

The Department of Mathematics

2018–19–A term

Course Name Algebraic Geometry - Schemes (1)

Course Number 201.2.0121

Course web page

https://www.math.bgu.ac.il/~amyekut/teaching/2018-19/schemes-1/course_page.html

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Office Hours <https://www.math.bgu.ac.il/en/teaching/hours>

Abstract

Requirements and grading¹

The course will be in **English**. It will continue in the Spring semester, as: Algebraic Geometry - Schemes (2)

Course Topics (tentative, for both semesters; more details in course web site):

1. Sheaves on topological spaces.
2. Ringed spaces.
3. Affine Schemes.
4. Schemes.
5. Maps of schemes.
6. Morphisms to projective space and blow-ups.
7. Calculating some invariants.
8. The functor of points and moduli spaces.
9. Algebraic differential calculus.
10. Group schemes and their Lie algebras.

¹Information may change during the first two weeks of the term. Please consult the webpage for updates



Course topics

1. Sheaves on topological spaces
2. Affine schemes
3. Schemes and morphisms between them.
4. Quasi-coherent sheaves
5. Separated and proper morphisms.
6. Vector bundles and the Picard group of a scheme.
7. The functor of points and moduli spaces.
8. Morphisms to projective space and blow-ups.
9. Smooth morphisms and differential forms.
10. Sheaf cohomology.
11. Group schemes.