SYLLABUS

OCSC 1000 – Exploration of the World Ocean (online)

Instructor

Dr. Paul Snelgrove

- **Office**: Ocean Sciences Centre, Rm 4003 (Logy Bay)
- **Office hours**: Book an appointment
- **Phone**: (709) 864-3440
- **Email**: psnelgrove@mun.ca (But please do NOT use this email unless it is a real emergency).

For all course related communication, please use the online course mail widget (@online.mun.ca). I normally answer within 24-48 h. If you have a pressing question, concern or suggestion, I encourage you to use the Brightspace email to contact me AND copy the TAs to get a speedier response.

You may find out more about my work, research interests, and travels by accessing my academic website [https://www.mun.ca/osc/psnelgrove/](https://www.mun.ca/osc/psnelgrove/).

Course Description & Goal

This online course covers the basic disciplines of ocean sciences, including biological, chemical, geological and physical oceanography. There are no prerequisites; we will cover topics at a level sufficient for science majors but accessible to non-majors. The class will take the form of a multi-disciplinary oceanographic expedition that will expose you to techniques of ocean exploration and study, while explaining key concepts of ocean floor features, sediments, seawater chemistry and physics, ocean circulation, causes and effects of currents, waves and tides, deep-sea and coastal processes, biogeochemical cycles, and marine ecology – the interactions of all of these components with the biological systems present in or living off the ocean.

The course emphasizes critical thinking and applies learned principles to features of eastern North America, as well as other locations globally. After completing this course, you will have a better understanding of important oceanographic issues that affect the entire globe and feel more of a connection with what is happening in other countries with regards to ocean use, natural disasters, natural resources, sea level changes, and environment stewardship. You will also be able to analyze scientifically the consequences of human infrastructure built in and around coastlines, and understand the important role that the ocean has played and will continue to play in global environmental processes.

Learning Outcomes

Upon successful completion of this course, you will be able to:
1. Outline the basic physical, chemical, geological and biological characteristics of the ocean;
2. Compare current methods used in ocean sciences and their limitations;
3. Apply scientific methods to problems involving the marine environment;
4. Critically discuss various issues related to the world ocean (climate, pollution, resources management, etc.); and
5. Appreciate the global importance of oceanography and its special interest to diverse societies, including the population of Atlantic Canada.

**Course Schedule (last updated Dec 2021)**

The following are due by 11:59 PM on Wednesdays (see the schedule below).

- Expedition Log Books and Quizzes
- Discussion Posts (initial + reply)

Assessments (biweekly quizzes) must be submitted by 6 PM on the Thursday that they are due (see the schedule below). They are open for 24 hours.

**NOTE:** Once you start a quiz, you will have 15 minutes to complete it. We recommend that you submit the quiz a couple of minutes before the 15 minutes expire. A 5-minute grace period will be available in the case of a rare technical issue.

<table>
<thead>
<tr>
<th>Module Dates</th>
<th>Virtual Expedition</th>
<th>Class / Topics</th>
<th>Assignments</th>
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<tbody>
<tr>
<td>Introduction</td>
<td></td>
<td>- Welcome</td>
<td>- Familiarize yourselves with Brightspace (D2L).</td>
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<tr>
<td>January 6</td>
<td></td>
<td>- Introduction</td>
<td>- Review online materials.</td>
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<td>- Syllabus, course schedule and guidelines</td>
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<td></td>
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<td>- World ocean concept</td>
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<tr>
<td>Module 1: Ocean</td>
<td>1. Exploring the world ocean</td>
<td>- Oceanography</td>
<td>Complete Expedition 1 – Exploring the world ocean.</td>
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<tr>
<td>Exploration</td>
<td></td>
<td>- Ocean exploration from its origin to present days</td>
<td>Submit Log Book 1 and Quiz 1 by 11:59 pm on January 12.</td>
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<tr>
<td>January 7 - 12</td>
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<tr>
<td>Module 2:</td>
<td>2. The signs and effects of climate</td>
<td>- Water molecule</td>
<td>Complete Expedition 2 – The signs and effects of climate change.</td>
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<tr>
<td>Secrets of</td>
<td>change</td>
<td>- Temperature, Salinity</td>
<td>Submit Log Book 2 and Quiz 2 by 11:59 pm on January 19</td>
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<tr>
<td>seawater</td>
<td></td>
<td>- Dissolved gases</td>
<td>Assessment 1 due Jan 20 by 6pm</td>
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<tr>
<td>January 13-19</td>
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<td>- Pressure</td>
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<td></td>
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<td>- Nutrients</td>
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<td></td>
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<td>- Light and sound</td>
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<tr>
<td>Dynamic seafloor</td>
<td></td>
<td>- Evolution of oceans (moving plates)</td>
<td>Submit Log Book 3 and Quiz 3 by 11:59 pm on January 26</td>
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<tr>
<td>January 20 –</td>
<td></td>
<td>- Earthquakes and volcanoes</td>
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<tr>
<td>January 26</td>
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<td>- Major ocean basins and seas</td>
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1 Be aware that we change from Newfoundland standard time (NST) to daylight savings time (NDT) mid semester.

