

Faculty of Science Course Syllabus
Department of Oceanography
OCEA3002
Introduction into Chemical Oceanography
Fall 2016

Instructor(s): Helmuth Thomas, helmuth.thomas@posteo.org, LSC 4635

Lectures: mo/wed/fri 10.30h-11.30h, Riley Room, 3rd floor Oceanography wing

Laboratories: 0

Tutorials: based on interest, biweekly, 1 hour

Submit course syllabus to your Depart office for posting on the Dept website prior to the start of term
Submit requests for final exam exemptions to the Dean's office at least 2 weeks prior to the start of term

The following information should be included, as a minimum, in every course syllabus.

Course Description

This course provides students with a basic understanding of the composition of seawater and the processes that leads to this composition. This understanding is both qualitative and quantitative through the use of thermodynamic, kinetic and box models to describe the balances that produce the observed chemical distributions.

Course Prerequisites

PREREQUISITES: CHEM 1011.03 and CHEM 1012.03 or equivalents, and OCEA 2000.06 (or OCEA 2001.03/2002.03); OCEA 2020.03; OCEA 2021.03; or permission of instructor
EXCLUSIONS: OCEA 3170

Course Objectives/Learning Outcomes

Primay goal of this class are to understand

how chemicals are distributed in the oceans;

what processes (biological, geological, physical) act to cause these distributions;

how the chemistry of the oceans affects the biology and geology of the oceans;

how to make quantitative estimates about the chemical state of seawater and the transport of matter within the oceans.

Course Materials

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- *Textbooks and/or other*
- 1) Chemical Oceanography, W.S. Broecker (1974)
- 2) Tracers in the Sea, W.S. Broecker and T.-H. Peng (1982)



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- 3) Introduction to Marine Chemistry, J.P. Riley and R. Chester (1971)
- 4) Marine Chemistry, R.A. Horne (1969)
- 5) Chemical Oceanography, 2nd edition, F.J. Millero (1996)
- 6) Marine Geochemistry, R. Chester (2001)
- 7) Principles of Aquatic Chemistry, F.M. Morel (1983)
- 8) Aquatic Chemistry, W. Stumm and J.J. Morgan (1981)
- 9) Chemistry of the Atmosphere and Oceans, H.D. Holland (1978)
- 10) Principles of Chemical Sedimentology, R.A. Berner (1971)
- 11) The Global Water Cycle, E.K. Berner and R.A. Berner (1987)
- 12) The Geochemistry of Natural Waters, J.I. Drever (1982)

course website:

- <http://www.phys.ocean.dal.ca/~helmuth/protected/>

Course Assessment

Include dates and times for all tests, quizzes and exams, including lab exams. If appropriate, include due dates for assignments.

NOTE: An exemption is required if you are not planning to hold a final exam scheduled by the Registrar's Office for the final exam period. Submit your syllabus along with your request (**and reason for the request**) to the Assistant Dean (scieasst@dal.ca) at least 2 weeks prior to the start of classes.

Component	Weight (% of final grade)	Date
<i>Tests/quizzes (list)</i>		
<i>Final exam 1</i>	35%	(Scheduled by Registrar)
<i>Assignments 4</i>	<i>each 10%</i>	<i>tbd</i>

Other course requirements

Midterm:	15%	tbd
participation	10%	throughout the term

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

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)		

Course Policies

List your policies on issues such as late assignments, missed assignments or exams, weather-related cancelled classes, etc.

Course Content

- 1) Review of chemistry and physics
 - 2) Properties of water
 - 3) Properties of seawater
 - 4) Major components of seawater
 - 5) Minor components
 - 6) Trace components
 - 7) Ocean exchanges with surrounding environments
 - 8) Why is sea salt primarily NaCl?
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ACCOMMODATION POLICY FOR STUDENTS

Students may request accommodation as a result of barriers related to disability, religious obligation, or any characteristic protected under Canadian Human Rights legislation. The full text of Dalhousie's Student Accommodation Policy can be accessed here:

http://www.dal.ca/dept/university_secretariat/policies/academic/student-accommodation-policy-wef-sep--1--2014.html

Students who require accommodation for classroom participation or the writing of tests and exams should make their request to the **Advising and Access Services Centre (AASC)** prior to or at the outset of the regular academic year. More information and the ***Request for Accommodation*** form are available at www.dal.ca/access.

