

APM 384: Syllabus

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Lecture times: Mondays 3-4 and Fridays 4-6
Lecture location: Monday ESB 142, Friday MC 252
Office location: ES 4145 (Earth Sciences, 4th floor)
Tutorial times: Thursday 4-5 or Fridays 3-4
Tutorial location: Thursday WB 130, Friday GB 412
Course web site: <http://individual.utoronto.ca/ortmann/APM384-14F.html>

This document contains relevant information about the Fall 2014 course APM 384 *Partial Differential Equations*. Please read it carefully.

I will assume that you regularly check your U of T email address, as required by university regulation. All important announcements will be communicated by email.

Textbooks

Required: We will mostly be using *Applied Partial Differential Equations with Fourier Series and Boundary Value Problems* by Richard Haberman, fifth edition, published by Pearson Prentice.

Recommended: For a more mathematical and rigorous treatment of some of our material, *Partial Differential Equations, An Introduction* by Walter Strauss.

Assessment

Grades in this course will be determined by a mid-term, a final exam and bi-weekly assignments that will be marked and returned to you by the TA. The final mark will be composed as follows:

- assignments 20%
- midterm 30%
- final exam 50%

No electronic aides will be allowed (or needed) in the midterm and final exam. It is the students' responsibility to ensure that the allotted exam time is available. There will be five assignments in total, and you will receive the average of the best 4 of your 5 marks.

Assignments submitted after the deadline will be given zero marks. If you feel you are unable to submit an assignment on time for medical, personal, family or other unavoidable reasons, please contact me as early as possible, but in any case well before the deadline. The only exception to this are health problems that preclude you from contacting me, in which case you should contact me as soon as you return to class. If you miss an assignment deadline or test for medical or disability related reasons, in addition to getting in touch with me you will usually need to provide at least one of the following documents:

- U of T Verification of Student Illness or Injury form
- Student Health or Disability Related Certificate
- a letter from Accessibility Services.

If you legitimately miss a mid-term or assignment I may re-assign the weight of your final grade to other assessed work.

While you are encouraged to discuss lecture material and exercises with other students, **any work that you submit must be your own**. The university takes any dishonest submissions *very* seriously. In addition to jeopardising your learning (because the exercises will help you test your understanding) you risk fairly harsh punishment that can range beyond getting zero marks for the course.

Exercises and tutorials

There will be roughly weekly exercise sheets. Most of the questions will not be assigned, but you are still strongly encouraged to attempt all of them. The TA will discuss these exercises in the tutorials, but there is little to be gained from seeing the solution to an exercise you haven't attempted.

Please note that no written solution sheets will be provided for the exercises since they are discussed in the tutorials.

Topics covered

Roughly I am hoping to cover Chapters 1-3, 5, 6 and 9-12 of Haberman, with a few extra topics. We will discuss the following:

- Characterisation of PDEs, order of a PDE.
- Initial and boundary conditions. Directional derivatives and characteristics.
- Separation of Variables
- Harmonic Functions
- Fourier Series
- Dirac's and Green's functions
- Higher-order equations

- Numerical methods

Laplace's equation, the heat equation and the wave equation will feature prominently throughout the course.

Accessibility

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability or health consideration, please feel free to approach me and get in touch Accessibility Services at (416) 978-8060, so they can advise you about the support options available. Their website is <http://accessibility.utoronto.ca>