

# Biological Oceanography Syllabus

## Department of Oceanography

OCEA 4140/5140, BIOL 4661/5661, MARI 4661

Winter 2024

*Dalhousie University acknowledges that we are in Mi'kma'ki, the ancestral and unceded territory of the Mi'kmaq People and pays respect to the Indigenous knowledges held by the Mi'kmaq People, and to the wisdom of their Elders past and present. The Mi'kmaq People signed Peace and Friendship Treaties with the Crown, and section 35 of the Constitution Act, 1982 recognizes and affirms Aboriginal and Treaty rights. We are all Treaty people.*

*Dalhousie University also acknowledges the histories, contributions, and legacies of African Nova Scotians, who have been here for over 400 years.*

### Course Instructor(s)

Name	Email	Office Hours
Zoe Finkel (Instructor)	zfinkel@dal.ca	Wednesdays after class LSC 3627B

### Course Description

The goal of this course is to describe how physical, chemical, and biological processes interact to determine the species composition, biogeochemical activities, and trophic structure of marine communities. Outstanding problems currently facing biological oceanographers and earth systems scientists are discussed, as are current attempts and methodologies to address them.

#### *Course Prerequisites*

OCEA 2000.06 (OCEA 2001.03/2002.03); OCEA 2020.03; OCEA 2021.03; or permission of instructor

### Student Resources

Send me an email to set up an appointment if office hours do not work for your schedule.

## Course Structure

### *Course Delivery*

Course content will be delivered in person. Lecture notes will be posted to Brightspace following the lecture. Video recordings of the lectures will not be posted to Brightspace.

### *Lectures*

Mondays and Wednesdays, 8:35 – 9:55 AM, LSC C240.

## Course Materials

There is no required textbook for this course.

## Assessment

### *Assignment*

#### **Assignment: Scientific paper summary**

Students will write a 1-page summary of a high impact research paper written by one of Dalhousie University's Biological Oceanography Researchers (that are giving a lecture to the class). Additional details on the format of the assignment, and list of researchers, will be provided in class and on Brightspace.

- This assignment is due Jan. 24<sup>nd</sup> and is worth 10% of your final grade.

### *Tests*

There will be two tests during the term, held in person, in the lecture period. These tests will consist of short answer questions. You will have 80 minutes to complete the test.

- **Test 1** will cover course materials up to Feb. 7<sup>th</sup>, will be worth 30% of your final grade, and is scheduled for Feb. 14<sup>th</sup>.
- **Test 2** will cover course material between Feb. 7<sup>th</sup> to March 13<sup>th</sup>, will be worth 30% of your final grade, and is scheduled for March 20<sup>th</sup>.

### *Final exam*

This course has a final exam that will be scheduled in the exam period. It will cover all material in the course and is worth 30% of the final grade.

### *Other course requirements*

Different expectations are placed upon graduate and undergraduate students. Graduate students will be required to answer additional questions on the tests and final exam and are assigned additional components on the assignment. These differences will be clearly described.

Conversion of numerical grades to final letter grades follows the

<u>Dalhousie Grade Scale</u>			
A+ (90-100)	B+ (77-79)	C+ (65-69)	D (50-54)
A (85-89)	B (73-76)	C (60-64)	F (0-49)
A- (80-84)	B- (70-72)	C- (55-59)	

### **Course Policies on Missed or Late Academic Requirements**

Assignments must be uploaded to the course Brightspace page as a PDF by the due date indicated. The file name of the PDF should include the assignment number and your full name (A1\_Last Name\_First Name.pdf).

10% will be deducted for each day late.

If you are sick or have extenuating circumstance that cause you to miss an assignment due date you must contact me (by email) before the due date and upload a Student Absence Declaration form to the course Brightspace page. The form and Dalhousie policies regarding the declaration can be found at the following link and accommodation will be determined based upon the circumstances: [https://www.dal.ca/campus\\_life/safety-respect/student-rights-and-responsibilities/academic-policies/student-absence.html](https://www.dal.ca/campus_life/safety-respect/student-rights-and-responsibilities/academic-policies/student-absence.html).

Note that a Student Absence Declaration does not automatically guarantee an extension on the assignment, but we will be reasonable and exercise common sense when assessing your situation. If you have a reasonable circumstance for missing a test the weight of the test will be moved to the final exam.

### **Course Policies related to Academic Integrity**

Your work must be your own. Policies/Links regarding Academic Integrity and the Student Code of Conduct are provided below. No plagiarism software (e.g., URKUND) will be used in the assessment of assignments or tests. There is an expectation that you will not use artificial intelligence tools for your assignments (such as ChatGPT).

## **Learning Objectives**

Students will understand the structure of marine ecosystems, the flow of matter and energy through them, and their interaction with physical and chemical processes.

