

Syllabus

OCN 667 Advanced Geophysical Fluid Dynamics I

This course covers the theoretical foundations of geophysical fluid dynamics.

Prerequisites are:

Marine Hydrodynamics (OCN 662)
Ocean Waves I (OCN 660)
Introduction to Geophysical Fluid Dynamics
Numerical Modeling
Otherwise, the consent of the instructor is required.

The class consists of lectures by the instructor, classroom discussions, and presentations by students. Discussions and presentations will be based on the book “The Equations of Oceanic Motions” by Peter Müller
Cambridge University Press, ISBN-13 978-0-521-85513-6
<http://www.cup.cam.ac.uk/catalogue/catalogue.asp?isbn=0521855136>

Grading will be based on presentations, homework assignments, and participation in classroom discussions.

Student learning outcomes:

By the end of the class students should be able to:

- List the main physical processes that affect geophysical flows.
- Classify the most common dynamic equations.
- Distinguish between geometric, thermodynamic and dynamic approximations.
- Understand theoretical reasoning in geophysical fluid dynamics.
- Rigorously derive theorems and implement approximations.