MATH 3100: Introduction to Mathematical Analysis

MATH 3100/3100H: Introduction to Mathematical Analysis

MWF 12:40-1:30 PM Poultry Science, Room 125

Fall 2025

Current assignments/other course materials

- Static syllabus (will not be updated!)posted 8/13PDF

Course summary to date (reverse chronological order)

- 8/13 Go over syllabus. Introduction to sequences.

Course synopsis

UGA's CAPA system contains the following Course Description of MATH 3100:

> Precise description of the real number system; rigorous treatment of limits and convergence for sequences, series, and functions; continuity and the maximum and intermediate value theorems; differentiation and the mean value theorem; Taylor approximation.

Those are indeed the topics we'll aim to cover this term. But if you really want to understand what sort of fine mess/math you've gotten yourself into, it will be useful to take a step back and think more philosophically. What is this course doing in the major?

There are two answers to this, equally important. On the one hand, this course aims to introduce you to one of primary strands of mathematical thinking, "mathematical analysis." (Many would say that "algebra" and "analysis" are the two cornerstones of mathematics.) Analysis is the that branch of mathematics that grew out of calculus. So why not just call it calculus? We use a different word because we have a different focus. Calculus courses aim primarily to equip you to solve a wide range of problems. Analysis, at its most basic level, is about understanding why those solution methods make sense. That is, we want to understand the theory behind the practice.

The second raison d'être of this course is to serve as further practice for your writing of carefully reasoned mathematical proofs. **You should not expect this to be easy**; indeed, as you mature as a mathematician, you will find yourself confused a good deal of the time! (By the time you get to be a professional mathematician, you are constantl y confused.) I will do my best to guide you through the difficulties and to help you come out the other side. Of course, this depends a great deal on your own engagement with the material --- both in class and in office hours.

OK, that's 3100... but what about 3100**H**? Everything just discussed applies --- just moreso! As a student in 3100H, you will be asked to work additional problems on the homework assignments, meant to deepen your understanding of analysis and/or strengthen your understanding of mathematical logic and proof struture. 3100 students may attempt these problems for extra credit.

Textbook

Our primary resource will be the MATH 3100 course notes developed by UGA Professor Emeritus Malcolm Adams. You may download the notes here. These notes were written with this course in mind and we will follow them closely for about 75% of the semester.

Office hours

This is a difficult course! There is no shame (far from it!) in seeking help when you get stuck. I strongly recommend that you show up at office hours (times TBD); even better, show up and bring a friend! Note that these are intended as collaborative problem solving sessions. As such: You should expect me to give hints and to follow up on ideas you tried, not to simply telegraph answers.

Both at office hours and in class, you should expect that your input will be treated respectfully, by myself and by your classmates. Turning it around, you are expected to show respect and understanding for your classmates' ideas. Kindness is important --- everywhere and always!

Exam dates

There are three in-class midterm exams as well as a final exam.

- Midterm #1: Friday, September 19
- Midterm #2: Friday, October 17
- Midterm #3: Friday, November 21
- Final exam: Wed, December 10, 12:00-3 PM (usual classroom)

No make-up exams will be given. The final exam is **cumulative**.

Attendance/ Homework /Exam Policies

Your grade is made up of the following weighted components:

- Each midterm: 15% (total of 45%)
- Homework: 25%
- Final exam: 30%

You are expected to participate in class. In particular, attendance in this course is **required**. More than four unexcused absences may result in you being withdrawn from the course. Keep me posted whenever you have a conflict that requires you to miss class and this should not be an issue.

All exams are in-class, closed book, and closed notes.

Homework will be collected about once each week. Late homework will not be accepted. (If you have a need to turn in HW early, that can be arranged.) Your lowest HW score will be dropped at the end of the term.

On homework, collaboration is allowed and in fact is very much encouraged. Mathematics wouldn't be nearly as much fun if we couldn't talk about it with other people! However, copying (from a textbook or another student), web searches, and AI tools (such as ChatGPT) are not allowed, and you must write your own final solutions independently. Keep in mind that by entering UGA, you have already agreed to abide by the UGA Honor code described in detail at https://honesty.uga.edu/Academic-Honesty-Policy/.

In practice, what this means that you may discuss homework problems and their solutions with your classmates, but you may not turn in a solution unless you understand it yourself. A reasonable rule of thumb is that you should be able to explain your solutions verbally to me (in all their gory detail) if requested to do so.

Special accommodations

Students with disabilities who may require special accommodations should talk to me as soon as possible. Appropriate documentation concerning disabilities may be required. If you plan to request accommodations for a disability, please register with Accessibility and Testing services. They can be reached by visiting Clark Howell Hall, calling 706-542-8719 (voice), or by visiting https://accessibility.uga.edu/.

FERPA Notice

The Federal Family Educational Rights and Privacy Act (FERPA) grants students certain information privacy rights. See the registrar's explanation at reg.uga.edu/general-information/ferpa/. FERPA allows disclosure of directory information (name, address, telephone, email, major, activities, degrees, awards, prior schools), unless requested in a written letter to the registrar.

Disclaimer

The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary.