

*Course description:* The bulk of the course is about the solution by Galois of the problem of solving polynomial equations by radicals. This gives an outstanding introduction to some intriguing concepts of abstract algebra. So the course may be chosen as an introduction to abstract algebra with the focus on a concrete problem. The main impact in mathematics and science in general of Galois' beautiful discovery is that it became the model for many powerful applications of the notion of symmetry. Familiarity with Galois theory is essential in certain areas of number theory, representation theory, algebraic geometry.

*Topics:*

**Cubic equations**, Cardano's Formula, discriminant

**Field extensions**, algebraic elements, degree of a field extension

**Splitting fields**, simple finite field extensions

**Automorphisms of field extensions**, normal and separable extensions

**Galois correspondence**, subgroup and subfield lattices

**Solvability of equations by radicals**, ruler-and-compass constructions

**Transcendental extensions**, field of fractions, prime subfield

**Finite fields**, Frobenius automorphism

**Ordered fields**, algebraically closed fields