

MATH 4310 – FALL 2012 – GENERAL INFORMATION

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Office hours: Mondays 3-5pm

Web page: <http://www.math.cornell.edu/~tsh/4310-F12.html>

Teaching Assistants.

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Lectures.

Section 1: MWF 9:05–9:55 in 207 Malott.

Section 2: MWF 11:15–12:05 in 207 Malott.

The Course. Linear algebra is a major component in the foundation of many areas of modern mathematics, and has applications across the social and physical sciences and in engineering. You have seen in calculus how to use the derivative to approximate a differentiable function with a linear one. In linear algebra, we analyze linear functions and study their applications.

This may be the first upper level course for some of you. The biggest difference you will find is that we will be more rigorous in this course than in 1000- and 2000-level courses. That means that I expect careful attention to detail on your part. You should prepare for class by reading the textbook ahead of time; I welcome your questions in class about the text. You should stop me in class if you do not understand something I have explained. Finally, you should spend significant time making sure that your homework solutions are clear and well written.

Textbook. The course text book is *Linear Algebra, An Introductory Approach*, by Charles W. Curtis. I will supplement the book with extra examples and exercises. In particular, the text largely works with real or complex numbers; we will include more general fields in our study. I expect we will spend one or two lectures per section, spelling out all of the details. We should cover the first six chapters completely and will discuss parts of the remaining chapters and applications, as time permits.

There are many other good linear algebra resources out there. Whenever you feel stuck or confused with our text, please feel free to consult alternative treatments. Reading multiple accounts of one topic is often helpful. Some other texts you might consult include

- (1) S. Axler, *Linear algebra done right*. Second edition. Undergraduate Texts in Mathematics. Springer-Verlag, New York, 1997.
- (2) S. Friedberg, A. Insel and L. Spence, *Linear algebra*. Fourth edition. Prentice Hall, Inc., Upper Saddle River, NJ, 2003.
- (3) K. Hoffman and R. Kunze, *Linear algebra*. Second edition Prentice-Hall, Inc., Englewood Cliffs, N.J. 1971.

These books are on reserve at the Mathematics Library on the fourth floor of Malott.

Warning: There will be some correlation between our text and the lectures, but we will cover material that is not in the book, and we may do some things differently. *What matters for the exams is what material is covered in lectures and in the homework!*

Academic integrity. As always, you are expected to abide by the [Cornell Code of Academic Integrity](#). This states, “A Cornell student’s submission of work for academic credit indicates that the work is the student’s own. All outside assistance should be acknowledged, and the student’s academic position truthfully reported at all times.”

Homework. There will be ten homework assignments over the course of the semester, and each one will have two components: first a typical set of **exercises** including a few numerical problems and a few proofs; and second an **extended glossary**. Assignments will be handed out on Wednesday, and will be due the following Wednesday in class. All handouts will be available on the web at

<http://www.math.cornell.edu/~tsh/4310-F12.html>

No late homework will be accepted, but I will drop your two lowest exercises grades when I compute your final homework exercises grade, and your two lowest glossary grades when I compute your final homework glossary grade.

Extended glossaries need a bit more explanation. For these, you should give a definition of the **term of the week**, give an example and a non-example (different from those given in the book), and state and prove a theorem that uses the term. I expect these should be a page or two long, depending on how small your writing is. You may \LaTeX your glossaries if you wish! More information will appear on the course website. These should be written formally – so that we could cut and paste them into a textbook. By the end of the semester, you will have a compendium of important terms and examples.

You may work together on your assignments, and you are encouraged to do so. However, you must write up your final solutions **by yourself**. Your work must be written neatly and legibly. Proofs should be written in complete English sentences. Your homework score will be determined not only by the correctness of the responses, but also by the quality of the writing.

Exams. There will be two prelims and a final exam. The first prelim and the final will be timed in-class exams. You will not be allowed to consult any books or notes, nor use a calculator.

The second prelim will be a take-home exam: you will be allowed to consult your text and your course notes, but you should not discuss the exam with your fellow students. You will have ten days (over two weekends) to complete this prelim.

The exams will take place on the following dates.

First Prelim: Friday, October 5, 2012 in your lecture.

Second Prelim: Friday, November 2, 2012 through Monday, November 12, 2012.

Final Exam: Monday, December 10, 2012, from 2pm until 4:30pm.

Warning: There will be no make-up exams, except in extreme circumstances. In the rare case that a make-up exam is granted, it will probably be an oral examination.

Grading policy. The course components will be weighted as follows:

Homework exercises – 20%

Extended glossaries – 20%

Each prelim – 15%

Final – 30%

If you have questions about homework, exams, or grades, please come talk to me during my office hours or send me email.