

Ocean 621: Biological Oceanography Sample Syllabus

(MSB 315)

Instructors:

Kyle Edwards	Office: Marine Science Building 612, kfe@hawaii.edu
Angelicque White	Office: C-MORE Hale 120, aewhite@hawaii.edu
Erica Goetze	Office: Marine Science Building 631, egoetze@hawaii.edu
Craig Smith	Office: Marine Science Building 617, craigsmi@hawaii.edu
Jeff Drazen	Office: Marine Science Building 605, jdrazen@hawaii.edu

Course Overview:

Biological Oceanography (OCN 621) is one of several required core courses for graduate students in the Department of Oceanography at the University of Hawaii. The course meets three times each week (MWF) from 9:30-10:20 AM in the Marine Science Building classroom 315. Lectures, discussions, and exams cover fundamental concepts in biological oceanography, including pelagic and benthic ecology. Topics include organismal diversity from microbes to metazoans, drivers of biomass and production, population and community processes, and biogeochemical cycling.

There is no required textbook for this course; however, instructors will assign reading material in the form of papers or book chapters. In addition, weekly discussions led by student presenters will cover a range of primary literature.

Student Learning Outcomes:

- 1) Students should be able to define the major forms of life in the sea, describe the characteristics that distinguish these forms, and describe how these forms relate to each other ecologically.*
- 2) Students should be able to explain how marine organisms influence cycling of bioelements.*
- 3) Students should be able to describe prominent characteristics of the primary marine habitats.*
- 4) Students should be able to define processes that control the biomass, growth, and productivity of organisms in the marine environment.*
- 5) Students should be able to describe methodological approaches appropriate for evaluating the biomass, growth, and mortality of plankton, nekton, and sessile marine organisms.*

Grading:

Grading for the course will be based on four criteria:

- 1) **Attendance (5%): Regular attendance and participation in weekly lectures.** Students are expected to attend all lectures and paper discussions.
- 2) **Leading a paper discussion (15%):** Every third class session will be a student-led discussion on 1-2 papers from the primary literature. Each student will lead one of these discussions, providing a brief overview of the paper(s) and presenting a set of questions to discuss in small groups.
- 3) **Discussion participation (20%): Participation during student-led paper discussions (10%), and written summaries and questions for the student-led paper discussions (10%).** Prior to attending each paper discussion, all students submit a brief written summary of the paper(s), including 3-4 questions or comments that arose while reading the paper (~1 page total).
- 4) **Exam (60%): Performance on two written, in class exams (30% each).** Exams are not cumulative.

Please note:

- Any student who feels s/he may need an accommodation based on the impact of a disability is invited to contact the course instructors privately. We would be happy to work with you and the KOKUA Program (Office for Students with Disabilities) to ensure reasonable accommodations in the course. KOKUA can be reached at (808) 956-7511 or (808) 956-7612 (voice/text) in room 013 of the Queen Lili'uokalani Center for Student Services.
- UH's Counseling and Student Development Center is available for any personal, academic and career concerns. Their approach is "encouraging, collaborative, goal focused and culturally sensitive." They can be reached at 808-956-7927 and manoa.hawaii.edu/counseling/
- The University of Hawai'i is committed to providing a learning, working and living environment that promotes personal integrity, civility, and mutual respect and is free of all forms of sex discrimination and gender-based violence, including sexual assault, sexual harassment, gender-based harassment, domestic violence, dating violence, and stalking. If you or someone you know is experiencing any of these, the University has staff and resources on your campus to support and assist you. Staff can also direct you to resources that are in the community. Here are some of your options:
 - As members of the University faculty, your instructors are required to immediately report any incident of potential sex discrimination or gender-based violence to the campus Title IX Coordinator. Although the Title IX Coordinator and your instructors cannot guarantee confidentiality, you will still have options about how your case will be handled. Our goal is to make sure you are aware of the range of options available to you and have access to the resources and support you need.
 - If you wish to remain ANONYMOUS, speak with someone CONFIDENTIALLY, or would like to receive information and support in a CONFIDENTIAL setting, contact the confidential resources available here:
<http://www.manoa.hawaii.edu/titleix/resources.html#confidential>
 - If you wish to directly REPORT an incident of sex discrimination or gender-based violence including sexual assault, sexual harassment, gender-based harassment, domestic violence, dating violence or stalking as well as receive information and support, contact: Dee Uwono Title IX Coordinator (808) 956-2299 t9uhm@hawaii.edu

Schedule

Date	Topic	Instructor
Monday Jan. 7	Overview	Edwards
Wednesday Jan. 9	Cell Biology	Edwards
Friday Jan. 11	Discussion	Edwards
Monday Jan. 14	The Mixed Layer and Nutrient Supply	Edwards
Wednesday Jan. 16	Seasonality and Blooms	Edwards
Friday Jan. 18	Discussion	Edwards
Monday Jan. 21	MLK Day	
Wednesday Jan. 23	Measuring Biomass and Production	White
Friday Jan. 25	Phytoplankton Diversity	Edwards
Monday Jan. 28	Discussion	Edwards
Wednesday Jan. 30	Bacteria and Archaea	Edwards
Friday Feb. 1	Protists and Microbial Food Webs	Edwards
Monday Feb. 4	Discussion	Edwards
Wednesday Feb. 6	Viruses	Steward
Friday Feb. 8	Life at the Microscale	Edwards
Monday Feb. 11	Discussion	Edwards
Wednesday Feb. 13	Size in the Ocean	Edwards
Friday Feb. 15	The Biological Carbon Pump	White
Monday Feb. 18	President's Day	
Wednesday Feb. 20	The Carbon Cycle and Climate	White
Friday	Discussion	White

Feb. 22		
Monday Feb. 25	Nutrient Cycles 1	White
Wednesday Feb. 27	Nutrient Cycles 2	White
Friday Mar. 1	Discussion	White
Monday Mar. 4	Climate Change and Marine Ecosystems	Edwards
Wednesday Mar. 6	Exam Review	Edwards
Friday Mar. 8	Midterm Exam	
Monday Mar. 11	Zooplankton Diversity	Goetze
Wednesday Mar. 13	Zooplankton Feeding & Growth	Goetze
Friday Mar. 15	Discussion – Trophic interactions	Goetze
Monday Mar. 18	Spring Break	
Wednesday Mar. 20	Spring Break	
Friday Mar. 22	Spring Break	
Monday Mar. 25	Diel Vertical Migration	Goetze
Wednesday Mar. 27	Zooplankton – Spatial & temporal dynamics	Goetze
Friday Mar. 29	Discussion– Zoops in biogeochemical cycles	Goetze
Monday Apr. 1	Benthic Ecosystem Processes	Smith
Wednesday Apr. 3	Benthic Microbial Ecology	Smith
Friday Apr. 5	Discussion	Smith
Monday Apr. 8	Benthic Metazoans	Smith
Wednesday Apr. 10	Benthic Macropatterns	Smith
Friday Apr. 12	Discussion	Smith

Monday Apr. 15	Higher trophic levels / food webs 1	Drazen
Wednesday Apr. 17	Higher trophic levels / food webs 2	Drazen
Friday Apr. 19	Good Friday	
Monday Apr. 22	Discussion	Drazen
Wednesday Apr. 24	Higher trophic levels / food webs 3	Drazen
Friday April 26	Higher trophic levels / food webs 4	Drazen
Monday April 29	Discussion	Drazen
Wednesday May 1	Exam Review	Edwards