MATH 660
ALGEBRA

Spring 2005 MW 5:30 PM–6:45 PM
JR 215
Instructor: Prof. Al Sethuraman

This is a one-semester graduate course in Algebra that covers groups, rings and modules, and Galois theory. Topics covered will be a (possibly proper) subset of the following:

- Groups: Normal subgroups, quotient groups, isomorphism theorems, group actions, Sylow theorems, symmetric groups, solvable groups, groups of small order.
- Rings and Modules: Commutative rings, principal ideal rings and unique factorization domains, structure of modules over principal ideal rings, applications to abelian groups and to Jordan canonical forms of matrices, localization.
- Galois theory: Algebraic and transcendental extensions, splitting field of a set of polynomials and algebraic closure, separability and normality, group of automorphisms of a field extension, fundamental theorem of Galois theory, Galois groups of some polynomials of small degree, roots of unity and Kummer extensions, solvability by radicals, finite fields.

There is no set text for the course, but several books will be placed on reserve in the library. Good sources are Topics in Algebra by I.N. Herstein, Algebra by Thomas Hungerford, and Algebra by Serge Lang.

A problem list will be maintained for the semester. Problems will be added to this list as the semester progresses. A kernel version is available at http://www.csun.edu/~asethura/Spring05/660Problems.pdf