**Text**    We will be using *Abstract Algebra: Theory and Applications*, by Thomas W. Judson as our textbook. We will cover material from the Chapters 16 through 23.

**Home Page**    Start at `http://buzzard.ups.edu/courses.html` to locate the WWW page for this course.

**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`. Office Hours are 10:00-10:50 on Monday and Friday, and 9:30-11:20 on Tuesday and Thursday. 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**    Homework 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 problem session where 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 are posted on the course WWW page, 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 four one-hour exams — see the attached sheet for tentative dates — at the conclusion of each two chapters. The lowest of your exam scores will be dropped. The comprehensive final exam will be given at 8 AM on Wednesday, May 9. 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.

**Projects**   Each student will give research a topic related to the course and use this as the subject of a paper and an in-class presentation. Details will be provided separately early in the semester.

**Grades**   Grades will be based on the following breakdown: Reading Questions — 5%; Sage Exercises — 20%; Project — 15%; Exams — 40%; Final — 20%. Homework, attendance and improvement will be considered for borderline grades. Scores will be posted anonymously on the World Wide Web 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 will not routinely check attendance, but 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.

We will build upon, and extend, the basic ideas of algebra that we studied for groups last semester. At the end of this term you should be familiar with many new algebraic structures, and be able to readily understand new ones you will encounter later. We will also encounter some surprising applications. The investment of your time and energy applied will be amply repaid by a full understanding of the deeper ideas of algebra.

# Suggested Exercises

| Chapter | Computational | Theoretical |
|---|---|---|
| 16 | 1, 3, 5, 6, 7, 8, 9, 10, 12 | 2, 16, 20, 21, 25, 27, 28, 29, 34, 37, 39 |
| 17 | 3bc, 4ab, 5ab, 7, 8, 10, Additional: 2-8 | 13, 14, 17, 18, 19, 23, 24, 25 |
| 18 | 1, 10, 15 | 5, 7, 9, 11, 12, 13, 14, 17, 19 |
| 19 | 1, 2, 3, 5, 11 | 12, 13, 15, 16, 18, 21, 22, 23 |
| 20 | 3, 4, 9 | 10, 13, 16, 18 (maybe more to come) |
| 21 | 1, 2, 3bcd, 4, 6, 8, 9 | 11, 16, 19, 20, 21 |
| 22 | 1bc, 3, 4, 7, 8 | 14, 15, 17, 18, 21 |
| 23 | 1, 2, 3, 4, 5, 11 | 6, 7, 9, 12, 13, 14, 20 |

# Tentative Daily Schedule

| Monday | Tuesday | Thursday | Friday |
|---|---|---|---|
| Jan 16<br>MLK Day | Jan 17<br>No Class | Jan 19<br>Polish<br>Permutations | Jan 20<br>Polish<br>Permutations |
| Jan 23 | Jan 24 | Jan 26 | Jan 27 |
| Jan 30 | Jan 31 | Feb 2 | Feb 3 |
| Feb 6 | Feb 7 | Feb 9 | Feb 10<br>Exam 1<br>Chapters 16, 17 |
| Feb 13 | Feb 14 | Feb 16 | Feb 17 |
| Feb 20 | Feb 21 | Feb 23 | Feb 24 |
| Feb 27<br>Last day to drop | Feb 28 | Mar 1 | Mar 2<br>Exam 2<br>Chapters 18, 19 |
| Mar 5 | Mar 6 | Mar 8 | Mar 9 |

Spring Break

| Monday | Tuesday | Thursday | Friday |
|--------|---------|----------|--------|
| Mar 19 | Mar 20 | Mar 22 | Mar 23 |
| Mar 26 | Mar 27 | Mar 29 | Mar 30<br>Exam 3<br>Chapters 20, 21 |
| Apr 2 | Apr 3 | Apr 5 | Apr 6 |
| Apr 9 | Apr 10 | Apr 12 | Apr 13 |
| Apr 16 | Apr 17 | Apr 19 | Apr 20 |
| Apr 23<br>Exam 4<br>Chapters 22, 23 | Apr 24<br>Presentations | Apr 26<br>Presentations | Apr 27<br>Presentations |
| Apr 30<br>Presentations | May 1<br>Presentations | | |

# Final Examination
Wednesday, May 9, 8 AM