Math 406 – Syllabus – Spring 2022

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Office Hours: (Tentative) Monday 3:30 pm; Tuesday 4:00 over Zoom; or by appointment.

Course: Introduction to Number Theory, MWF 1:00-1:50 pm, in MTH 0201. Section 0201.

Text: Kenneth H. Rosen, *Elementary Number Theory and its applications*, 6th Edition. *Recommended supplemental text*: H. Davenport, *The Higher Arithmetic*, Cambridge University Press, 7th Edition (or any earlier edition).

Calculator: TI-83 (or TI-83 Plus, ..., TI-89, or rough equivalent). You will be allowed (and expected) to use this calculator in this course, on homework assignments and on in-class examinations and on the final examination. Certain computations can only be done easily with a calculator, so it is highly recommended that you obtain one of the above calculators as soon as possible. NOTE: on exams, you will not be allowed to use the calculator on your phone, iPad, or laptop, etc.

This course will cover elementary number theory, with some applications. Some topics include prime numbers, Fibonacci numbers, divisibility and the Division algorithm, congruences, the Chinese remainder theorem, primality testing, factorization methods, Fermat and Mersenne primes, RSA cryptography, primitive roots, quadratic reciprocity, and non-linear Diophantine equations. This material is included in the following sections of Rosen's book:

Chapter 1:	1.1-1.5
Chapter 3:	3.1, 3.3-3.7
Chapter 4:	4.1-4.3 (4.4?)
Chapter 5:	5.1
Chapter 6:	6.1,6.3
Chapter 7:	7.1-7.4
Chapter 8:	8.1, 8.3-8.4
Chapter 9:	9.1-9.4
Chapter 11:	11.1-11.2
Chapter 13:	13.1-13.4.

Homework: Homework problems will generally be assigned weekly (Fridays), will be collected **online, on Canvas** the following Friday, and will be marked by a grader. Homework problems

will be posted on the course web-site on Canvas. **Late papers will not be accepted.** However, the lowest three grades will be dropped from your homework score.

You are allowed to work together on homework problems, but you must write down your own solutions. Copying solutions outright from any source (e.g. your classmate, friend, or online source) constitutes academic misconduct (see more about that below).

Exams: Dates for in-class exams:

Exam I: Monday, February 28 (16th class meeting)
Exam II: Wednesday, April 20 (35th class meeting)

Last day of class: Monday, May 9

Final Exam: Friday, May 13, 1:30-3:30 pm.

You will be allowed to use calculators (see above), but no notes or other aids on your exams.

Grading: Your final grade will be calculated according to the following scheme:

Exams I,II: 27.5% each
Homework: 15%
Final Exam: 30%.

Excused Absence Policy: Make-ups for in-class exams will only be given for *compelling* and *documented* reasons. University policy now requires that make-up exams be given, in a timely way, in case an exam is missed due to an excused absence. Be aware that this policy means that absences will only be excused if they meet the university standard (see link below). Also be aware that a make-up exam could be an oral exam. Here is a link to university policies about excused absences: https://policies.umd.edu/assets/section-v/V-100G.pdf.

Academic Integrity: We follow the university-approved guidelines for academic integrity. Basically, they boil down to: no cheating of any kind, including homework and all exams. Please consult the university policies: https://faculty.umd.edu/teach/integrity.html

University course-related policies: See http://www.ugst.umd.edu/courserelatedpolicies.html.

No texting/computer policy: Open computer screens and active phone use are a distraction for your instructor and for other students, and therefore will not be permitted during the class meetings. If you must attend to something via phone/text or otherwise, please excuse yourself and conduct your conversation outside the classroom. You may not have a laptop or ipad, etc,. open during lecture, unless you prove to me you are using that device to take notes.

Mask policy: Face coverings over the nose and mouth are required while you are indoors at all times. There are no exceptions. Students not wearing a mask will be given a warning and asked to wear one, or will be asked to leave the classroom immediately. Students who have additional issues with the mask expectation after a first warning will be referred to the Office of Student Conduct for failure to comply with a directive of University officials.

Note the following official university policy: Fully vaccinated instructors have the option of teaching without masks if they can maintain social distancing from their students and if they are willing to teach without mask. The choice is up to the instructor.

Other: More details as the course evolves will become available on Canvas. You should check Canvas for updates on a regular basis.