Physics 3300 - Winter 2025

Intermediate Physical Oceanography

General Information
Instructor: Dr. Joe Fitzgerald
Office: C4062
Email: jgfitzgerald@mun.ca (Note: Please do not use Brightspace messenger, and when emailing me please include PHYS3300 in the email subject line. Also please carefully check my email address before sending as many students misspell my email)
Course time and location: Slot 20 - T-R 3:30-4:45 PM (Room C2045)
Help centre slot: 2-3PM on Thursdays (a great time to ask assignment questions!)
Office hours: By appointment (email me)
Course website: Brightspace
Prerequisites and co-requisites: PHYS2053 and MATH2000 or registration in Academic Term 5 of the Ocean and Naval Architectural Engineering Program

Evaluation Scheme

- 5 Assignments: 5% each (Total 25%)
- 2 Term tests: 15% each (Total 30%)
- Final exam: 45%

For **tentative** distribution and due dates, see below. Students are encouraged to collaborate on assignments but must write up their own solutions.

Evaluation Schedule

- **Assignments**
  - Assignment 1: Distributed Jan. 14, Due Jan. 28
  - Assignment 2: Distributed Jan. 28, Due Feb. 7
  - Assignment 3: Distributed Feb. 13, Due Feb. 21
  - Assignment 4: Distributed Mar. 4, Due Mar. 21
  - Assignment 5: Distributed Mar. 27, Due Apr. 9
- **Term Tests**
  - Term test 1: Feb. 11
  - Term test 2: Mar. 25

Tentative topics

- Review of mathematics and coding background
- Equations of motion for a uniform fluid
- Surface gravity waves
- Ocean bathymetry
- Density stratification

- Internal gravity waves
- Fourier analysis of waves
- Convection

Textbooks
The course will not follow any particular textbook, but a useful reference is
Introduction to Physical Oceanography by Stewart, 2015.
The book is available online at https://open.umn.edu/opentextbooks/textbooks/introduction-to-physical-oceanography
Other useful books include 'Introduction to Physical Oceanography: A Short Course for Beginners' by our own Iakov Afanasyev, and 'Atmospheric and Oceanic Fluid Dynamics' by Geoff Vallis.

Students with Disabilities
Memorial University of Newfoundland is committed to fostering equitable and accessible learning environments for all students. Accommodations for students with disabilities are provided in accordance with the Accommodations for Students with Disabilities Policy (www.mun.ca/policy/site/policy.php?id=239) and its related procedures. Students who feel that they may require formal academic accommodations to address barriers or challenges they are experiencing related to their learning are encouraged to contact Accessibility Services (the Blundon Centre) at the earliest opportunity to ensure any required accommodations are provided in a timely manner. You can contact Accessibility Services (Blundon Centre) by emailing blundon@mun.ca.

Academic Integrity
Students are expected to adhere to those principles which constitute proper academic conduct. A student has the responsibility to know which actions, as described under Academic Offences in the University Regulations, could be construed as dishonest or improper. Students found guilty of an academic offence may be subject to a number of penalties commensurate with the offence including reprimand, reduction of grade, probation, suspension or expulsion from the University. For more information regarding this policy, students should refer to the University Regulations for Academic Misconduct (Section 6.12) in the University Calendar.

Land Acknowledgement
We acknowledge that the lands on which Memorial University's campuses are situated are in the traditional territories of diverse Indigenous groups, and we acknowledge with respect the diverse histories and cultures of the Beothuk, Mi'kmaq, Innu, and Inuit of this province.

Note on the use of AI
All submitted work in the course must be original work completed by each student individually. Collaboration is encouraged on assignments but students must write up their own solutions. Use of AI tools such as ChatGPT is permitted to help understand the material and can be very useful as a learning tool, but you may not submit work produced by AI as your own work. Please also be aware that ChatGPT and similar tools are prone to errors, especially related to physics and other scientific and mathematical topics, and exercise caution when using these tools.

Missed evaluations
If you have a valid reason for missing an exam or other evaluation please contact me in advance and we can discuss a solution on a case-by-case basis, normally by moving some marks onto future evaluations such as the final exam. If you miss an exam unexpectedly, for example due to illness, please contact me as soon as you are able and we can discuss a solution, again most likely involving moving marks onto later evaluations.