Mathematics 8202, Spring 2003
Algebra

Lectures: MWF 9:05-9:55 unless otherwise arranged!
Text: D.S. Dummit and R..M. Foote, Abstract Algebra, 2nd edition, Wiley 1999.
Instructor: Peter Webb, Office: 350 Vincent Hall, telephone: 625 3491,
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Office hours: to be announced, or by appointment

0. **Time of class.** I will ask in the first week if it is possible to hold the class on Tuesdays and Thursdays at some time later than 9:05. If this is possible and the class time changes, the dates for quizzes and homework listed below will change from Monday to the next day (Tuesday).

1. **Course Assessment.** Your grade will be determined by your performance on homework, quizzes given in class and a final exam. I will take in homework from you each Monday, starting on 2/3/03. Homework may be given to me during class, and I will also accept it if you put it in my mailbox before 4pm on Monday. There will be about thirteen sets of homework altogether during the semester. Every other Monday there will be a 30 min. quiz in class on the subject matter of the homework due that day and on the previous Monday. There will be 6 quizzes altogether, on 2/10/03, 2/24/03, 3/10/03, 3/31/03, 4/14/03 and 4/28/03. We will finish with a final exam on all the topics covered, which will probably be an optional take-home exam in the same manner as last semester – we will discuss this. Each quiz will count 6%, the homeworks will count 48%, and the final exam will count 16%. There will be no make-up quizzes. If you miss a quiz and explain to me your genuine reason I will give you a score which is the average of your remaining quizzes. If you do not talk to me about missing a quiz you get 0, and I am most unlikely to think favorably about missing 3 or more quizzes. I will probably drop the lowest homework score of each person.

2. **Syllabus.** Over the two semesters we will cover the topics which appear on the official graduate preliminary written exam syllabus, obtainable from
http://www.math.umn.edu/grad/syllabus.html,
and we will probably cover one or two further things as well. Most of this syllabus is treated by Dummit and Foote. The material on the spectral theorem for symmetric and Heritian matrices does not appear in the book, and it also appears that the Jordan-Hölder theorem in the context of modules is missing. In the Spring semester we will cover chapters 9, 10, 12, 13, 14 and 15.1, together with supplementary material on the topics in our syllabus not covered in this book.

3. **Expectations of your work.** You may discuss homework problems with other students, indeed I encourage you to do this; but I would like each person to write out their

own homework as an independent effort. If the final exam turns out to be a take-home exam, I expect this to be entirely your own work, done without any collaboration.

As concerns your written style, I expect your homework to contain full written explanations of your arguments. These should be written in English sentences (recall that sentences start with a capital letter, contain a verb and finish with a period!), and read smoothly as English. If some portion of argument is missing from what you write, you will not get credit by explaining afterwards that you knew it really but you just omitted to write it down. I expect that you all will come with some experience of writing mathematical arguments in this fashion.

4. Other books. The following are useful: S. Lang, Algebra; M. Artin, Algebra; I.N. Herstein, Topics in Algebra; the books by P. Cohn, N. Jacobson and J. Rotman.

Math 8202 **Homework 1** **PJW**

Date due: February 3, 2003

Hand in only the five starred questions.

Section 9.1 nos. 8*, 9, 10*, 13, 14*, 15, 16, 17.

Section 9.2 nos. 4, 5*, 6, 7, 12.

Section 9.3 nos. 1, 2*, 3, 4.

Section 9.4 nos. 1, 2, 3, 9*, 11*, 13, 14, 15, 16*, 17, 18.