**Text**   We will be using *Contemporary Abstract Algebra* (Fifth Edition) by Joseph A. Gallian. (Note that the book is now in a Sixth Edition, but we will still be using the Fifth Edition.) We will cover material from Chapters 0 through 11, and 24 — see the attached **tentative** schedule for the exact sections covered.

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

**Office Hours**   My office is Thompson 321G; 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 will be 11:00–11:50 on Monday, Wednesday and Friday, and 10:30–12:20 on Tuesday. I will always be available during these times on a first-come, first-served basis. If these times are not convenient, please do not hesitate to make an appointment with me for another time. You are also welcome to drop by my office without an appointment at any time that I am in (2 P.M. to 4 P.M. is a good time to try). 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 a week, generally on Friday, 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**  Each section of the textbook contains reading questions at the end. Once you have read the chapter *prior* to our in-class discussion, submit your responses to the reading questions via electronic mail as follows. Do **not** send your responses to my regular email address (`beezer@ups.edu`), but instead use the address I will announce in class. Your responses are due at 9 PM the night before we begin discussing a new chapter (usually this will be Monday night), and will not be accepted late. Use a subject that is **exactly** like "X-RQ," where X is the number of the chapter. So for example, your first response will be titled: 0-RQ. In the first line of your response, please put your real name, then answer the questions in order.

If a question asks for a computation, you can just give the answer, no need to show your work in the email. If the question is a yes/no answer, or asks "Why?" then give an explanation. Do your best with mathematical notation, but do not fret if it is a bit sloppy or weird, I can usually decipher any reasonable attempt. Please send *only straight text* — no attachments, no Word files, no graphics, no HTML if you can help it. Please pay careful attention to these procedures and deadlines.

**Quizzes**  There will be thirteen one-hour quizzes — see the attached sheet for tentative dates — though mostly they will be on Monday, at the conclusion of each chapter. The lowest two of your quiz scores will be dropped. The comprehensive final exam will be given at 8 AM on Wednesday, 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: Quizzes — 75%; Reading Questions — 5%; Final — 20%. Homework, attendance and improvement will be considered for borderline grades. Scores will be posted on the Internet at `http://buzzard.ups.edu/courses.html`. A reminder about withdrawals — a Withdrawal Passing grade (W) can only be given during the third or fourth 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' and please read *Academic Handbook* at `http://www.ups.edu/x4727.xml#withdrawal` about these often misunderstood grades.

**Attendance**  Daily attendance is required and expected, and is 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.

Many consider group theory (the branch of Abstract Algebra that we will concentrate on this semester) one of the most fascinating and beautiful 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.

# Homework Exercises

| Chap | Page | Computational | Theoretical |
|------|------|---------------|-------------|
| 0 | 23 | 4, 16, 29, 38, 41, 46 | 8, 12, 14, 15, 21, 24 |
| 1 | 37 | 4, 13, 19, 22 | 6, 7, 8, 9 |
| 2 | 53 | 3, 5, 8, 13, 22, 24, 37 | 12, 14, 16, 17, 19, 29, 33 |
| 3 | 67 | 9, 24, 27, 28, 31, 33, 34, 41, 42 | 10, 13, 14, 16, 19, 21, 22 |
| 4 | 82 | 19, 22, 33, 40, 45, 46, 55, 65 | 24, 31, 41, 54, 56, 62, 64 |
| 5 | 111 | 4, 6, 24, 25, 32, 33, 36, 43 | 13, 16, 22, 31, 40, 45, 46 |
| 6 | 129 | 3, 4, 5, 7, 12, 16, 22, 23 | 2, 10, 30, 32, 33, 34, 35 |
| 7 | 145 | 1, 2, 3, 6, 8, 12, 13, 26, 33 | 10, 15, 19, 21, 23, 24, 36 |
| 8 | 162 | 5, 8, 12, 18, 20, 22, 26, 30, 40, 49, 51, 53 | 3, 14, 16, 55 |
| 9 | 186 | 3, 4, 5, 9, 12, 14, 21, 24 | 6, 10, 30, 37, 41, 43, 46, 48, 49, 58 |
| 10 | 205 | 2, 6, 10, 11, 14, 17, 19, 20 | 22, 37, 38, 42, 45, 46, 53 (see #7 p. 169) |
| 11 | 219 | 3, 4, 6, 7, 8, 12, 15, 19, 25, 28 | 20, 30, 32, 34 |
| 24 | 407 | 5, 7, 11, 12, 18, 21, 44 | 1, 4, 10, 33, 36, 39, 42 |

# Tentative Daily Schedule

| Monday | Tuesday | Wednesday | Friday |
|--------|---------|-----------|--------|
| Aug 29<br>Chapter 0 | Aug 30<br>Chapter 0 | Aug 31<br>Chapter 1 | Sep 2<br>Problem Session |
| Sep 5<br>Labor Day | Sep 6<br>Quiz #0 | Sep 7<br>Chapter 1 | Sep 9<br>Problem Session |
| Sep 12<br>Quiz #1 | Sep 13<br>Chapter 2 | Sep 14<br>Chapter 2 | Sep 16<br>Problem Session |
| Sep 19<br>Quiz #2 | Sep 20<br>Chapter 3 | Sep 21<br>Chapter 3 | Sep 23<br>Problem Session |
| Sep 26<br>Quiz #3<br>Last day to drop | Sep 27<br>Chapter 4 | Sep 28<br>Chapter 4 | Sep 30<br>Problem Session |
| Oct 3<br>Quiz #4 | Oct 4<br>Chapter 5 | Oct 5<br>Chapter 5 | Oct 7<br>Problem Session |
| Oct 10<br>Quiz #5 | Oct 11<br>Chapter 6 | Oct 12<br>Chapter 6 | Oct 14<br>Problem Session |

# Mid-Term

| Monday | Tuesday | Wednesday | Friday |
|---|---|---|---|
| Oct 17<br>Fall Break | Oct 18<br>Quiz #6 | Oct 19<br>Bonus Day<br>RSA Encryption | Oct 21<br>Bonus Day<br>RSA Encryption |
| Oct 24<br>Chapter 7 | Oct 25<br>Chapter 7 | Oct 26<br>Chapter 7 | Oct 28<br>Problem Session |
| Oct 31<br>Quiz #7 | Nov 1<br>Chapter 8 | Nov 2<br>Chapter 8 | Nov 4<br>Problem Session |
| Nov 7<br>Quiz #8 | Nov 8<br>Chapter 9 | Nov 9<br>Chapter 9 | Nov 11<br>Problem Session |
| Nov 14<br>Quiz #9 | Nov 15<br>Chapter 10 | Nov 16<br>Chapter 10 | Nov 18<br>Problem Session |
| Nov 21<br>Quiz #10 | Nov 22<br>Chapter 11 | Nov 23<br>Chapter 11 | Nov 25<br>Thanksgiving |
| Nov 28<br>Problem Session | Nov 29<br>Quiz #11 | Nov 30<br>Chapter 24 | Dec 2<br>Chapter 24 |
| Dec 5<br>Chapter 24 | Dec 6<br>Problem Session<br>Housekeeping | Dec 7<br>Quiz #24 | |

## Final Examination
8AM, Wednesday, December 14