANDS PROGRAM:
PRESERVING ENVIRONMENTS
SUMMER 2021
August 1-14

ACADEMIC SYLLABUS

Faculty:
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Contact Hours: We will be in contact throughout the program, with the instructor on-site and available. Class will meet every day, with the instructor available for individual meetings.

Class Meetings: This Wildlands Studies Program involves seven days per week of instruction and field research, with very limited down time during the program. Faculty and staff work directly with students 6-10+ hours a day and are available for tutorials and coursework discussion before and after scheduled activities. Our activities typically begin each morning and extend into the late afternoon, with meal breaks (though some meals will need to be taken into the field – usually lunch). Some activities may start as early as 4 am (e.g., if there is intertidal work) or end as late as 10 pm. It is necessary to be flexible and to be able to accommodate a variety of class times. Most evenings include scheduled activities, including guest lectures, structured study time, and workshops.

Course Credit: Wildlands Studies students receive credit for one undergraduate course:

> **ESCI 437A, Environmental Wildlands Studies (5 quarter credits)** – Field study of environmental problems affecting the natural and human-impacted ecosystems of our study region, including the role of human interactions.

This course has distinct objectives, 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 with support from the Environmental Science Department in WWU's Huxley College of the Environment. An extended description follows in the course description section of this syllabus.

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

In addition, there is one required book that students purchase before the program:
The Natural History of Big Sur by Paul Henson and Donald Usner. 1996, University of California Press. ISBN 0520205103

Contents of this syllabus:

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I. Program Overview

The Wildlands Studies Big Sur Program was established at the Big Creek Reserve in 1995, and has been running every year since then, giving students a unique opportunity to contribute to a long-term database. The class is designed to give college undergraduate students practical experience with the process of conducting field work, including designing a hypothesis-based ecological investigation, data collection, data analysis and report preparation. As with past summers, we are working to enable students to do their investigations in the Big Creek Reserve, Big Sur, California, while this year staying on nearby private property due the damage sustained by the Reserve this past year. As a part of the class, each year students engage in two long-term investigations: 1) Southern sea otter populations (*Enhydra lutris nereis*) and raft locations between Big Creek and Esalen Institute; and 2) a stream survey of Lower Big Creek, Middle Big Creek and Devils Creek which involves stream mapping, pool substrate analysis and steelhead (*Oncorhynchus mykiss*) counts in four size classes. We now have many consecutive years of data from that effort. In addition, students carry out data collection and analysis on a variety of subjects, including plant communities and intertidal communities, as well as an independent project. We will not know the status of our stream surveys until later in June or early July.

Students gain important skills and experience during the class and participate as teams to implement their investigations. The Big Creek Reserve and this class provide a unique experience for undergraduate students to engage fully in the process of science outside the classroom. They gain insight into scientific investigation as well as a better understanding of their own future goals and educational pathways.

II. Learning Objectives

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

1. ***The design and implementation of Ecological Sampling Methods and data collection.*** Students will participate in two long-term projects (Sea Otter census and stream mapping), where they will learn and carry out established methods. Each team of students will be responsible for modifying those methods as needed and making sure those modifications do not impact the integrity of the data. They will also be presenting a proposal for a study of their own to be conducted (hypothetically) in the reserve. This proposal will include methods and expected results.
2. ***Data analysis, presentation, and report writing.*** Student teams will be responsible for analyzing project data for the two long-term studies, and presenting those data (in graphs, tables, etc.) to the class. These data will also be included in a report the teams will turn in. These reports are made available to the Big Creek Reserve Manager and the data will go into the long-term database. The program will generally include an additional project that utilizes mathematical analyses for species diversity and dominance indices (plants). If possible, students will collect the data and present the analyses.

3. ***Integrating ecological data and concepts into a management perspective, and a larger scale context.*** Through discussions, guest lectures and the 'significance' section of all required reports, as well as the integrated nature of working in a complex and diverse ecosystem, students will be able to articulate how ecological investigations and data contribute to a wider understanding of ecosystems, and how important knowledge of other aspects of ecosystem function (in addition to their study objectives) are applied to management and ecosystem trends. This includes an understanding of the human uses and their social and political context. We will be discussing the first nations people of the region as well.

