

Math 8220: Abstract Algebra I — Fall 2026

(Section 002, CRN 90880)

2:00–3:15pm, Mondays and Wednesdays, 305 Aderhold Learning Center (ALC)

Instructor: Yongwei Yao

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Lecture: 2:00–3:15pm, Mondays and Wednesdays, 305 Aderhold Learning Center (ALC).

Office Hours: 12:00–1:30pm, Tuesdays and Thursdays, via Zoom (URL posted on iCollege).

Textbook: *Basic Abstract Algebra* (2nd edition or newer) by P. B. Bhattacharya, S. K. Jain and S. R. Nagpaul, Cambridge University Press, **ISBN-10:** 0521466296; **ISBN-13:** 978-0521466295. The lectures will be (mainly) based on this textbook, covering materials in Chapters 15, 16, 17, 18, 5, 6, 7, 8.

Alternative textbook: *Abstract Algebra* (3rd edition) by David S. Dummit and Richard M. Foote, John Wiley & Sons Inc., **ISBN** 0-471-43334-9.

Course content/outcome: The course offers a solid introduction to field theory covering its basic concepts and fundamental theorems. It also covers some topics in group theory. The course will cover field extensions, algebraic extensions, splitting fields, finite fields, normal extensions, separable extensions, simple extensions, Galois extensions, Galois theory, etcetera. Concerning group theory, this course will cover group actions, Sylow p -subgroups, solvable groups, finitely generated abelian groups, etcetera. Students passing the course should be able to present proofs, understand the majors results as well as apply them in solving routine exercises.

Prerequisites: Math 6441 and Math 6442 each with a grade of C or higher. During the first two weeks of the semester the Department of Mathematics and Statistics checks the computer records to determine whether or not each student has met the prerequisites for this course. If you do not have the prerequisites please inform your instructor and change to another course. In case the system finds that you don't have the prerequisites, you will be dropped from this course.

Homework: There will be weekly homework assignments that will be graded. You can discuss the problems with your classmates, but the write-up of the solutions has to be done individually according to your own understanding. Identical solutions will not be graded. **Show your work/steps. No late homework is accepted.** Homework weighs 25% of overall performance.

Exams: There will be two midterm exams and a final exam, all held 305 Aderhold Learning Center (ALC) and independent work.

Exam	Date	Time	Location	Weight
Midterm Exam I	Sept. 30 (Wednesday), 2026	2:00–3:15pm	305 ALC	25%
Midterm Exam II	Nov. 04 (Wednesday), 2026	2:00–3:15pm	305 ALC	25%
Final Exam	Dec. 09 (Wednesday), 2026	1:30–4:00pm	305 ALC	25%

All three exams are required and the final exam is cumulative. Make-up exams will only be allowed in case of extreme emergencies that must be documented, such as medical emergencies. It is the instructor's role to determine if a specific excuse is a valid one.

(more on the next page)

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Grading Scheme: Total scores are computed by using the weights as follows:

Component	Homework	Midterm Exam I	Midterm Exam II	Final Exam
Weight	25%	25%	25%	25%

Then the letter grades will be assigned as follows:

Score (%)	97—	93–96	90–92	87–89	83–86	80–82	77–79	70–76	60–69	0–59
Grade	A+	A	A–	B+	B	B–	C+	C	D	F

Attendance: You are expected to attend regularly for the entire period of the class. That is, you are expected to arrive on time and stay for the duration of the class. Attendance will be taken periodically. If you miss all the classes during the first two weeks, you could get withdrawn administratively. After five or more absences a student could get withdrawn from this class. In case of an absence, the student is responsible for knowing/studying all the materials covered. For university policies, see <http://codeofconduct.gsu.edu/>

Important withdrawal dates: Remember that a student who misses all the lectures during the first two weeks can be withdrawn by the instructor.

Last day to add/drop classes: Friday, Aug. 28, 2026, 5:00pm. See PAWS or GoSolar.

Midpoint of the semester: Tuesday, Oct. 13, 2026

Last day to withdraw and receive a **WP** (then turned to **W** or **WF**): Friday, Oct. 23, 2026

For details, see <http://advisement.gsu.edu/self-service/policies/withdrawal-policy/>

Academic (dis)honesty: Academic honesty is expected. Cheating will not be tolerated and will be handled according to the University's policy on academic honesty found at <http://codeofconduct.gsu.edu/>, which includes academic as well as disciplinary consequences.

Teaching evaluations: Your constructive assessment of this course plays an indispensable role in shaping education at Georgia State. Upon completing the course, you are welcome to fill out the online course evaluation.

Accommodations: Students who wish to request an accommodation may do so by registering with the Access and Accommodation Center (AACE). Students may only be accommodated if the instructor receives an email with the notification of approved accommodations from AACE. Note: Accommodations are not retroactive and will be applicable following the date in which they are received.

Other Important dates:

Labor Day (no classes)	September 07 (Monday), 2026
Thanksgiving (no classes)	November 23–28, 2026
Last Day of Classes	December 07 (Monday), 2026

Changes: This course syllabus provides a general plan for the course; deviations may be necessary.

Course URL: <https://math.gsu.edu/yyao/2026F/math8220.html>

Relevant information (homework assignments, etc.) will be posted there as the course progresses.

Welcome aboard!