

VIRGINIA COMMONWEALTH UNIVERSITY
Department of Mathematics

I. Required Syllabus Information

A. Course prefix and number, section number, and title

CRN: 34859

Section Number: 001

Subject: Mathematics & Appl Mathematics

Course Number: 401

Title: INTRO TO ABSTRACT ALGEBRA

B. Semester term and credit hours

Associated Term: Fall 2024

Credit Hours: 3

C. Class meeting days/times/location

Class meeting days/times: TTH 11:00 AM - 12:15 PM

Location: Monroe Park Campus | Grace E Harris Hall-Floyd Ave | Room 2113

D. Instructor name, contact information, and office hours

Instructor name: Allison H. Moore

Contact information: moorea14@vcu.edu

Office hours: W 9-10, F 10-11 Harris Hall 4149 (tentative)

E. University course description (required to be verbatim from the University Bulletin)

MATH 401 Introduction to Abstract Algebra Semester course; 3 lecture hours. 3 credits.

Prerequisites: MATH 300 and MATH 310, each with a minimum grade of C. An introduction to groups, rings and fields from an axiomatic point of view. Coset decomposition and basic morphisms.

F. Course prerequisites, if any

MATH 300 and MATH 310, each with a minimum grade of C.

G. Student learning outcomes

This class will give an introduction and overview of abstract algebra, including groups, rings and fields. Examples will be emphasized throughout the semester. Group theory topics will include subgroups, cyclic groups, permutations, cosets, direct products, normal subgroups, quotient groups, group homomorphisms and the fundamental theorem of finite Abelian groups. Ring theory topics will include subrings, integral domains, ideals, polynomial rings, factorization and irreducibility. Field theory topics will be motivated by classic polynomial problems, and will touch upon algebraic extensions, fields of fractions, and finite fields. *If time permits* we will look at some applications in cryptography, symmetry and coding, or further topics like the Sylow theorems and group presentations.

H. Required texts and/or course materials

1. The textbook is: *A first course in Abstract Algebra*, 3rd edition, by Rotman. ISBN-10: 0131862677; ISBN-13: 978-0131862678. Please note that earlier editions and used copies of the textbook may be found much cheaper, and that these are acceptable substitutes.
2. An optional, second textbook is *Abstract Algebra* by Dummit and Foote. ISBN 0471433349. I will occasionally borrow lecture material from this textbook.

I. Course schedule

The schedule is **subject to change**, as is appropriate for the progression of the class. Homework and quiz dates, in particular, may vary. Announcements regarding due dates will be made regularly via Canvas.

Homework: *Assigned every other week, check course schedule.* I will type homework assignments and post them to Canvas that way if you have an older edition of the textbook, you will still be able to do the homework.

Major Assignment Schedule:

• Quiz 1	August 29	In class, in-person
• Quiz 2	September 12	In class, in-person
• Quiz 3	September 26	In class, in-person
• Midterm	October 3	In class, in-person
• Quiz 4	October 17	In class, in-person
• Quiz 5	October 31	In class, in-person
• Quiz 6	November 14	In class, in-person
• Midterm	November 21	In class, in-person
• Final Exam	December 17	In class, in-person

See section II-Q below for additional information about quiz, exam and homework policies.

J. Final exam date and time (if applicable)

Final exam to be held Tuesday, December 17, 2024.

K. Grading scale

90-100 A, 80-89 B, 70-79 C, 60-69 D, below 60 F. Instructor reserves the right to curve.

L. Grade categories and weights

Quizzes:	20% (Lowest dropped)
Homework:	15% (Lowest dropped)
Midterm 1:	20%
Midterm 2:	20%
Final Exam:	20%
Attendance and participation:	5%

M. Link to the VCU Syllabus Policy Statements on the Provost's Website

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.

N. The following statement and link:

Use VCU Libraries to find and access library resources, spaces, technology and services that support and enhance all learning opportunities at the university. (<https://www.library.vcu.edu/>)

II. Additional Syllabus Information

O. Modality

The modality of this course is Face-to-Face Instruction. In-person attendance and participation is required. Quizzes and exams will be held in person unless otherwise stated. Homework may be submitted online.

P. Zoom and Canvas

In the event of illness or other campus disruption, we may need to conduct meetings virtually. For online meetings, we will use the following Zoom link:
<https://vcu.zoom.us/j/86406128409>
Meeting ID: 864 0612 8409

Canvas will be used to download and submit homework. Canvas may be used to conduct quizzes in the event that the university switches to online-mode or in other special circumstances.

Q. Homework, Quiz and Exam Policy

Q1. Homework: Homework will be assigned periodically and will be due approximately every two weeks. Handwritten or typed homework should be submitted in PDF format online, through Assignments in Canvas. Working problems is the best way to learn the material, so expect homework assignments to be long. Not every problem on the assignments will be graded; only a small subset will be graded for correctness and the remaining problems will be marked for completion.

Q2. Quizzes: All quizzes will be held during class and will be timed. For the most part, quizzes will be in-person, although one or two of the quizzes may need to be conducted through Canvas (in which case advance notice will be given). Quizzes are open book and open notes, but you are not allowed to consult other people or internet-based resources.

Q3. Exams. Two midterm exams are scheduled along with a final exam. Exams will be a timed and in-person. A single page note sheet will be permitted for all exams.

Final exam times are set by VCU here: <https://rar.vcu.edu/exams/index.html>.

R. Academic Dishonesty (cheating):

- You are expected to uphold the honor system at all times.

- If you are suspected of cheating, the matter will be sent to the honor council. This may result in a zero on the assignment, an F in the class, or suspension from the University.
- Examples of cheating include, but are not limited to, the following:
 - copying someone else's work or allowing another student to copy your work
 - copying answers to problems from websites like Stack Exchange
 - paying a tutor to solve a problem on your homework or having someone else do your homework
 - using sites like Chegg, Quora, Slader, Coursehero or social media to solicit for answers, regardless of whether it is free or paid
 - prompting any type of AI to answer your homework or exam problems
 - gaining knowledge from looking at another student's quiz/test
 - giving another student answers (or letting them copy) on a quiz/test
 - discussing a quiz/test with someone who has already taken it or asking for information on a quiz/test from someone who has already taken it

Working together with your classmates on homework assignments in a collaborative manner is *not considered cheating in this class*. I strongly encourage students in this class to work together on homework assignments.

S. Our shared learning environment

Everyone should know that I am grateful for your presence and appreciate your input in our in-person and online classes. You are welcome here, and our diverse backgrounds make us stronger together. I am dedicated to providing a welcoming and inclusive environment for all students, independent of your immigration status, country of origin and/or citizenship, race, ethnicity, religious affiliation, gender/sex, gender identity, sexual orientation, age, ability or disability, socioeconomic status, or perspective. Thank you for joining my class and bringing your unique experience and background to our intellectual community!

T. Students with disabilities:

VCU is committed to ensuring that all students maintain equal access to all aspects of the university, including educational experiences through the provision of reasonable accommodations and academic adjustments. In addition to being a requirement under Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act, this speaks directly to VCU's mission of inclusion, equity, and access. To receive accommodations or other disability-related supports, students must register with the Office of Student Accessibility and Educational Opportunity on the Monroe Park Campus (828-2253) or the Division for Academic Success on the MCV campus (828-9782). Students and faculty can visit the [Student Accessibility and Educational Opportunity website](#) and/or the [Division for Academic Success website](#) for additional information. Once students have completed the registration process, they will be provided with a letter of accommodation. They should provide a copy to their instructor(s) and attempt to schedule a meeting to discuss the implementation of accommodations as early in the semester as possible.