Math 4107—Fall 2026

Instructor: Harold Blum

Class Time: TuTh 3:30-4:45

Contact: Canvas message

Classroom: Skiles 255

Office: Skiles 227

Office Hours: TBA

Course Description:

This course is an introduction to abstract algebra, which is the study of abstract algebraic structures such as groups, rings, and fields. These notions abstract out the algebraic properties that appear when studying arithmetic, numbers, and polynomials and are ubiquitous in pure mathematics, applied mathematics, and computer sciences. As this is a course in pure mathematics, we will focus on understanding the theory.

Learning goals:

We will learn the basic concepts of abstract algebra. As this is a course in pure mathematics, we will focus on understanding the theory, rather than applications of algebra to other fields. In particular, we will learn the basic theory through examples and writing clear and mathematically correct proofs.

Canvas site: Our course web page will be through Canvas.

Text: The main reference books for the course will be:

- *Abstract Algebra* by Herstein,
- *Topics in Algebra* by Herstein, and
- *Concrete Abstract Algebra* by Lauritzen.

Prerequisites: Math 2406 or Math 2106

Assignments: There will be weekly homework assignments. Solving homework problems is a key part of learning the course material.

Other: Roughly each week, there will be a quiz or short worksheet. These will be designed to help you see how well you are learning the material and how well you are prepared for the exams.

Exams: There will be two midterm exams and a final exam.

Collaboration: A great way to learn mathematics is through collaboration. Thus I encourage students to discuss homework problems with each other. To maximize learning, it is often helpful to try the homework solutions on your own and then discuss your solutions or your lack thereof with other students. You are required to write your solutions for submission independently.

AI: AI can be a very useful tool for learning mathematics. For example, one can ask AI to find the best reference on a topic, whether a statement is true, or for a sample computation. These are all allowable forms of AI in our course.

At times AI decreases learning. For example, by asking AI to solve a homework problem or by finding a solution online, you are missing out on the experience of tackling the problem yourself (the struggle is part of the learning experience)! Thus these activities are not allowed on the homework.

If you are struggling with homework problems, instead of asking AI, you are welcome to post your question on Piazza or ask me in office hours. I will do my best to lead you to the answer, rather than give you a written-out complete solution.

Grading: The grade will be calculated using the highest of the following schemes.

	Option 1	**Option 2**	**Option 3**
Homework	20%	20%	20%
Quizzes/Worksheets	10%	10%	10%
Midterms	20% each	20% highest midterm	25% each
Final Exam	30%	50%	20%

This way you can do well in the course even if you do poorly on one of the exams or the midterm.

When calculating the quiz and homework grades, I will drop one in each category.

Participation: While there is no formal participation grade, I expect students to attend class, take quizzes, and work in groups on worksheets. Students that miss class will not have an opportunity to take any quiz, worksheet, or exam at a later date unless they have a medical exemption.

Academic Integrity: Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. Review Georgia Tech's Honor Code and the student Code of Conduct.

Any student suspected of cheating or plagiarism on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

Disabilities: If you are a student with learning needs that require special accommodation, contact the Office of Disability Services (404-894-2563) as soon as possible to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.

Student-Faculty Expectations: At Georgia Tech, we believe that it is important to strive for an atmosphere of mutual respect, acknowledgment, and responsibility between faculty members and the student body. The Student-Faculty Expectations articulate some basic

expectations that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.