

**Text** We will be using *Abstract Algebra: Theory and Applications*, by Thomas W. Judson as our textbook. We will cover material from thirteen of the first fifteen chapters as described on the calendar. This is an open source textbook, which in part means you are free to make unlimited copies. The book's website is <http://abstract.ups.edu/>. The "2012 Edition" will be the version I will follow for this course — it is your responsibility to be careful about numbering of chapters and exercises if you use an old edition.

**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 email — my address is [beezer@ups.edu](mailto:beezer@ups.edu). Do not confuse this address with the one used for submitting homework (I only look at the homework address when something is due). Office Hours are 10–10:50 on Monday and Friday, and 9:30–11:20 on Tuesday and Thursday. Office Hours are first-come, first-served, so I do not make appointments for these times. You **may** make an appointment for other times, or just drop by my office to see if I am in. 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 talk about 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, as indicated on the schedule. These should be submitted to the email address announced in class, **not** my [beezer@ups.edu](mailto: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. We will discuss this procedure in class.

**Exams** There will be eleven one-hour exams, see the attached calendar for planned dates. With two exceptions, these will each cover a single chapter. The two lowest of your exam scores will be dropped. The comprehensive final exam will be given at 8 AM on Friday, December 14. 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/>.

**Conduct** Daily attendance is required, expected, and overall a pretty good idea. Class will begin on-time, so be here, settled in and ready to go. In other words, walking in the door at the exact time class is to begin is not acceptable. Repeated tardiness and absences will result in grade penalties. Do not leave class during the lecture unless there is a real emergency — fill your water bottles, use the toilet, and so on, **in advance**. Please keep phones in your pocket or bag. In short, we are here to learn and discuss abstract algebra and it is your responsibility to not distract your peers who are serious about their education.

**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.

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.

**Classroom Emergency Response Guidance** Please review university emergency preparedness and response procedures posted at [www.pugetsound.edu/emergency/](http://www.pugetsound.edu/emergency/). There is a link on the university home page. Familiarize yourself with hall exit doors and the designated gathering area for your class and laboratory buildings.

If building evacuation becomes necessary (e.g. earthquake), meet your instructor at the designated gathering area so she/he can account for your presence. Then wait for further instructions. Do not return to the building or classroom until advised by a university emergency response representative.

If confronted by an act of violence, be prepared to make quick decisions to protect your safety. Flee the area by running away from the source of danger if you can safely do so. If this is not possible, shelter in place by securing classroom or lab doors and windows, closing blinds, and turning off room lights. Lie on the floor out of sight and away from windows and doors. Place cell phones or pagers on vibrate so that you can receive messages quietly. Wait for further instructions.

# Tentative Daily Schedule

Monday	Tuesday	Thursday	Friday
Aug 27 Syllabus Lecture Chapter 1	Aug 28 Lecture Chapter 1	Aug 30 Introduction to Sage	Aug 31 Problem Session
Sep 3 Labor Day	Sep 4 Lecture Chapter 2	Sep 6 Lecture Chapter 2	Sep 7 Problem Session
Sep 10 Exam Chapters 1, 2	Sep 11 Lecture Chapter 3	Sep 13 Lecture Chapter 3	Sep 14 Problem Session
Sep 17 Exam Chapter 3	Sep 18 Lecture Chapter 4	Sep 20 Lecture Chapter 4	Sep 21 Problem Session
Sep 24 Exam Chapter 4	Sep 25 Lecture Chapter 5	Sep 27 Lecture Chapter 5	Sep 28 Problem Session
Oct 1 Exam Chapter 5	Oct 2 Lecture Chapter 6	Oct 4 No class	Oct 5 No class
Oct 8 Lecture Chapter 6 Last day to drop	Oct 9 Problem Session	Oct 11 Exam Chapter 6	Oct 12 Lecture Chapter 9

Mid-Term

Monday	Tuesday	Thursday	Friday
Oct 15 Fall Break	Oct 16 Fall Break	Oct 18 Lecture Chapter 9	Oct 19 Problem Session
Oct 22 Exam Chapter 9	Oct 23 Lecture Chapter 10	Oct 25 Lecture Chapter 10	Oct 26 Problem Session
Oct 29 Exam Chapter 10	Oct 30 Lecture Chapter 11	Nov 1 Lecture Chapter 11	Nov 2 Problem Session
Nov 5 Exam Chapter 11	Nov 6 Lecture Chapter 12	Nov 8 Lecture Chapter 12	Nov 9 Problem Session
Nov 12 Exam Chapter 12	Nov 13 Lecture Chapter 14	Nov 15 Lecture Chapter 14	Nov 16 Problem Session
Nov 19 Lecture Chapter 7	Nov 20 Lecture Chapter 7	Nov 22 Thanksgiving	Nov 23 Thanksgiving
Nov 26 Exam Chapters 7, 14	Nov 27 Lecture Chapter 15	Nov 29 Lecture Chapter 15	Nov 30 Problem Session
Dec 3 Exam Chapter 15	Dec 4 Housekeeping		

Final Examination  
8 AM, Friday, December 14

## 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, 55
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, 23, 23
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
11	2, 3, 4, 5, 6; Additional: 7, 8	8, 15, 16, 17, 20; 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
7	7, 8, 10	
15	1, 2, 3, 5, 6, 9, 15, 16, 17, 24	4, 7, 8, 10, 12, 14, 21