(1) Introduction: elements of group theory and ring theory.

(2) Field Theory: basic notions.

(3) Extension of a field.

(4) Galois group.
Extension of a field and its Galois group. Fundamental theorem of Galois theory.

(5) Cyclotomic fields.
Cyclotomic fields, Cyclotomic polynomials. Regular polygons.

(6) Solving algebraic equations in radicals.
Cyclic extensions and binomial equations. Solvable groups and solvable extensions. Solvability of symmetric groups. Solution of algebraic equations of degree up to four. Abel’s theorem.

(7) Transcendental extensions.
Transcendental extensions. Factorization of any field extension into transcendental and algebraic one. Algebraic independence of symmetric polynomials.

Prerequisites: Linear Algebra I, II, Group Theory.

Credits: (i) submission of 70% of homework is obligatory, (ii) final grade – 95% - examination test, 5% - homeworks.

Bibliography:
E. Artin. Galois Theory.
S. Lang. Algebra.
B. L. Van der Waerden. Algebra.