VIRGINIA COMMONWEALTH UNIVERSITY
Department of Mathematics & Applied Mathematics
Math 353 – Experimental Mathematics
Fall 2025

Instructor: Dr Larson
Office: 4106 Harris Hall
Email Address: clarson@vcu.edu
Web page: math1um.github.io/Teaching, and Canvas for grades.
Classroom and Meeting: 2127 Harris Hall, 11:00-12:15 TTh
Office Hours: 12:30-2:00 TTh

Prerequisite: Math 201 (with a C or better).

Text: *Elementary Number Theory: Primes, Congruences, and Secrets: A Computational Approach*, W. Stein, 2009 (ISBN #0387855246).

Additional Text Resources: wstein.org/ent (including link to "free legal PDF" of the book).

Software: Each student is required to sign up for a one semester student subscription to CoCalc (cocalc.com), approx. $20.

Bulletin Description: An introduction to a mathematical computing package, computer manipulation of lists and sets, and symbolic computing. Numerical computation will be used to investigate mathematical objects, such as integers, prime numbers, graphs, matrices and to identify properties and patterns among these objects. Random methods will be used to explore properties and patterns in long sequences and large collections.

Learning Goals: Chps. 1,2,4. The mathematical goal is to understand and use the basic, classical theorems of number theory. The experimental goal is to learn to use an automated conjecturing program (CONJECTURING) for generate conjectures about mathematical objects (primarily integers).

Course Schedule: This course is based on a set of daily instructor-produced worksheets. We will do one of these in class every class day. It is generally impossible to finish these completely without in-class help and discussion. Tests are based these daily classroom worksheets and assigned homework. The pace will not be predetermined (but will depend on how things go in class from day to day).

Expectations:

- You are expected to attend class, complete homework, and ask questions during class or office hours.
- Communicating mathematics is integral to the creation and transmission of mathematics. You should give significant thought as to how to explain your homework solutions to the class.
- I encourage you to work with others on homework problems, however, any assignments to be turned in must be written up on your own. If you work with others, you must write who you worked with on your assignment.
- Please write neatly on all assignments to be graded; exceptionally messy work may not be graded.
- Only selected homework problems will be graded; other problems will be graded for completion.
- **There are no make-ups on in-class assignments.** I will drop your three lowest in-class assignments, assuming that you couldn't come to class for excusable reasons.

- Make up tests will be considered under exceptional circumstances: if you miss a test and want to be considered for a make-up, you *must* contact me immediately.

Tests and Determination of Grades:

There will be 2 equally weighted tests. Here is the *tentative* schedule:

Test #1 (Midterm), Thurs., Oct. 16
Test #2 (Final), Tues., Dec. 16, 8:00-10:50.

• The tests are closed-book and closed-notes.
• The tests will be based *on* the in-class assignments and assigned homework.
• Use of calculators or other computing technology is not allowed on the tests.
• Tests are written under the assumption that you are studying the material at least 6 hours per week outside of class.

Your final average will be computed as follows:

Test 1, 2:	20% each
Homework:	25%
In-class assignments:	35%

Grade Scale: The 10-point scale: 90-100 A, 80-89 B, etc.

Important Dates to Know:

- Last day to withdraw, Fri. Oct. 31
- Fall Break, Nov. 24-30
- Classes end, Mon., Dec. 8

More VCU Policies, Honor System and Syllabus Information:

Students should visit http://go.vcu.edu/syllabus and review all syllabus statement information. The full university syllabus statement includes information on safety, registration, the VCU Honor Code, student conduct, withdrawal and more.