

Text We will be using *Abstract Algebra: Theory and Applications*, by Thomas W. Judson as our textbook. We will cover material from most of the first fifteen chapters, see the tentative schedule for exact chapters covered. This is an open source textbook, which in part means you are free to make unlimited copies. I will discuss in class your options for obtaining a copy. The book's website is <http://abstract.ups.edu/>.

Home Page Start at <http://buzzard.ups.edu/courses.html> for course information.

Office Hours My office is in Thompson 303; the telephone number is 879-3564. Making appointments or simple, non-mathematical questions can be handled via electronic mail — my address is beezer@ups.edu. Do not confuse this email address with the one used for submitting homework. Office Hours are 2:00–2:50 on Monday, Tuesday, Thursday and Friday. You may make an appointment for other times, or just drop by my office. Office hours are your opportunity to receive extra help or clarification on material from class, or to discuss any other aspect of the course.

Homework Exercises from the text will be assigned for each chapter, but will not be collected. Of course, you are not limited to working *just* these assigned problems. Once per chapter we will have a day reserved for discussion when we can discuss these problems. It is your responsibility to be certain that you are learning from the homework exercises. The best ways to do this are to work the problems diligently when assigned and to participate in the classroom discussion. If at this point you are still unsure about a problem, then a visit to my office is in order. Making a consistent effort outside of the classroom is the easiest way to do well in this course.

Mathematics not only demands straight thinking, it grants the student the satisfaction of knowing when he [or she] is thinking straight.

— D. Jackson

Mathematics is not a spectator sport.

— Anonymous

I hear, I forget.

I see, I remember.

I do, I understand.

— Chinese Proverb

An education is not received. It is achieved.

— Anonymous

Reading Questions Reading questions for the entire semester are posted on the course webpage, along with careful directions about submitting your responses. These are due to me by midnight the evening before we begin discussing a new chapter. These should be submitted to the email address announced in class, **not** my beezer@ups.edu address.

Sage Exercises For each chapter there will be assigned exercises to work in Sage. These will be due on the discussion day following the lectures for each chapter, as a Sage worksheet attached to an email sent to the same address as for the reading questions.

Exams There will be six one-hour exams — see the attached sheet for tentative dates — primarily these will cover two chapters each. The lowest of your exam scores will be dropped. The comprehensive final exam will be given at 8 AM on Monday, December 12. The final exam cannot be given at any other time, so be certain that you do not make any travel plans that conflict, and also be aware that I will allow you to work longer on the final exam than just the two-hour scheduled block of time.

Grades Grades will be based on the following breakdown: Reading Questions — 5%; Sage Exercises — 25%; Exams — 45%; Final — 25%. Homework, attendance and improvement will be considered for borderline grades. Scores will be posted anonymously at <http://buzzard.ups.edu/courses.html>.

Reminders Three reminders about university policies contained in the *Academic Handbook*. These are described thoroughly online, or a printed copy may be requested from the Registrar's Office (basement of Jones Hall).

“Regular class attendance is expected of all students. When non-attendance is in the instructors judgment excessive, the instructor may levy a grade penalty or may direct the Registrar to drop the student from the course.”

See <http://www.pugetsound.edu/student-life/student-resources/student-handbook/academic-handbook/registration-for-courses-of-in/#Attendance>.

Withdrawal grades are often misunderstood. A Withdrawal grade (W) can only be given during the third through sixth weeks of the semester, after that time (barring unusual circumstances), the appropriate grade is a Withdrawal Failing (WF), *even if your work has been of passing quality*. See the attached schedule for the last day to drop with an automatic ‘W’.

See <http://www.pugetsound.edu/student-life/student-resources/student-handbook/academic-handbook/grade-information-and-policy/#withdrawal>.

All of your graded work is expected to be entirely your own work, this means reading questions and Sage exercises. Anything to the contrary is a violation of the university's comprehensive policy on Academic Integrity (cheating and plagiarism). Discovered incidents will be handled strictly, in accordance with this policy. Penalties can include failing the course and range up to being expelled from the university.

See <http://www.pugetsound.edu/student-life/student-resources/student-handbook/academic-handbook/academic-integrity/>.

Attendance Daily attendance is required, expected, and overall a pretty good idea.

Purpose At this point in your college career, you should be well on your way to being an independent scholar, who appreciates the beauty of mathematics and understands the effort needed to master new and difficult ideas. Consistent with that, I will be giving you a fair degree of freedom to learn this material in a manner that suits you.

