

Math5383 Number Theory

Min Ru

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Course Format: On-line through Blackboard. This course covers 10 Chapters. Note that, the schedule of summer is very tight. We need to finish the material within one month, where otherwise would take three months. Therefore, You must work harder.

Textbook: No textbook. Lecture notes written by myself will be posted through the Blackboard. Recommended book: “Beginning Number Theory” by Neville Robbins, second edition.

Prerequisites: None

Grading Policy: Homework 30% ,Midterm Examination 35%, Final Examination 35%.

Homework: Homework will be assigned right after we finish the materials for each chapter. Every time, the due date is different. Homework must be handed in by the due date – by e-mail or by FAX (713-743-3505) or in person. Late homework will not be accepted.

Exams: Open book, any notes and homework. Midterm exam is on tuesday, July 23, 6:00pm -9:00pm at PGH 674. The final is on August 7, 6:00-9:00 pm.

Course Description: Number theory is a subject that has interested people for thousand of years. This course is a one-semester long graduate course on number theory. Topics to be covered include divisibility and factorization, linear Diophantine equations, congruences, applications of congruences, solving linear congruences, primes of special forms, the Chinese Remainder Theorem, multiplicative orders, the Euler function, primitive roots, quadratic congruences. and representation problems. The homework problems contain both computational problems and questions requiring proofs. It is hoped that students, through this course, not only learn the material, but also learn how to write the proofs.

Schedule (subject to change):

- Number System and Mathematical Induction (June 2-3), HW1 is due on June 3
- Divisibility and Factorization (June 4-5), HW 2 is due on June 5
- The Euclidean Algorithm and Linear Diophantine Equations (June 6-8), HW 3 is due on June 8
- Primes (June 9-10), HW4 is due on June 10
- The Theory of Congruences (June 12-13), HW5 is due on June 13
- Solving Linear Congruences (June 16- June 17), HW6 is due on June 17
- Reivew (Wed. June 18), Midterm Exam(June 18), 6:00 pm -9:00 pm at PGH 646.
- Fermat's Theorem and Euler's Generalization (June 19-21), HW7 is due on June 21
- Number-Theoretic Functions (June 22-23), HW8 is due on June 23
- Primitive Roots(June 24-June 27), HW9 is due on June 27
- Quadratic Congruences (June 28-July 2), HW10 is due on July 2
- Review (Thursday., July 3), Final Exam(July 3), 6:00-9:00 pm.