

MATH-211

Algebra II - groups

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Cursus	Sem.	Type
Mathematics	BA3	Obl.

Language of teaching	English
Credits	5
Session	Winter
Semester	Fall
Exam	Written
Workload	150h
Weeks	14
Hours	4 weekly
Courses	2 weekly
Exercises	2 weekly
Number of positions	

Summary

This course deals with group theory, with particular emphasis on group actions and notions of category theory.

Content

Topics covered include quotient groups, the isomorphism theorems, abelian groups, Sylow subgroups, group actions and representations, basic notions of category theory.

Keywords

Group, quotient, isomorphism, Sylow subgroup, action, representation, category.

Learning Prerequisites**Required courses**

MATH-110(a) Advanced linear algebra I
MATH-115(a) Advanced linear algebra II
MATH-113 Algebraic structures

Important concepts to start the course

Definitions of groups and basic examples: symmetric groups, reflection groups, dihedral groups.

Learning Outcomes

- Prove basic results of group theory
- Construct examples of groups and their actions
- Systematize groups, homomorphisms and categories
- Formulate the main theorems of the course

Teaching methods

Lectures and exercise sessions

Expected student activities

Students are expected to attend all lectures and participate in all problem sessions.

Assessment methods

Written exam

Supervision

Office hours	No
Assistants	Yes
Forum	Yes

Resources

Bibliography

J. J. Rotman, "An introduction to the Theory of Groups"
D. S. Dummit, R. M. Foote, "Abstract algebra, 3rd edition"

Moodle Link

- <https://go.epfl.ch/MATH-211>