Algebra I
MATH 621, Spring 2019
MW5:55-7:10pm, Exploratory Hall 4106

Instructor: Dr. Rebecca R.G., Exploratory Hall 4406, Email address: rrebhuhn@gmu.edu

Office Hours: MTW4-5pm, 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. The order of chapter coverage will be I, III, II, IV, V. This includes a deeper dive into (and a more sophisticated take on) group theory than you have likely seen before, including structure theory and adjacent topics such as monoids and categories. We will also learn some ring theory (e.g. principal ideal domains, unique factorization domains, formal power series, 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.

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 **Monday, February 25th** and **Monday, April 8th**) and a final on **Monday, May 13th**. 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.

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.

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. 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 why, and make a plan with me to make up the material as soon as possible.