

Engineering School of Sustainable Infrastructure & Environment
EGM 5816 – Intermediate Fluid Dynamics
Credit 3 – Fall 2018

Prerequisite: ENG 3353C (or CWR 3201), MAP 2302

Lectures: TR 6-7th period, FLG 0275

Instructor: Dr. Xiao Yu
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Description: The objective of this course is to introduce the students to fluid flow phenomena that are important in natural environments. The first part of the course will be an overview of fundamental fluid dynamics principles, including the Reynolds Transport Theorem and the Navier-Stokes equations. The second part of the course, the fundamental concepts will be applied to specific problems in environmental flows.

Outline of the topic covered in the class

- Review of fundamental laws
- Reynolds Transport Theorem
- Navier-Stokes equations
- Analytical solutions of N-S equations
- Dimension Analysis and Asymptotic Analysis
- Boundary Layer Theory

Office Hour

MW 3-4pm, Weil Hall 575K

Grading

Your final grade for the course will be evaluated as follow

- Homework: 60%
- Midterm/Final exams: 20% each

Midterm and final exams will be in class closed book exams. The grading of the exam will be based on both the approach and the final answer.

Final letter grades will be assigned based on the following scale

A	100-90%
B	89-80%
C	79-70%
D	69-60%
F	59-0%

Accommodations for Students with Disabilities: Students requesting classroom accommodation must first register with the Dean of Students Office. That office will provide the

student with documentation that he/she must provide to the instructor when requesting accommodation.

Textbooks

There is no required textbook for this course. The following book is recommended:

- Ronald L. Panton. Incompressible flow (4th edition). John Wiley & Sons, Inc.
- G. K. Batchelor. An introduction to fluid dynamics. Cambridge University Press.
- P. K. Kundu, I. M. Cohen and D. R. Dowling. Fluid Mechanics (6th Edition). Academic Press.
- Fluid dynamics videos, National Committee for Fluid Mechanics for Films
<http://web.mit.edu/hml/ncfmf.html>