



MTH 433T: Advanced Calculus

Zoom policy: This semester we return to in-person teaching. In exceptional cases (i.e. if I feel sick, or if I am out of town for a conference) the lecture will be broadcast on Zoom. We won't do both things simultaneously.

Textbook: Terence Tao, *Analysis I*, third edition, Springer. It's a lovely book, and if you want to know more (beyond my course), the same author, who is perhaps the finest mathematician of our times, also wrote *Analysis II*.

Content: Tentative outline is:

- Chapters 1,2,3,4 (introductory): 3 weeks
- Chapter 9, 10, 11: 4-5 weeks.
- Rest of the book: time permitting

Grading policy:

- Two midterms and a final; the final weighs double. Do not ask me when the final is, because the date is not decided by me, but by the university — which puts it online at some point in the semester.
- Makeups will be given only in case of documented medical excuse. Please inform me via email.
- Homework is typically assigned in class and is to be viewed as a preparation for the midterms. It does not influence your grade directly, but (like the class participation!) it plays an important role in determining final grades, especially in borderline cases. If you see a mistake at the blackboard, help me correct it!
- Cooperation in homework is allowed, as long as you indicate it clearly on top. (e.g. “Solved exercise 2 together with Luigi and discussed the solution of exercise 4 with Mario”.) It is not allowed in tests. The usual UM honor code applies. If you do not know an exercise in an exam, leave it blank!, you still have a chance to get an A. Copying the solution from a website results instead in an F, so it's never convenient - and the department often finds out, as we intensified the efforts and the automated searches.
- The following is a standard clarification I write in any syllabus (particularly important if you are freshmen; whereas if you are seniors, probably you have figured this out already).

“This is a university, not an elementary school, and I am a professor, not your personal trainer. What's the difference? If pupils don't want to study, it is up to the teachers to push them, otherwise they are just bad teachers. Similarly, if I hire a personal trainer to run a marathon, but I don't make it, this is a failure both for me *and* for the trainer. Instead, if a student doesn't put any effort into a university course, the student gets an F, but the professor is not at all blamed for it. On the contrary, a university is blamed if it graduates people who are clueless. Here students are treated as grown-ups, and we respect their choices. My goals/duties are (i) to help you learn by explaining the best way I can to those who are willing to listen to me, and (ii) to certify to society (on behalf of UM) whether you master the topic or not. Instead “(iii) to pass you all with an A” is **not at all** in my list of goals. So don't ask me to tell you the test questions in advance: I am aware that it would be great for goal (iii), but it would spoil goal (ii). Explaining math gives me joy, but you have to do the learning part yourselves. For example, the book has many exercises: Consider them ‘free game’ for training, as learning is an **active** process. It is all up to you!, we presume you are here because you want to learn, and because you want to work hard to deserve a U Miami degree: your life is in your hands.”

General rules:

- Questions and feedback during class are always welcome. You are also welcome to send me emails, though remember that for your math questions I have office hours in which I am available. If you send me an email in the middle of the night, perhaps you won't get an answer by early morning. Also, you don't want to send me emails like "hey, is there any homework due today?". What you want to do is take the contact of a classmate on the first day, and then ask them.
- (Virtual) attendance to office hours is not compulsory, but recommended. I have seen tremendous progress in people who come to office hours every week (and I grade in single blind, so I didn't intentionally raise their grades). Showing up by the dozen with plenty of questions the day before the test is not efficient; please consider the office hours when you have the first doubts. Plan ahead!
- Tests are designed to cover the material explained in class; you are expected to keep track of the topics presented. If I never mentioned it in class, it's not going to be on the test. In contrast, what I covered in class but is not in the book, can appear in the test.
- Any material sent to me should be in PDF format. If you start off your emails with a "Dear Bruno", or your questions with "Bruno", it is completely fine by me, and I actually prefer it. Let me know how you would like to be called, if this differs from your first name: it will take me some weeks to remember, because I am forgetful, but at some point I will learn.

With this, I wish you a lovely Fall semester here at The U!



Bruno Benedetti
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