

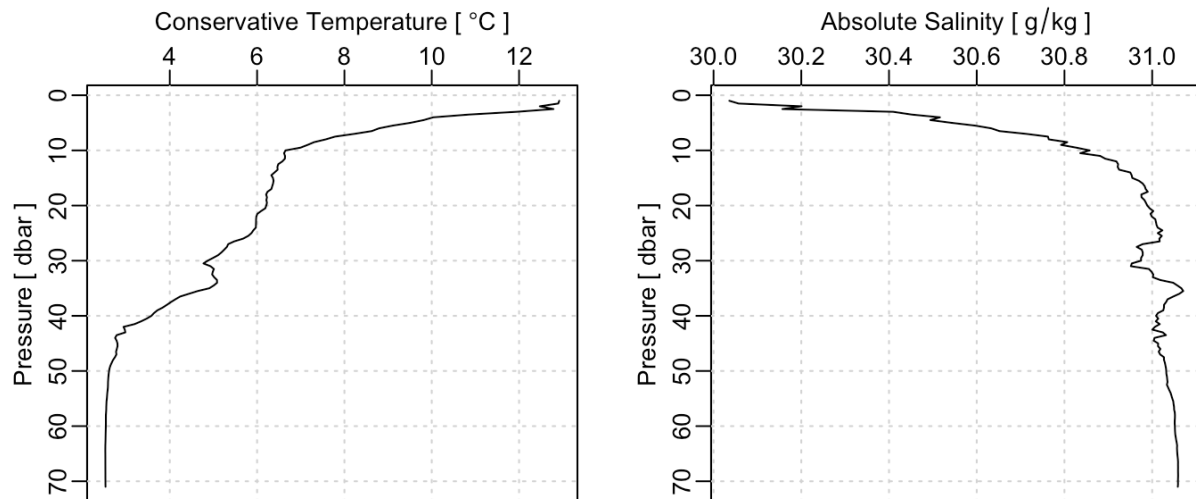
# Oceanography 3001 Syllabus

Department of Oceanography (Room 3655 LSC)

CRN 12576 Fall 2024

## Course Instructor(s)

Name	Email	Office Hours
Dan Kelley	Dan.kelley@dal.ca	By arrangement



*Results of measurements made in the Bedford Basin by staff at the Bedford Institute of Oceanography. The left panel shows the variation of water temperature with depth in the water column. (Pressure, measured in decibars, indicates depth below the air-sea interface.). The right panel is similar, but for the salt concentration in the seawater. Students will learn how to interpret such diagrams in the context of ocean dynamics.*

## Course Description

This course introduces Ocean Physics, focusing on issues of interest to undergraduates in ocean-related disciplines. The approach is to bind facts together with ideas, often starting with thought experiments and proceeding to simple mathematical models. Central ideas of physical oceanography will be exposed in this way, through interactive lectures. Thinking is the key to success. This is not a “memorize and repeat” course.

### Course Prerequisites

MATH 1000.03, MATH 1010.03, classic calculus or equivalent.

### *Course Exclusions*

It seems silly to have to state this, but students must not be enrolled in any other class that has overlapping lecture times.

## **Student Resources**

Various materials will be made available in due time, on the course Brightspace page.

## **Course Structure**

### *Course Delivery*

The course will be taught in-person unless it is forced into a remote mode again, as it was during previous waves of COVID-19. Recording of lectures is not permitted. Lectures will not rely on PowerPoint or similar tools, instead being based on a conversational, sometimes Socratic approach that involves heavy use of the whiteboard and not-infrequent demonstrations. Skipping classes is highly discouraged.

### *Lectures*

Lectures occur from 1135 to 1225 on Mondays, Wednesdays, and Fridays.

## **Course Materials**

See "Student Resources", above.

## **Assessment**

### *Assignments*

There will be 2 assignments (each worth 20% of the final grade). The timing will be established in collaboration with the students, to avoid undue strain relating to other coursework, fieldwork, etc.

### *Tests/quizzes*

There will be a mid-term test (worth 25% of the final grade), somewhat after the halfway point in the course.

### *Final exam*

There will be a final examination (worth 35% of the final grade), during the formal examination period.

### *Other course requirements*

Class participation is an expected part of this class, being especially valuable given the diverse nature of the students and the level of the material.

Conversion of numerical grades to 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)	

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

A late fee of 15% per working day (defined by hours of service in the departmental office, prorated by hour) is applied to assignments, unless a “time out” period is justified by a Student Declaration of Absence form or other suitable means. Assignments are intended to encourage and display the understanding of individuals, *not* of groups.

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

While students may find it helpful to discuss assignments with others, all submitted work is required to have been done by the individual student. The usual rules about plagiarism and other forms of cheating apply in this course, as they do throughout Dalhousie. As a new addition for the year 2023, the use of generative AI or similar technologies (e.g. chatGPT) is strictly forbidden.

## **Learning Objectives**

Students should be able to derive and explain the equations describing the static and dynamic states of the ocean, and to apply these equations to important problems of oceanography and climatology. Successful students will be able to tackle unfamiliar problems with insights gained from understanding, not memorization.

## **Course Content**

Introduction; continuum approximation; concept of conservation; heat and temperature; concept of fluxes; air-sea fluxes of scalars and momentum; box models of fluid systems such as oceans and atmospheres; the Coriolis effect; Ekman dynamics, geostrophy; waves; tides; applications to beaches, estuaries, shelves and the deep sea; the climate system.

## 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.