

# Math 600 – Abstract Algebra I – Fall 2007

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**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 will first cover homological algebra (section 17.1, including tensor products, the “snake lemma”, etc.), followed by field theory and Galois theory (chapters 13-14), and finally the representation theory of finite groups (chapter 18). If time, we will discuss a little bit about commutative rings and algebraic geometry (chapter 15).

**Grading policy:**

There will be two written hour exams and a written final exam. There will be approximately 10-12 weekly homework assignments. Late homework papers will not be accepted, but however, your lowest two or three homework scores will be dropped (I’ll announce the precise number later). 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, Oct. 3.

Exam 2: Wednesday, Nov. 14.

Last lecture: Monday, Dec. 10.

Final Exam: Wednesday, Dec. 19, 8:00-10:00 am.

Roughly speaking, the first hour exam will cover group theory, and the second ring theory. The final exam will be cumulative, but will emphasize the material on modules and vector spaces not covered on the two hour exams.