

MATH-211

**Algebra II - groups**

Negut Andrei

Cursus	Sem.	Type
Mathematics	BA3	Obl.

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

**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>