

Math 601 Syllabus, fall 2002

Course=Basic Algebra

Instructor=Sam Evens, evens.1@nd.edu, 631-7165, 277 Hurley.

Text:I will use a combination of a web-based text in graduate algebra used at the University of Illinois by Robert Ash available at [www.math.uiuc.edu/~r-ash/](http://www.math.uiuc.edu/~r-ash/) and the book by Serge Lang called “Algebra, 3rd edition”, which is 211 in the Springer graduate texts in mathematics series. Ash is a coherent introduction to the subject which is relatively accessible even without a strong undergraduate algebra background, and is essentially free. I have found Lang to be an excellent reference with lots of interesting mathematics explained well. It requires a stronger background, and isn't cheap. Both cover the essential material of the course, and I would encourage students to try both and see which they prefer.

During the first semester, we will cover group theory, including Sylow theorems and solvable and nilpotent groups; ring theory and modules, including unique factorization rings and the structure theorem for modules over a principal ideal domain; and fields.

Second semester (math 602), we will cover Galois theory, projective and injective modules, and probably some commutative algebra and perhaps some basic representation theory.