

**Math 620: Groups, Rings, and Fields**  
**Fall 2019**

**Instructor:** Christopher O'Neill  
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**Office Hours:** Monday 11:00am - 1:00pm,  
Tuesday 10:00am - 1:00pm,  
Wednesday 3:00pm - 5:00pm,  
and other times by appointment

**Course Content:** Group theory to include finite Abelian groups, isomorphism theorems, matrix groups, and permutation groups. Ring theory to include ideals, principal ideal domains, and unique factorization. Field theory to include field extensions and finite fields.

**Text:** *Abstract Algebra: The Basic Graduate Year*, by Robert B. Ash  
Free download: <https://faculty.math.illinois.edu/~r-ash/Algebra.html>

**Prerequisites:** Math 320, 522, 524, or 525 with a grade of C or better.

**Course Organization:** The class will be organized as follows.

- One class day each week (usually Tuesday), I will give a lecture on course material (a “lecture day”).
- The other day each week (usually Thursday), you will work in small groups (a “discussion day”).

A problem list will be distributed at the beginning of each discussion day containing both the in-class work problems (which **will introduce new material**) and the weekly homework problems. All completed homework problems will be turned in for credit, usually the following Thursday.

The day before each discussion day, a short list of “preliminary problems” will be assigned, and should be completed before class on the discussion day. These assignments will be short, usually requiring at most 10 minutes to complete, and will be computational in nature (i.e. no proofs).

Although I intend to use this format throughout the course, I reserve the right to restructure the course as the term progresses, based in part on student feedback and performance. Potential changes include (but are not limited to) the introduction of quizzes, and a restructuring of the lecture/discussion schedule. I will periodically collect anonymous feedback in class, but feel free to come talk to me if you have suggestions or concerns.

**Grading Policy:** Your grade will be determined by one midterm exam, a cumulative final exam, weekly homework submissions, and a participation grade, weighted as follows.

Participation	10%	Midterm Exam: October 17	A = 90-100
Homework Average	50%	Final Exam: December 12	B = 80-89
Midterm Exam	20%		C = 70-79
Final Exam	20%		D = 60-69
Total	100%		F = 0-59

The Final Exam will be comprehensive, and will take place on Thursday, December 12th from 3:30pm-5:30pm. Keep this date in mind when making travel plans for the end of the term.

**Exams:** All exams will take place in the same classroom as our lecture, on the dates given above. **No makeup exams will be given.** If you miss an exam for a university approved reason (illness, etc), your grade will be replaced with your grade on the other exam. However, you must notify me via email **on the day of the missed exam**, and provide sufficient documentation (doctor's note, etc). Otherwise, you will receive a 0. Any questions regarding grading/scoring must be done within one week of returning the exam, and cannot be done the day the exam is returned.

**Participation:** Attendance in problem sessions is vital to success in this class, since **new material** will be covered. Your participation grade will be based on the following:

- attending and participating in lectures;
- attending and engaging in problem sessions; and
- completing the preliminary problems before each problem session.

Missing class will result in a lowered participation grade, and only university excused absences with **advance notice** to the instructor will be accepted. I reserve the right to deduct one **additional full letter grade** if you miss too many classes, or if sufficient participation is not demonstrated during problem sessions.

**Homework:** There will be one homework assignment given each week, as well as a short list of preliminary problems to be completed before each problem session. Completed homework assignments will be submitted to the instructor for a grade, but preliminary problems will not be collected. Collaboration on homework is encouraged, but solutions should be written individually, and **collaborators should be identified** on the front of your assignment.

Homework assignments, along with their due dates, will be posted on the course webpage as they are assigned. Out of fairness to the other students, late homework assignments will not be accepted for credit. However, the lowest homework grade of the term will be dropped.

**Class Announcements, E-mail Policy and Communications:** Class announcements will be posted to my class web page and sent to your university e-mail account. Be sure to regularly check your e-mail. If you send me an e-mail, please include your name and course information (i.e. class and section) as well as any additional information that I might need to respond to your e-mail.

**Attendance, Absence, and Makeup Work Policies:**

- Attendance is **essential** for success in the course, especially problem sessions!
- No makeup exams will be given. If you miss an exam for a university approved reason (e.g. illness), your grade will be replaced with the average of the remaining exams. However, if you fail to both (i) notify me via email on the day of the missed exam and (ii) provide sufficient documentation (e.g. doctor's note), you will receive a 0.
- Late homework will not be accepted. However, your lowest homework grade will be dropped.
- The last day to drop this class is **September 9th**.

**A.D.A. Policy Statement:** The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. This legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring accommodation, please contact Student Disability Services.

If you require additional time on quizzes and/or exams, you must **contact me at the start of the course**. You will not be given extra time if you present this information just before an exam.

For additional information, visit [https://go.sdsu.edu/student\\_affairs/sds/](https://go.sdsu.edu/student_affairs/sds/).

**Copyright Policy:** The handouts used in this course are copyrighted. By "handouts," I mean all materials generated for this class, which include but are not limited to syllabi, quizzes, exams, in-class materials, review sheets, and additional problems sets. Because these materials are copyrighted, you do not have the right to copy the handouts, unless I expressly grant permission.

**Scholastic Dishonesty:** *An Aztec Does Not Lie, Cheat, or Steal, or Tolerate Those Who Do.* The San Diego State University Student Conduct Code will be enforced in this course. For the purpose of this course, cheating will be defined as (but not limited to) access or use of unauthorized material during exams and quizzes, collaboration between students during exams, quizzes or assignments for which group work is not allowed, perusal of another student's work during exams and quizzes, copying other student's work or allowing other students to copy your work on any assignment, quiz or exam, and having unauthorized programs or other information stored on calculators when these calculators are accessible during an exam or quiz. Note: Falsifying documentation is considered scholastic dishonesty and may result in a grade of F for the course.

For additional information, visit [http://go.sdsu.edu/student\\_affairs/srr/conduct.aspx](http://go.sdsu.edu/student_affairs/srr/conduct.aspx).