

Math 521 – Abstract Algebra I – Fall 2019

T, Th 10:15 - 11:30 am in SAS 1218

Instructor: Cynthia Vinzant

Tentative Office Hours: Mon, Wed 1:30-2:30pm,
Tu 11:30am-12:30pm or by appointment

Office: SAS 3260

email: clvinzan@ncsu.edu

Textbook: Dummit and Foote (3rd edition), *Abstract algebra*, Wiley 2003

Course website: <https://clvinzan.math.ncsu.edu/teaching/521/>

Prerequisites: MA 405 (linear algebra) and MA 407 (algebra) or equivalent

Course Description: Groups, normal subgroups, quotient groups, Cayley's theorem, Sylow's theorem. Rings, ideals and quotient rings, polynomial rings. Elements of field theory.

Homework will be assigned weekly and due at the beginning of class on Thursday, unless explicitly stated otherwise. Late homework will not be accepted, but the lowest two homework grades will be dropped.

Participation: Students are encouraged to actively participate in the course. This includes asking questions and volunteering answers in class, as well as in office hours and via email.

Exams: There will be one midterm exam and a final exam.

Midterm exam: Tuesday, October 8, in class

Final exam: Tuesday, December 17, 8-11am

Grades will be calculated by

Homework (35%), Participation (5%), Midterm (25%), Final exam (35%),

based on the the scale A: ($> 85\%$), B: (70-85%), C: (60-70%), D-F: ($<60\%$).

Academic Integrity: Students are expected to follow the NC State code of student conduct, available at <http://policies.ncsu.edu/policy/pol-11-35-01>.

Students with disabilities: Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, students must register with Disability Services for Students at 1900 Student Health Center, Campus Box 7509, 515-7653. More information on NC State's policy on working with students with disabilities is available at <http://policies.ncsu.edu/regulation/reg-02-20-01>.

Class evaluations will be available online for students to complete during the last two weeks of class. Students will receive an email message directing them to a website where they can login using their Unity ID and complete evaluations. All evaluations are confidential; instructors will never know how any one student responded to any question, and students will never know the ratings for any particular instructors.

Rough schedule:

Groups (\approx 4.5 weeks)

- (1.5 weeks) Ch 1-2: Basic group theory
- (1 week) Ch 3: Quotient groups, homomorphisms, and the Isomorphism Theorems
- (2 weeks) Ch 4-5: Group actions & constructions

Rings (\approx 4 weeks)

- (2 weeks) Ch 7: Basics, quotient rings, homomorphisms ideals
- (2 weeks) Ch 8: Euclidean, principal ideal, and unique factorization domains

Fields (\approx 5 weeks)

- (2 weeks) Ch 13: Basics, algebraic and transcendental extensions
- (3 weeks) Ch 14: Galois theory