

EVHY 5670, Environmental Fluid Mechanics, Fall 2015

Clark G054, MWF 11:00-11:50

Patricia Wiberg, 215 Clark Hall, 924-7546, pw3c@virginia.edu

Office hours: Mon 2-4 or after class

TA: Rachael Johnson, rej3na@virginia.edu

Text: No required text, but I can recommend several if you are interested in owning one.

Course Web Page: Collab

Grading: Homework 25%

Midterm 20%

Final 20%

Project 20%

Lab 15%

Week	Date	Topic
1	Aug 26	Basic concepts, classification of flows
2	Aug 31	Material derivatives, acceleration, conservation of mass
3	Sep 7	Applications of conservation of mass, transport equation
4	Sep 14	Conservation of momentum, fluid deformation
5	Sep 21	Navier-Stokes equation, application to laminar flow, shear stress
6	Sep 28	Scaling, Reynolds number, frictionless flow
7	Oct 5	Bernoulli equation, potential flow (No class Oct 5, Reading Break)
8	Oct 12	Drag, laminar boundary layers
9	Oct 19	Turbulence and turbulent boundary layers (characteristics and initiation)
10	Oct 26	Reynolds averaging, turbulent fluxes, Reynolds stress
11	Nov 2	Law of the wall, channel flow, bottom friction
12	Nov 9	Discharge relationships, stream flow, dispersion
13	Nov 16	Stratified flows, flows with rotation (Coriolis, geostrophic flow, Ekman layers)
14	Nov 23	Coastal flows (Thanksgiving break: no class Nov 25, 27)
15	Nov 30	Coastal flows, flow in porous media
Fri	Dec 11	Take-home final due by scheduled final exam time (9am-12)