Math 451/551 Number Theory Fall 2020

Instructor	Amites Sarkar
Text	Elementary Number Theory James K. Strayer
Zoom meeting time	12–12:50 Mondays, Tuesdays, Thursdays and Fridays I will also post class recordings on Canvas.

Syllabus

This course is a continuation of Math 302, which covers most of Chapters 1 and 2 of Strayer's book. We'll cover Chapter 3 (**arithmetic functions**), Chapter 4 (**quadratic residues**), Chapter 5 (**primitive roots**), followed by Sections 8.1 through 8.3 (**RSA encryption and primality testing**). If there's time, we'll then cover Chapter 7 (**continued fractions**) and Section 8.4 (**Pell's equation**). This is all beautiful mathematics, and I hope you'll enjoy it.

Course objectives

The successful student will know and understand the statements and proofs of the main theorems in the course (a list will be provided later), and be able to apply these theorems to solve problems in number theory.

Relation to overall program goals

Among other things, this course will (i) enhance your problem-solving skills; (ii) help you recognize that a problem can have different useful representations (graphical, numerical, or symbolic); (iii) increase your appreciation of the role of mathematics in the sciences and the real world; (iv) inform you about the historical context of the area of mathematics studied.

Grading

There will be no exams. Instead, there will be 10 homework assignments, each worth 10% of the final grade. These must be submitted through Canvas, and they will all be due on Fridays (except during Thanksgiving): 2, 9, 16, 23, 30 October; 6, 13, 20, 25 November; and 4 December. For the graduate students, there will be additional homework questions. Assignments must be typed (preferably in LaTeX) or handwritten *very* neatly.

Office hours

My office hours are 1–1:30 on Mondays, Tuesdays, Thursdays and Fridays, via Zoom.