

SYLLABUS: MA 435-535-2C
ALGEBRA II: MODERN
SPRING 2024

Class meets: Tuesday & Thursday 11:00–12:15, UH 4002

Instructor: Dr. Nándor Simányi

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Web site: <http://people.cas.uab.edu/~simanyi/teaching/MA-435-535-2024/>

Office hours: Tuesdays and Thursdays, 2:00–3:00, or by appointment.

Course Description. Basics of the most important algebraic structures: Groups, rings, fields. Plenty of examples.

Text:. Regularly distributed handouts and I. N. Herstein: Abstract Algebra. John Wiley & Sons. 3rd Ed. (A copy of this book can be found on the website dedicated to this class.)

Homework will be assigned on a weekly basis.

Assessment Procedures. Student achievement will be assessed by any or all of several measures: Regularly assigned homework problems, two midterm tests, and a comprehensive final exam. A numerical score is given on each of them.

Students taking the class at the 500 level will have an additional, assigned project to prepare in order to successfully pass the class.

Class Attendance: Class attendance is mandatory. One can get a passing grade only if the number of their unexcused absences is not more than 20% of the number of classes.

Grading Policy. Student achievement on the items assessed will be used to determine the final grade. The percentage of the final numerical grade assigned to each item is as follows: final exam: 40%; two midterm tests: 20% each; homework 20%. At the end I will “reasonably” curve the overall numerical scores.

Final exam. Tuesday, April 23 10:45 AM 1:15 PM

DRAFT SYLLABUS

Groups: Definition and examples

Subgroups, isomorphisms

Transformation groups

Cyclic groups, order of an element

Coset decomposition, Lagrange’s theorem

Homomorphisms. Normal subgroups and factor groups
The homomorphism theorems
Cauchy's theorem

Rings: Definitions and examples
Subring, center
Ideals, homomorphisms, quotient rings
Polynomial rings and their structure
Divisibility, irreducible vs. prime elements.
Unique Factorization Domains

Fields: Definition, examples.
Prime fields, characteristics
Field extensions
Elements of Galois Theory, time permitting.