



Ceiba Foundation for Tropical Conservation TROPICAL CONSERVATION SEMESTER 2024

MARINE BIOLOGY of COASTAL and REEF ECOSYSTEMS

4 March - 12 April

4 credits

Professors

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Canvas and Google Drive

Please enroll in the Canvas course (invite via email), which will be used mostly for assignments and grades. **Note Ceiba does not use the same Canvas system as UW.** Create a username and password the first time you access the page, and then edit your profile. Be sure the time zone is set to Quito, Once you are enrolled, access all your TCS courses at: <https://canvas.instructure.com>. Please also ensure you have access to the shared TCS google drive (invite via email), where all other course files will be available.

Purpose of the Course

The marine realm occupies some 70% of the Earth's surface, yet receives little attention in most ecology courses. This course aims to introduce you to the field of marine biology, and provides an overview of physical oceanography, energy and food webs, selective pressures and evolutionary responses, major taxonomic groups of organisms, and the ecological communities found in marine ecosystems. This course will also give you the opportunity to practice field research techniques used in marine studies and carry out your own investigation. Finally, together with the marine portion of Conservation Biology, we will examine the many challenges faced by marine systems, including providing food for much of the planet, and the conservation approaches being employed to overcome them.

Learning Objectives:

- Describe the basic physical and chemical properties of seawater.
- Describe the geomorphology of oceans and how conditions change with depth.
- Explain the causes of waves, tides, and global ocean circulation patterns and their impact on climate.
- Understand how abiotic conditions in the oceans shape the biotic communities within them.
- Identify and describe the distinguishing characteristics of major marine animal taxa.
- Describe how Galapagos islands were formed and the origins of its marine organisms.
- Describe foundation species and ecological interactions that determine the structure and function of marine ecosystems.
- Demonstrate marine sampling and research techniques for field data collection.
- Articulate major threats to ocean ecosystems and actions that can be taken to mitigate them.
- Apply ecological concepts in marine science to the design of marine protected areas.

Course Expectations & Grading

The Marine Biology course combines classroom lectures, field study of marine ecosystems and organisms, and hands-on research projects in marine science. We expect you to take initiative above and beyond the minimum requirements. **Participation** scores are based on active engagement during classroom and field activities, input during group discussions, demonstration of curiosity and inquisitiveness, respect and helpfulness towards others, and overall contribution to the success of the course. **Homework assignments** include several field activities, collecting marine data underwater, and an island-by-island set of Galapagos Natural History questions to be completed during the weeklong boat voyage. Each student must also keep a **field journal** that should be considered a permanent record of sites visited, natural history notes, species lists, daily observations and reflections, and data collected.

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Students will work in pairs or small groups to conduct an observational **research project** while in Galapagos on a topic of their interest. The project will provide preliminary observations and the scientific rationale for writing a grant proposal (part of the Conservation Biology course). The purpose of the project is to gain experience in conducting research in marine ecology, to apply concepts and methods learned during the course, and to provide background data for your grant proposal. Students will present research findings orally and in writing. The **final exam** will be composed of a field portion and a written portion made up of short answer and brief essay questions.

Reading and Additional Course Materials

There will be readings and activities assigned throughout the course. Articles, handouts, and other course materials (links, syllabi, videos, etc.) will be posted on the TCS google drive. The following texts will also be used for reference during the course but are not required readings; copies will be available for check-out.

Jackson, M.H. 1997. *Galapagos, A Natural History Guide (revised)*. University of Calgary Press.
 Castro, P. & M. Huber 2019. *Marine Biology (11th edition)*. McGraw Hill Education.

Course materials are copyrighted, or owned by Ceiba, and are for your use for educational purposes during this program only. Never share your login or password with people outside the program.

Assessment

Your grade breakdown is as follows:

Grade Item	Weight
Participation (including discussions)	15%
Assignments	15%
Field Exam	15%
Written Exam	20%
Galapagos Marine Project	
Pilot Study Plan (final draft)	10%
Oral presentation	10%
Peer Evaluation	5%
Field Journal	10%

Grading Scale*: A=100-92%, AB=91.9-88.0%, B=87.9-82.0, BC=81.9-78.0, C=77.9-70.0, D≤69.9 **Please note the USFQ online grade system only displays whole letter grades; your actual final grade will appear correctly on your transcript from UW-Madison.*

Statement on Diversity & Inclusion

Diversity is a source of strength, creativity, and innovation at the Ceiba Foundation. We value the contributions of each person and respect the profound ways their identity, culture, background, experience, status, abilities, and opinion enrich the program and broader community with whom we interact. We commit ourselves to the pursuit of excellence in teaching, research, outreach, and diversity as inextricably linked goals, and we encourage all participants to value the contribution of one another, and to treat each other with respect.

Academic and Personal Conduct

All students on the TCS program are expected to agree to a common Code of Conduct. As a visitor in Ecuador and a representative of your home country and the Ceiba Foundation, we expect you to act at all times in a safe, responsible, culturally sensitive, and respectful manner. As a UW-Madison affiliated and accredited program, Ceiba abides by the same rules governing academic conduct. All homework, quizzes, tests, and written assignments require your own thought and effort. Any student found to have submitted plagiarized material, or have otherwise obtained information falsely, will be subject to rules governing UW Academic Misconduct. Consequences of academic misconduct may range from failure on the assignment, failure in the course, or (in extreme cases) expulsion from the Tropical Conservation Semester program without refund. But most of all, we encourage all students to have fun, learn a lot, be curious, and enjoy the richness of the world around you!