



MTH 761P: Abstract Algebra I

Zoom policy: Office hours will be either in person, in my office (Ungar 533), or on Zoom, with camera on. Due to international travels, the classes of the first week will be on Zoom. The zoom links are not public and will be shared in a separate email.

Textbook: My lecture notes *Introduction to Algebra: Groups First* are freely available on my website, at the secret address

<https://www.math.miami.edu/~bruno/algebra3.pdf>. These free notes completely cover what I plan to teach in MTH761, what I would teach in MTH762, and even some extra stuff, so don't be scared by the amount of material. A textbook I recommend for further reading is Shafarevich, *Discourses on Algebra*, Springer. If you want a book with plenty of exercises, I suggest Cooperstein *Introduction to Groups, Rings, and Fields*.

Content: This is Part I of a yearly course. The tentative outline is:

- Preliminary: 2 weeks.
- Groups: 5 weeks.
- Vector Spaces: 2 weeks.
- Time permitting, I will just sketch some of Ring Theory.

Grading policy:

- Two midterms and a final; the final weighs double. I grade in single blind.
- Makeups will be given only in case of documented medical excuse. Please inform me via email.
- Homework will be assigned in class, also in the form of completing proofs. (You are supposed to keep track of the exercises, I do not keep a list.) We will use one of the following two options: (a) the homework will be submitted as PDF via Blackboard, annotated by a grader, and returned to you via Blackboard, or (2) in case we do not have a grader, I will do a collective solution in class in some extra hours. Either way, handing in the solution is not compulsory: I view homework as a preparation for the midterms.
- Class participation and homework do not influence your grade directly, but they play an important role in determining final grades, especially in borderline cases.
- All students are bound by the Academic Integrity Policy, which is intended to promote and support an atmosphere conducive to learning. Each student's work is to be their own unless express permission is given by the instructor. Additionally, while students are bound by the policy, faculty are also bound to report violations as offered in the policy.
- Follow up to the previous UM-dictated lines: For me 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, where the usual UM honor code applies. Personal hint: If at the exam you do not know how to solve an exercise, leave it blank!, you still have a chance to get an A. Copying the solution from any website, instead, results in an F, so it's never convenient - and the department nowadays has tools to find out.
- My goals/duties are (i) to help you learn by explaining the best way I can, and (ii) to certify to UM and to

society that you master this topic. Instead “(iii) to pass you all with an A” is not in my list of goals. So for example, it’s pointless if you 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’ll have to do the learning part yourselves. For example, the book has exercises; I will also leave some proofs “to the audience” during class: Consider all of this ‘free game’ for training. (Don’t write later in the evaluations “bruno does not give us enough exercises”...)

General rules:

- Questions and feedback during class are always very welcome. You are also welcome to send me emails, though remember that for your math questions I have also office hours in which I am available. It is not a shame to tell me you have not understood my first explanation - I am always happy to repeat, and most likely if you haven’t understood, some other students have not understood either, so your question becomes useful for the whole class. Of course, you might not want to send me emails like “hey, is there any homework due today?”, unless you want to let me know that you are not studying. What you might want to do on day 1, instead, is to write down the contact of a couple of classmates, so you can refer these questions to them.
- 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 (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.
- Zoom policy: I don’t have a particular set of rules on that. If you wish to keep your camera off, that is fine by me.
- Cell phones and ipads are allowed in class, but must be on silent mode. Same policy for pets, kids, and lovers.
- I would prefer if you do not use the computer in class, even if the textbook is online. It tends to distract both you and the students sitting behind you. Statistically, the students who attend with a computer tend to get a lower grade. That said, if this is your ‘work mode’ and you wish to prove me wrong, I do not mind – please sit in the last row though, so you do not distract other students behind you.
- It happens every now and then that some students find mistakes in my notes. I value corrections a lot!, that’s the best way to let me know that you are on top of the subject.
- 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, I don’t need to be reminded that I am the professor. 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
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