A. CALENDAR DESCRIPTION

OCSC 2100 Introductory Chemical Oceanography (same as Chemistry 2610): 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 remineralization of organic matter; the ocean carbon cycle; human-induced changes; stable isotopes; and trace elements.

CR: CHEM 2610  PR: CHEM 1011 OR CHEM 1051 which may be taken concurrently OR CHEM 1001

B. LEARNING GOALS

Upon successful completion of this course, the student should be able to

- know what are the fundamental properties and chemical composition of seawater
- identify what drives or limits ocean circulation and mixing, and how it redistributes chemical species throughout the ocean
- understand the processes that create and modify the chemical species in ocean waters and sediments
- understand how the ocean carbonate system works
- know the mechanism of ocean acidification and its effect on the ocean chemistry and biology, sediments and future climate
- understand biogeochemical cycling in the oceans
- understand global carbon cycle and the role the oceans play in it
- know fundamentals of Coastal Marine Chemistry
- understand the many way in which humans influence the chemistry of oceans, directly through marine pollution and indirectly through the emissions of greenhouse gases.

C. COURSE LECTURES AND CONTACTS

Lectures: Monday, Wednesday, Friday; 10:00–10:50 am; Currently: until January 31 via online deliver (Online Rooms on Brightspace). If we get to the in-person lectures: Room: A-1046

Attendance at lectures is critical to your success in this course. Ahead of the lecture, I will post on Brightspace lecture notes, so during the lectures you can concentrate on understanding the material. Note however that the lecture notes may have blank areas and questions – which we will fill-in and answer during the lectures. This is another reason not to miss the lectures – not only will you have material explained and give you a chance to ask questions, but also it will save you time in the long term when preparing to the exams. During lectures, I will often indicate which issues are particularly important (and therefore more likely to show up on the exams ...)

Instructor:
Dr. Piotr Trela  Office: CSF-2231
Phone: 864-3063  email: D2L ptrela@online.mun.ca [backup: ptrela@mun.ca]

Please include the course name in the subject line phrase, particularly if you have to use a backup email. Every effort will be made to respond to emails within 24h, with the exceptions of evenings, weekends and holidays.
Office hours: online delivery: Wed 12 pm, during in-person delivery: Mon. 12-2pm
Teaching Assistant: TBA

**D. COURSE RESOURCES**

**TEXTBOOK:**

<table>
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<tbody>
<tr>
<td>Supplementary Texts (I’ll try to get on QEI reserve)</td>
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<tr>
<td>‘Marine Biogeochemical Cycles’ The Open University (R. James), 2005. [GC111.2 M36 2005]</td>
</tr>
</tbody>
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**BRIGHTSPACE:**

I will use the Brightspace website in many ways:

**Main Page:** News and updates, Calendar

**Content:** Lecture notes posted before the corresponding lecture. Also: information on exams, resource documents, and relevant links

**Communications:** **Online Rooms** – where we will meet in January for the online lectures. You can also view there the recordings of the past lectures.

Also: D2L-email is the preferred way to email me (my general MUN email listed above should be used only as a backup). E-mail is best for discussing private or very specific questions; for general questions it is better to use the Discussion, as the answer to your question may be of interest to other students as well. You can post questions in the discussion area under your name or, if you prefer, anonymously.

**Assessment:** Grades section – for your midterm grades. If online delivery continues into the February we will use also Quizzes

**E. IMPORTANT DATES AND COURSE SCHEDULE**

<table>
<thead>
<tr>
<th>JAN. 10, MON.</th>
<th>1ST LECTURE (ONLINE)</th>
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<tr>
<td>FEB. 4, FRI.</td>
<td>MIDTERM 1</td>
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Course Sections

- Fundamental properties of seawater and sediments and their composition
- Water masses, ocean circulation and mixing
- DOM, Air-Sea Exchanges, Speciation and Seawater Gases
- Redox
- Inorganic Carbon
- Marine Biogeochemistry
- Anthropogenic Influences
- Other topics

