

MATH-510

**Algebraic geometry II - schemes and sheaves**

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Cursus	Sem.	Type
Ing.-math	MA1, MA3	Opt.
Mathématicien	MA1, MA3	Opt.

Language of teaching	English
Credits	10
Session	Winter
Semester	Fall
Exam	Written
Workload	300h
Weeks	14
<b>Hours</b>	<b>8 weekly</b>
Lecture	4 weekly
Exercises	4 weekly
<b>Number of positions</b>	

**Summary**

The aim of this course is to learn the basics of the modern scheme theoretic language of algebraic geometry.

**Content**

- sheaves
- affine schemes
- general schemes
- projective schemes
- coherent sheaves
- line bundles
- cohomology of sheaves

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

- Rings and modules
- Algebraic curves

**Learning Outcomes**

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

- Use basic notions of scheme theoretic algebraic geometry.

**Assessment methods**

The final grade will be assigned based on the cumulative points of the student obtained from handed in homework solutions, from homework solutions presented at the exercise sessions and from the written exam. The weights of the two parts are:

30% - handed in homework solutions, and homework presented at the exercise sessions

70% - written exam

Students will have at most 10 homeworks to be handed in, and at most 4 exercises to present at the exercise sessions,

throughout the semester.

Dans le cas de l'art. 3 al. 5 du Règlement de section, l'enseignant décide de la forme de l'examen qu'il communique aux étudiants concernés.

## Resources

### Bibliography

Hartshorne: Algebraic geometry

### Ressources en bibliothèque

- [Algebraic geometry / Hartshorne](#)

### Moodle Link

- <https://go.epfl.ch/MATH-510>