

Algebra I
MATH 621, Fall 2020
TTh4:30-5:45pm, Blackboard Collaborate

Instructor: Dr. Rebecca R.G., email address: rrebhuhn@gmu.edu

Graduate Learning Assistant: Cigole Thomas, email address: cthoma40@gmu.edu

Office Hours: TBD via Zoom, or email me to meet at another time.

Textbook: Thomas W. Hungerford, *Algebra*.

Prerequisites: Abstract Algebra (Math 321) or equivalent.

Course Content: Most of chapters I-III, along with the first section of chapter V and perhaps some of chapter IV. This includes a deeper dive into (and a more sophisticated take on) group theory than you have likely seen before. We will also learn some ring theory (e.g. principal ideal domains, unique factorization domains, etc.) and field theory (esp. the theory of field *extensions*). Theory, problems, and proofs will all be discussed.

After this course, the student should have a firm basic understanding of abstract algebra, enough to be able to read more advanced algebra texts and some research articles.

Technology: You will need a computer, tablet, or other device that can access Blackboard Collaborate Ultra, with a speaker so that you can hear what's going on. It will be easier if you also have a microphone, but this is not required. You may also find it easier to use a device with a touch screen for editing the Class Notebook.

Class Notebook: In order to collaborate during class, we will use a Class Notebook in OneNote. You do not need to install any software in order to access the Class Notebook, but may need to be logged into your GMU account in order to use it.

Expectations:

- Come to class and work on problems/participate in the discussion as appropriate. Make contributions to both the mathematics and the group dynamic (e.g. make sure everyone in the group gets a chance to speak and don't leave people behind!).
- Do the homework problems. Try to stay on schedule and do them by the deadlines, but if you get behind, talk to me about how to get caught up as soon as possible.
- Ask lots of questions of both me and your peers, make constructive suggestions, and share your ideas.
- You may be asked to present proofs or ideas for the class.

Grading: There will be two in-class exams (on **Tuesday, 9/29** and **Thursday, 11/5**) and a final on **Tuesday, 12/15 from 4:30-7:15pm**. Together, they will comprise about 75% of your grade.

The other approximately 25% of your grade will come from the homework, which will be assigned roughly weekly. The final exam is also the preliminary exam in Algebra, but I may assign grades differently from your prelim grade.

Homework: Homework will be assigned roughly weekly. Problems will be checked over and correct problems given credit. Incorrect problems should be rewritten and turned in a week after the homework is returned to you. When rewriting problems, unless otherwise specified, rewrite the whole problem, including whatever changes you needed to make. Include a brief explanation of the changes and why you made them.

Collaboration: Please work together, both in and out of class! It's hard to survive grad school alone. You can also ask me for help on problems. Once you've worked on the problems together, please write your solutions individually, in your own words. Include a list of everyone you spoke to about the problems and any sources you used (or write "worked alone" if you worked alone). When you are doing rewrites, you may get help from me and your classmates, but again, you should write up the problem on your own.

Attendance and Class Participation: You are expected to attend classes regularly and participate in the problem solving and discussion. Please let me know ahead of time if you plan to be absent, and make a plan with me to make up the material as soon as possible.

Prelim Practice Sessions: Cigole will run weekly sessions during which you will have an opportunity to study for the algebra prelim together. Participation is not required but is strongly recommended, especially if you are in the math PhD program. Schedule TBD, but will be one hour a week for the first 3 weeks of classes and two hours a week thereafter.