_Syllabus – OCSC 1000 – Online version_
| Module 4: Ocean in motion | 4. Tracking El Niño | - Winds  
- Surface currents  
- Underwater currents  
- Water cycle  
- Climate  
- Submit Log Book 4 and Quiz 4 by 11:59 pm on February 2  
- Post to Discussion 1 forum  
-- Assessment 2 due Feb 3 by 6pm |
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<tbody>
<tr>
<td>January 27 – February 2</td>
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| Module 5: Marine Rhythms | 5. Harnessing the ocean’s energy | - Waves  
- Tides  
- Sea surface disturbances | - Complete Expedition 5 – Harnessing the ocean’s energy.  
- Post to Discussion 1 forum  
- Submit Log Book 5 and Quiz 5 by 11:59 pm on February 9 |
| February 3 – February 9 | | | |
| Module 6: Coastal seascapes | 6. Moving shorelines | - Sea level  
- Erosion and deposition  
- Types of coasts  
- Seascapes worldwide | - Complete Expedition 6 – Moving shorelines.  
- Submit Log Book 6 and Quiz 6 by 11:59 pm on February 16  
- Deadline for Discussion 1 (submit Discussion post and reply to the Assignments folder by February 16)  
**Assessment 3 due February 17 by 6pm** |
| February 10 – February 16 | | | |
| Module 7: Shallow seas | 7. Surveys of coastal habitats | - Continental shelves  
- Rocky habitats  
- Sandy habitats  
- Underwater fields and forests  
- Coral reefs | - Complete Expedition 7 – Surveys of coastal habitats.  
- Submit Log Book 7 and Quiz 7 by 11:59 pm on March 2  
- Post to Discussion 2 Forum |
| February 17 – March 2 (note extended period because of winter break) | | | |

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### Module 8: Open ocean
**March 3 – 9**
- **8. Exploring the deep sea and polar environments**
  - Stratification
  - Plankton life
  - Continental slope
  - Deep-sea features
  - Polar oceans
- Complete Expedition 8 – Exploring the deep sea and polar environments.
  - Submit Log Book 8 and Quiz 8 by 11:59 pm on March 9
  - Post to Discussion 2 Forum

### Module 9: Cradle of life
**March 10 – 16**
- **9. Measuring ocean productivity**
- Classifying marine organisms
  - Productivity
  - Life in the water column
  - Life on the seafloor
  - Adaptations
  - Fossils
- Complete Expedition 9 – Measuring ocean productivity.
  - Submit Log Book 9 and Quiz 9 by 11:59 pm on March 16
  - Post to Discussion 2 forum and submit posts to Assignments folder by 11:59 pm on March 16
  - Assessment 4 due March 17 by 6pm

### Module 10: Marine biodiversity
**March 17 – 23**
- **10. Counting and monitoring marine organisms**
  - Biodiversity
  - Major groups of marine animals
  - Microorganisms
  - Seaweeds and plants
  - Evolution Interactions
- Complete Expedition 10 – Counting and monitoring marine organisms.
  - Submit Log Book 10 and Quiz 10 by 11:59 pm on March 23

### Module 11: Human-ocean interactions
**March 24 – March 30**
- **11. Towards a sustainable use of ocean resources**
  - Marine food webs
  - Marine ecosystems under threat
  - Ocean management and conservation
- Complete Expedition 11
  - Towards a sustainable use of ocean resources.
  - Assessment 5 due March 31 by 6pm
  - Submit *OPTIONAL Log Book 11 and OPTIONAL Quiz 12 by 11:59 pm on March 30

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**Syllabus – OCSC 1000 – Online version**
### Review
April 1 – April 6
- Review: Review module will be available.

