

Introduction to Number Theory

MAS 4203

3 Credit Hours

Class Number 11792

Summer B 2022

Instructor: Alexander York
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Office Hours: TWR 1:00-2:00PM

Lecture

MTWRF LIT 205 Period 5 2:00 - 3:15PM

Prerequisites	MAC2312, MAC2512, or MAC3473 with a minimum grade of C; MAS3300 or MHF3202 recommended.
Course Description	This course is designed as an introduction to elementary number theory and its applications for Mathematics and Computer Science majors. The basic topics include the greatest common divisor, the fundamental theorem of arithmetic, arithmetic functions, multiplicative functions, congruences, the Chinese remainder theorem, quadratic residues, quadratic reciprocity and primitive roots. We hope to cover some material on cryptography and/or diophantine equations.
Courses Goals	The goals of this course are for students to gain an understanding of the basic ideas behind number theory. At the end of the course students should have a firm understanding of how to effectively communicate mathematical ideas, formulate mathematical proofs, and know and understand basic ideas and applications of number theory.
Required Materials	There is no required textbook for this course. The course will be self-contained within the lectures given, however these will follow material from <i>Elementary Number Theory</i> by Strayer, Chapters 1-5.
E-Learning Canvas:	E-learning canvas, a UF course management system, is located at elearning.ufl.edu . Use your Gatorlink username and password to login. All course information including your grades, course homepage, syllabus, office hours, etc. can be accessed from this site. You are responsible for verifying that your grades are accurate. You have one week after a score has been posted to contact your instructor if you believe there has been a recording error. There is no grade dispute at the end of the semester. I will post homework assignments, take-home exam portions, announcements, and grades on Canvas.
E-mail	All communication between student and instructor and between students should be respectful and professional. All official class communications will be sent only to the ufl.edu addresses. Students are responsible for acquiring, checking their email accounts regularly, and any class information sent to their ufl.edu account. Please be sure to sign your name to your e-mails.

Tests There will be two (paper and pencil) examinations throughout the course. The midterms will consist of two parts. Part 1 will be in class and written. Part 2 of the mid-term exams will consist of take home problems. These will take place during the 3rd and 6th weeks of the course, June 11-15 and August 1-5, respectively.

Homework There will be 6 homework assignments. These will generally be assigned on Mondays and due by midnight the following Sunday. You are allowed and encouraged to discuss the assignments with your classmates. However, you are expected to write up your own solutions to each exercise. Plagiarized solutions will result in a 0 on that assignment.

All homework will have posted due dates next to them on Canvas and these due dates will not be extended under any circumstance.

Class Participation Attendance in class both is highly recommended. Students who come to class and participate are more likely to do well in the course.

Make-up Policy **Make-up Exams** If you are participating in a UF sponsored event or religious observance, you may make up an exam only if you make arrangements with your instructor at least ONE WEEK PRIOR to the event. You must present documentation of a UF sponsored event.

Incomplete Students who are currently passing a course but are unable to complete the course because of illness or emergency may be granted an incomplete grade of I which will allow the student to complete the course within the first two weeks of the following semester. See the policy on <http://www.math.ufl.edu/fac/incompletes.html>. If you meet the criteria, you must see your instructor before finals week to be considered for an I. An I only allows you to make up your incomplete work, not redo your work.

Grading Homework: 50%

Exam 1 In-Class Portion: 12.5%

Exam 1 Take-Home Portion: 12.5%

Exam 2 In-Class Portion: 12.5%

Exam 2 Take-Home Portion: 12.5%

Grading Scale

90-100 A	87-90 A-	84-87 B+	80-84 B
77-80 B-	74-77 C+	67-74 C	64-67 C-
60-64 D+	57-60 D	54-57 D-	0-54 E

Scores within 0.5% of the next cutoff will round up.

For a complete explanation of current policies for assigning grade points, refer to the UF undergraduate catalog:

catalog.ufl.edu/ugrad/regulations/info/grades.aspx

Calculators One of the goals of the class is to learn how to use number theoretic tools to simplify or speed up calculations and algorithms that would otherwise be unwieldy to use. Since these applications involve the use of numbers larger than would be comfortable to work with in an exam setting, you will be allowed to use a non-programmable calculator on exams if necessary.

Students with Learning Disabilities Students requesting class and exam accommodations must first register with the Dean of Students Office Disability Resource Center (DRC), www.dso.ufl.edu/drc/. That office will provide a documentation letter via email to your instructor. This must be done as early as possible in the semester, **at least one week before the first exam**, so there is adequate time to make proper accommodations.

Academic Honesty Guidelines All students are required to abide by the Academic Honesty Guidelines which have been accepted by the University. The academic community of students and faculty at the University of Florida strives to develop, sustain and protect an environment of honesty, trust, and respect. Students are expected to pursue knowledge with integrity. Exhibiting honesty in academic pursuits and reporting violations of the Academic Honesty Guidelines will encourage others to act with integrity. Violations of the Academic Honesty Guidelines shall result in judicial action and a student being subject to the sanctions in paragraph XIV of the Student Code of Conduct. The conduct set forth hereinafter constitutes a violation of the Academic Honesty Guidelines (University of Florida Rule 6C1-4.017).

The Mathematics Department expects you to follow the Student Honor Code. We are bound by university policy to report any instance of suspected cheating to the proper authorities. You may find the Student Honor Code and read more about student rights and responsibilities concerning academic honesty at the link www.dso.ufl.edu/sccr/.

In addition, we remind you that lectures given in this class are the property of the University/faculty member and may not be taped without prior permission from the instructor and may not be used for any commercial purpose. Students found to be in violation may be subject to discipline under the Student Conduct Code.

Diversity and Inclusion The Mathematics Department is committed to diversity and inclusion of all students. We acknowledge, respect, and value the diverse nature, background and perspective of students and believe that it furthers academic achievements. It is our intent to present materials and activities that are respectful of diversity: race, color, creed, gender, gender identity, sexual orientation, age, religious status, national origin, ethnicity, disability, socioeconomic status, and any other distinguishing qualities.

Evaluations Students are expected to provide feedback on the quality of instruction in this course based on 10 criteria. These evaluations are conducted online at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be notified when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results>.

Important Summer B 2022 Academic Dates and Deadlines

Classes Begin	Monday, June 27
Drop/Add	Monday, June 27 - Tuesday, June 28 (11:59PM)
Withdrawal with 25% Refund	Wednesday, July 6 (11:59PM)
Withdrawal Deadline	Friday, July 29 (11:59PM)
Classes End	Friday, August 5

Holidays

Independence Day Monday, July 4

Note: Information in this syllabus is subject to change. Any changes will be clearly announced in class or through e-mail.