



Marine Environmental Science Laboratory: ENV 115L

Course Syllabus

Fall 2019

Human alteration of earth is substantial and growing. Peter M. Vitousek et al.

Saving our planet, lifting people out of poverty, advancing economic growth... these are one and the same fight. We must connect the dots between climate change, water scarcity, energy shortages, global health, food security and women's empowerment. Solutions to one problem must be solutions for all.

Ban Ki-moon

Climate change is happening, humans are causing it, and I think this is perhaps the most serious environmental issue facing us.

Bill Nye

By the mid-1950s manatees were already scarce, and monk seals, once common as far north as Galveston, were gone. By the end of the 20th century, up to 90 percent of the sharks, tuna, swordfish, marlins, groupers, turtles, whales, and many other large creatures that prospered in the Gulf for millions of years had been depleted by overfishing. The coral reefs had declined by half, and hundreds of miles of marshes, mangroves, and sea grass meadows were replaced by houses and hotels, malls and marinas. Rivers that once nourished the Gulf with vital nutrients now carried toxic loads of pollutants, forming massive "dead zones."

Sylvia Earle

Department Name: Environmental Program
College/School/Division Name: Natural Sciences and Mathematics; Chaminade University of Honolulu
Course Credits: 1
Term: Fall 2019 **Class Meeting Days**: W **Class Meeting Hours**: 2:30-5:20 **Class Location**: HL4

Instructor: Dr. Gail Grabowsky
E-mail address: ggrabows@chaminade.edu
Phone: 735-4834 (ext. 834 if calling from on campus); cell 808-387-9319 (please don't call after 9:00 pm, but you may text anytime!)
Office Location: Wesselkamper Science Center, room 105
Office hours: MF: 2:30-6:00; T 12:30-2:30; Or by appointment
Course Website: https://drive.google.com/drive/folders/1eo1I6ZUW0hDCQJmtUUu7qHj2RLN5IWP0

University Course Catalog Description: This course introduces students to the scientific methodologies used to determining and studying the current major marine environmental issues. Issues studied include: global warming, marine pollution, marine debris, oil spills, fisheries exploitation, fisheries by-catch, marine alien species and coral reef degradation. Laboratory exercises are conducted in the field and on the Chaminade campus. Students taking this course will be engaged in field science activities. Course must be taken concurrently with ENV 115.

Course Learning Outcomes: When you have completed this course you should:

- Know what science is and how scientific research is conducted
- Be familiar with and experienced at reading the primary scientific literature
- Know the basic units used in making scientific measurements
- Be able to competently collect, record, analyze, present and interpret scientific data
- Be able to write up a scientific research report
- Be able to properly collect, identify and preserve marine biological specimens
- Be able to identify particular marine organisms and their behaviors in the field
- Be comfortable conducting field measurements in a variety of types of marine habitats
- Be able to document the physical effects of a number of the major marine environmental issues
- Be able to document some of the detrimental effect(s) marine environmental issues have on marine ecosystems

Texts:
Required: None; Your labs are coming from many sources! Informational handouts will be given in e-copy prior to lab. All documents will we posted on the course Google Drive website in the sub-folder titled "Lab related." Worksheets will be handed out in hard-copy.

Course Website: https://drive.google.com/drive/folders/1f3i4sxB9gE6OmpLVumE_5zOaPZCh8_t-

Grading & Assessment: Your grade in this course will be based on the following. Each of the items/activities listed below will be described to you in writing or orally in class.

