DALHOUSIE UNIVERSITY

Faculty of Science Course Syllabus (Section A)
Department of Oceanography
OCEA 2001
The Blue Planet I
Fall, 2022

Dalhousie University is located in Mi'kma'ki, the ancestral and unceded territory of the Mi'kmaq. We are all Treaty people.

We acknowledge the histories, contributions, and legacies of the African Nova Scotian people and communities who have been here for over 400 years.

Instructor(s): Paul Hill paul.hill@dal.ca

Lectures: Tuesday and Thursday, 8:30-9:30 AM

Laboratories: None

Tutorials: None

Course delivery: Blended Delivery: all lecture content will be delivered online; class time will be used to investigate some topics more deeply, answer questions, review quiz content, and to present topics that link course content to current events.

Course Description

This course provides a general survey of oceanography. It is designed to develop an understanding of the ocean and of the science of oceanography. Students learn about the geological, chemical, physical and biological processes at work in the ocean.

Course Prerequisites

None

Course Exclusion

OCEA 2000.06, OCEA 2850.06, OCEA 2851.03/OCEA 2852.03

Learning Objectives

The course is divided into 24 modules, and each module has 5 specific Learning Outcomes. These outcomes are listed at the beginning of each module, and a quiz at the end of each module is designed to assess whether the outcome has been attained. Since they are too numerous to list here, a summary for each module, except the Introduction module, is given instead.

At the end of the course, students should be able to do the following:

- Relate some major achievements in early investigations of the ocean.
- Describe the mechanisms and ages of the origins of the universe, solar system, earth, moon, and oceans.
- Review the major hypotheses for the origin of life on Earth.
- Compare the physical and compositional layering of the Earth's interior.
- Explain the evidence for continental drift and seafloor spreading.

- Account for the major geographic features on the Earth's surface in the context of the theory of plate tectonics.
- Identify the types and distributions of marine sediments.
- Account for the unique properties of water based on its molecular structure.
- Describe salinity and its effects on the properties of water.
- Explain the causes and consequences of vertical stratification in the ocean.
- Describe the fate of light that enters the surface ocean.
- Explain the processes responsible for creating the large-scale patterns of atmospheric circulation on Earth.
- Review the role of the oceans in generating interesting and dangerous weather phenomena.
- Explain the processes responsible for large-scale patterns of surface-ocean circulation on Earth.
- Review the causes and consequences of thermohaline circulation on Earth.
- Describe the physical properties of waves.
- Describe the evolution of wave properties as waves approach the shore.
- Summarize the properties of waves in the ocean that have longer wavelengths than wind-generated waves and shorter wavelengths than the tides.
- Explain the equilibrium theory of the tides.
- Describe various processes that affect timing and height of tides at the shore.
- Describe the basics of the processes of photosynthesis, respiration, and growth in the ocean.
- Explain seasonal and geographic patterns of primary production in the ocean.
- Describe various schemes to classify life in the ocean.

Course Materials

- The required text for the course is *Oceanography and Marine Biology*, by D. W. Townsend.
    - A digital version of the text will be available for purchase through Brightspace.
    - New or used hard copies of the text may also be used.
    - New hard copies are available for purchase at the Dalhousie Bookstore.
- There are no other required materials.
- Course content will be delivered through Brightspace: OCEA 2001 - The Blue Planet I (Sec 01) - 2022 Fall
- Students will need access to one of the following: laptop computer, tablet computer, smart phone or desktop computer.
- The Course Instructor and TA should be contacted via email.
- If a power or internet outage occurs during an online quiz, then contact the Instructor or the TA as soon as possible to report the problem. The quiz attempt will be reset.
- TopHat will be used to encourage and evaluate in-class participation.
- Students connecting to online resources from outside Canada are responsible for ensuring awareness and compliance with any applicable laws in the country from which they are connecting.

Course Assessment

Assessment will be through online quizzes delivered through Brightspace and a final exam. There are two types of online quizzes:

1. Learning Module quizzes;
2. Weekly Ocean Assessments (WOAs).

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The Learning Module quizzes appear at the end of each Learning Module. The comprise 5 questions. Each question is designed to assess whether a student has attained one of the 5 Learning Outcomes for that Learning Module. Two attempts are allowed for each Learning Module quiz, and the mark for the quiz is based on the highest score for the two attempts. The Learning Module quizzes become available when the Module becomes available, at 8:30 AM on either Tuesday or Thursday. They are due one week later, by 5 PM. Students have 2 hours to complete each assessment, which is ample time for all learners. The lowest Module quiz score is dropped. Overall, the top 23 Learning Module quizzes account for 50% of the overall mark, so each one is worth just under 2.2%.

