Math 406 – Syllabus – Fall 2006

Instructor: Thomas J. Haines
   Office: Room 4403, Mathematics Building
   Phone: 405-5103
   Email: tjh AT math DOT umd DOT edu

Office Hours: (Tentative) Wednesday 1-2 p.m., Friday 12-1 p.m., or by appointment.

Course: Introduction to Number Theory, TuTh 12:30-1:45 pm, in MTH 0105. Section 0201.

Text: Kenneth H. Rosen, *Elementary Number Theory*, 5th Edition.
Recommended supplemental text: H. Davenport, *The Higher Arithmetic*, Cambridge
University Press, 7th Edition (or any earlier edition).

Calculator: TI-83 (or TI-83 Plus). You will be allowed (and expected) to use this calculator in this course, on homework assignments and on in-class examinations. Certain computations can only be done easily with a calculator, so it is highly recommended that you obtain one of the above calculators as soon as possible.

This course will cover elementary number theory, with some applications. Some topics include prime numbers, Fibonacci numbers, divisibility and the Division algorithm, congruences, the Chinese remainder theorem, primality testing, factorization methods, Fermat and Mersenne primes, RSA cryptography, primitive roots, quadratic reciprocity, and non-linear Diophantine equations. This material is included in the following sections of Rosen's book:

Chapter 1:	1.1-1.5
Chapter 3:	3.1, 3.3-3.7
Chapter 4:	4.1-4.3 (4.4?)
Chapter 5:	5.1
Chapter 6:	6.1,6.3
Chapter 7:	7.1-7.4
Chapter 8:	8.3-8.4
Chapter 9:	9.1-9.3
Chapter 11:	11.1-11.2
Chapter 13:	13.1-13.4.

Homework/Quizzes: Homework problems will be assigned weekly, but will not be marked. Homework problems will be posted on the course web-site. There will be approximately 11 brief in-class quizzes, which will consist of a few problems taken from the most recently assigned homework

problems. The quizzes will take place on Thursdays, except near the end of the term, when they will be on Tuesdays. Here are the tentative quiz dates:

> September 7, 14, 21, 28
> October 19, 26
> November 2, 9, 28
> December 5, 12

Your lowest three quizzes will be dropped in the calculation of your quiz grade.

Exams: Tentative dates for in-class exams:
> Exam I: Thursday, October 5.
> Exam II: Thursday, November 16.

The date and time of the final exam will be announced later. You will be allowed to use calculators, but no notes or other aids on your quizzes and exams.

Grading: Your final grade will be calculated according to the following scheme:
> Exams I,II: 25% each
> Quizzes: 20%
> Final Exam: 30%.

Other: No make-ups for quizzes will be given. Make-ups for in-class exams will only be given for *compelling* and *documented* reasons.

More details about the course description and topics, etc., will be available on my web-page. You will be able to access this through the math department page, and you should do so regularly to keep apprised of updates about this course.