Grading will be quantified as follows:

Laboratory worksheets, quizzes, homework, etc.	40% (200 points)
Hawaiian Invertebrate/Vertebrate Organism Exposé	20% (100 points)
Marine environmental issue Journal Article Critique	20% (100 points)
Attendance	20% (100 points)
	500 points total

Letter grades are interpreted as follows:

A = Outstanding scholarship and an unusual degree of intellectual initiative
B = Superior work done in a consistent and intellectual manner
C = Average grade indicating a competent grasp of subject matter
D = Inferior work of the lowest passing grade, not satisfactory for fulfillment of prerequisite course work
F = Failed to grasp the minimum subject matter; no credit given

Attendance and Your Grade:

If you miss a lab your absence must be excused if it is not to *formally* effect your grade. Excused absences occur when you bring in a doctor's note, a funeral announcement for a family member, notice of participation in athletic events, etc. Unexcused absences occur when you were working, surfing, sleeping, cramming for an exam in another class, etc. Unexcused absences cost you the assignment you missed that day: you receive a zero for it. Excused absences mean that the lab you missed is not counted in determining your lab grade. You may make up a lab (if it is possible to do so for that particular lab) IFF (that means IF and ONLY IF) it was an excused absence. You cannot make up a lab you missed for an unexcused reason.

Grading Procedures:

Laboratory worksheets, the Organism Exposé and the Journal Article Critique will be graded on *effort*, *correctness* (when there is a correct response etc.) *thoughtfulness* and *organization*. Effort in general manifests itself as neatness, completeness, thoroughness, calories expended per unit time(!), timeliness, correct spelling, any extra creative things you do above-and-beyond what is expected, etc. Correctness means do your statements jive with corresponding scientific knowledge, do your conclusions follow from the evidence before you, did you calculate an equation correctly, interpret a graph accurately, make a table that illustrates your data properly, etc. Thoughtfulness can show up in many ways, perhaps you really think things through, trying to consider all the variables or you worked hard to tie pieces of evidence together, maybe you consider something that may be important that everyone else ignores. By being "thoughtful" I don't mean that you look out for other people (i.e. are kind) I mean that you have done some thinking, really reflected upon a topic, have given it some time, have analyzed it, etc. thoroughly. Organization pertains to the design of your presentation. Did you present the material, answers, ideas, etc. is a way that is understandable, efficient and follows existing protocol (if they exist and/or are explained prior to the assignment).

Equipment You'll Need for Lab:

1. **Snorkel Gear**: The Environmental Studies Program has purchased REALLY GOOD masks and snorkels for you to check out for each lab! (Dr. Gail was tired of seeing students – who had purchased cheap masks to save $ - with fully fogged-up equipment seeing nothing underwater!) So borrow Chaminade's and if you like snorkeling Dr. Gail will help you to know where to go and what to look for in good equipment of your own. It is however NOT a pre-requisite that you be able to snorkel/swim to take this class. ENV has also purchased really nice Oiwi rash guards for you to borrow so that we don't harm the reef and larval fish by using sunscreen ☺. If you like the rash guard you may purchase a new one in the Chaminade Biookstore. You will need to buy your own fins.
2. **Lab Coat and Covered Shoes**: For when we are in lab. Details will be explained at the first lab meeting.
3. **Shoes that can get wet:** Be sure you have something for your feet that you can cross wet basalt rocks in! These will get wet.
4. **Water Bottle:** Bring this to all labs that occur in the field.
5. **Hat/etc.**: To protect you when we are in the field.
6. **A love of the field and getting dirty, wet or cold:** Guys this is a marine course so you will have/get to go outside! Be ready to be hot/cold, dirty etc. and prepare accordingly. Bring sunscreen if you need it, a towel, a wetsuit, etc. if you'd like and have a mind to be IN nature!

