### Module title
Computer Algebra

### Abbreviation
10-M=VCALin-211-m01

### Module coordinator
Dean of Studies Mathematik (Mathematics)

### Module offered by
Institute of Mathematics

### ECTS
10

### Method of grading
Numerical grade

### Only after succ. compl. of module(s)
--

### Duration
1 semester

### Module level
Graduate

### Other prerequisites
--

### Contents
Fast multiplication of numbers, polynomials and matrices, fast chinese remainder theorem; factorisation of polynomials over finite fields; lattices, lattice basis reduction and LLL-algorithm; factorisation of rational polynomials, symbolic integration of rational functions; exact arithmetic with algebraic numbers; multivariate polynomials, Gröbner basis, Buchberger's algorithm, algorithms for permutation groups.

### Intended learning outcomes
The student knows about the theoretical foundations and the possible applications of several methods in computer algebra.

### Courses
V (4) + Ü (2)

### Module taught in:
English

### Method of assessment
(a) written examination (approx. 90 to 120 minutes, usually chosen) or
(b) oral examination of one candidate each (approx. 20 minutes) or
(c) oral examination in groups (groups of 2, 15 minutes per candidate)

Language of assessment: English

Assessment offered: Only when announced in the semester in which the courses are offered and in the subsequent semester creditable for bonus.

### Allocation of places
--

### Additional information
--

### Referred to in LPO 1
(examination regulations for teaching-degree programmes)

--

### Module appears in
Master's degree (1 major) Mathematics International (2021)