

# GEOL 1033 N2: General Oceanography

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## Syllabus

### Course Overview

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**"My first view - a panorama of brilliant deep blue ocean, shot with shades of green and gray and white - was of atolls and clouds..."** Charles Walker, NASA Payload Specialist, 1984-85

When viewed from space, the Earth's surface appears to be predominantly covered by water. In fact, the world's ocean covers 71% of the Earth's surface and contains 97% of the planet's water. An estimated 50 to 80% (UNESCO) of all life on Earth is found under the ocean surface. Not only does the ocean contain almost all of the planet's water and host at least half of all life, but it also plays an integral role in many of the Earth's systems, including climate and weather. This course examines and explores this vast, under-explored part of our planet, focusing on the physical, chemical, and biological features.

### Instructor

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Christa Pufahl

First off, I would like to welcome you to the course (General Oceanography - Geol 1033) and introduce myself. My name is Christa Pufahl and I am an instructor in the Department of Earth and Environmental Science. I'm trained as a geologist, more specifically, as a sedimentologist, which is a term for someone who studies sediments (sand, silt, clay), the structures that sediments form, and the environments that sediments are deposited in. It is a bit like being a detective, I go around and gather clues (by looking at rocks and rock outcrops) and then take these clues, put them altogether, and develop a 'history' of that area. By looking at sedimentary structures in an actual rock, I can tell if the sediment (sand) forming these structures was deposited by a river, ocean, glacier or wind. There's a lot more to it, and if you have questions, feel free to ask me.

Studying the ocean is an important component to sedimentology. Sediments are created in the ocean, sediments are transported away from the ocean, and sediments are transported back into the ocean where they are deposited. Sediments (in many shapes, forms and composition) form beaches and other coastal features, and sediments can be found in the deepest parts of the ocean. Some marine organisms also play a vital role in the creation of sediments.

Feel free to contact me by e-mail at any time if you have any questions, comments or concerns. I may not get back to you immediately, but I will get back to you.

I hope that you enjoy the course and learn at least a little bit about the ocean. If you are ever unfamiliar with or having difficulty with a term or concept don't hesitate to get in touch with me.

#### **Contact Information:**

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Acadia University  
Wolfville, Nova Scotia  
CANADA B4P 2R6

E-mail: [christa.pufahl@acadiau.ca](mailto:christa.pufahl@acadiau.ca)

### Course Materials

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**Text: *Essentials of Oceanography*** by Alan P. Trujillo and Harold V. Thurman; the 12<sup>th</sup> edition is recommended, earlier editions may also be used.

See the [student handbook](#) for ordering information.

Material in this course will be presented by PowerPoint lectures. Specific topics may be supplemented with information from other websites. Readings are given for every module, and self-administered quizzes are found at the end of every module. Additionally, five (5) assignments further comprehension of the material present in this course (see below for description).

## Evaluation

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Marks in this course are broken down in the following manner.

Quizzes (12)	10%
Assignments (5, each worth 12%)	60%
Final Exam	30%

Quizzes are found at the end of all 12 modules. They are self-administered and are an opportunity to make sure that you understand the material. The quizzes are all multiple choice.

Assignments are found at the end of: Module 3 (Assignment 1), Module 6 (Assignment 2), Module 9 (Assignment 3), and Module 12 (Assignments 4 and 5). Assignments 4 and 5 can be worked on prior to Module 12. Assignments are available as a Word file and can be answered directly in the Word document. *Please remember to include your name and/or student number, and assignment number on the assignment and keep a copy in the event the original is lost. An important thing to include on your assignment and in its file name is your name. I can sometimes download Assignment 3 from 3 different students on the same day, if there are no names on the assignment or in the file name, and all are called 'Assignment 3' it can be tricky to figure out which assignment belongs to which student.*

The final exam consists of 150 questions. 100 are multiple choice questions, 40 are T/F questions. The final is weighted towards material that is covered in the PowerPoint lectures, although some questions related to the readings may be included. If you have any other questions about the final, don't hesitate to contact the instructor.

## Exam

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How to apply: Complete the [Application for Examination](#)

### Proctored at Acadia

- The final exam in an online course must be passed to successfully pass the course unless otherwise stated in the assessment section of the course syllabus. There are no rewrites or supplemental examinations at Acadia University.
- Examination requests must be received one month prior to the date you wish to write your examination.
- Course requirements must be completed to the satisfaction of your instructor.
- **Graduating Students Note:** If you are graduating in Spring Convocation you must write by April 15th. If you are graduating in the Fall you must write by September 15th.