Marine Environmental Science Laboratory
Course Schedule
Fall 2019

DATE	LAB TOPIC	ACTIVITIES
8/28	Course Intro and Mechanics; Who are we?! "Background Knowledge Probe"	Review syllabi; Choose critters; Explain On-line Ocean Literacy Quiz assignment
9/4	Blue Planet II Series: Episode I	E-mail Quiz proof by lab & turn in handout Coral common & species names Quiz!
9/11	**Current Marine Issues Around the World**	**Share a marine issue of concern to you** Inverts other-than coral Quiz! (Common names)
9/18	The Big Picture: Survey the Aina and Coastal Development from Above	Diamond Head Hike; Lab worksheet; Bony fish Quiz! (Common names)
9/25	Marine Biodiversity & Taxonomy Lab Biodiversity Power Point	**Worksheet:** Camanicule Classification All remaining critters Quiz!!! (Common names)
10/2	**Hawaiian Organism Exposé Presentations**	**Natural history of Hawaiian marine critters**
10/9	Phylum Gallery Walk!	**Upload a photo of two critters by 10/4!!!**
10/16	Marine Plants = Limu Classification	Diamond Head; **Need snorkel gear!**; Draw, identify and press marine algae
10/23	Marine Ecology	Waikiki Aquarium; Lab handout & worksheet
10/30	Ocean Ecosystems (we won't get to!) Ocean Issues and the Role of Science	Blue Planet II series selection "Changing Seas" series selection; Discussion
11/6	Climate Crisis Skits	Skits: Use data and a story to convince a denier!
11/13	Coral Bleaching Survey Read: Coral Survey Information handout	Waikiki MLCD; **Need Snorkel Gear!** Worksheet Data collected and shared with *Eyes of the Reef*
11/20	Overfishing; Tuna big data lab Choose Journal Articles for Critiques	"End of the Line" & CUH big data page; Worksheet "Fieldtrip" to the Library
11/27	A Healthy Reef	Hanauma Bay; **Need Snorkel Gear!** Worksheet [We might change the date of this by consensus]
12/4	**Journal Article Critiques** (the class chooses!)	**Short presentation** of the title, purpose, graphs, tables and findings that you understand!

Alignment of Natural Sciences Courses with Marianist & Hawaiian values of the University:
The Natural Sciences Division provides an *integral, quality education:* sophisticated integrative course content taught by experienced, dedicated, and well-educated instructors.

- We *educate in family spirit* – every classroom is an *Ohana* and you can expect to be respected yet challenged in an environment that is supportive, inclusively by instructors who take the time to personally get to know and care for you.
- We *educate for service, justice and peace*, since many of the most pressing global issues (climate change, health inequity, poverty, justice) are those which science and technology investigate, establish ethical parameters for, and offer solutions to.
- We *educate for adaptation and change*. In science and technology, the only constant is change. Data, techniques, technologies, questions, interpretations and ethical landscapes are constantly evolving, and we teach students to thrive on this dynamic uncertainty.

The study of science and technology can be formative, exploring human creativity and potential in the development of technologies and scientific solutions, the opportunity to engage in the stewardship of the natural world, and the opportunity to promote social justice. We provide opportunities to engage with the problems that face Hawai'i and the Pacific region through the Natural Sciences curriculum, in particular, those centered around severe challenges in health, poverty, environmental resilience, and erosion of traditional culture. The Marianist Educational Values relate to Native Hawaiian ideas of *mana, na'auao, ohana*, *aloha* and *aina*. We intend for our Natural Sciences programs to be culturally-sustaining, rooted in our Hawaiian place, and centered on core values of *Maiau,* be neat, prepared, careful in all we do; *Makawalu,* demonstrate foresight and planning; *`Ai,* sustain mind and body; *Pa`a Na`au,* learn deeply.

Grades of "Incomplete":
Students and instructors may negotiate an incomplete grade when there are specific justifying circumstances. When submitting a grade the "I" will be accompanied by the alternative grade that will automatically be assigned after 90 days. These include IB, IC, ID, and IF. If only an "I" is submitted the default grade is F. The completion of the work, evaluation, and reporting of the final grade is due within 90 days after the end of the semester or term. This limit may not be extended.

Instructor and Student Communication:
Questions for this course can be emailed to the instructor at [ggrabows@chaminade.edu]. Online, in-person and phone conferences can be arranged. Dr. Gail will get back to you in person or via email or text ASAP usually within one day. Please if you text Dr. Gail include your name in your text!

