M 328K

Fall 2024

Course Information

Instructional Mode: Face-to-face
Meeting Times: Tue/Thu 11:00 AM - 12:30 PM
Meeting Location: PMA 5.120
Unique Number: 53845

Instructor

William Stagner
Email: stagner@math.utexas.edu

Office Hours and Location

Office Location: PMA 11.136

Office Hours: Monday 12-1pm, Friday 1-2pm

Overview of the Class

Number theory is the study of the integers and their arithmetic properties. As the oldest branch of mathematics, this field is uniquely situated at the center of many deep connections across various areas of study. Many problems in number theory can be stated very simply, and yet their answers, many of which still remain elusive, demand sophisticated methods which draw in techniques from essentially every other mathematical discipline. This course will cover the basics of integer arithmetic, including factorization, primality, modular arithmetic, Diophantine equations, quadratic reciprocity, and related algorithmic aspects. Additional topics may include quadratic forms, continued fractions, public–key cryptography, and number fields. Coursework will focus on proofs, formal mathematical reasoning, and analysis of computational effectiveness.

Class meetings will be in-person. Attendance to regular class meetings is not mandatory but highly encouraged.

Pre-Requisites for the Course

Prerequisite: Mathematics 325K; 333L; or 341 with a grade of at least C-.

Learning Outcomes

At the conclusion of this course, students will be able to:

- Demonstrate fluency with elementary number theoretic concepts through problem solving and mathematical reasoning
- Communicate precise mathematical ideas by writing formal, rigorous proofs

Grading Policy

Homework: 15%, Midterm 1: 25%, Midterm 2: 25%, Final Exam: 35%

Lowest homework score will be dropped.

Overview of all Major Course Requirements and Assignments

Homework: Weekly homework will be posted on Canvas and you will submit them on Gradescope. Late homework will not be accepted for any reason; however, the lowest scoring assignment will be dropped.

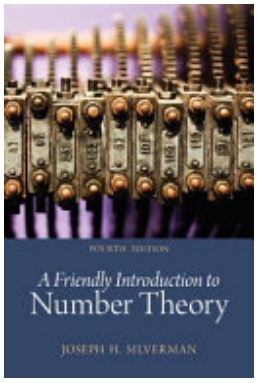
Exams: There will be two in-class midterms and a final exam.

Midterm 1: Tuesday, October 1, 11am

Midterm 2: Tuesday, November 5, 11am

Final Exam: Thursday, December 12, 3:30-5:30pm

Required Course Materials



Friendly Introduction to Number Theory, a (Classic Version)
ISBN: 9780134689463
Authors: Joseph Silverman
Publication Date: 2017-02-13
Not strictly required, but highly recommended and an excellent reference.

Final Exam Date and Time

The Final Exam Schedule is available here. The Final Exam is scheduled for Thursday, December 12, 3:30-5:30pm.

Notice of Academic Accommodations from Disability and Access (D&A)

If you are a student with a disability, or think you may have a disability, and need accommodations please contact Disability and Access (D&A). You may refer to D&A's website for contact and more information: http://disability.utexas.edu/. If you are already registered with D&A, please deliver your Accommodation Letter to me as early as possible in the semester so we can discuss your approved accommodations.

University Policies and Resources for Students Canvas Page

This Canvas page is a supplement to all UT syllabi and contains University policies and resources that you can refer to as you engage with and navigate your courses and the university.