

MATH 521 - Algebra I

Instructor: Ayhan Günaydın

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Course Description

We will study Groups, Rings, and Modules assuming some knowledge of undergraduate level algebra. So the students are assumed to have seen the basics of these objects before. A list of topics to be covered is as follows:

- Review of basics of group theory: definition, examples, homomorphisms, subgroups, quotient groups, etc.
- Group actions.
- Sylow Theorems.
- Solvable groups.
- Nilpotent groups.
- Review of basics of rings. . .
- Chinese Remainder Theorem.
- Euclidean domains, PIDs, UFDs.
- Polynomial rings.
- Basics of modules. . .
- Tensor product of modules.
- Exact sequences of modules.
- Modules over PIDs.

Sources

We will provide **lecture notes** on the webpage of the course.

We will be loosely following *Abstract Algebra* by Dummit and Foote. Even though we will cover topics from the Chapters 1–12 of that book, we may do it in a different way than done there.

The following texts might be useful as well:

- *Algebra*, T.W. Hungerford
- *Algebra*, S. Lang

Grading Policy

Homeworks: (30%). Homework will be assigned weekly.

Midterm (30%). There will be one midterm exam whose date is to be determined.

Final (40%). The final exam date is also to be determined.