

Syllabus.
G112 Algebra 2, Spring 2006.

Instructor: Jerzy Weyman, 530 NI, ext. 5513, j.weyman@neu.edu.

Office hours: by appointment.

Time: Tue, Thu, 5:30-7:15, 509 LA

Text: S. Lang, Algebra.

Supplementary reading:

M. Artin, "Algebra" (for exercises in problem sessions),

M. Atiyah, I. MacDonal, "Introduction to Commutative Algebra",

I.N. Herstein, "Noncommutative Rings", J-P. Serre, Representations of finite groups.

This is a standard algebra course, we will study Groups, Rings and Modules. This particular year we will cover some material on quadratic forms because it was not covered during the fall quarter.

The list of topics includes:

Quadratic forms: Classification of quadratic forms over the complex and real numbers, Sylvester Theorem, signature, Hermitian forms, Witt theorems, spectral theorems.

Group theory: groups, subgroups, normal subgroups, Jordan-Holder Theorem, abelian and solvable groups, Sylow theorems, representations of groups, Maschke theorem.

Rings and Modules: Rings, ideals, prime and maximal ideals, Zorn's lemma, principal ideal domains and unique factorization domains, semi-simple rings, Wedderburn theorem.

Homological Algebra: the language of exact sequences, kernels, cokernel, derived functors, Hom and Ext (mostly in module categories).

Except regular classes we will have problem sessions every second week (usually on Thursdays, in the early afternoon). The grading will be based on homework assignments.