

## Course Details

### Instructor

My name is Stefan LLEWELLYN SMITH. My e-mail address is [sgls@ucsd.edu](mailto:sgls@ucsd.edu). If you have a question, it's easiest to talk to me before or after class, or come to office hours.

### Schedule

Lectures MWF 11–11:50 pm in PCYNH 120. Office hours (MAE210A/CENG210A and MAE294B/SIOC203B): I will aim to be available MTuThF 9–10 am, probably MF in EBU II 574, TuTh in Keck 365 (SIO). TA: Yue (Cynthia) Wu [yuw099@eng.ucsd.edu](mailto:yuw099@eng.ucsd.edu). Office hours: W 1–2 pm in EBU II 378. Problem classes: W 2–3 pm in EBU II 370 and Th 3–4 pm in EBU II 305.

### Website

See top of page. Homework, solutions and other useful information will be posted on the website.

### Semi-required text

The book for the class is Fluid Mechanics (3rd edition) by Kundu and Cohen, Elsevier Academic Press. Other books you might find useful:

*Elementary Fluid Dynamics*, D. J. Acheson, Oxford University Press. Very clear and concise.

*Physics of Continuous Media*, B. Lautrup, IoP Press. Good introduction to continuum mechanics written by a physicist.

*An Introduction to Fluid Dynamics*, G. K. Batchelor, Cambridge University Press. Not as introductory as one might wish.

*Hydrodynamics*, Sir Horace Lamb, Cambridge University Press/Dover. Hard-core book from the 1930s. Read it and be impressed.

### Syllabus

Introduction

Vector analysis and tensors

Fluid kinematics

Conservation laws

Bernoulli's theorem

Irrotational flow  
Exact solutions of the Navier–Stokes equations  
Dimensional analysis

## **Homework**

There will be six or seven homeworks. They will be posted a week before they are due. Dates will be posted on the website. No late homework will be accepted; hand in (or get someone else to hand in) what you have done on the due date. Regrades: you should write a short explanation and turn it in to Cynthia within one week of the homework's due date.

## **Assessment**

The grade in this course is based on homeworks, a midterm, and a final exam. An approximate division is 20%, 30% and 50%, but this is by no means definite. Exams will probably be “open-note and open-textbook”, i.e. you may bring in hand-written material and the textbook. No calculators, no cell phones, no computers during midterm or final exams. There will be make-up exams except in exceptional circumstances.

Your final grade is the culmination of a quarter-long effort. I do not like giving C grades and lower for graduate courses. Please try and keep me happy.

I encourage you to discuss the material among yourselves. When it comes to assigned homework however, everything you turn in should be essentially your own. If you and a friend have worked too closely on a problem, please say so. Needless to say, collaboration is not permitted during exams.

## **Academic integrity**

See UCSD's policy on (there is a link on the class web page). Don't do it.

## **OSD Accommodation**

Please come and see me at least two weeks before exams to discuss.