**Introductory Chemical Oceanography**  
**Winter 2021**

**Ocean Sciences 2100 – Introductory Chemical Oceanography**

This course will provide an introduction to the fundamental chemical properties of seawater and the processes governing the concentrations of elements and compounds in the oceans. It is an introduction to the sources, distribution, and transformations of chemical constituents of the ocean, and their relation to biological, chemical, geological, and physical processes. Topics include: controls on average concentration of chemicals in the ocean; vertical and horizontal distributions of ocean constituents; air-sea interactions; production, export, and remineralisation of organic matter; the ocean carbon cycle; human-induced changes; stable isotopes; and trace elements.

CR: CHEM 2610          PR: CHEM 1011 OR CHEM 1051 OR CHEM 1001


**Instructor:**          
Professor:  Dr. Rachel Sipler                  Office: AX-4021, Ocean Sciences Centre, Logy Bay  
email:  resipler@mun.ca                  Office hours: Online office hours by appointment

**Lecture:**          
M,W,F     Time: 10:00 to 10:50 AM       Room: asynchronous online delivery  
*Exams online at 10am NLT on dates below*

<table>
<thead>
<tr>
<th>Structure of Course Evaluation*</th>
<th>Marks</th>
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<tbody>
<tr>
<td>Mid-term Exams</td>
<td>40</td>
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<tr>
<td>Assignments</td>
<td>20</td>
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<tr>
<td>Final</td>
<td>40</td>
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<tr>
<td>Total:</td>
<td>100</td>
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**Important dates:**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tr>
<td>January 6, Wednesday</td>
<td>Lectures begin</td>
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<tr>
<td>January 20, Wednesday</td>
<td>Assignment 1 due (online submission)</td>
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<tr>
<td>February 1, Monday</td>
<td>Midterm Exam 1 (via Brightspace)</td>
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<tr>
<td>February 10, Wednesday</td>
<td>Assignment 2 due (online submission)</td>
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<td>February 22 – 26</td>
<td>Winter break</td>
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<tr>
<td>March 3, Wednesday</td>
<td>Assignment 3 due (online submission)</td>
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<tr>
<td>March 8, Monday</td>
<td>Midterm Exam 2 (via Brightspace)</td>
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<tr>
<td>March 17, Wednesday</td>
<td>Assignment 4 due (online submission)</td>
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<td>April 9, Friday</td>
<td>Lectures end</td>
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<tr>
<td>April 14-23</td>
<td>Final exams (date and time to be determined)</td>
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Course Material:
Recommended readings, assignments and class updates will be posted on our class Desire2Learn page (http://online.mun.ca).

Course Content Overview
1. An Introduction to Oceanography and Environmental Chemistry
2. Fundamental Properties of Seawater
3. Chemical Composition of Seawater
4. Water Masses, Ocean Circulation and Mixing
5. Fundamental Properties of Sediments
6. Chemical Reactions in the Oceans
7. Chemical Sedimentology
8. The Carbonate System and Ocean Acidification
9. Biogeochemical Cycling in the Oceans
10. Global Carbon Cycle
11. Coastal Marine Chemistry
12. The Oceans as a Waste Space

Class policies
All students are expected to display respect for the learning environment. This includes respecting opinions of your instructor, classmates and any guests as they are expressed in class. We welcome students from various disciplines and differing ethnic and cultural backgrounds expect course discourse to be collegial and respectful across disciplinary, ethnic, cultural, and personal boundaries. All students are bound by the Memorial University Student Code of Conduct (https://www.mun.ca/student/supports-and-resources/respectful-campus/student-code-of-conduct.php).

Missed/late work
*Missing an assignment or exam:* You should contact the instructor as soon as possible to explain the reason. In case of sickness, you do not have to produce doctor's note for the missed assignment or exam. Exams will be timed and held during the assigned class period (please contact Dr. Sipler directly if you are out of province and this is not reasonable. If you receive timing exceptions and are found to be sharing exam information with other students, you and the student(s) who receives the information will receive a mark of 0% and will be referred to academic council. Exams cannot be made up. If you have an excused absence, the marking for the missed exam will be prorated (proportionally added) to your final exam. Assignments or exams, missed without explanation will receive a mark of 0%. Late assignments should be emailed directly to the instructor and will be deducted 5% for each day that they are late with no marks granted after 10 days delayed without explanation.

*Dropping the course (after the last drop date) or requesting deferred final exam for health reasons requires a doctor's note. The information required in the doctor's note is listed in Section 6.14.6 of MUN Calendar,*
Academic Integrity

All students are personally responsible for knowing which actions could be viewed as dishonest. Students found guilty of an academic offence may be subject to penalties commensurate with the offence. The standards to Academic Integrity are outlined in the Undergraduate Calendar: http://www.mun.ca/regoff/calendar/sectionNo=REGS-0748

This class is designed to provoke thought and improve your scientific skills. Quoting word for word should be done sparingly. In your assignments or exams - any direct quotes must be clearly identified as such, using quotation marks, AND referenced properly. Plagiarism will not be tolerated and if detected you will receive a 0 mark for that assignment and the issue will be submitted to the academic counsel. Please take the time to digest the information and put it into your own words.

Inclusion and Equity

Memorial University of Newfoundland is committed to ensuring an environment of understanding and respect for the dignity and worth of each student and also to supporting inclusive education based on the principles of equity, accessibility and collaboration. Students who may require physical or academic accommodations are encouraged to contact the Glen Roy Blundon Centre https://www.mun.ca/student/new-student-experience/access.php

Support Services offered to students at Memorial include:

- The Counselling Center http://www.mun.ca/counselling/home/
- The Glen Roy Blunden Center http://www.mun.ca/blundon/about/index.php
- The Writing Center http://www.mun.ca/writingcentre/about/
- Student Affairs and Services http://www.mun.ca/student/home/
- The International Student Advising Office http://www.mun.ca/isa/main/