

MATHEMATICS 171
INTRODUCTION TO MODERN ALGEBRA

EFFECTIVE FALL 2003

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

This is the first quarter course in a two quarter sequence covering the fundamental concepts of modern algebra. The topics covered include groups, subgroups, quotient groups, homomorphisms, symmetry groups, fundamental properties of rings, integral domains, ideals and quotient rings.

TOPICS	SUGGESTED NO. OF 50 MIN. CLASSES
Elementary group theory.....7 (§§ 0, I.1-I.5) <div style="padding-left: 40px;"> Proofs in mathematics, sets and equivalence relations, binary operations, definitions of groups and subgroups, cyclic groups. </div>	7
Cosets and important families of groups.....7 (§§ II.8-II.11) <div style="padding-left: 40px;"> Permutation groups, cyclic decomposition of permutations, cosets and Lagrange's Theorem, direct products, finitely generated abelian groups. </div>	7
Homomorphisms.....5 (§§ III.13-III.15) <div style="padding-left: 40px;"> Homomorphisms, isomorphisms and Cayley's Theorem, factor groups, series of groups. </div>	5
Elementary ring theory.....5 (§§ IV.18-IV.20, IV.24) <div style="padding-left: 40px;"> Rings, fields, integral domains, Fermat's and Euler's Theorems, non-commutative rings. </div>	5

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