

CVEN 6833 SPRING 2005 Advanced Environmental Fluid Mechanics

<http://ceae.colorado.edu/~crimaldi/teaching/cven6833/index.html>

Instructor

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office hours: T, Th 4:45-6:00p

Lectures

location: ECCR 1B08
times: T, Th 3:30-4:45p

Prerequisites

math: Multi-variable & Vector Calculus
Differential Equations
fluids: Graduate viscous fluid mechanics

Course Description

This course expands on the basic knowledge of the Navier-Stokes equations as developed in CVEN 5313. Topics will include stratified flows, waves, and turbulence. Other topics will be scheduled according to student research interests.

Objectives

- (1) Learn to apply the Navier-Stokes equations to complex environmental flow phenomena.
- (2) Use scientific literature as part of the educational process.
- (3) Give students the opportunity to research individual topics and present them in a lecture format.
- (4) Incorporate current research topics into the curriculum.

Course Communications

I will use email as the primary means of communicating with you outside of class or office hours. I may send modifications to assignments, hints, etc., as necessary. You are responsible for checking your email on a regular basis. If you would prefer that I use an email address other than your default CU account (e.g., a Hotmail account), please send me an email to that effect.

Reading Sources (all on reserve)

Panton, R.L., *Incompressible Flow* (2nd ed.), John Wiley & Sons, 1996

Pope, S.B., *Turbulent Flows*, Cambridge University Press, 2000

Kundu, P.K. and I.M. Cohen, *Fluid Mechanics* (2nd ed.), Academic Press, 2002

Bendat, J.S. and A.G. Piersol, *Random Data: Analysis and Measurement Procedures*. Wiley, 2000

Rubin, H. and J. Atkinson, *Environmental Fluid Mechanics*, Marcel Dekker, Inc., 2001

Pedlosky, J., *Geophysical Fluid Dynamics*, Springer-Verlag, 1987

Tritton, D.J., *Physical Fluid Mechanics*, Oxford Science Publications, 1988

Turner, J.S., *Buoyancy Effects in Fluids*, Cambridge University Press, 1973