### Final Exam
Date TBD

*OPTIONAL This March 30 Logbook AND Quiz are optional in that if you complete them, we will drop the lowest of the log book grades and quiz grades and calculate the grades for these portions of the course based on your best 10 grades. If you choose not to exercise these option we will calculate your grade for these portions of the course from the 10 required log books and quizzes. We will also open up the submission date for the log book and quiz the previous week if you want to complete it early and get it out of the way.

1 Be aware that we change from Newfoundland standard time (NST) to daylight savings time (NDT) mid semester.
Course Format and Resources

There are no required textbooks for this course; the course website will provide all of the relevant resources.

Teaching and Learning Approach

This course is designed to be as dynamic and engaging as possible. Students must read and complete self-guided virtual expeditions. Self-paced "Deep Dive" content and "Captain's Notes" replace lectures, providing details on the topics and answering typical questions that students may have. Bi-weekly assessments and online discussions will round out the learning experience.

Online/Virtual Expeditions

You are expected to play an active role in your learning through the timely completion of online virtual expeditions. The expeditions, which are designed to replace one classroom lecture, are web-based interactive exercises, i.e. self-paced tutorials composed of animations, short audio/video segments, graphics and texts. You should work your way through an expedition by viewing the materials, taking notes in a log book, and completing a quiz. See Assessment of Learning.

You are advised to post any questions or thoughts on a particular expedition in the associated “Any Questions” discussion forum in the course shell (questions will be answered as quickly as possible, generally within 48 hours). A "Student Questions" discussion forum is also available where you can ask each other questions related to course material and online expeditions. In Modules 4 and 7 you will also be required to participate in electronic discussions, which may be problem-based and issue-oriented. All forums can be accessed inside the modules as well as under the Communication / Discussions tab.

Download your log book at the start of each expedition. As you navigate through the expedition (view the content and participate in self-guided activities), take notes in the preformatted log book by answering the guiding questions and using the additional space as necessary. The log book serves as the notes from which to study for exams. In each expedition, you must also answer five questions (through the Quiz tool). For further details, please refer to the section on Assessment of Learning / Course Evaluation.

About submission deadlines
The due date for each assignment (completed expedition log book, discussion post, etc.) is provided under Course Schedule. It is your responsibility to make sure that the correct file is submitted to the Assignments folder on time. You should ensure that you received proper confirmation of all submissions (if in doubt, check your Submission History).

Because extra “make up” credits can be obtained, *late submissions will not be accepted* (and students will not be notified that their submission has not been received). Late submissions justified by *exceptional* (major medical issue or death in family with appropriate written justification) circumstances may be granted but deductions may still apply.

**Technical issues and broken links**

For general issues with the Brightspace portal, use the Help tab (Student Resource or Support Centre).

Technical issues will not be a valid excuse for missing assignment deadlines so give yourself some latitude and avoid last-minute completion (e.g. do not submit an assignment only minutes before the deadline).

If you encounter a broken link in a module, please notify the instructor and the TAs immediately.

There will of course be no penalty related to inaccessible content unless the situation is resolved (check the news widget regularly and make sure to activate notifications in your profile).

**Review Module**

A Review module will also become available towards the end of the semester. It will include flip cards, a study guide and a mock exam. The intention is that students use this module to help succeed in the class, by reviewing material and studying for the final exam. Prepare ahead by reviewing your notes (including biweekly assessments, online quizzes and log books), and identifying the specific areas in which you need help, practice, or review.

**Course Evaluation**

**Evaluation Breakdown**

<table>
<thead>
<tr>
<th>Component</th>
<th>Weighting</th>
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<tbody>
<tr>
<td>Virtual Expeditions</td>
<td>30% (3% x 10)</td>
</tr>
<tr>
<td>Assessments (biweekly)</td>
<td>20% (4% x 5)</td>
</tr>
<tr>
<td>Discussions</td>
<td>10% (5% x 2)</td>
</tr>
<tr>
<td>Final Exam</td>
<td>40%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
<tr>
<td>Optional extra Credits</td>
<td>up to 10%</td>
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</tbody>
</table>

*Be aware of the policy on Submission Deadlines outlined in the Course Format and Resources*

