

Math 442/542 Theory of Numbers
Mon-Tue-Thu-Fri 10:00 – 10:50 AM
Classroom: Wissink Hall 286
My Office: Wissink Hall 263

Professor: Dan Singer
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Office Hours: 2-5 Mon-Tue-Thu-Fri

Course Description: An introduction to number theory. Topics include divisibility, arithmetical functions, congruences, quadratic residues, quadratic forms, Diophantine approximation, quadratic fields, Diophantine equations. Prerequisite: Math 345.

Textbook: *A Concise Introduction to the Theory of Number*, Alan Baker, Cambridge University Press, 1984.

Course Format: This deceptively small textbook is packed with information and the material is presented in very spare prose. At certain points the author discusses points that are not developed in the textbook, and we need to differentiate between theorems which can be proved using elementary methods and theorems which one can learn through additional study of the references cited in the textbook. We want to wrap our minds around the elementary material and thoroughly master the techniques. I will prove every elementary theorem in the textbook and provide hints or complete solutions to every problem in the exercise sets. I will ask students to take notes as necessary and carefully write up the details to every problem solution.

Attendance Policy: Please attend regularly. I would appreciate it if you would send me an email in advance of any unavoidable absences or emergencies.

Homework Policy: Homework must be written up carefully and legibly. I will look over your submissions, make comments as necessary, and award a score on a 0-100 scale. You should interpret a score of 90-100 as an A, a score of 80-89 as a B, etc.

Grade Calculation: Your grade is based on your homework average and class participation.

Grade Policy: Your grade is based on your performance during the fifteen weeks of the regular semester in accordance with the grade calculation above. I will not change any grades after they have been submitted to the Registrar, and I will not consent to extra-credit opportunities designed for the express purpose of raising the grade of one individual.

Course Schedule:

| <u>Dates</u> | <u>Material</u> | <u>Meetings</u> |
|-----------------|-----------------|-----------------|
| Jan 13 – Jan 16 | Chapter 1 | 3 |
| Jan 17 – Feb 03 | Chapter 2 | 9 |
| Feb 04 – Feb 11 | Chapter 3 | 5 |
| Feb 13 – Feb 21 | Chapter 4 | 6 |
| Feb 24 – Mar 04 | Chapter 5 | 6 |
| Mar 06 – Apr 04 | Chapter 6 | 14 |
| Apr 07 – Apr 18 | Chapter 7 | 8 |
| Apr 21 – May 02 | Chapter 8 | 8 |