These topics will be addressed through classroom lecture and discussion, course readings, field activities, visits with local experts, exposure to ongoing research, backcountry excursions, and field research projects. The course generally progresses from faculty-led instruction in the beginning (i.e., more lectures and readings) to student-led critical evaluation, analysis, and synthesis in the end of the course. Our overarching goal is to have students leave the course not only with extensive knowledge about this particular region, but with broader skills and understanding of ecological, geological, and social sciences that allows them to critically evaluate information in other settings in their future lives and careers.

III. Course Description

Students will receive transcript credit for the following course (this was introduced on page 1):

ESCI 437A, Environmental Wildlands Studies (5 quarter credits) – Field study of environmental problems affecting the natural and human-impacted ecosystems of our study region in Big Sur, California, including the role of human interactions.

Experiences/Activities: Students will participate in two long-term projects (Sea otter census and stream mapping) if allowable, where they will learn and carry out established methods. They will also be presenting a proposal for a study of their own to be conducted (hypothetically) in the Reserve or nearby. The course will generally include an additional project that utilizes mathematical analyses for species diversity and dominance indices (plants). Students will collect the data and present the analyses. They will be presenting data and results both orally and in a written report format. Techniques will include (possibly): population census (double blind), stream mapping, steelhead counts in 3-4 size classes, transects, and behavioral observations.

Outcomes: Students will gain the ability to undertake a substantial, complex field project and be able to synthesize, organize, and present final data in a way that is appropriate to the audience and subject matter. Students will be able to identify the key testable questions for a research project and identify what elements need to be measured to answer those questions. Students will analyze (using basic summary statistics), visually represent (e.g., figures, tables), and interpret the results of their data. Students will discuss their results in light of current management and conservation issues and should be able to demonstrate how their results compare with or add to current knowledge of their study subject. Students will prepare written reports and oral presentations that synthesize their data and interpretations. Students will be able to demonstrate their understanding of the geological, ecological, and/or social science processes and concepts that underlie their research.

Evaluation/Assessment: Oral and written presentations of the work will be 55% of the grade, field notebooks will be 15% of the grade, and field effort will be 30% of the grade.

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. Due dates are subject to adjustment based on field conditions, logistics, and data collection. Final grades will be based on the following items:

Course Number	Assessment Item	Date due	Percent of grade
ESCI 437A	Oral reports (3)	See itinerary	30
	Written reports (2)	below	25
	Field notebooks		15
	Field participation		30

Assessment Protocol

Students are expected to participate in all activities. The data collection will depend on good teamwork, sound methods, and well-kept notebooks. The importance of a well-kept field notebook cannot be emphasized enough, both for you as a student, and for the research project you are a part of. Your grade will be based on your notebook, field reports, your project, and overall participation.

Field Notebook guidelines:

Most students keep a separate notebook and transcribe the daily data and activities into that notebook. This works well as it also allows you to reflect on the activities and better synthesize your conclusion. Be NEAT.

Students will be graded on*:*

- Activity descriptions: give an overall description of what we did.
- Sampling design: be sure to explain what you did in detail.
    - Where it was
    - What the METHODS were; so someone could pick up your notebook and do it too!
    - What materials you used
    - Draw diagrams if needed to explain things – this is often very effective
- Scientific question analysis: what questions did we ask?
- Rough data analysis and results.
- Outline any problems you had with the sampling and how it might be done better next time.
- Include relevant aspects of our evening discussions and wrap-ups in your notebooks.
- A conclusion – what did it all mean to you?

Your field notebook should be able to be used by yourself or a colleague to conduct the sampling outlined. This is why descriptions, materials, methods, problems, and conclusions are so important.

