MA 294: Applied Abstract Algebra
Spring 2022

Instructor:	Anna Medvedovsky
Email:	`medved@bu.edu`
Office:	MCS 127
Lecture:	TӨ 2–3:15pm in BRB 122
Discussion:	W 10:10–11am in CAS 228
Zoom info:	Meeting ID: 964 5122 5226; see email or contact me for passcode
Office hours:	TBA
	First office hour: Thursday 20 January 3:30–4:30pm in MCS 127
Textbook:	Norman Biggs, *Discrete Mathematics*, 2nd ed. (2002)
	We will start with chapter 20 and follow Part VI: Algebraic Methods.
Website:	`http://math.bu.edu/people/medved/Teach/294S2022/Land.html`
	All course information (homework, announcements) will generally be posted on the website. The main regular exception is grades, which will be on Blackboard.

Course content: MA 294 is an overview course in abstract algebra with an emphasis on applications. We will cover groups (chapters 20, 21 of the text); rings and fields (chapter 22), including finite fields (chapter 23); and error-correcting codes (chapter 24). If there is time we will move on to generating functions, partitions, and Pólya's theorem (chapters 25–27).

Lectures and discussion: I generally will not make particular distinction between lectures and discussion, though I will aim to spend about 45–60 minutes of our 75min + 50min + 75min each week doing discussion-type work (students collaborating to solve problems, answering student questions in details) rather than lecturing.

After every class you should review your notes and try to resolve any confusion you may have had. If you cannot resolve something you're confused about your own, please come ask me in office hours or after class. Plan for about an hour of review time for every hour of class time — and that's before you start working on the homework assignments or studying for tests.

I expect you to attend class, but I do not take attendance. If you miss lecture or discussion for whatever reason, it is your responsibility to get notes from a classmate! Make contact with a classmate today.

If you are quarantined, or have to miss more than one class in a row for other reasons, or have a known conflict with an exam date, or are struggling with math or otherwise, please get in touch with me as soon as you are able and let me know what's going on. Obviously your health and safety must come first.

Homework: Homework assignments are an essential part of the course!

Collaboration on homework: You are very much encouraged to work together on problem sets. In fact, one of your goals for the few classes should be to make contact with classmates to work on assignments with.

However, you must hand in solutions which are written by you and in your own words. For each problem you turn in, please identify your sources: classmates you worked with, anyone else you asked for help, or books or websites that you consulted other than the textbook.

Homework grading: A selection of problems from each homework set will be graded by our grader. If you've turned in *all* the homework assignments in the first half of the course, then the bottom homework grade will be dropped in computing the homework average.

We will generally have weekly assignments with some breaks. Homework assignments will generally be due on Thursdays by 4pm or in class.

Keeping up with homework assignments is crucial for success in the course. If you run into trouble, do not wait — get help!

Office hours: I will hold two open office hours weekly (most likely, Tuesday mornings and Wednesday afternoons), or email me to make an appointment. I'm always happy to answer questions about this course, or algebra and number theory more generally. I plan to be on campus Tuesdays, Wednesdays, Thursdays, and some Mondays.

Plan on coming to office hours at least once in the first three weeks of the semester to introduce yourself.

Tests: We will have two short (20–30min) in-class quizzes, one in-class midterm, and a university-scheduled final exam.

- **Quiz 1:** February 15 (Tuesday)
- **Midterm:** March 17 (Thursday)
- **Quiz 2:** April 7 (Thursday)
- **Final** (tentative): May 9 (Monday) 3–5pm

Grading: Your grade in the course will be computed as follows:

- Homework: 20%
- Quizzes: 17%
- Midterm: 25%
- Final: 30%
- Class participation: 5%
- Instructor discretion: 3%

Class participation: If you attend most classes, answer questions in class from time to time, participate fully in group work problems, and come to office hours at least once before the first quiz to introduce youself, you will receive full credit.

Instructor discretion: This component will never be used to lower your grade. It will be used to slightly bump up students who show steady improvement over the course of the semester and/or make progress on several of the optional challenge homework problems.

Optional project: If you're interested in doing an optional project (a short paper or something more creative exploring a topic related to class material) in the second half of the semester, come talk to me. This project would count for 15% of your grade at the expense of the tests, and would never lower your grade.

Tutoring room: In addition to my office hours, the BU math department runs a tutoring room: during most regular work hours, MCS B36 is staffed with graduate students ready to answer your math questions. See `http://www.bu.edu/math/undergraduate/resources/tutoring-room-schedule/` for the exact schedule, and note that some graduate students have more experience with algebra than others, as described in the tutoring expertise document.