Number Theory

Spring 2025

Time:	TTh 2:30 – 3:50	**Place:**	Smith-Buonanno Hall G13
Office:	Kassar House 014	**Office Hours:**	TBD

Course Pages:

1. https://weizhining.github.io/Teaching/math1560/math1560.html

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Main References:

- Lecture notes;
- E.M. Stein and Rami Shakarchi, *Fourier analysis*, 2003;
- Jean-Pierre Serre, *Linear representations of finite groups*, GTM42, 1977;
- Harold Davenport, *Multiplicative number theory*, GTM 74, 1980/2000;
- J.S. Milne, *Algebraic number theory*, online notes, https://www.jmilne.org/math/CourseNotes/ANT.pdf

Course Descriptions: In this course, we will explore and prove Dirichlet's Theorem on arithmetic progressions, which asserts the existence of infinitely many primes in such sequences. Key topics will include:

- Representation theory and character theory;
- Infinite series and products, Dirichlet L-functions;
- Number fields and class number formula.

Prerequisites: MATH 1530.

Grading Policy: Homework (80%), Final (20%).

Academic Integrity:

- The instructors of this course take Brown's Academic Code, and academic integrity in general, very seriously. Submitting dishonest work, whether on homework or exams, makes it more difficult to effectively help you and your fellow students learn, and it dilutes the meaning of a Brown degree. It is your responsibility to understand what actions are allowed in this course, and what actions are violations of the Academic Code. Any incidents that appear to violate course rules will be presented to, and adjudicated by, the university's Academic Code committee.

Inclusivity and Nondiscrimination:

- This course strives to be accessible and inclusive to all students, regardless of age, race, nationality, gender identity, sexual orientation, religion, and economic background. We are committed to conducting all interactions with students with a sense of respect and equity. We ask that students interact with other students and instructors in this same spirit. If something happens to make you feel unwelcome or discriminated against, please bring it to our attention so that we can respond accordingly. In addition, Brown is committed to providing support for students with learning differences, physical impairments, and other disabilities. If you think you may need accommodations due to one of these conditions, please contact Student Accessibility Services for more information.