The Weekly Ocean Assessments (WOAs) are based directly on the text. Each WOA is based on the two assigned readings for the week. The purpose of these assessments is to promote engagement of the students with the text, which offers a fuller treatment of the material than is possible in each module's video units. They comprise 10 questions each. Only one attempt is allowed per WOA. WOAs become available on each Thursday, and they are due by 5 PM on the Friday of the following week. The only exception is for the Remembrance Day break week, when the due date is moved to the week after. Students have 2 hours to complete each assessment, which is ample time for all learners. The first WOA, called WOA0, is for practice and will not be marked. The lowest WOA mark will be dropped. Overall, the top 10 WOAs account for 20% of the overall mark, so each one is worth 2%.

There are no other assignments.

The final exam will be written, in person, during exam period, with the date and time arranged by the Registrar. The exam will include a variety of answer formats. It will account for 30% of the overall mark.

Assessment	**Due Date**	**Weight (%)**	**Total (%)**
Introduction Module Quiz	14.09.21	2.2	50
Foundations Module Quiz	16.09.21	2.2	
Origins Module Quiz	21.09.21	2.2	
Origin of Life Module Quiz	23.09.21	2.2	
Structure of the Earth Module Quiz	28.09.21	2.2	
Continental Drift Module Quiz	30.09.21	2.2	
Plate Tectonics Module Quiz	05.10.21	2.2	
Marine Sediments Module Quiz	07.10.21	2.2	
The Water Molecule Module Quiz	12.10.21	2.2	
Sea Water Module Quiz	14.10.21	2.2	
Vertical Structure of the Ocean Module Quiz	19.10.21	2.2	
Light in the Ocean Module Quiz	21.10.21	2.2	
Atmospheric Circulation Module Quiz	26.10.21	2.2	
Ocean Weather Module Quiz	28.10.21	2.2	

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Surface Ocean Circulation Module Quiz	02.11.21	2.2	
Deep Ocean Circulation Module Quiz	04.11.21	2.2	
Waves Module Quiz	16.11.21	2.2	
Waves in Shallow Water Module Quiz	18.11.21	2.2	
Other Types of Waves Module Quiz	23.11.21	2.2	
Tides Module Quiz	25.11.21	2.2	
Tides at the Shore Module Quiz	30.11.21	2.2	
Basics of Marine Biology Module Quiz	02.12.21	2.2	
Biological Production in the Ocean Module Quiz	07.12.21	2.2	
Classification of Marine Life Module Quiz	09.12.21	2.2	
Weekly Ocean Assessment 00	17.09.21	0	20
Weekly Ocean Assessment 01	24.09.21	2.0	
Weekly Ocean Assessment 02	01.10.21	2.0	
Weekly Ocean Assessment 03	08.10.21	2.0	
Weekly Ocean Assessment 04	15.10.21	2.0	
Weekly Ocean Assessment 05	22.10.21	2.0	
Weekly Ocean Assessment 06	29.10.21	2.0	
Weekly Ocean Assessment 07	05.11.21	2.0	
Weekly Ocean Assessment 08	19.11.21	2.0	
Weekly Ocean Assessment 09	26.11.21	2.0	
Weekly Ocean Assessment 10	03.12.21	2.0	
Weekly Ocean Assessment 11	10.12.21	2.0	
Final Exam	Exam period	30.0	30

Conversion of numerical grades to Final Letter Grades follows the Dalhousie Common Grade Scale

Marks will be rounded. For example, a mark of 79.5 will be rounded up to 80, and a mark of 79.4 will be rounded to 79. No extra points are available, and marks will not be "bumped" to the next higher letter mark.

A+ (90-100)	B+ (77-79)	C+ (65-69)	D	(50-54)
A (85-89)	B (73-76)	C (60-64)	F	(<50)
A- (80-84)	B- (70-72)	C- (55-59)		

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Course Policies on Missed or Late Academic Requirements

Course assessments, apart from the Final Exam, are asynchronous. Module quizzes are available for 7 days, and Weekly Ocean Assessments are available for a minimum of 8 days. As a result, students with circumstances that keep them away from school for 3 days or less will still have time to complete their assessments. Students will not be able to make up any missed work. The lowest mark in each assessment category will be dropped.