**Assessment Descriptions**

**Virtual Expeditions**

Each student will take on the role of research scientist in a series of 11 virtual oceanographic research activities (online). Each expedition will be worth 3% (30 pts). Your top 10 marks will comprise your grade.
New expeditions will be available well ahead of time; they are due and are to be completed by the indicated Wednesday 11:59 pm. You should not get too far ahead of schedule because preparing the logbooks will also help prep you for the quizzes! For each expedition, students must answer 5 simple/basic questions through the Quiz tool and fill out a weekly Expedition Log Book for submission to the Assignments folder. Please submit only doc/docx, rtf or pdf files and ensure that you include your name and student number on your submission. Completing the expedition and submitting a fully filled log book is worth 15 points and each of the 5 correctly answered questions is worth 3 points. The log books also provide a medium for taking notes on the materials; you will use them to prepare for biweekly assessments and for the final exam.

**Log books**
Completing the expedition log book may seem time consuming relative to being worth only 1.5% — but it is essentially there to identify important contents (rather than being an assignment meant to earn you marks). The fact that we mark the log books is a bonus (like getting marks for taking class notes).

**Expedition quizzes**
Online quizzes are not designed to test your knowledge but rather to make sure you go over all the expedition material provided. Therefore some of the questions are simplistic/trivial (rather than learning oriented). Essentially the quiz marks are a bonus for completing the expedition.

**Assessments (biweekly quizzes)**
Biweekly assessments (5 quizzes x 4%) are learning oriented. Questions may be derived from all of the module contents covered in the two weeks that precede an assessment (modules 1 and 2 for Assessment 1; modules 3 and 4 for Assessment 2; modules 5 and 6 for Assessment 3; modules 7 and 8 for Assessment 4; and modules 9 and 10 for Assessment 5). There will not be any deferral of these assessments (because extra credit reports can help make up for any missed assessment or assignment).

**Discussions**
At the end of expeditions 4 and 7, students will be invited to participate in a required discussion in the online discussion forum. Each student will make an initial posting, approximately 300 words long and reply to another student with a posting of approximately 100 words. The original posting and subsequent reply to at least one other student must be separate postings*. You will have 2-3 weeks to complete each discussion. Personal insight and accurate knowledge, gained from the modules and associated material, and the quality of writing for communicating this knowledge to other students in the class are the important grading criteria for these discussions. Discussions are worth 5% each, with 3% assessed for content knowledge (pertinence, accuracy), and 2% for writing quality (logical flow, grammar, spelling).

*Important Notes: You are required to submit both an initial posting and at least one response to another student’s posting to the discussion forum and you must submit a copy of these postings to your instructor, via the Assignments folder, by 11:59 pm on the due date (see Schedule for exact dates). Only the submissions to the Assignments folder will be marked (not the forum postings). Please submit only doc/docx, rtf or pdf files and ensure that you include the context of your postings (e.g. post to which you are replying). Indicate your name and student number on your submission to the Assignments folder.
Final Exam

Because exams emphasize all the material covered in various formats inside the modules, it is very important that you take notes throughout the course. Taking good notes and reviewing them on a regular basis is the best way to absorb the material presented. In addition, the expedition log books and the periodic assessments/quizzes should be helpful when studying.

Prior to the final exam, a Review module will become available online in the course shell (including flip cards, a study guide and mock quiz); it is recommended that you make good use of it.

To request a Deferred Final Exam, please consult the relevant guidelines in the MUN Calendar. More information can also be found on the website of the Department of Ocean Sciences (Deferring a Final Exam).

Extra credits

Two “extra credit” seminar/activity reports, worth 5% each, will be made available. In other words, there are 110% available in the class but grades will be calculated as if there were only 100% available. The extra credits are basically free points. Students are encouraged to take these extra credits to either boost their grades or to make up for missed assessments or expeditions. This way, students do not have to plead (illness, appointment, family problem, computer glitch, etc.). If they miss an assignment/assessment, extra credit reports can be used to make up. It is also a great opportunity for highly motivated students to boost their grades.

Start attending seminars/conferences early in the semester to gather material for the extra credit reports; don’t wait until it is too late! Presentations on topics in ocean sciences or in other science fields (biology, geology, chemistry, physics, etc.) are eligible. Note that guest lectures presented as part of the course are NOT eligible for extra credit reports. You need to attend an external event, conference or seminar. Note that many online seminars are now available through groups such as NOAA or other universities.

