Tools & Concepts in Ocean Sciences II Syllabus

Department of Oceanography

OCEA 2021.03 Winter 2025

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 Instructors

Name	Email	Office Hours | Office
Laura deGelleke (prof)	laura.degelleke@dal.ca	W 11:30-12:30 | LSC O3627E
TBA (marker)	TBA	TBA

Labs:	Section 01	Mondays (Jan 13 – Apr 7)	11:35-14:25	LSC B4012
	Section 02	Fridays (Jan 10 – Apr 4)	11:35-14:25	LSC B4012
Tutorials:	All sections	Wednesdays (Jan 8 – Apr 2)	10:35-11:25	McCain 1130

Course Description

Students gain practical insights into oceanographic concepts introduced in OCEA 2001.03 and 2002.03 through lab exercises. Labs focus on particle dynamics and life in the ocean and involve data acquisition and analysis to develop quantitative skills. At the end of the course, students observe a mesocosm to synthesize concepts from both OCEA 2020.03 and OCEA 2021.03. Students will continue to use the 'R' programming language.

Course Corequisites

- OCEA 2002.03

Course Prerequisites

- OCEA 2020.03

Course Structure

Class meets once a week for three hours. Class begins with a short presentation and the remaining class time is spent completing lab activities. There is an assignment each week, and students have a minimum of one week to complete each assignment. Tutorials are held weekly to assist with data analysis and assignments.

Course Materials

This class uses a custom lab manual provided at no additional cost. Brightspace will be used to make announcements, access course materials, and submit assignments. Students are responsible for any printing of the supplied material. Students will need a lab notebook for the course.

Assessment

There is an assignment associated with each lab activity that is typically due on the date of the next class meeting. **Assignments are submitted on Brightspace and are always due by 11:30 on the due date**. Assignments are one of two types: exercises or reports. Exercises are short-answer problem sets that use data and/or build on concepts from lab activities. Reports are formal lab reports on the lab activities. A lab report format and guidelines document is available on Brightspace. Late assignments are a subject to penalty.

Component	Weight (% of final grade)	Due Date
Assignments	100% (9 total)	weekly
Exercises	63% (7 total, 9% each)	lab 12, 13, 14, 16, 17, 18, 19
Reports	37% (2 total, 15% and 22%)	lab 15, 20

Conversion of numerical grades to final letter grades follows the Dalhousie Grade Scale

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)	

General Course Policies

1. Allow 24-48 *weekday* hours for replies to emails. I will try, but I cannot guarantee a quicker response time.
2. No open-toed shoes in lab.
3. Properly wear PPE when instructed to do so.
4. If you want an extension on a due date, request one via email to your instructor (cc marker). Make your request in advance of the due date, briefly provide a reason, and suggest a revised due date. In general, requests that are *received* on the actual due date are not approved.

Course Policies on Missed or Late Academic Requirements

5. The late penalty is 5% for the first day (24 hours) and doubles every day after including weekends.
6. You must attend lab to complete an assignment for that lab (unless another arrangement has been made in advance).
7. You may submit a maximum of 1 Student Declaration of Absence (SDA) form each term for short-term absences of 3 days or less.

8. SDA forms must be completed and submitted on Brightspace before the class meeting or deadline that will be missed.
9. There are no make-up labs, even with an SDA. Missed work associated with the absence will be handled on a case-by-case basis. It is your responsibility to contact the course instructor as soon as possible following an absence. If contact is not made within 10 days of a missed lab, you will receive a zero for any assignments associated with the lab.
10. For students that miss lab, the following solutions may apply at the discretion of the course instructor:
    a. You are exempt from assignments associated with any missed labs, which will increase the grade weight of all other assignments in that category equally.
    b. You complete a modified version of the original assignment.
    c. You receive a completely different assignment on the same topic as the original assignment.
11. SDA forms give you a maximum of 3 additional days to submit assignments. You must submit any missed assignments by 3 days after the original due date. You will not be reminded of this revised due date, and late penalties will begin after 3 days.
12. Absences longer than 3 days will be handled on a case-by-case basis.

Course Policies related to Academic Integrity

13. You may discuss material and exchange ideas with others, but you must submit individual, original work not generated by AI.

Learning Objectives

This is a laboratory class and focuses on how we study the ocean and interpret data as ocean scientists. By the end of the course, you should be able to:

1. Demonstrate basic laboratory skills and knowledge of laboratory safety.
2. Operate and calibrate various laboratory instruments.
3. Perform laboratory analyses using common techniques and protocols.
4. Synthesize data and identify trends.
5. Apply concepts introduced in the classroom to interpret data collected or provided.
6. Present results from laboratory activities in written format using figures and tables.
7. Compare your data with data collected by another and/or cited in peer-reviewed journals.
8. Predict outcomes of experiments using results of previous studies.
9. Assess efficacy of laboratory activities and offer suggestions for future work.
10. Provide examples that demonstrate the breadth of techniques and instruments used to study the ocean.

Course Content

Section 01 – Mondays

Lab #	Lab Topic	Lab Date	Assignment Due	Assignment Type
12	Nutrients	13-Jan	20-Jan	Exercise
13	Particle Size & Concentration	20-Jan	27-Jan	Exercise
14	Settling Velocity	27-Jan	03-Feb	Exercise
15	Vertical Flux	3-Feb	17-Feb	Report
	NO CLASS (Munro Day)	10-Feb	--	--
	NO CLASS (Reading Week)	17-Feb	--	--
16	Phytoplankton Fluorescence	24-Feb	03-Mar	Exercise
17	Zooplankton	03-Mar	10-Mar	Exercise
18	Benthic-Pelagic Coupling	10-Mar	17-Mar	Exercise
19	NPZD Modelling	17-Mar	24-Mar	Exercise
20	Aquatron Mesocosm	24-Mar	14-Apr	Report
20	Aquatron Mesocosm	31-Mar		
20	Aquatron Mesocosm	07-Apr		

Section 02 – Fridays

Lab #	Lab Topic	Lab Date	Assignment Due	Assignment Type
12	Nutrients	10-Jan	17-Jan	Exercise
13	Particle Size & Concentration	17-Jan	24-Jan	Exercise
14	Settling Velocity	24-Jan	31-Jan	Exercise
15	Vertical Flux	31-Jan	14-Feb	Report
	NO CLASS (Munro Day)	07-Feb	--	--
16	Phytoplankton Fluorescence	14-Feb	28-Feb	Exercise
	NO CLASS (Reading Week)	21-Feb	--	--
17	Zooplankton	28-Feb	07-Mar	Exercise
18	Benthic-Pelagic Coupling	07-Mar	14-Mar	Exercise
19	NPZD Modelling	14-Mar	21-Mar	Exercise
20	Aquatron Mesocosm	21-Mar	14-Apr	Report
20	Aquatron Mesocosm	28-Mar		
20	Aquatron Mesocosm	04-Apr		

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. Additional information regarding the Indigenous Student Centre can be found at: 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

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) 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

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

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

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.