SIO203C/MAE294C Spring 2020

Administration

Class times: Lectures are from 3:30pm to 4:50pm on Tuesdays and Thursdays. The recitation is scheduled from 11am to 12:20pm on Fridays. All of these will be conducted via Zoom — look for an invitation from me. There is usually a request to reschedule the recitation, and in some years this is possible. Send me am email if you have a clash `wryoung@ucsd.edu`.

Instructor: Bill Young. My office is Room 353 in the Keck building (but I won't be there) and email is `wryoung@ucsd.edu`. I won't enter into extended electronic correspondence with individual students. But for a quick question please feel free to email. This is particularly useful if you suspect there is a misprint in class notes, or if you're stuck on an apparently insoluble homework problem.

Recitations: I'll set problems for discussion in recitation each week. The recitation is not a third lecture: usually I encourage students to come to the blackboard and recite. That won't happen in 2020. But I'll try to conduct an interactive zoom session. Let's see how the first one goes on Friday the 3rd of March. The main problem is equipping students so that the class can view their handwritten working on a note pad, ipad or blackboard. — are you prepared to do this?

Hand-in problems for assessment: I'll set five or six assignments, each with a few hand-in problems. Answers to the hand-in problems should be presented in latex or an equivalent mathematical typesetting program — I'll distribute a latex template via email. There is no mid-term or final — the grade is based on your satisfactory completion of the hand-in problems.

Collaboration: Discussing and working the recitation assignments with your socially distanced colleagues is encouraged. But for the hand-in assignments you should work on your own.

Website: I'll set-up a class website where you'll find assignments, the pdf notes and perhaps some copies of past exams. There are misprints and mistakes in the notes. If something is confusing or screwy it may be a mistake, and you should ask. I'll also try to use the UCSD Canvas

to duplicate the class website. Let's see how that goes — if I become confident with Canvas we can abandon the website.

Office hours: I won't schedule office hours — please feel free to set up an appointment via either Zoom Skype by email.

Prerequisites and my assumptions

I'll assume that you're familiar with ordinary differential equations at the level of the summary in chapters 1, 3 and 4 of Bender & Orszag *Mathematical Methods for Scientists and Engineers*. I also assume knowledge of vector calculus e.g., aside from notational idiosyncrasies,

$$\int_V \boldsymbol{\nabla}\cdot\boldsymbol{u}\,\mathrm{d}V = \int_{\partial V} \boldsymbol{u}\cdot\boldsymbol{n}\,\mathrm{d}S \tag{1}$$

should hold neither mystery nor fear. I'll occasionally discuss examples from fluid mechanics. I'd also like to assume basic knowledge of complex analysis, such as residue calculus, contour deformation etc. I'm not sure if this is realistic — tell me.

Textbooks

I'll distribute a fairly complete set of notes. At the end of lecture 1 in those notes there is a list of reference books and textbooks on partial differential equations.