Format: Seminar reports must be 1.5 to 2 pages (single-spaced). They will include: (1) a full description and clear overview of the event/seminar attended, (2) a clear outline of the major activities/findings, (3) a critical assessment of their strengths and limitations. In that last segment, you must state what you thought of both (3a) the contents and (3b) the delivery. There will be deductions for grammar and spelling errors. Extra credit reports may be submitted at any time to the Assignments folder. A maximum of two extra credit reports can be submitted during the semester, with one during the first half of the semester and one during the second half. Submissions will be accepted until 11:59 pm on the due date listed on Brightspace.

Please submit only doc/docx, rtf or pdf files and include your name and student number on your submission.

Evaluative Criteria

The University regulations for grading can be located at:
http://www.mun.ca/regoff/calendar/sectionNo=REGS-0661

Academic Integrity

Academic integrity is a foundational component of academia. The Center for Academic Integrity (CAI) defines academic integrity as "a commitment, even in the face of adversity, to five fundamental values: honesty, trust, fairness, respect, and responsibility. From these values flow principles of behavior that enable academic communities to translate ideals to action” (CAI, Fundamental Values Project, 1999).
To ensure that learning and scholarship continue to thrive as described, academic communities cannot condone acts of academic dishonesty, such as cheating, misrepresentations, or plagiarism.

To prevent such offenses, you as a student attending Memorial are responsible to familiarize yourself with the Memorial University of Newfoundland's General Academic Regulations on Academic Misconduct (Section 5.11), specifically noting the list of Academic Offences outlined in (Section 5.11.4).

Please Note: Submitted works will be monitored for academic offenses.

Course and Institutional Policies

Basic skills requirements

Students enrolling in a science class at Memorial are expected to do university-level work. It is assumed that you are proficient in English (reading and writing at the university level) and that you are familiar with basic mathematics. If you do not have these basic skills, it is recommended that you obtain them before you enroll in this course. Furthermore, all students are required to use a computer and the Internet in this course. If you do not have computer access and Internet skills, then it is highly recommended that you obtain them before you attempt this course.

University-level expectations

Students fresh out of high school may be a little shocked and initially confused by what is expected of them and what is not provided to them in their first semester at university. Be reminded that you are entirely responsible for knowing what is expected of you in a course, including course requirements, course materials, assignment schedule, study hours needed, and so on. I assume that you have determined exactly how much time you have in your life and work schedule to devote to this and other classes. When in doubt, you are expected to ask questions, seek answers, get help, find the right people to guide and assist you, and, generally, to be in charge. There are numerous resources at Memorial that you can tap into for assistance (see below), including your instructor. But it is ultimately up to you to acknowledge that you need help and to get help if you need it.

Drop policy

It is the sole responsibility of the student to drop the course. Do not rely on the instructor. Failure to drop a course before the prescribed deadline may result in a failing grade (F) for the semester which may affect your program.

Study requirements

Students are expected to dedicate at least six (6) hours per week for this course, excluding review/study. As a general guideline, you can expect to devote about 120 hours or more to this course over the semester (14 weeks), including class time, online time and study time. I assume that you are spending the appropriate amount of time towards your studies. Failure to properly budget your time may severely hamper your success in this course. Make sure you consider your time constraints when signing up for this course and any others.
Inclusion, Equity and Caveats

Students with Disabilities

Memorial University 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. Memorial works in collaboration with the Glen Roy Blunden Center, to support students with disabilities. I encourage any class participant(s) who may require physical or academic accommodations to notify me privately.

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.

Support Services

Support Services offered to students at Memorial University include:

- Aboriginal Resource Office https://www.mun.ca/aro/
- The Blundon Center https://www.mun.ca/student/about/Blundon-Centre.php
- The Internationalization Office http://www.mun.ca/isa/main/
- Student Affairs and Services http://www.mun.ca/student/
- Student Wellness and Counselling Center http://www.mun.ca/counselling/home/
- The Writing Center http://www.mun.ca/writingcentre/

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Additional Information

Online student support: http://www.delts.mun.ca/students/
Library services: http://www.library.mun.ca/
Welcome to Memorial: http://www.mun.ca/become/undergrad/explore/index.php