Instructor Information	**Name:** Jason LeGrow **Office:** McBryde 470 **Email:** `jlegrow@vt.edu`
Class Times	Tuesday and Thursday, 9:30 – 10:45am
Class Location	McBryde 240
Office Hours	Tuesday 2:00 – 4:00pm, and other times by appointment.
Course Website	`canvas.vt.edu`
Prerequisites	Math 3034 or 3134. You may be required to use a computer algebra system. I recommend Maple. Students must be comfortable reading and writing mathematical proofs. Prior exposure to modern algebra at the level of Math 3124 would be beneficial.
Textbook	Weissman, M. H. (2017). **An Illustrated Theory of Numbers**. American Mathematical Society.
Course Objectives	This is a first course in number theory. We will study foundational results in the field, such as the Euclidean algorithm, the fundamental theorem of arithmetic, arithmetic in quadratic integer rings, modular arithmetic, quadratic residues and quadratic reciprocity, and the theory of quadratic forms.
Course Outline	I intend to cover the following topics, which encompass the entire textbook: **Foundations:** The Euclidean algorithm, prime factorization and the fundamental theorem of arithmetic, rational and constructible numbers, arithmetic of the Gaussian and Eisenstein integers. **Modular Arithmetic:** Introduction, modular dynamics, the Chinese remainder theorem, the RSA cryptosystem, quadratic residues and quadratic reciprocity. **Quadratic Forms:** Introduction, the topograph, definite forms, indefinite forms.
Grading	Assignments will be worth 30% of your grade, two midsemester tests will be worth 40% of your grade (20% each), and the final exam will be worth 30% of your grade. **Assignments.** There will be a number of assignments, each due on a **Tuesday at 11:59pm**. Your lowest assignment grade will be dropped. Late assignments will not be accepted. **Tests and Exams.** The tests are tentatively scheduled for 1. **Tuesday, February 20, in class** 2. **Tuesday, March 26, in class** The final exam is scheduled by the registrar's office; check the course schedule. A final numerical grade of 90, 80, 70, or 60 will guarantee a final letter grade of at least A-, B-, C-, or D-, respectively.
Collaboration	You are welcome—in fact, *encouraged*—to collaborate with current Math 4134 students while solving assignment problems. However, you must write your solutions separately, and the solution you submit must be your own. If you do collaborate, you must write the name of all of your collaborators on the first page of your assignment. If you use external resources (*e.g.* textbooks) you must cite them precisely. You must **not** post assessment problems or solutions on any platform (*e.g.,* CourseHero, Chegg).

Attendance

Attendance is not required, but it is *highly* encouraged. While lectures will mostly be based on the textbook or similar resources, I will provide additional explanation and context that will help you to understand the material.

Academic Integrity

The Undergraduate Honor Code pledge that each member of the university community agrees to abide by states:

"As a Hokie, I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."

Students enrolled in this course are responsible for abiding by the Honor Code. A student who has doubts about how the Honor Code applies to any assignment is responsible for obtaining specific guidance from the course instructor before submitting the assignment for evaluation. Ignorance of the rules does not exclude any member of the University community from the requirements and expectations of the Honor Code.

The Virginia Tech honor code pledge for assignments is as follows:

"I have neither given nor received unauthorized assistance on this assignment."

The pledge is to be written out on all graded assignments at the university and signed by the student. The honor pledge represents both an expression of the students support of the honor code and a commitment to uphold the academic standards at Virginia Tech.

Academic Accommodations

Virginia Tech welcomes students with disabilities into the Universitys educational programs. The University promotes efforts to provide equal access and a culture of inclusion without altering the essential elements of coursework. If you anticipate or experience academic barriers that may be due to disability, including but not limited to ADHD, chronic or temporary medical conditions, deaf or hard of hearing, learning disability, mental health, or vision impairment, please contact the Services for Students with Disabilities (SSD) office (540-231-3788, `ssd@vt.edu`, or visit `ssd.vt.edu`). If you have an SSD accommodation letter, please meet with me privately during office hours or by appointment as early in the semester as possible to deliver your letter and discuss your accommodations. You must give me reasonable notice to implement your accommodations, which is generally 5 business days and 10 business days for final exams.

Policy Changes

This course policy sheet is subject to change pending changes in the university policy. If the university policy changes (*e.g.*, we go all online), a new course policy sheet will be posted to Canvas, and it is your responsibility as a student to inform yourself of the changes made.