Project (your own): You will be proposing an ecological study, not actually doing one. You will present the study, its significance, some methods you would use and an outline of expected preliminary results. This must be well organized, clear, and be presented in under 10 minutes.

Reports (done in groups): You will be preparing reports of your field projects (Sea otter population census, stream mapping/steelhead, and plant communities' diversity analyses). You will also be presenting these orally. Reports and presentations will include: background information, questions/hypotheses, significance, materials and methods, results and discussion with conclusion. These data are kept as part of an ongoing database.

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

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

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

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

VII. Academic Schedule & Course Content

Outlined in the following table, but subject to change due to road closures and opportunities that arise.

Date	Lecture Topics & Activities	Readings Required	Assignments Due
Aug 1 Sun	Travel to Santa Cruz. Night at Wildlands headquarters Evening: discussion	Henson and Usner, Introduction and Chapter 2	
Aug 2 Mon	AM: **Kayak in Elkhorn Slough**: introduction to coastal processes. Travel to Big Sur. Set up camp at Point 16. Evening: discussion and plant survey preparation: Introduction to field methods and data collection.	Henson and Usner, Chapter 4	Arrive Pt 16
Aug 3 Tues	Plant community survey: On-site trail to the Beach. Hike to Camoldoli Evening lecture: Big Sur Geology with Dave Schwartz	Henson and Usner, Chapter 5 (fire ecology) and Chapter 1 (Geology)	Dave/Vera: Geology
Aug 4 Wed	Big Sur Geology: Beach surveys Evening: discussion and preparation for Sea Otter Surveys	Henson and Usner, Chapter 6 (Fauna)	**Report #1** – Plant communities Dave/Vera
Aug 5 Thurs	Morning: Sea Otter surveys Evening: Sampling discussion/data/notebooks	Reader assignment: sea otters, marine ecology Henson and Usner, Chapter 3 (Shoreline)	Student presentations (2)
Aug 6 Fri	Morning: Sea otter surveys Evening: discussion, work on data/reports	Reader and Henson and Usner, chapter 8	Student presentations (2)
Aug 7 Sat	**Drive to Indians** Salinan and Essalen native peoples Night at Indians	Reader: human history Henson and Usner, chapter 7 (People)	
Aug 8 Sun	Hike Cone Peak Afternoon: Notebooks/projects Evening: discussion	Henson and Usner, Chapter 7	Student presentations (3)

Aug 9 Mon	Sea otter data and report preparation Evening: stream methods and preparation for stream surveys	Reader: streams	**Report #2** – sea otters
Aug 10 Tues	Morning: Stream Mapping and steelhead surveys (snorkel) **Big Creek** Afternoon: discussion/data/notebooks Evening: discussion/data analysis	Reader: streams	Group at Pt 16 (Day) Student presentations (2)
Aug 11 Wed	Morning: Stream Mapping and steelhead surveys (snorkel) **Big Creek** Afternoon: discussion/data/notebooks Evening: discussion/data analysis	Reader: streams	Student presentations (3)
Aug 12 Thurs	Morning: Finish data and report preparation Afternoon: Presentations/notebooks/projects Evening: discussion	Notebooks Reports	**Report #3** - Streams
Aug 13 Fri	(Pfeiffer Beach? LT 8:00 .95) Independent projects Presentations Discussions Pack up!	Evaluations and clean-up	**Notebooks due** Final student presentations (4)
Aug 14 Sat	Travel back to Santa Cruz		

VIII. Complete Reading List and Reader Contents

1. *The Natural History of Big Sur* by Paul Henson and Donald Usner. 1996, University of California Press. ISBN 0520205103
   Please buy it in advance. You can order it online. It was published in 1996 by the University of California Press. This book can be found it at Amazon.com or half.com. Make sure the book is in stock before you order it.

2. Course Reader: Content is assembled prior to each program with relevant and current papers and will either be provided in advance or when students arrive on-site. Information from the following website is included: http://www.werc.usgs.gov/, with specific data from the Sea Otter database: http://www.werc.usgs.gov/Project.aspx?ProjectID=91.