

Oceanography (ENVI 180)

Macalester College – Spring 2024

Class meetings: T 10:50 – 11.50am, OLRI 243

Instructor: Louisa Bradtmiller

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Office hours: M 1.30 – 2.30pm, Th. 10.30 – 11.30am, and by appointment via email

Course description

The study of oceanography is a multidisciplinary pursuit that applies tools from geology, physics, chemistry, and biology to better understand one of Earth's most unique planetary features. Oceans cover the majority of Earth's surface and were the birthplace of nearly all complex life on Earth. Ocean currents carry heat, nutrients, and carbon around the globe, influencing Earth's climate from global to local scales. However, despite its immense size, the ocean system is also highly sensitive to human impacts such as acidification, overfishing, and pollution. This course will provide an overview of the ocean's physical, chemical, and biological properties and processes and the complex ways in which they interact. We will use oceanographic data to ask and answer questions about modern oceanographic systems. We will also explore human impacts on the oceans in their scientific and socio-political contexts. This course is designed for students with an introductory background in any related discipline, and enthusiasm for approaching science in a multidisciplinary way.

Goals for students

By the end of this course, students should be able to demonstrate the ability to:

- Apply basic principles of geology, physics, chemistry, and biology to topics and systems in oceanography
- Analyze data and use it to make reasonable interpretations
- Integrate data, conclusions, and lines of evidence from multiple sources
- Research a topic relevant to human impacts on the oceans and effectively communicate the results orally and in writing

Required Texts

Trujillo, A. and H. Thurman. Essentials of Oceanography. Boston: Pearson, 2016.

What to expect in class

Moodle

The class Moodle page will be updated regularly, and should be your first stop for information about readings, assignments, and what to expect in class on any given day. The page is color-coded: anything in green is a reading you should complete before class on the day of the entry, and anything in purple is an assignment due that day. This will require some looking/thinking ahead on your part.

Grading

Your final grade for this course will be determined by the number of points you accumulate throughout the semester.

Point distribution	
Participation	80
Problem sets (8 @ 40 points each)	320
Paper	100
TOTAL	500

Attendance

Attendance is at your discretion, although students who attend regularly are likely to be more successful than those who do not. The participation portion of your grade will be based on your contributions to classroom discussions/activities, including a self-assessment at the end of the course.

Problem sets

There will be 8 problem sets throughout the course. Each is designed to reinforce and build on material and concepts introduced through lecture or discussion. We will begin working on each assignment during class time, so you can think of these as mini-labs of sorts. I encourage you to work in groups on these assignments. You may either turn them in individually, or as a group of no more than three people. If you turn them in as a group, you must complete the entire assignment together, start to finish. Please put everyone's name on the assignment, and submit one copy on Moodle. If you turn them in individually, you are still welcome to work with classmates on portions of the assignment, but each student must turn in their own work, in their own words. This means that you may discuss the answers together, but must write them out yourselves. See me with any questions about what this means- copying will not be tolerated.

Paper

During the second half of the course you will write an individual research paper about a topic of your choosing related to human impacts on the oceans. Papers should be 5-7 pages (double spaced) and require the use of high-quality sources, including peer-reviewed scientific literature. We will do an in-class peer review session of your first draft. More details about deadlines and specific requirements will be provided on the paper assignment sheet (see Moodle).

Other important information

Diversity

It is my intent that students from diverse backgrounds and perspectives be well served by this course, that students' learning needs are addressed both in and out of class, and that the diversity that students bring to this class be viewed as a resource, strength and benefit. I am

committed to presenting materials and activities that are respectful of diversity: race, gender, sexuality, disability, age, socioeconomic status, ethnicity, and culture. I appreciate your feedback on this and every aspect of our course, and your suggestions for ways to improve the effectiveness of the course for you personally or for other students or student groups.

Health and wellbeing

I encourage you to be intentional about maintaining your physical and mental health during this and every semester at Macalester. Taking care of yourself in these ways will help you to be healthier, happier, and better able to focus on your academic work. It will also keep us safer as a community. Be aware of people, situations and circumstances that help you to feel focused and engaged, as well as those that cause you stress; try to maximize the former, and eliminate the latter as much as possible. While every person is different, for most of us regular and adequate sleep, healthy meals, regular exercise, and connecting with others are all ways to foster wellness. If you find that you are having trouble maintaining your health and wellbeing, please don't hesitate to set up a time to talk with me, or with one of the many individuals or programs in the Hamre Center for Health and Wellness.

COVID has been making another appearance lately, and it is likely that at some point during the semester, someone in our classroom community will be exposed to, if not infected by this virus. In the absence of other information from the college, I will follow CDC guidance on any COVID-related absences. *If you are infected*, please follow [these guidelines](#), and contact me about setting up ways to participate in class remotely while you isolate, as long as you feel well enough to do so. If you have a known exposure, please follow [these guidelines](#), which generally allow in-person attendance as long as you are asymptomatic.

Accommodations

Your experience in this class is important to me, and I am committed to creating an inclusive and accessible learning environment. If you have already established accommodations with the Center for Disability Resources, please communicate your approved accommodations to me as soon as possible so that we can discuss your needs in this course. If you have not yet established accommodations, but have a temporary health condition or permanent disability that requires accommodations (this includes but is not limited to: mental health, attention-related, learning, vision, hearing, physical or health impacts), please contact Disability Services to make an appointment: disabilityresources@macalester.edu or 651-696-6748. Disability Services offers resources and coordinates reasonable accommodations for students with disabilities and/or temporary health conditions. Reasonable accommodations are established through an interactive process between you, your instructor(s), and the Disability Services staff.

Academic integrity and Artificial Intelligence (AI²)

I take all instances of cheating and plagiarism very seriously. It is YOUR RESPONSIBILITY to become familiar with [Macalester's policies](#) on what constitutes each of these offenses and to behave accordingly. Instances of suspected academic dishonesty will be handled as outlined in college policies.

In this course, you may use AI tools (such as Bard or ChatGPT) to help you generate ideas and to brainstorm. However, you should note that the material generated by these tools may be inaccurate, incomplete, or otherwise problematic. Beware that overuse of AI may stifle your own independent thinking and creativity, and use any tools (for generating text, code, video, audio, images, or translation) wisely and carefully.

You may not submit any work generated by an AI program as your own. If you include material—including both *ideas* and *language*—generated by an AI program, it should be cited like any other reference material, both in this course and at Macalester College in general. If you have any questions, please feel free to contact me.

Recording policy

In the hopefully unlikely event that we need to hold synchronous class meetings on zoom during this semester, I plan to record our synchronous class sessions in a manner consistent with [Macalester's classroom recording policy](#). I will share these recordings on Moodle as needed. If you download any class recordings, you must store them in a password-protected file or on a password-protected site. Please note that the recording policy clearly states that ***students may not share, replicate, or publish any class recording, in whole or in part, or use any of the recordings for any purpose besides knowing what happened during the class period, without my written approval.***