Math 601 – Abstract Algebra II – Spring 2008

Instructor: Thomas J. Haines
Office: Room 4403, Mathematics Building
Phone: 405-5103

Required Text:
David S. Dummit and Richard M. Foote, *Abstract Algebra*, 3rd ed., John Wiley and Sons, Inc., 2004. ISBN 0-471-43334-9.

Course Plan:
Math 600-601 is a two-course sequence on abstract algebra. It essentially prepares the student for the qualifying exam in algebra, and for further coursework in the fields of algebraic geometry, number theory, representation theory, and more. In the FIRST semester, we will cover roughly the following material from the book by Dummit and Foote:

1. Group theory: quick recap of material in chapters 1-2, and then at least sections 3.2,3.3,3.5, 4.1-4.6, 5.5 (+ "exact sequences"), and 6.1.

2. Ring theory: at least chapters 7,8,9 (except probably section 9.6).

3. Modules and Vector spaces: at least section 10.5 (possibly 10.4), chapter 12 (including "Smith form of matrices"), section 11.5.

In the SECOND semester, we'll cover
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1. Multilinear algebra (section 11.5, except over rings not just fields).

2. Homological algebra (chapter 17, including the "snake lemma", plus a quite a bit more not covered in the book, such as derived functors).

3. Field theory and Galois theory (chapters 13-14).

4. Representation theory of finite groups (chapters 18-19).

Grading policy:
There will be two written hour exams and a written final exam. There will be approximately 12-15 weekly homework assignments. Late homework papers will not be accepted, but however, your lowest three homework scores will be dropped. You are allowed (even encouraged) to work together on homework problems, but you must write up the solutions individually.

The homework will appear on the course web-site (see http://www.math.umd.edu/~tjh). You should consult that web-site regularly for other announcements related to this course as well.

The grade will be computed according to the following plan (this is tentative):

Each hour exam: 25%

Homework: 20%

Final Exam: 30%.

Tentative Exam Schedule:

Exam 1: Wednesday, March 5.

Exam 2: Wednesday, April 23.

Last lecture: Monday, May 12.

Final Exam: Wednesday, May 21, 8:00-10:00 am.

Roughly speaking, the first hour exam will cover multilinear and homological algebra, and the second field and Galois theory. The final exam will be cumulative, but will emphasize the material on character theory of finite groups not covered on the two hour exams.