

COURSE DETAIL

ALGEBRAIC GEOMETRY

Country

Germany

Host Institution

Technical University Berlin

Program(s)

Technical University Berlin

UCEAP Course Level

Upper Division

UCEAP Subject Area(s)

Mathematics

UCEAP Course Number

106

UCEAP Course Suffix**UCEAP Official Title**

ALGEBRAIC GEOMETRY

UCEAP Transcript Title

ALGEBRAIC GEOMETRY

UCEAP Quarter Units

4.50

UCEAP Semester Units

3.00

Course Description

This course begins with a study of the most classical objects in algebraic geometry: conics and plane curves. Students spend time examining these examples to develop a feeling for how algebraic equations and geometric shapes interact and prove an early version of Bezout's theorem. The central part of the course develops the theory of sheaves and schemes, which provide the natural framework in which to formulate and generalize classical results. The course introduces morphisms of schemes and their fundamental properties, and it studies divisors and line bundles as fundamental tools for encoding geometric information. Students examine the local structure of schemes, including objects such as differential forms. The class also introduces Čech cohomology, both as a computational method and as a bridge to more advanced cohomological techniques. The course concludes with the Riemann-Roch theorem.

Language(s) of Instruction

English

Host Institution Course Number

3236 L 263

Host Institution Course Title

ALGEBRAISCHE GEOMETRIE

Host Institution Course Details

Host Institution Campus

Host Institution Faculty

Host Institution Degree

Host Institution Department

Institut für Mathematik

Course Last Reviewed

2025-2026

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