

MATH-310

**Algebra**

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Cursus	Sem.	Type
Chemistry	BA5	Opt.
Communication systems	BA5	Obl.
Computer science	BA3	Opt.
Cyber security minor	H	Opt.
HES - IC	H	Opt.

Contact language	English
Credits	4
Session	Winter
Semester	Fall
Exam	Written
Workload	120h
Weeks	14
<b>Hours</b>	<b>4 weekly</b>
Lecture	2 weekly
Exercises	2 weekly
<b>Number of positions</b>	

**Summary**

This is an introduction to modern algebra: groups, rings and fields.

**Content**

Integer numbers, Bezout's theorem. Groups, dihedral and symmetric groups. General structure results. Classification of finite abelian groups. Rings, ideals. Polynomial rings. Integral domains and Euclidean domains. Finite fields.

**Learning Prerequisites****Required courses**

Linear algebra

**Learning Outcomes**

By the end of the course, the student must be able to:

- Detect properties of algebraic objects
- Analyze finite groups
- Formulate structure of a finite abelian group in terms of cyclic groups
- Analyze structure of a ring, in particular polynomial rings

**Assessment methods**

Written homework assignment (15% of the grade)

Written exam (85 % of the grade)

**Supervision**

Forum                      Yes

**Resources****Moodle Link**

- <https://go.epfl.ch/MATH-310>