

## Introduction to Geophysical Fluid Dynamics (3 Credits)

001-2-4027

*Pre requisite:* Vector analysis, basic calculus, and basic ordinary and partial differential equations.

Lectures	Exercise	Laboratory	Field Trip
3			

- The course requirements include the submission of exercises.
- The grade is determined by a final exam/project at the end of the semester.
- The course usually includes oceanographic cruise in the Gulf of Eilat.

The Course includes:

1. Introduction
2. The governing equations
3. Surface gravity waves
4. Geostrophic flow and vorticity dynamics
5. The Ekman layer
6. Linear barotropic waves
7. Stratification
8. Internal waves
9. Large scale ocean circulation
10. Layered models
11. Stratified geostrophic dynamics

**Lecturer:** Y. Ashkenazi

### **Recommended Reading:**

Benoit Cushman-Roisin, *Introduction to Geophysical Fluid Dynamics*, Prentice-Hall (1994).

Adrian E. Gill, *Atmosphere-Ocean Dynamics*, Academic Press (1982).

James R. Holton, *An Introduction to Dynamic Meteorology*, Elsevier Academic Press 4<sup>th</sup> edition (2004).

Joseph Pedlosky, *Waves in the Ocean and Atmosphere*, Springer (2003).

Joseph Pedlosky, *Geophysical fluid dynamics*, 2nd edition, Springer (1986).

David Randall, *The General Circulation of the Atmosphere*,

available at <http://kiwi.atmos.colostate.edu/group/dave/at605.html>