Mathematics 4301/5301: Number Theory
Fall 2022

Instructor: Noah Lebowitz-Lockard
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Course Schedule: Class meets MW at 2:30-3:50 in RBN 4025.

Course Website: You MUST activate your Canvas account. To do so, go to https://www.uttyler.edu/canvas. This is also the address to login. If you are registered in the course, you already have access to the course. Important documents will be posted on Canvas. Additionally, announcements may be made via email, so you must regularly check your uttyler email.

Office Hours: TBA in RBN 4038.

Required Text: *A Friendly Introduction to Number Theory* by Joseph H. Silverman

Course Description: Number theory is the study of the *whole numbers*. Much of the course relates to the *prime numbers*. Additional topics include factorization, the Euclidean algorithm, the Sieve of Eratosthenes, the Fermat-Euler Theorem, and quadratic reciprocity.

Course Prerequisites: MATH 3315 (Linear Algebra) and MATH 4325 (Foundations of Mathematics)

Learning Objectives: By the end of this course, you should be able to do the following:

1. Write proofs. Rather than simply doing computations, you need to prove theorems and be able to justify your arguments.
2. Know the fundamental ideas of number theory and be able to apply them to different types of problems.

Grading: To assign your grade, I will average your homework, the midterm, and the final as follows.

Homework: 50%
Midterm: 25%
Final: 25%

Getting an A requires at least a 90% average, B 80%, C 70%, and D 60%. Anything lower is an F.

Homework: Every Wednesday, you will receive a homework assignment which you will have one week to complete. If you hand an assignment in late, you will receive a 10% penalty for each day after the due date. (I would prefer that you hand it in during class, but if you email it to me that night, that is also acceptable.) If you have a scheduling conflict and cannot turn it in on time, please inform me beforehand.

Exams: On October 12, we will have the midterm.

Calculators and cell phones will not be allowed on the midterms or final exam. If you are unable to take the midterm on the given date, please inform me one week in advance so that I can reschedule it.

Final Exam: The final exam is currently scheduled for Wednesday, December 7 from 2:45 to 4:45 in RBN 4025. (As there are very few students in this class, I may be open to changing this if there are scheduling conflicts.)

Cell Phones: Cell phones are not permitted in class. Please silence them beforehand.

Calculators: The use of calculators and other electronic devices, including cell phones, during exams is strictly prohibited.

Make-Ups: If you are unable to take a midterm or the final at the given date, please inform me at least one week in advance. If it is for a UT Tyler obligation or a religious observation, I will grant it.

Academic Integrity: Your work must be your own. Violations will be processed according to the established guidelines of the department, college, and university. Violations of academic integrity include, but are not limited to, cheating, fabrication, or plagiarizing. A range of academic sanctions may be taken against a student who engages in academic dishonesty. Below are ideas related to academic integrity.

Resources you are encouraged to utilize in this course include the textbook, assigned and unassigned problems, notes from class, the Math Learning Center, your instructor, and the other students (though your work must ultimately be your own). E-mail is the best way to contact me outside of class and office hours.

While the internet is a valuable resource, using it to unethically acquire answers is considered a violation of academic integrity and processed accordingly. Similarly, copying answers from other students' assignments, past and present, violates the idea that your work must be your own.

Cheating is a very serious issue and can result in disciplinary action. While you may collaborate with your peers, you cannot copy their work.

University Policies: September 2 is this semester's Census Date, the deadline for all registrations, schedule changes, and section changes. For university policies concerning Students' Rights and Responsibilities, Grade Replacement/Forgiveness, State-Mandated Course Drop Policy, Disability Services, Student Absence due to Religious Observance, Absence for University-Sponsored Events and Activities, Social Security, and FERPA Statement, please see http://www.uttyler.edu/academicaffairs/files/syllabuspolicy.pdf.