



Math 422/501

Fields and Galois Theory

Fall 2017 Course Information

Time: MWF 14:00-15:00

Place: Math Annex 1102.

Instructor: [Kai Behrend](#)

Office hours: TBA
in Math Annex 1213.

Text Book: We will mostly be following the notes by James Milne, which you can get here: [pdf](#)

You might also consult other textbooks on algebra, such as those by Dummit and Foote, Lang, Herstein, or Artin.

Prerequisites: Math 322 or equivalent. Math 323 would be desirable but not absolutely necessary. You have to have a good working knowledge of group theory, especially quotient groups and group actions.

Course Outline: This is a standard course in Galois Theory, the study of the symmetries of polynomials and their roots.

Not only does Galois theory itself appear in many diverse areas, but the principles of symmetry we cover appear in different guises throughout mathematics. This, or a course like it, is a must for anyone serious about our mathematics. Besides, Galois theory is beautiful and fun!

Our goal is to cover the first 5 chapters of the text. If time permits, we will cover some of the other subjects covered there. Highlights include Ruler and Compass constructions:

the impossibility of doubling the cube or trisecting an angle.
Impossibility of solving the quintic by radicals.

Exams: There will be one midterm exam and one final exam.

Homework: Homework will be assigned on a weekly basis throughout the semester. Please do all homework assignments.

Marking: Your mark will be made up as follows:

Homework: 40%

Midterm: 20%

Final: 40%
