

Math 414: Number Theory

<http://wstein.org/edu/2010/414/>

AT UNIVERSITY OF WASHINGTON
MWF 10:30–11:20 IN MEB 248

OFFICE HOURS: 4:30–6:00pm on Tuesdays

Instructor: William Stein (wstein@uw.edu)

1 Topics

Math 414 is University of Washington's undergraduate number theory course. The main ideas of the course are prime numbers, arithmetic modulo n , public-key cryptosystems, continued fractions, and elliptic curves.

2 Prerequisites

You must already be comfortable reading and writing **proofs**. I will assume you are also familiar with abelian groups and commutative rings. It is also helpful if you have written simple computer programs in some language.

3 Texts

The primary text is my book *Elementary Number Theory: Primes, Congruences, and Secrets* (see <http://wstein.org/ent/ent.pdf>), which you can download for free.

4 Evaluation

Homework	30%
Take-Home Midterm	35%
Final Project	35%

4.1 Homework

There will be one homework assignment per week, and these will sometimes involve using a computer. Homework will be assigned on Wednesday and due the following Wednesday.

Please do work together on homework problems!

Write up your solutions individually and **acknowledge** those people and other sources that helped you.

4.2 Project

There will be a project on something relevant to number theory that appeals to you. This project will be due **March 12 at 5pm**, which is the Friday before finals week.

4.3 Exam

There will be a take-home midterm exam. You must work on this exam by yourself. The take-home midterm will be assigned on **Friday, February 12** [[changed from Feb 15]], you will return it on **Wednesday, February 17**, and you will know your grade by **Friday, February 19**, which is before the “Late Course Drop Period” ends.

As mentioned above there *is no final exam*.

4.4 Attendance

If you come to class less than half the time, you will not receive a passing grade in the course, even if you do passing work on the homework, project, and exams. **Don't take this course if you don't plan to attend.**

5 Office Hours

My office is Padelford C423 and my office hours are 4:30–6:00pm on Tuesdays.

6 Mailing List

The closed course mailing list is here: <http://groups.google.com/group/uw-414> You have to be subscribed to read the messages.

7 Computing

I'll give lectures on techniques for using computers to do experiments in number theory, and create homework problems that involve computation.

In class I will demonstrate how to do computations using Sage. This is a free program, which you can use online at <http://sagenb.org> or install on your own computer.