UNIVERSITY
OF MIAMI

Dr. Bruno Benedetti
Office hours: Tue 10:30–12:30, via Zoom
(or by appointment: bruno@math.miami.edu)
Class: TuTh 4:20–5:35

MTH 461S: Survey of Modern Algebra

Zoom policy: When in Zoom, students are encouraged to keep their webcam on, but I am not going to make this compulsory. Per university policy, students are not allowed to record the zoom lectures. The zoom link is not public; it will be shared with the students in a separate email.

Textbook: My lecture notes *Introduction to Algebra: Rings First* are freely available on my website, at the address https://www.math.miami.edu/~bruno/algebra2.pdf. These free notes cover an entire year of material, so do not be scared by the amount of stuff present, I will cover about a third of it. If you want a book with plenty of exercises, I suggest Cooperstein, *Introduction to Groups, Rings, and Fields*. Caution: Cooperstein does "groups first", so we start from the second half of his book. (I taught it both ways: usually students prefer rings first, but of course the order doesn't really matter.) Buying Cooperstein's book is not compulsory.

Content: Tentative outline is:
- Preliminaries: 2 weeks
- Rings: 4-5 weeks
- Fields and field extensions: 3 weeks

Grading policy:

- Two midterms and a final; the final weighs double. The date of the final 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 sometimes 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 feel like you need more homework, please go to Cooperstein's book; homework is like training, and as such, the amount of workload necessary is something you should figure out and customize, based on the way you learn.
- 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? When you are in elementary school, if you don't want to study, it is up to the teachers to push you, otherwise they are bad teachers. When you run a marathon, if you hired a personal trainer to make it, but you don't make it to the finish line, the *trainer* has failed. Instead, if you don't put any effort into a university course, you might get an F, but it is important that you understand that the professor is not at all blamed for it. On the contrary, a department is blamed if it graduates people who are clueless. So: 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** 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. This course **is** difficult; it's normal that you find it so. If you see a mistake at the blackboard, help me correct it! 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 it's not because I wanted to raise their grades). Showing up by the dozen with plenty of questions the day before the test is, in my experience, not efficient; please consider the office hours when you have the first doubts. Please 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 (even if it's in the book.) In contrast, what I covered in class but is not in the book, can appear in the test. This second case is rare though, because for this particular course, the book is written by me, and taken off my UM lectures; so usually if I explain something new, I update the book. Please refresh the book webpage from time to time.
- 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 Spring semester here at The U!

Bruno Benedetti
Assistant Professor