Outline

1. Groups
   (a) Isomorphism Theorems
   (b) Sylow Theorems
   (c) Group Actions
   (d) Cauchy-Frobenious-Burnside Lemma
   (e) Linear Groups
   (f) Split Extensions
   (g) Wreath products
   (h) Frobenious Groups
   (i) Solvable Groups
   (j) Finitely Generated Abelian Groups

2. Rings
   (a) Polynomial Rings
   (b) Euclidean Domains
   (c) Principle Ideal Domains
   (d) Unique Factorization Domains
   (e) Zorn's Lemma

3. Fields
   (a) Galois Theory and construction of Galois groups
   (b) Finite Fields
   (c) Algebraic Extensions