F. Evaluation

<table>
<thead>
<tr>
<th>Evaluation</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Midterms (x 3)</td>
<td>15% each</td>
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<tr>
<td>Assignments (x 2)</td>
<td>7.5% each</td>
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<tr>
<td>Final Exam</td>
<td>40%</td>
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Exam format: may contain all or some of the following: multiple choice, fill in the blanks, short answers, and/or map/graph questions. The final exam will be cumulative, with proportionally more weight given to the part not covered on the mid-term.

Assignment format: questions and/or problems to solve

Note: if we have to continue with online delivery past Jan. 31 – the evaluation format may be modified.

H. COVID and Other Health Issues

Your mental and physical health are the primary consideration, even more so at the current COVID situation.

General COVID-19 supports:

While the COVID-19 pandemic is slowly subsiding in many parts of the world and vaccination rates are increasing, this is still a stressful time for many. It’s important that we support each other and keep informed of
current information. The Memorial COVID-19 website is an excellent source of information and support, with specific links for students, supports and services, and health and wellness.

- **Vaccinations and masks:**
  “As a part of our shared responsibility to keep each other and our extended families safe during the upcoming school year, COVID-19 vaccines are required for all students, faculty, and staff; masks are required on all Memorial campuses in all indoor spaces. For further information, see the University webpage on COVID-19 Vaccination Clinics.”

- **The COVID Alert app.:**
  Memorial encourages faculty, staff, and students to download the COVID Alert app to help protect yourself and others. The app is designed to let Canadians know whether they may have been exposed to COVID-19.

**What to do if you feel unwell:**

- To protect yourself and those around you, **please stay home if you feel unwell** or if you are under quarantine, because you have potentially been exposed to the virus. If needed please see appropriate medical attention. Please keep me informed so we can work together to allow you to keep up with the course materials, should you need to miss classes. **You will not be penalized if you need to stay home** for quarantine. Memorial University has recognized the importance of academic leniency as we work to keep our campus safe for all.

- **Stress/mental health issues** affect many students even in normal times, and these are not normal times. If you experience stress, anxiety, or other mental issues, please seek appropriate attention from the Student Wellness and Counselling Centre. There is no point in suffering alone.

- **Doctors’ notes are not required** for medical absences **shorter than 5 days for non-COVID-related illnesses and shorter than 14 days for the COVID-related ones.** Please contact me as soon as possible, so we can figure out the alternatives. The only times when doctor’s note might be needed would be if you apply to drop the course after the last day to drop courses, or if you apply for a deferral of the final exam. (see also information in Course Policies)

- I am committed to **working with students with pre-existing medical and mental health needs**, as well as new needs that may arise within the semester. I encourage you to reach out to the Blundon Centre as early as possible to discuss any adjustments you think may be necessary in this course. Let’s explore the options to help you succeed.

- There are also **many other resources** you can use if needed – see the last section of the outline.

**COVID Contingencies:**

- We will have our January lectures online. Whether we continue or return to the on campus – depends on the COVID situation. I will **inform you** of all changes relevant to our course via Brightspace News section of our course (the first page after the log in). Any changes will be also reflected in revisions to the syllabus and if needed to the lecture schedules.

- For the online delivery you will need to have access to a networked PC or Mac computer with a microphone and preferably a webcam. The university has published minimum computer requirements which you can review.

- Remote lectures for our class will include a synchronous and/or asynchronous components.

- If we have exams online – they will be via Brightspace (Quizzes)
J. HOW TO DO WELL IN THIS COURSE

Try not to fall behind - because this would make things more difficult as the new sections build on previous ones.

Combine lectures and the readings of the textbook – to do well in the course you will need both.

Understand your diagrams – graphs in the textbook and lecture notes organize and summarize the important elements of the material. So if you take the time to understand them – it will go a long way to help you with understanding of the material and preparing for the tests and exams.

