MATH-690 **Scheme Theory**

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Cursus	Sem.	Type
Mathematics		Obl.

Language of teaching	English
Credits	4
Session	
Exam	Oral presentation
Workload	120h
Hours	**56**
Courses	14
Exercises	28
TP	14
Number of positions	**15**

Frequency

Only this year

Summary

This is a course on the second chapter of the book â##Hartshorne: algebraic geometryâ## treating the foundations of scheme theory. The goal is to build a solid fundation for algebraic geometry by solving all exercises from this chapter.

Content

This is a course on the second chapter of the book “Hartshorne: algebraic geometry” treating the foundations of scheme theory. The special feature of algebraic geometry is that students have to learn it twice. First, using the “traditional” or “classical” point of view, and then using the more general theory of schemes. So, this is a course for those ho have already learned the former and want to learn now the latter.
“Hartshorne: Algebraic Geometry” is the standard foundational graduate textbook for scheme theory. It is famous about the particular approach that the big chunk of the material is in the exercises.
The goal is to read the material at home, and present all the exercises during the meetings. Each student presents one or more exercises per week. This is a course only for those who have taken a course which is at least equivalent to the alge-braic geometry masters course here at EPFL.
Warning: the course is hard, as the book and the subject is famously hard. Significant work is needed to be put in at home. There are 128 exercises in the chapter, and these are hard statements, even some theorems are proved in them. We spend about 20 minutes on each exercise

Keywords

algebraic geometry, scheme theory

Learning Prerequisites

Required courses

Algebraic geometry (masters course)

Learning Outcomes

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

- know the scheme theoretic language of algebraic geometry

Resources

Bibliography

Hartshorne: Algebraic Geometry

Ressources en bibliothèque

- Algebraic Geometry / Hartshorne