

COURSE INFORMATION: MATH 410 Number Theory
Spring 2007

Time and Place: 3:15pm, Tuesday & Thursday at 103, Engineering 1 Bldg.

Instructor: Hemanshu Kaul

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Office Hours: 2pm-4pm Wednesday, and by appointment.

You are encouraged to request joint appointments so that more people can benefit from the discussion, or simply bring others with you. Emailed questions are also welcome.

Course Webpage: <http://www.math.iit.edu/~kaul/TeachingSpr07/Math410.html>

Check the course webpage regularly for homework assignments, announcements, and a lecture log.

Prerequisites: Math 230 Introduction to Discrete Mathematics.

Course Description: This proof-based course has a two-fold aim : Proficiency in concepts, theory, and applications of Number Theory, including divisibility, congruences, distribution of prime numbers, functions of number theory, diophantine equations, applications to encryption methods; and Development of good habits of understanding, communicating, and writing mathematics.

An official description of the lecture topics and the course objectives is available at "<http://www.math.iit.edu/courses/syllabi/Syllabus Math 410.pdf>"

Textbook: D. M. Burton, Elementary Number Theory, 6th ed., McGraw-Hill.

Each section covered in class must be fully read by you.

Grade Break-down: Homework is worth 25%; Two exams are worth 20% each ; Final exam is worth 35% . The grading scale will be no more strict than A:85-100, B:75-84, C:65-74, D:55-64.

Examinations: The two examinations are expected to cover topics from Chapters 1-5 and Chapters 6-9 of the textbook, respectively. The final exam will be on all the topics covered during the semester. Make-up exams will be given only in case of a documented emergency. The exam dates and their precise topics will be announced in class and on the course webpage.

Attendance and Class Participation: You are expected to attend the lectures and participate in class discussions. You are also expected to read the text, including examples not covered in class. The importance of proofs in this course makes it critical to practice and be exposed to good proof techniques in lecture.

Homework Assignment: Homework problems will be assigned after each lecture. There will be one homework due each week, usually on Thursday. It is your responsibility to check the webpage for assignments and their due dates. Homework needs to be submitted at the beginning of class on the due date. It should be typed or written legibly. Be sure to staple the pages together and write your name, course number, assignment number, and the date of submission on the front. Late homework will not be accepted.

'Why and How' of Homework: Homework serves as an opportunity for students to practice communicating written mathematics with clarity of thought and language. To improve your mathematical writing quickly, start by writing draft solutions to homework early. A day or two

later after you have had time to forget what you wrote, read it. If it doesn't make sense or convince you, rewrite it. Writing a solution requires saying what you mean and meaning what you say. Be intellectually honest. Intellectual dishonesty includes: 1) stating a "reason" without understanding its relevance. 2) Claiming a conclusion when you know you haven't proved it. 3) Giving an example and claiming you have proved the statement for all instances. Please read more of this excellent advice (by Doug West) at <http://www.math.uiuc.edu/~west/247/advice.pdf>

You are allowed to discuss homework problems with your classmates. However, the solutions should be written by you alone. Solutions for homework, and exams must be written clearly, legibly, and concisely, and will be graded for mathematical correctness and presentation. Points will be deducted for sloppiness, incoherent or insufficient explanation, or for lack of supporting rationale. The solutions should be presented so that your classmates could read them and follow the logic.

Office hours: You are encouraged to ask questions during class, or in office hours, or through email. If you are having trouble solving a homework problem, I will be glad to direct you in the right direction. I am here to help you learn, but I cannot help you if you don't take the initiative.