Course Objective

Our objective this quarter is once again twofold. First, we wish to complete our extension of calculus to vector-valued functions of several variables. Topics here include differentiation, integration, Taylor series and Implicit Function Theorem. This is all compulsory for a class in “advanced calculus”.

From there, though, further topics are largely up to us. Candidates include notions of integration different from Riemann integration, analysis on metric spaces, abstract functional analysis, Inverse Function Theorem, Fourier analysis and lots of other options. We’ll decide when the time is right.

Methodology

As it has been all year, our high ambitions will necessitate various vehicles for progress.

1. **Discussion.** Class time will be spent discussing and working on mathematics. Your engagement in the discourse is vital. You may be called upon to offer your thoughts. You will get out of this class only what you put in.

2. **Homework.** Homework is assigned on Fridays and due the subsequent Friday. Homework is by far the most important aspect of this course. Ours is a beautiful and powerful subject, but there is a cost in sweat and tears to sharing in its delights. Immerse yourself in your work, be patient and persistent in your efforts, and do not settle for a passing acquaintance. Your rewards shall be myriad.

3. **Examination.** There will be two midterms and a final exam at the end of the quarter.

4. **Query.** Two students will be drawn randomly for a daily query at the beginning of each class.
Grading Policy

The two midterms and homework will each count 20%, the final will count 35%, and the query will count 5%.

Office Hours

Our in-class discussions will likely be the proverbial “tip of the iceberg.” To facilitate sustained mathematical discussion, there will be additional times to meet throughout the week.

- T 9:30-11:00.
- R 9:30-11:00.
- By appointment.

Exam Dates

- Midterms:
  - Exam 1 Friday, April 25th
  - Exam 2 Friday, May 23rd
- Final Exam:
  - Friday, June 13th, 1:10pm-4:00pm

Academic Integrity

It is my opinion that there is hardly any human act more satisfying or important than the sharing of knowledge. I therefore consider the classroom and the university at large to be hallowed ground, well deserving of all the humility and respect that we would afford our other most sacred places.

Please refer to the University’s policy on cheating and plagiarism found in the Campus Administration Manual, Section 684.

In short: be sensible, respectful and mindful of the integrity of the system we are all so lucky to share.