### Proctored at Another Location

If it isn't practical to take your exam at Acadia, off-campus exams can be written at another university or college. Arrangements for an examination may be made through the Registrar's Office or the Continuing Education office of most universities and colleges. If it is not possible to write your exam at an approved institution, please contact us for assistance.

- **All fees associated with examinations written at other locations are your responsibility.**
- Some courses may require specific software or internet accessibility at the off-campus examination location.

## Student Handbook

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You are responsible for becoming familiar with the contents of the Student Handbook. It contains important information about scheduling examinations (if applicable), applying for extensions, withdrawing from your course, ordering books, and computer and library services available to you. If you have questions about the policies outlined in the [handbook](#), contact:

Open Acadia  
21 University Avenue (Rhodes Hall)  
Wolfville, NS B4P 2R6

Phone: 1-800-565-6568

Fax: 902-585-1068

Email: [openacadia@acadiau.ca](mailto:openacadia@acadiau.ca)

## Academic Integrity

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Academic integrity demands responsible use of the work of other scholars. It is compromised by academic dishonesty such as cheating and plagiarism. A student who is uncertain whether or not a course of action might constitute cheating or plagiarism should seek in advance the advice of the instructor involved.

- Cheating is copying or the use of unauthorized aids or the intentional falsification or invention of information in any academic exercise
- Plagiarism is the act of presenting the ideas or words of another as one's own. Students are required to acknowledge and document the sources of ideas that they use in their written work.
- Self plagiarism is also a form of plagiarism. It is the presentation of the same work in more than one course without the permission of the instructors involved.
- A student who knowingly helps another to commit an act of academic dishonesty is equally guilty.
- Penalties are levied in relation to the degree of the relevant infraction. They range from requiring the student to re-do the piece of work, through failure on that piece of work, to failure in the course, and to dismissal from the university.

## Course Schedule

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You have 6 months to complete this course. I often tell students to work at a pace with the goal of completing a module (12 modules) every week to 10 days. You may set your own schedule, but if you intend to complete the course in less than 3 months, please give me a heads up.

Try not leave all of your course work until a few weeks before your completion date. Although I will make every effort to accommodate your schedule within reason, I need time to grade assignments and mark exams.

### **Module Descriptions**

**Module 1 - Introduction and History**

- introduction to the ocean, concept of one world ocean
- brief history of oceanography
- what is oceanography

**Module 2 - Origins of the Solar System and the Earth; Plate Tectonics**

- the Big Bang and birth of the Solar System
- birth of the Earth and early ocean
- Earth's internal structure and plate tectonics

**Module 3 - Ocean Basins and Sediments**

- if you drained out all the water, what would the ocean basin look like?
- nature of ocean basins and ocean floor topography
- regions of the ocean floor
- origin, classification, and distribution of marine sediments

**Module 4 - The Nature of Seawater**

- why is sea water salty?
- properties of sea water, ocean chemistry, and structure

**Module 5 - Atmospheric Circulation**

- atmosphere composition and structure
- Coriolis effect
- interaction between atmosphere and ocean; El Nino
- winds and storms

**Module 6 - Oceanic Circulation**

- ocean circulation patterns
- surface currents
- deep water currents
- how weather and climate are affected by oceanic circulation

**Module 7 - Waves**

- what is a wave
- wave creation and propagation
- classification and behaviour of waves
- tsunami

**Module 8 - Tides**

- what is a tide and the different types of tides
- generation of tides, what roles does the Sun, Moon and Earth play in creating tides
- tidal processes
- tides in Nova Scotia

**Module 9 - At The Beach (Coastlines)**

- a close look at where the land and ocean meet
- coastal classification
- coastal processes - how the coast is reshaped
- erosional and depositional features
- sea-level changes
- estuaries and atolls

**Module 10 - Ocean Life I**

- introduction to biological oceanography
- classification of marine life
- marine productivity
- phytoplankton and zooplankton
- marine plants

**Module 1 - Introduction and History**

- introduction to the ocean, concept of one world ocean
- brief history of oceanography
- what is oceanography

**Module 11 - Ocean Life II**

- marine invertebrates - different phylums
- marine vertebrates
- characteristics of marine mammals
- marine communities

**Module 12 - Ocean Resources; The Ocean and the Environment**

- renewable and non-renewable marine resources
- sustainability of marine resources
- environmental concerns

**Recommended Readings**

A list of recommended readings can be found on ACORN.

[Click here to return to the Module](#)

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