Cell phones, tablets, and laptops:
Music Devices and Cellular Phones: Unless specifically permitted by your instructor, use of music devices and cell phones is prohibited during all Natural Science and Mathematics classes, as it is discourteous and may lead to suspicion of academic misconduct. Students unable to comply will be asked to leave class.

Out of consideration for your classmates, please set your cell phone to silent mode during class. Students are encouraged to bring laptops or tablets to class as the instructor will assign online activities and readings that will require the use of a laptop or tablet. Laptops and tablets should not be misused, such as checking distracting websites. Use your best judgment and respect your classmates and instructor.

Disability Access:
If you need individual accommodations to meet course outcomes because of a documented disability, please speak with me to discuss your needs as soon as possible so that we can ensure your full participation in class and fair assessment of your work. Students with special needs who meet criteria for the Americans with Disabilities Act (ADA) provisions must provide written documentation of the need for accommodations from the Counseling Center by the end of week three of the class, in order for instructors to plan accordingly. If a student would like to determine if they meet the criteria for

accommodations, they should contact the Counseling Center at (808) 735-4845 for further information (counselingcenter@chaminade.edu).

Title IX Compliance:
Chaminade University of Honolulu recognizes the inherent dignity of all individuals and promotes respect for all people. Sexual misconduct, physical and/or psychological abuse will NOT be tolerated at CUH. If you have been the victim of sexual misconduct, physical and/or psychological abuse, we encourage you to report this matter promptly. As a faculty member, I am interested in promoting a safe and healthy environment, and should I learn of any sexual misconduct, physical and/or psychological abuse, I must report the matter to the Title IX Coordinator. If you or someone you know has been harassed or assaulted, you can find the appropriate resources by visiting Campus Ministry, the Dean of Students Office, the Counseling Center, or the Office for Compliance and Personnel Services.

Attendance Policy:
For the University wide attendance policies please see page 54 of the 2019-2020 Academic Catalog.

Academic Conduct Policy:
From the 2018-2019 Undergraduate Academic Catalog (p. 42): Any community must have a set of rules and standards of conduct by which it operates. At Chaminade, these standards are outlined so as to reflect both the Catholic, Marianist values of the institution and to honor and respect students as responsible adults. All alleged violations of the community standards are handled through an established student conduct process, outlined in the Student Handbook, and operated within the guidelines set to honor both students' rights and campus values. Students should conduct themselves in a manner that reflects the ideals of the University. This includes knowing and respecting the intent of rules, regulations, and/or policies presented in the Student Handbook, and realizing that students are subject to the University's jurisdiction from the time of their admission until their enrollment has been formally terminated. Please refer to the Student Handbook for more details. A copy of the Student Handbook is available on the Chaminade website. For further information, please refer to the Student Handbook: https://studentaffairs.chaminade.edu/wp-content/uploads/sites/28/2018-19-NEW-STUDENT-HANDBOOK.pdf

ClassroomAtmosphere:
I value a very open, yet courteous class atmosphere. Express your ideas! **Ask your questions!** (The only dumb question is the one in which you ask yourself if you should ask your question.) Respect the thoughts and ideas and opinions of others – really think about what others say. Let them fully express their thoughts and ideas and then you do the same. **The thing I value most from my college days are all the wonderful, valuable, diverse ways of looking at and understanding the world that I was exposed to. Be an open vessel – take ideas in! You will learn as much from each other as you do from me.**

This syllabus and course schedule are living documents: they are free to change. I try to adhere as closely as possible to them for your convenience, but there will be times when weather or sea states may force me to change our lab plans or there may be times in which we will take longer on a particular topic or add or delete a topic to enhance the course. I like to be able to react to you as the course proceeds and go with the flow a bit in order to make the course experience sort of custom fit to you!

You are responsible for all of the information in this document: losing it or not reading it do not make you exempt from knowing what's in it!

Use your syllabus to keep you organized and aware of important dates and how your grade is determined.