

APM384H1F Syllabus

Fall 2009

Lectures: 9:10–10:00 (Mon), BA 1190, 11:10–12:00 (Wed), WB 116,
9:10–10:00 (Thu), MC 252

Tutorials: 10:10–11:00 (Wed), GB 404, 17:10–18:00 (Tue), WB 219

Instructor: Tadahiro (Hiro) Oh

Office: BA 6103, Email: oh@math.toronto.edu

Office Hours: 10:30–12:00 (Mon), 12:00–1:00 (Wed), and by appointment.

TA: Geordie Richards

Office: HU 1027 Email: georich@gmail.com

Office Hours: TBA

Textbook: *Applied Partial Differential Equations with Fourier Series and Boundary Value Problems* by Richard Haberman, 4th edition, Prentice Hall.

Note: No calculator is allowed in quizzes and tests.

Course Outline: This is an introductory course in Partial Differential Equations (PDEs): modelling physical systems with PDEs and interpreting results. We will cover Chap 1-5, and (parts of) Chap 7, 8, 10, if time permits. Topics: What are PDEs? What are solutions to PDEs? Heat equation: Derivation, Steady-state, Boundary conditions, Method of separation of variables, Initial value problems. Fourier Series. Wave equation: Derivation, Initial and boundary value problems. Sturm-Liouville problems. Further Topics: Higher dimensional PDEs (wave equations on rectangular regions, on disks), Nonhomogeneous problems (Heat equation with sources), Infinite domain Problems: Solving PDEs with Fourier transforms.

Grading Policy:	Homework & Quizzes	20 %
	Midterm (in late Oct./early Nov.)	40 %
	Final Exam	40 %

Homework will be assigned on a regular basis and there will several quizzes throughout the course. Homework is to be done in a group of (randomly assigned) five students for five (sets of) problems. Each student is responsible to write solutions for one set of problems, which counts 50 % of the HW grade, while the remaining 50 % comes from the grades of the four other students in your group. Thus, it is strongly recommended that students in the same group help each other, but each student needs to write solutions for his/her part. When you hand in homework, you must do so as a group with a cover sheet showing the names of students in a group and indicating who is responsible for which problems. **NO late homework is accepted.** Occasional quizzes will be given during the lectures, and I will make an announcement about each quiz two weeks in advance.

The midterm will be scheduled in the evening, while the final exam will be

during the time slot assigned by the university. If you believe that you can not take a term test because of special reasons, you should see me to obtain special prior permission. You must provide proper documentation. Such permission will be given only for legitimate reasons (e.g. you are on the university hockey team and have to go out of town for a competition on the day of the test.) Permission will *not* be given for reasons such as: “I have been extremely busy recently because of personal reasons and do not hav time to prepare for the test”, “I have three different tests on three consecutive days”. “I have other tests on the day of the APM384 test (which however do not create a direct time conflict with the APM384 test).” *Anyone who skips a test without prior approval will get a zero for that test* (unless absence is due to illness, properly documented.) If you can not show up for a test because of illness, you should submit your medical documentation to me *no later than one week after the day of the test.*