## **Course Content**

Unit 1: Introduction to the course

Unit 2: Water properties

Unit 3: Light

Unit 4: Phytoplankton photosynthesis and primary production

Unit 5: Temperature and nutrient kinetics

Unit 6: Nutrient requirements and limitation

Unit 7: Size and scale

Unit 8: Survey of marine phytoplankton

Unit 9: Survey of marine zooplankton

Unit 10: Marine microbes and viruses

Unit 11: NPDZ modelling, ocean biomes

Unit 12: Deep sea and benthos

Unit 13: Human impacts

## University Policies and Statements

### Recognition of Mi'kmaq Territory

Dalhousie University would like to acknowledge that the University is on Traditional Mi'kmaq Territory. The Elders in Residence program provides students with access to First Nations elders for guidance, counsel, and support. Visit or e-mail the Indigenous Student Centre at 1321 Edward St or [elders@dal.ca](mailto:elders@dal.ca). Additional information regarding the Indigenous Student Centre can be found at: [https://www.dal.ca/campus\\_life/communities/indigenous.html](https://www.dal.ca/campus_life/communities/indigenous.html)

### Internationalization

At Dalhousie, 'thinking and acting globally' enhances the quality and impact of education, supporting learning that is "interdisciplinary, cross-cultural, global in reach, and orientated toward solving problems that extend across national borders." Additional internationalization information can be found at: <https://www.dal.ca/about-dal/internationalization.html>

### Academic Integrity

At Dalhousie University, we are guided in all our work by the values of academic integrity: honesty, trust, fairness, responsibility, and respect. As a student, you are required to demonstrate these values in all the work you do. The University provides policies and procedures that every member of the university community is required to follow to ensure academic integrity. Additional academic integrity information can be found at: [https://www.dal.ca/dept/university\\_secretariat/academic-integrity.html](https://www.dal.ca/dept/university_secretariat/academic-integrity.html)

### Accessibility

The Student Accessibility Centre is Dalhousie's centre of expertise for matters related to student accessibility and accommodation. If there are aspects of the design, instruction, and/or experiences within this course (online or in-person) that result in barriers to your inclusion, please contact the Student Accessibility Centre ([https://www.dal.ca/campus\\_life/academic-support/accessibility.html](https://www.dal.ca/campus_life/academic-support/accessibility.html)) for all courses offered by Dalhousie with the exception of Truro. For courses offered by the Faculty of Agriculture, please contact the Student Success Centre in Truro (<https://www.dal.ca/about-dal/agricultural-campus/student-success-centre.html>)

### Conduct in the Classroom – Culture of Respect

Substantial and constructive dialogue on challenging issues is an important part of academic inquiry and exchange. It requires willingness to listen and tolerance of opposing points of view. Consideration of individual differences and alternative viewpoints is required of all class members, towards each other, towards instructors, and towards guest speakers. While expressions of differing perspectives are welcome and encouraged, the words and language used should remain within acceptable bounds of civility and respect.

### **Diversity and Inclusion – Culture of Respect**

Every person at Dalhousie has a right to be respected and safe. We believe inclusiveness is fundamental to education. We stand for equality. Dalhousie is strengthened in our diversity. We are a respectful and inclusive community. We are committed to being a place where everyone feels welcome and supported, which is why our Strategic Direction prioritizes fostering a culture of diversity and inclusiveness (Strategic Priority 5.2). Additional diversity and inclusion information can be found at: <http://www.dal.ca/cultureofrespect.html>

### **Student Code of Conduct**

Everyone at Dalhousie is expected to treat others with dignity and respect. The Code of Student Conduct allows Dalhousie to take disciplinary action if students don't follow this community expectation. When appropriate, violations of the code can be resolved in a reasonable and informal manner - perhaps through a restorative justice process. If an informal resolution can't be reached, or would be inappropriate, procedures exist for formal dispute resolution. The full Code of Student Conduct can be found at:

[https://www.dal.ca/dept/university\\_secretariat/policies/student-life/code-of-student-conduct.html](https://www.dal.ca/dept/university_secretariat/policies/student-life/code-of-student-conduct.html)

### **Fair Dealing Policy**

The Dalhousie University Fair Dealing Policy provides guidance for the limited use of copyright protected material without the risk of infringement and without having to seek the permission of copyright owners. It is intended to provide a balance between the rights of creators and the rights of users at Dalhousie. Additional information regarding the Fair Dealing Policy can be found at: [https://www.dal.ca/dept/university\\_secretariat/policies/academic/fair-dealing-policy-.html](https://www.dal.ca/dept/university_secretariat/policies/academic/fair-dealing-policy-.html)

### **Originality Checking Software**

The course instructor may use Dalhousie's approved originality checking software and Google to check the originality of any work submitted for credit, in accordance with the Student Submission of Assignments and Use of Originality Checking Software Policy. Students are free, without penalty of grade, to choose an alternative method of attesting to the authenticity of their work and must inform the instructor no later than the last day to add/drop classes of their intent to choose an alternate method. Additional information regarding Originality Checking Software can be found at:

[https://www.dal.ca/dept/university\\_secretariat/policies/academic/student-submission-of-assignments-and-use-of-originality-checking-software-policy-.html](https://www.dal.ca/dept/university_secretariat/policies/academic/student-submission-of-assignments-and-use-of-originality-checking-software-policy-.html)

### **Student Use of Course Materials**

Course materials are designed for use as part of this course at Dalhousie University and are the property of the instructor unless otherwise stated. Third party copyrighted materials (such as books, journal articles, music, videos, etc.) have either been licensed for use in this course or fall under an exception or limitation in Canadian Copyright law. Copying this course material for distribution (e.g. uploading to a commercial third-party website) may lead to a violation of Copyright law.