MATHEMATICS 172

MODERN ALGEBRA

EFFECTIVE WINTER 2004

Text: *A First Course in Abstract Algebra, Seventh Edition,* by J. Fraleigh

This is the second quarter course in a two quarter sequence covering the fundamental concepts of modern algebra. The topics covered include groups, fields, polynomials, geometric constructions, an introduction to Galois theory, and algebraic encoding.

TOPICS	SUGGESTED NO. OF 50 MIN. CLASSES

Ring theory……..8
(§§ IV.22-IV.23, V.26-V.27)

Ring homomorphisms and factor rings, polynomial rings and factorization of polynomials over a field, prime and maximal ideals.

Extension Fields……...8
(§§ VI.29-VI.33)

Field extensions as vector spaces, algebraic extensions, applications to classical geometric construction problems, classification of finite fields.

Introduction to Galois Theory……..7
(§§ X.48-X.56)

Automorphisms of fields, extension of isomorphisms, splitting fields, separable extensions, the Galois correspondence, illustrations of the theory.

This outline leaves substantial time for catching up and/or review.