Be active – when something is confusing, unclear, or seems contradictory – ask question in the class or post questions in Brightspace Discussion.

K. POLICIES

Grading system

The grading system follows that described in the Memorial University Undergraduate Calendar:
https://www.mun.ca/regoff/calendar/sectionNo=REGS-0661 6.9 Letter Grades, Numeric Grades and Points Per Credit Hour.

Academic Integrity: Within the University community there is a collective responsibility to maintain a high level of scholarly integrity. A student is expected to adhere to those principles which constitute proper academic conduct. Academic misconduct cannot be condoned or even appear to be condoned. A student has the responsibility to know which actions, as described under Academic Offences, could be construed as dishonest or improper. In our case the most important is passing somebody’s else work as your own (e.g. when submitting Assignments). For further guidance on proper scholarly behaviour seek advice from their instructors and faculty advisors. http://www.mun.ca/regoff/calendar/sectionNo=REGS-0748

Medical Notes:

When is a medical note, or other appropriate supporting documentation, required?

When a student is absent from a final laboratory or final lecture examination due to illness and they would like to request a deferred examination or other sort of accommodation. A medical note is also required when a student misses a mid-term test/exam or other form of course work during the regular semester due to illness of five or more calendar days that is not related to COVID-19. In both cases, a request for accommodation must be made in writing no later than 48 hours after the original date of the evaluation. Information required in doctor’s notes is described in https://www.mun.ca/regoff/calendar/sectionNo=REGS-0859

When is a medical note NOT required?

1. COVID-related absence of less than 14 calendar days’ duration, including illness, isolation or quarantine requirements, or caregiving requirements. If the student wishes to request accommodation for illness in this case, then they must inform their instructor of their illness in writing within 48 hours of the date of test/mid-term/seminar or due date of paper/report.

2. Non-COVID related illness of less than 5 calendar days during the term.

L. FEEDBACK
I value your feedback, both on the content and format of lectures and labs – your feedback lets me know what works and what does not, and adjust it to make the course better for you, and for future students. If you have any specific questions about the content – ask in class, if not via Brightspace: Communications -> Discussion section by posting a question about the material or upcoming exams. You can also provide anonymous feedback in the Feedback subsection.

M. INCLUSION AND EQUITY

Students with Disabilities
Memorial University of Newfoundland is committed to supporting inclusive education based on the principles of equity, accessibility and collaboration. Accommodations are provided within the scope of the University Policies for the Accommodations for Students with Disabilities (www.mun.ca/policy/site/policy.php?id=239). Students who may need an academic accommodation are asked to initiate the request with the Glen Roy Blunden Centre. I encourage any class participant(s) who may require physical or academic accommodations to talk to me to see how your needs may be met.

Equity
We welcome all learners from various disciplines and differing ethnic and cultural backgrounds from within the University, as this provides opportunity for the sharing of a diversity of experiences, world-views, values, problem-solving approaches, and enlightening and enriching course perspectives. It is an expectation that course discourse be collegial and respectful across disciplinary, ethnic, cultural, and personal boundaries.

Memorial Support Services
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/blunden/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/

For Additional Supports see: www.mun.ca/currentstudents/student/ and http://munsu.ca/studentlife/centres/, among them:

Memorial University Libraries, The Commons (QEII library), CITL Support Centre, Information Technology Services, Academic Advising, and specific departmental help centres, as well as: Student Wellness and Counselling Centre, Student Support and Crisis Management, MUN Chaplaincy, Sexual Harassment Office, Student Parent Resource Centre, Aboriginal Resource Centre, Disability Information Support Centre, International Students Resource Centre, Sexuality and Gender Advocacy, Student Parent Assistance & Resource Centre, Students Older Than Average, Intersections – A Resource Centre for Marginalized Genders, and specific departmental societies.