2015/2016 - Term 2

MECH 380

FLUID DYNAMICS

Instructor: Professor Gwynn Elfring
Lectures: M W F   1pm-2pm   MacLeod 228
Tutorials: Friday   2-3pm   MacLeod 228
Office hours: Wednesday 10am-12pm   ICCS 181
Final Exam: *TBA*   *TBA*   *TBA*
Course web site: *Connect*
Course discussion: *http://piazza.com*

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Academic prerequisites: Either (a) MECH 225 or (b) MATH 255 and one of CHBE 251, CIVL 215, MECH 280 and one of CHBE 241, PHYS 257.

Textbook: Introduction to Fluid Mechanics, Faith A. Morrison, *Cambridge University Press*.
- *Optional:* Supplementary reading from a textbook is strongly encouraged, you might find it clearer or find useful examples; I will follow some sections closely but will NOT assign questions from it.

Course Goals:
To develop a physical (and mathematical) understanding of the simple **external** flows.

Course Topics:
Review of vector calculus; derivation of the Navier-Stokes equations; simple laminar flows; Stokes flows; potential flow theory; boundary layers; flow around bluff bodies; compressible flow.

Course Evaluation (tentative):
1. Five problem sets (20% of course grade); *All problems may or may not be graded*
2. Two midterm exams (40% of course grade);
3. Final exam (40% of course grade);

Detailed course schedule (tentative):

[1]	Monday, January 11	HW1 posted
[2]	Wednesday, January 20	HW1 due
[3]	Monday, January 25	HW2 posted
[4]	Wednesday, Feb 3	HW2 due
[5]	*Monday, February 8*	*Family Day*
[6]	Wednesday, February 10	**Midterm 1**
[7]	*Feb 15-19*	*Reading Break*
[8]	Monday, February 22	HW3 posted
[9]	Wednesday, March 2	HW3 due
[10]	Monday, March 7	HW4 posted
[11]	Wednesday, March 16	HW4 due
[12]	Wednesday, March 23	**Midterm 2**
[13]	*Friday, March 25*	*Good Friday*
[14]	*Monday, March 28*	*Easter Monday*
[15]	Tuesday, March 29	HW5 posted
[16]	Wednesday, April 6	HW5 due

Course policy

(a) **No late homework will be accepted**. Homework assignments due at the start of class on the due date. Graded assignments will be available for pickup outside of ICCS 181 roughly 1 week after submission. Solutions to the homework assignments will be posted online.

(b) **Answer only will not receive full credit.** You must justify clearly all requisite steps required to obtain an answer. You should think of it as trying to explain to the marker how you solve the problem.

(c) **Re-grading of HWs**: You are allowed to ask for a regrade if you think we owe you some points but must be done the same week as they are returned. All regrading requests have to be made in writing on a piece of paper attached to the problem set, and submitted in class within the week it was returned. The regrade requests will be returned to you in the HW box.

(d) **Re-grading of midterm exams**: Graded midterm exams will be returned during class. You will be allowed to take a look at it and ask for a regrade before leaving class. Once you leave with the class, no regrading will be accepted. All regrading requests have to be made in writing on a separate piece of paper attached to the exam.

(e) **All exams are no notes, no books and no calculators**. This may seem bizarre, but you won't need them. The solution to the midterm exams will be posted on the class website, and the graded midterms will be available in class the following week.

(f) We will offer a **review session** at the end of the course before the final exam.

(g) There will be **no make-up exams** ('midterms' or final).

(h) **Plagiarism and cheating will not be allowed**. We will follow UBC's policy on academic misconduct as presented in the UBC calendar. **Do not cheat.** All work submitted must be entirely your own.

(i) **I may not reply to emails**. If you have a homework question, **come to office hours or go to the discussion board**. If you do send email, include MECH 380 in the subject.