

[Back to MATH course list](#)**COURSE CHANGE PROPOSAL****COURSE ID**

MATH 4000/6000

TITLES

Course Title: Modern Algebra I
Athena Title: Modern Algebra I

COURSE DESCRIPTION

An introduction to abstract algebra. Course begins with arithmetic and congruence in the integers, and introduces modular arithmetic. Course then moves to the more general setting of rings, and extends concepts from the integers to polynomial rings and other rings. The concepts of ideals and quotient rings are introduced. Groups are introduced, and normal subgroups and quotient groups appear as the analogues of ring-theoretic concepts.

ADDITIONAL REQUIREMENTS FOR GRADUATE STUDENTS

Extra problems on weekly homework.

GRADING SYSTEM

A-F (Traditional)

CREDIT HOURS AND LECTURE/LAB/DISCUSSION HOURS

	FIXED	VARIABLE
Credit Hours	3	
Lecture Hours per week	3	

NON-TRADITIONAL FORMAT (IF THE LECTURE/LAB HOURS OR THE LECTURE/DISCUSSION HOURS ARE FEWER THAN THE CREDIT HOURS, PLEASE PROVIDE JUSTIFICATION IN THE BOX BELOW.)**REPEAT POLICY**

Course cannot be repeated for credit

EQUIVALENT COURSES

The course will not be open to students who have credit in the following courses:

CURRENT:

Undergraduate

Graduate

PROPOSED:

Undergraduate
MATH 4000E
Graduate
MATH 6000E

REQUIRED PREREQUISITES

Undergraduate:

(MATH 3000 or MATH 3300 or MATH 3300E or MATH 3500 or MATH 3500H) and (MATH 3200 or MATH 3200W or CSCI 2610 or CSCI 2610E)

Graduate:

PREREQUISITE OR COREQUISITE COURSES

Undergraduate:

Graduate:

COREQUISITE COURSES

Undergraduate:

Graduate:

PRIMARY DELIVERY MECHANISM (SELECT ONLY ONE)

Lecture

COURSE WILL BE OFFERED

Every Year – Fall Spring Summer

EFFECTIVE SEMESTER AND YEAR OF CURRENT VERSION OF COURSE**CURRENT:**

Fall 2024

PROPOSED:

Fall 2026

**ADDITIONAL INFORMATION REQUIRED FOR THE SYLLABUS
COURSE OBJECTIVES OR EXPECTED LEARNING OUTCOMES**

The Student Learning Outcomes are as follows:

Students will acquire computational skills with modular arithmetic and polynomials, as well as with concrete examples of rings and groups.

Students will master basic definitions related to abstract algebraic structures such as rings, fields, groups, ideals, and quotients.

Students will develop their abstract reasoning and proof-writing skills, enabling them to write rigorous proofs about rings and groups in both general and concrete settings.

TOPICAL OUTLINE

Arithmetic in Z (the integers)

Congruence in Z and modular arithmetic

Rings

Congruence in $F[x]$ and congruence-class arithmetic

Ideals and quotient rings

Groups

Normal subgroups and quotient groups

The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary.

EXPERIENTIAL LEARNING

+

INSTITUTIONAL COMPETENCY

+

UNIVERSITY HONOR CODE AND ACADEMIC HONESTY POLICY

+

UGA WELL-BEING RESOURCES

+

COMMENTS

Comment By	Comment Date	Comment
Paree Shedd	11/14/2025 12:35:41 PM	Adding equivalent course information.

ORIGINATOR OF REQUEST

curriculum systems (capa@uga.edu)

11/14/2025 12:29:52 PM

Mathematics

Franklin College of Arts and Sciences

ORIGINATING UNIT APPROVALS

Department Head: Michael Usher

Approved on: 11/14/2025 12:35:52 PM

COLLEGE CURRICULUM COMMITTEE

College Committee Chair: Bram Tucker

Approved on: 11/14/2025 12:36:28 PM

College/School Dean: Anna Westerstahl Stenport

Approved on: 11/14/2025 12:36:40 PM

Graduate School Dean: Ron Walcott

Approved on: 11/24/2025 3:04:01 PM

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