Math 4418 Information

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Office Hours: Tuesday 1:30-2:30 (I will also usually be around at the same time on Tuesday, and feel free to stop by anytime and see if I am free or arrange an appointment via e-mail).

Lectures: Thuesday-Thursday 12:00-1:30 in Skiles 271

Course Content

This is the first course in a two part introduction to real analysis, that is the study of functions in Euclidean space. The official departmental syllabus for this course can be found at

Analysis II -- Math 4318

In brief, we will cover differential and integral calculus of functions of a single variable and then move on to multi-variable calculus. I will be assuming that everyone is familiar with the material from Math 4317. In particular I will assume you know the material on the following outline

Outline of matrial from Math 4317

I would suggest that you read through the outline and try to recall the proofs of all the results in the outline.

Just as Analysis I, this is a proof based course. So the lectures, homeworks and exams will involve quite a lot of proofs. The reason for this is that we do not just want to learn properties of continuous functions, or how to take a derivative of a function, but why these properties and computational techniques are true. This will allow you to better understand when you can and cannot do something you "learned" in calculus. It will also allow you to expand what you currently know about calculus into other situations.

Though everyone in this class will have had at least a couple of proof based courses before this one, many students are still struggling to make the transition from a more "problems" or "recipe" oriented course. Getting comfortable with proofs (understanding their significance as well as writing them) can be difficult. The course also covers a great deal of material. Given this, many people find this a hard course. The best way to succeed in the course is to

- **Come to class.** All the textbooks mentioned below are useful resources, but there is no substitute for attending the lectures where you can hear what I am emphasizing and ask questions.
- **Work all homework problems!** On each homework assignment I will give many problems, but only ask you to turn in a few to be graded. This is so as to not overwork the grader, but if you really want to master the material in the course you need to work all the problems.
- **Copy the class notes.** Shortly after each class, copy over the class notes and make sure you understand every detail. If you find yourself not understanding some point, then see me as soon as possible. (It is hard to get everything in class given the speed we have to move through the martial, by recopying your notes and making sure you understand something before you write it down again, you will ensure that you really are on top of the material.)

Textbook

There is no required textbook for this class. I will draw material form many sources but will do my best to make the lectures self-contained.

If you would like to have a book to suppliment the material from class I would recommend

- ***Elementary Classical Analysis* by Jerrold E. Marsden and Michael J. Hoffman (2nd edition).**

You might also find the following books useful

- ***Real Mathematical Analysis* by C. C. Pugh (1st edition)**
- ***Principles of Mathematical Analysis* by Walter Rudin (3rd edition)**

The first book is very good, but very formal, while the second book is very good but very informal. I think the recommended book by Marsden and Hoffman strike a nice ballence between these two books, but all three are very good analysis books. Another popular analysis book is ***The Elements of Real Analysis* by Robert G. Bartle (2nd edition).** While I don't personally like this book as well as the others, many people find it excellent as well.

As mentioned above, I will try to make the lectures self-contained. So you do not strictly need a text book, but any of the above should provide a good suppliment to the course material.

Grading Policy

The course grade will be based on the following.

Homework: 30%
2 Midterm: 20% each
Final Exam: 30%

Homework Policy

Every week or two I will assign a set of homework problems. The homework sets will be posted by the end of Tuesday in a given week. You should check the homework web page regularly, since I will not always announce when I post an assignment. You will have one or two week to work on the problems (the exact due date will be on the problem set).

Exams

The first exam will be sometime in late February and the second one will be in early April.

Final Exam is **tentatively** scheduled for Tuesday, May 3 from 11:30 till 2:20.

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