MATH 124 (NUMBER THEORY)

INSTRUCTOR: LINUS HAMANN

1. Overview

This course will cover:

(1) Factorization and the primes. Euclidean and Division Algorithm.
(2) Congruences and Quadratic Reciprocity
(3) Continued fractions and approximations, Pell's equation, and selected Diophantine equations.
(4) Introduction to zeta functions (if time permits).

2. Background Material

Mathematics 22a or 23a or 25a or 101 or 122; or 55a which can be taken concurrently; or an equivalent experience and comfort level with abstract mathematics.

3. References

A good comprehensive reference for everything covered in class is the book of Niven and Zuckerman [NZ80].

4. Logistics

4.1. **Meeting Time.** The course will be held Tuesdays and Thursdays from 10:30 AM to 11:45 AM in SC 310.

4.2. **Homework.** The weekly homework will be posted on the website *https://people.math.harvard.edu/∼hamann/NT.html*, starting with the first Tuesday (September 8th) and is due in class the proceeding Tuesday.

4.3. **Office Hours.** Office hours will be held on Friday 2:00 - 3:00 PM in my office (SC 239). If you have questions regarding the material you may also email me at: *hamann@math.harvard.edu*.

5. Homework and Grading

5.1. **Overview.** The grading for the course is as follows:

(1) Weekly Homework (40 %)
(2) In Class Midterm and Final (60 %).

5.2. **Homework.** The homework for the week will be posted on the first Tuesday of each week. It is due in class on the proceeding Tuesday.

5.3. **Midterm.** The Midterm will take place on October 13th in class.

References

[NZ80] Ivan Niven and Herbert S. Zuckerman. *An introduction to the theory of numbers*. John Wiley & Sons, New York-Chichester-Brisbane, 1980, pp. xii+335. ISBN: 0-471-02851-7.