Course Change Request

New Course Proposal

Date Submitted: 01/26/26 10:39 am

Viewing: **MATH 521 : Abstract Algebra**

Last edit: 02/04/26 2:32 pm

Changes proposed by: esander

Programs referencing this course

SC-MS-MATH: Mathematics, MS

In Workflow

1. **MATH Chair**
2. **SC Curriculum Committee**
3. SC Assistant Dean
4. Assoc Provost-Graduate
5. Registrar-Courses
6. Banner

Approval Path

1. 01/28/26 10:55 pm Maria Emelianenko (memelian): Approved for MATH Chair

Are you completing this form on someone else's behalf?

No

Effective Term: Fall 2026

Subject Code: MATH - Mathematics

Course Number: 521

Bundled Courses:

Is this course replacing another course? No

Equivalent Courses:

Catalog Title: Abstract Algebra

Banner Title: Abstract Algebra

Will section titles vary by semester? No

Credits: 3

Schedule Type: Lecture

Hours of Lecture or Seminar per week: 3

Repeatable:

May only be taken once for credit (NR)
GRADUATE ONLY

Default Grade Mode: Graduate Regular

Recommended Prerequisite(s):
Math 213 and Math 300, or equivalents

Recommended Corequisite(s):

Required Prerequisite(s) / Corequisite(s) (Updates only):
Graduate-level student

Registrar's Office Use Only - Required Prerequisite(s)/Corequisite(s):

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?

Registration Restrictions (Updates only):

Registrar's Office Use Only - Registration Restrictions:

Field(s) of Study:

Class(es):

Level(s):

Degree(s):

School(s):

Catalog Description:
This course introduces students to the fundamentals of abstract algebra, focusing on the theory of groups, rings, and fields.

Justification:
What: Creating a new course.
Why: This course will be cross listed with Math 321. Students in this course will have additional expectations on homework and exams.

Does this course cover material which crosses into another department? No

Learning Outcomes:

Important topics include (but are not limited to):

- Writing excellent proofs.
- Equivalence relations, functions, and properties of the integers
- Groups, subgroups
- Cyclic groups
- Permutation groups and Cayley's theorem
- Cosets and Lagrange's theorem (a counting principle)
- Normal subgroups; simple groups; factor groups
- Group isomorphisms and homomorphisms
- Fundamental Theorem of Finite Abelian Groups
- Rings
- Integral domains
- Ideals; factor rings
- Ring isomorphisms and homomorphisms
- Introduction to fields

Will this course be scheduled as a cross-level cross listed section? Yes

Please use the Additional Attachments button to attach two syllabi for review, one undergraduate and one graduate, preferably as separate documents. These should be provided in order to demonstrate the difference in expectations and assessments for undergraduates and graduates taking the course.

Attach Syllabus

Math521Syllabus.pdf

Additional Attachments

Syllabus for Fall 2025 Abstract Algebra (MATH-321-001, MATH-321-P01).pdf

Staffing:

Rebecca Goldin, Rebecca RG, Neil Epstein, Anton Lukyanenko, Sean Lawton, Geir Agnarsson

Relationship to Existing Programs:

This course will be cross listed with Math 321. Students in this course will have additional expectations on homework and exams. Enrollment in this course is not permitted for undergraduate students. This course is part of a proposed change to our MS program.

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This course will be cross listed with Math 321. Students in this course will have additional expectations on homework and exams. Enrollment in this course is not permitted for undergraduate students.

Have you reached out to the Libraries to determine whether there are adequate resources to support your course? If not, please email Meg Meiman, Associate University Librarian for Learning, Research, and Engagement at mmeiman2@gmu.edu.

No

Additional Comments:

This course is part of a proposed change to our MS program.

Reviewer Comments

Key: 19208