

Math 616: Topics in Algebra - Galois Theory

Winter 2005

Instructor Dr. Davida Fischman

Office hours MTWR 4-5pm, and by appointment

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Textbook *Galois Theory*, by Joseph Rotman

Time and place MW 4-5:50, in JB 387.

Prerequisites

Math 546, Abstract Algebra II. Please note that will use the material from Math 546 throughout the quarter, so you should not take this class unless you have already passed Math 546. All of the material that we will need from ring theory is contained in our book, so if you are rusty on some of it, you will be able to review using our textbook.

Content

Galois Theory is the study of connections between polynomials, fields, and groups. Galois “invented” groups in 1831, associated a group to each polynomial, and used properties of this group to determine whether there exists a formula of the appropriate type for its roots. We will study portions of this theory, in particular splitting fields, the Galois group, solvability for radicals, Galois extensions, and “Galois’s great theorem” on the connection between properties of the Galois group of a polynomial $f(x)$ and solvability by radicals of $f(x)$.

Assignments and Exams

1. Homework will be assigned each week. Some of it will be collected and graded, though you are expected to solve all of the homework. I will do my best to get the homework back to you within a week, and as a consequence late homework will not be accepted. I will drop your lowest homework score for the final grade.
2. There will be one midterm during the quarter, and a comprehensive 2-hour final exam. There are *no make-up exams planned*. Should you have to miss the midterm for any reason, I will use your grade from the final exam as your midterm grade.

Grades

Grading is *not* competitive, so please work with friends to develop ideas. You will be allowed to hand in up to *two* homework assignments in pairs. It will be your decision which assignments to hand in jointly. You do not have to have the same partner for both such assignments.

On the other hand, the work you hand in “solo” should be your own. So after you develop ideas together, please go your separate ways to do your own write-ups. Plagiarism is a cardinal sin and will get you into major trouble if you indulge in it, either as the giver or as the taker!

The assignments and exams will make up your grade as follows:

Homework	Monday each week	30%
Midterm	Wednesday, Feb 16	35%
Final exam	Wednesday, March 23	35%

Your final grade will be given as follows; ``+" and ``-" grades will be given at the upper and lower ends of each range:

A: 90-100% B: 80-89% C: 70-79% D: 60-69% F: 0-59%.

Please note

1. In accordance with university rules, students may be required to show a picture i.d. at any time during the quarter.
2. Winter refund deadline: January 7, 2005
3. Last date to drop without record: January 31, 2005.
4. I will take roll in the first 2 weeks of class. If you do not come to 2 or more classes in this time, and do not let me know that your are continuing in the class, I *may* drop you from the class to make room for other students. If *you* wish to withdraw from the class, it is *your responsibility* to do so through TRACS.