

**Mathematics 309a: Abstract Algebra I**  
**Winter Semester 2009**  
**TR 8:00-9:20 – Hathorn 100**  
**Professor David Haines**

Office: 206 Hathorn Hall

Office Hours: TR 1-2:30 and other times – just ask.

Text: Fraleigh, John B. *A First Course in Abstract Algebra*. 7<sup>th</sup> ed. Addison-Wesley. 2003.

January

- 13: 0. Sets and Relations
  - 1. Introduction and Examples
- 15: 2. Binary Operations
  - 3. Isomorphic Binary Structures
- 20: 4. Groups
- 22: 5. Subgroups
- 27: 6. Cyclic Groups
- 29: 7. Generating Sets and Cayley Digraphs

February

- 3: Review
- 5: Exam #1
- 10: 8. Groups of Permutations
- 12: 9. Orbits, Cycles, and Alternating Groups
- 24: 10. Cosets and the Theorem of Lagrange
- 26: 11. Direct Products and Finitely Generated Abelian Groups

March

- 3: 13. Homomorphisms
- 5: 14. Factor Groups
- 10: Review
- 12: Exam #2
- 17: 15. Factor Group Computations and Simple Groups
- 19: 18. Rings and Fields
- 24: 19. Integral Domains
- 26: 20. Fermat's and Euler's Theorems
- 31: 21. The Field of Quotients of an Integral Domain

April

- 2: 22. Rings of Polynomials
- 7: 23. Factorization of Polynomials Over a Field
- 9: Review

Final Exam: Wednesday, April 15, 1:15 p.m. in Hathorn 100.

Homework: We introduce each new section of the text according to the above schedule. Take a few

minutes to scan the new section before that date to get your mind get moving on the new topic. For each section there is homework, listed on the sheet of “Problem Assignments.” I will not collect your homework.

Quizzes: At the beginning of each class there is a ten-minute quiz with a problem similar to those on the previous night's homework. We will begin to discuss the quiz problem at 8:15, so you must turn in your quiz by 8:15 for credit. Because the quizzes are an integral part of the class they cannot be made up at other times. They are designed to take at most 15 minutes, but I am often in the classroom a little early if you want more time. You will not be penalized for any quizzes you miss for which you have a Dean’s excuse or for quizzes missed because you were representing the College in an official event.

Grades: You determine your final grade by how well you do on:

Exam #1:	25%
Exam #2:	25%
Quiz average (after deleting the two lowest scores):	15%
Final Examination:	35%

Grading scale

A = 91.5 or above	B+ = 87.5-89.4	C+ = 77.5-79.4	D = 61.5-69.4
A- = 89.5-91.4	B = 81.5-87.4	C = 71.5-77.4	D- = 59.5-61.4
	B- = 79.5-81.4	C- = 69.5-71.4	F = 0.0 - 59.5

Plagiarism: Read the *Bates College Statement on Plagiarism*, especially page 2.

Web Site: The syllabus, Problem Assignments, and previous exams and quizzes for this course (including the ones you have already taken) are at <http://abacus.bates.edu/~etowne/mathresources.html> .

Library Reserves: A copy of the text, instructor’s solutions manual, and student solutions manual are on two-hour reserve in Ladd Library.