ACADEMIC INTEGRITY

Academic integrity, with its embodied values, is seen as a foundation of Dalhousie University. It is the responsibility of all students to be familiar with behaviours and practices associated with academic integrity. Instructors are required to forward any suspected cases of plagiarism or other forms of academic cheating to the Academic Integrity Officer for their Faculty.

The Academic Integrity website (<http://academicintegrity.dal.ca>) provides students and faculty with information on plagiarism and other forms of academic dishonesty, and has resources to help students succeed honestly. The full text of Dalhousie's ***Policy on Intellectual Honesty*** and ***Faculty Discipline Procedures*** is available here:

http://www.dal.ca/dept/university_secretariat/academic-integrity/academic-policies.html

STUDENT CODE OF CONDUCT

Dalhousie University has a student code of conduct, and it is expected that students will adhere to the code during their participation in lectures and other activities associated with this course. In general:

“The University treats students as adults free to organize their own personal lives, behaviour and associations subject only to the law, and to University regulations that are necessary to protect

- the integrity and proper functioning of the academic and non – academic programs and activities of the University or its faculties, schools or departments;
- the peaceful and safe enjoyment of University facilities by other members of the University and the public;
- the freedom of members of the University to participate reasonably in the programs of the University and in activities on the University's premises;
- the property of the University or its members.”

The full text of the code can be found here:

http://www.dal.ca/dept/university_secretariat/policies/student-life/code-of-student-conduct.html

SERVICES AVAILABLE TO STUDENTS

The following campus services are available to help students develop skills in library research, scientific writing, and effective study habits. The services are available to all Dalhousie students and, unless noted otherwise, are free.

Service	Support Provided	Location	Contact
General Academic Advising	Help with <ul style="list-style-type: none"> - understanding degree requirements and academic regulations - choosing your major - achieving your educational or career goals - dealing with academic or other difficulties 	Killam Library Ground floor Rm G28 <i>Bissett Centre for Academic Success</i>	In person: Killam Library Rm G28 By appointment: <ul style="list-style-type: none"> - e-mail: advising@dal.ca - Phone: (902) 494-3077 - Book online through MyDal
Dalhousie Libraries	Help to find books and articles for assignments Help with citing sources in the text of your paper and preparation of bibliography	Killam Library Ground floor Librarian offices	In person: Service Point (Ground floor) By appointment: Identify your subject librarian (URL below) and contact by email or phone to arrange a time: http://dal.beta.libguides.com/sb.php?subject_id=34328
Studying for Success (SFS)	Help to develop essential study skills through small group workshops or one-on-one coaching sessions Match to a tutor for help in course-specific content (for a reasonable fee)	Killam Library 3rd floor Coordinator Rm 3104 Study Coaches Rm 3103	To make an appointment: <ul style="list-style-type: none"> - Visit main office (Killam Library main floor, Rm G28) - Call (902) 494-3077 - email Coordinator at: sfs@dal.ca or - Simply drop in to see us during posted office hours All information can be found on our website: www.dal.ca/sfs
Writing Centre	Meet with coach/tutor to discuss writing assignments (e.g., lab report, research paper, thesis, poster) <ul style="list-style-type: none"> - Learn to integrate source material into your own work appropriately - Learn about disciplinary writing from a peer or staff member in your field 	Killam Library Ground floor Learning Commons & Rm G25	To make an appointment: <ul style="list-style-type: none"> - Visit the Centre (Rm G25) and book an appointment - Call (902) 494-1963 - email writingcentre@dal.ca - Book online through MyDal We are open six days a week See our website: writingcentre.dal.ca