AMP 575 – Applied Ocean Hydrodynamics, Prof. Jorge Willemsen

Goals:

This is a fundamental course on fluid mechanics focusing on the key analytical concepts necessary to form a solid foundation for later work in specialized applications.

Material:

Eulerian and Lagrangian formulations of the equations describing fluid motion; Streamlines, stream functions, vorticity and circulation; Kelvin circulation theorem; Laminar flow; Inviscid flow; Non-turbulent viscous flows; Boundary layers, wakes, and jets; Separation and attachment; Instabilities; Transition to turbulence in shear flows; Turbulence; Homogeneous isotropic turbulence; Turbulent shear flows; Convection; Chaos.

Assignments:

Weekly homework; mid-term and final open-book exams.

Course Grading:

Homework 50%, midterm 25%, final 25%.

Texts: