

THEORY OF NUMBERS

Autumn 2021

MATH-UA.0248-001

Instructor:	Liming PANG	Email:	liming@cims.nyu.edu
Lecture Time:	Mon. Wed. 15:30 – 16:45	Classroom:	KIMM 914
Office Hour:	Thu. 15:00 – 16:00, WWH 705		
Teaching Assistant:	Sixian (Suavis) Liu	Email	sl8668@nyu.edu
Recitation Time:	Fri. 15:30 – 16:45	Classroom:	KIMM 914
Office Hour:	Thu. 18:00 – 19:00, WWH 505		

Textbook:

David Burton, *Elementary Number Theory, 7th Edition*, McGraw Hill, 2011
ISBN10: 0073383147
ISBN13: 9780073383149

Grading Policy: Quiz (10%), Homework (20%), Midterm (30%), Final (40%).

Exam Schedule:

Quiz 1 Oct 01 2021, in Recitation
Midterm Oct 27 2021, in Lecture
Quiz 2 Dec 03 2021, in Recitation
Final Exam TBD

Class Policy:

- **We shall follow all the NYU COVID-19 Prevention and Response policies.**
- Homework will be released on Gradescope each Thursday or Friday, and due on the following Friday. Your solution should be uploaded to Gradescope. Late homework shall NOT be accepted. One LOWEST homework score shall be dropped.
- You may discuss with your classmates about homework, but you should write your solutions by yourself.
- We will use NYU Brightspace as the main website for our class, where you can find the most up-to-date Syllabus, lecture notes, homework solutions and announcements.
- We will not be able to accommodate out-of-sequence exams for purposes of more convenient travel, including already purchased tickets. Please note again the date of the exams and plan your travel accordingly.

Integrity: We value integrity and do not tolerate academic dishonesty. You are expected to uphold academic integrity as specified by the university and the College of Arts and Science.

Tentative Course Outline:

09/06: **No Class**
09/08: Preliminaries
09/13: Division Algorithm, Greatest Common Divisor
09/15: Euclidean Algorithm, Diophantine Equations
09/20: Congruence Modulo n
09/22: Prime Numbers, Fundamental Theorem of Arithmetic
09/27: Distribution of Primes
09/29: Binary and Decimal Representation of Integers
10/04: Chinese Remainder Theorem
10/06: Fermat's Little Theorem
10/11: **No Class**
10/12: (**Legislative Day**) Wilson's Theorem
10/13: Sum and Number of Divisors
10/18: Mobius Inversion Formula
10/20: Greatest Integer Function
10/25: **Midterm Review**
10/27: **Midterm**
11/01: Euler's Phi Function
11/03: Euler's Theorem
11/08: Order of an Integer Modulo n
11/10: Primitive Roots
11/15: Indices
11/17: Euler's Criterion
11/22: Legendre Symbol
11/24: Quadratic Reciprocity
11/29: Perfect Numbers
12/01: Mersenne Primes
12/06: Pythagorean Triples
12/08: Sum of Squares
12/13: **Final Review**