Students with longer absences should coordinate with the Instructor and the Assistant Dean of Student Affairs Patricia Laws to make a plan for completing academic requirements.

Course Policies related to Academic Integrity

Students must complete all assessments by themselves.

Course Content

Module	Availability Date
Introduction to the Blue Planet	September 6
Early Foundations of Ocean Sciences	September 8
Origins	September 13
Origin of Life	September 15
Structure of the Earth	September 20
Continental Drift	September 22
Plate Tectonics	September 27
Marine Sediments	September 29
The Water Molecule	October 4
Sea Water	October 6
Vertical Structure in the Ocean	October 11
Light in the Ocean	October 13
Atmospheric Circulation	October 18
Ocean Weather	October 20
Surface Ocean Circulation	October 25
Deep Ocean Circulation	October 27
Waves	November 1
Waves in Shallow Water	November 3
Other Types of Waves	November 15
Tides	November 17
Tides at the Shore	November 22
Basics of Marine Biology	November 24
Biological Production in the Ocean	November 29
Classification of Marine Life	December 1

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University Policies and Statements

This course is governed by the academic rules and regulations set forth in the University Calendar and by Senate

Academic Integrity

At Dalhousie University, we are guided in all of our work by the values of academic integrity: honesty, trust, fairness, responsibility and respect (The Center for Academic Integrity, Duke University, 1999). As a student, you are required to demonstrate these values in all of 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.
Information: https://www.dal.ca/dept/university_secretariat/academic-integrity.html

Accessibility

The Advising and Access Services Centre is Dalhousie's centre of expertise for student accessibility and accommodation. The advising team works with students who request accommodation as a result of a disability, religious obligation, or any barrier related to any other characteristic protected under Human Rights legislation (Canada and Nova Scotia).
Information: https://www.dal.ca/campus_life/academic-support/accessibility.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.
Code: https://www.dal.ca/dept/university_secretariat/policies/student-life/code-of-student-conduct.html

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
Statement: http://www.dal.ca/cultureofrespect.html

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 (1321 Edward St) (elders@dal.ca).
Information: https://www.dal.ca/campus_life/communities/indigenous.html

Important Dates in the Academic Year (including add/drop dates)
https://academiccalendar.dal.ca/Catalog/ViewCatalog.aspx?pageid=viewcatalog&catalogid=117&chapterid=-1&topicgroupid=31821&loaduseredits=False

University Grading Practices

https://www.dal.ca/dept/university_secretariat/policies/academic/grading-practices-policy.html

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Student Resources and Support

Advising

General Advising https://www.dal.ca/campus_life/academic-support/advising.html

Science Program Advisors: https://www.dal.ca/faculty/science/current-students/undergrad-students/degree-planning.html

Indigenous Student Centre: https://www.dal.ca/campus_life/communities/indigenous.html

Black Students Advising Centre: https://www.dal.ca/campus_life/communities/black-student-advising.html

International Centre: https://www.dal.ca/campus_life/international-centre/current-students.html

Academic supports

Library: https://libraries.dal.ca/

Writing Centre: https://www.dal.ca/campus_life/academic-support/writing-and-study-skills.html

Studying for Success: https://www.dal.ca/campus_life/academic-support/study-skills-and-tutoring.html

Copyright Office: https://libraries.dal.ca/services/copyright-office.html

Fair Dealing Guidelines https://libraries.dal.ca/services/copyright-office/fair-dealing.html

Other supports and services

Student Health & Wellness Centre: https://www.dal.ca/campus_life/health-and-wellness.html

Student Advocacy: https://dsu.ca/dsas

Ombudsperson: https://www.dal.ca/campus_life/safety-respect/student-rights-and-responsibilities/where-to-get-help/ombudsperson.html

Safety

Biosafety: https://www.dal.ca/dept/safety/programs-services/biosafety.html

Chemical Safety: https://www.dal.ca/dept/safety/programs-services/chemical-safety.html

Radiation Safety: https://www.dal.ca/dept/safety/programs-services/radiation-safety.html

Scent-Free Program: https://www.dal.ca/dept/safety/programs-services/occupational-safety/scent-free.html

Dalhousie COVID-19 information and updates: https://www.dal.ca/covid-19-information-and-updates.html