

Syllabus. Math 172. Modern Algebra.

A first course in abstract algebra. J.B. Fraleigh. The seventh edition.

- Ring theory. (*Sections* IV.18, IV.22-IV.23, V.26-V.27.)
 - Rings and fields,
 - ring homomorphisms, factor rings,
 - polynomial rings, factorization of polynomials over a field,
 - prime and maximal ideals.

- Extension fields. (*Sections* VI.29-VI.33.)
 - Field extensions as vector spaces,
 - algebraic extensions,
 - geometric construction problems,
 - classification of finite fields.

- Introduction to Galois theory (*Sections* X.48-X.56.)
 - Automorphisms of fields,
 - extension of isomorphisms,
 - splitting fields,
 - separable extensions,
 - the Galois correspondence,
 - illustrations of the theory.