Read the book before the lectures, work the exercises diligently, tidy up your class notes each evening, and ask questions. Arriving late to class, or having conversations with others during class, not only disrupts your peers, but tells me you are not serious about your education. I do not need to routinely check attendance, since our class is small enough that I will notice when you are not here, and again this will be another way that you signal me about your commitment to the endeavor.

Many consider group theory (the branch of Abstract Algebra that we will concentrate on this semester) one of the most fascinating areas of mathematics. The investment of your time and energy applied to studying it will be amply repaid by a full understanding of its deeper ideas.

Tentative Daily Schedule

| Monday | Tuesday | Thursday | Friday |
|---|---------------------|---------------------|---|
| Aug 29 Syllabus Sage Intro | Aug 30 Chapter 1 | Sep 1 Chapter 1 | Sep 2 Discussion |
| Sep 5 Labor Day Holiday | Sep 6 Chapter 2 | Sep 8 Chapter 2 | Sep 9 Discussion sagenb.org down? |
| Sep 12 Exam 1 Chapters 1, 2 | Sep 13 Chapter 3 | Sep 15 Chapter 3 | Sep 16 Chapter 3 Chapter 4 |
| Sep 19 Discussion | Sep 20 Chapter 4 | Sep 22 Chapter 4 | Sep 23 Discussion |
| Sep 26 Exam 2 Chapters 3, 4 | Sep 27 Chapter 5 | Sep 29 Chapter 5 | Sep 30 Chapter 5 Chapter 6 |
| Oct 3 Discussion | Oct 4 Chapter 6 | Oct 6 Chapter 6 | Oct 7 Discussion |
| Oct 10 Exam 3 Chapters 5, 6 Last day to drop | Oct 11 Chapter 9 | Oct 13 Chapter 9 | Oct 14 Discussion |

Mid-Term

| Monday | Tuesday | Thursday | Friday |
|------------------------------------|--|------------------------------------|-----------------------------------|
| Oct 17 Fall Break | Oct 18 Fall Break | Oct 20 Chapter 10 | Oct 21 Chapter 10 |
| Oct 24 Chapter 10 | Oct 25 Discussion | Oct 27 Exam 4 Chapters 9, 10 | Oct 28 Chapter 7 |
| Oct 31 Chapter 7 | Nov 1 Chapter 11 | Nov 3 Chapter 11 | Nov 4 Chapter 11 Chapter 13 |
| Nov 7 Discussion | Nov 8 Chapter 13 | Nov 10 Chapter 13 | Nov 11 Chapter 13 |
| Nov 14 Discussion | Nov 15 Exam 5 Chapters 7, 11, 13 | Nov 17 Chapter 14 | Nov 18 Chapter 14 |
| Nov 21 Chapter 14 | Nov 22 Discussion | Nov 24 Thanksgiving Holiday | Nov 25 Thanksgiving Holiday |
| Nov 28 Chapter 15 | Nov 29 Chapter 15 | Dec 1 Chapter 15 | Dec 2 Discussion |
| Dec 5 Exam 6 Chapters 14, 15 | Dec 6 Housekeeping | | |

Final Examination
8 AM, Monday, December 12

Suggested Exercises

| Chapter | Computational | Theoretical |
|---------|---|--|
| 1 | 18, 25 | 8, 9, 22c, 28, 29 |
| 2 | 15 | 5, 10, 16, 18, 27 |
| 3 | 1, 3, 5, 6, 10, 17, 32 | 29, 30, 31, 38, 43, 44, 45, 46, 53 |
| 4 | 3, 4, 5, 6, 7, 8, 9, 11, 20, 21, 22b | 24, 26, 27, 28, 30, 34, 37 |
| 5 | 2, 3, 5, 7, 9, 10, 15 | 4, 18, 20, 23, 25, 27, 30, 33, 35 |
| 6 | 1, 2, 5 | 3, 6, 11, 12, 17, 19, 20, 21, 22, 24 |
| 9 | 3, 5, 10, 12, 14, 16, 17 | 20, 21, 22, 24, 25, 29, 34, 35, 38, 48 |
| 10 | 1bcd, 2, 3, 4 | 5, 6, 7, 9, 11, 12, 13, 14, 15 |
| 7 | 7, 8, 10 | |
| 11 | 2, 3, 4, 5, 6; Additional: 7, 8 | 8, 15, 16, 17; Additional: 2, 3, 9, 10 |
| 13 | 1, 2, 3, 4bc | 6, 9, 11, 12, 13 |
| 14 | 2, 3, 4, 6, 9, 11, 13, 17 (S_3 only) | 20, 22, 24 |
| 15 | 1, 2, 3, 5, 6, 9, 15, 16, 17, 24 | 4, 7, 8, 10, 12, 14, 21 |