### Module title
Mathematics 3 for students in Computer Science

### Abbreviation
10-M-INF3-102-m01

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

### Module offered by
Institute of Mathematics

### ECTS
9

### Method of grading
Numerical grade

### Only after succ. compl. of module(s)
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### Duration
1 semester

### Module level
Undergraduate

### Other prerequisites
Registration for the exercise must be made via SB@home at the beginning of the course or as announced by the lecturer in accordance with the specified registration deadlines. Certain prerequisites must be met to qualify for admission to assessment (e.g., successful completion of a certain percentage of exercises). The lecturer will inform students about the respective details at the beginning of the course. Registration for the exercise will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the qualification for admission to assessment anew and have to register anew, too.

### Contents
Elementary algebra and number theory: cardinality of sets, relations, maps, groups, fields, residue class rings and polynomial rings, prime numbers, basics in cryptography. Discrete mathematics: graph theory, combinatorics, integral optimisation and algorithmic applications. Discrete stochastics: combinatorics, basic notions in probability theory, random variables, expected value and variance, independency, Bayes’ law, important distribution functions, Markov chains, tests.

### Intended learning outcomes
The student gets acquainted with fundamental concepts and methods of advanced mathematics. He/She learns to apply these methods to problems in natural and engineering sciences, in particular in computer science, and is able to interpret the results.

### Courses
(V + Ü (no information on SWS (weekly contact hours) and course language available)

### Method of assessment
Written examination (approx. 90 to 120 minutes); if announced by the lecturer, the written examination can be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups (groups of 2, approx. 30 minutes)

Language of assessment: German, English if agreed upon with the examiner

### Allocation of places
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### Additional information
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### Referred to in LPO I
(examination regulations for teaching-degree programmes)

### Module appears in
Bachelor’ degree (1 major) Computer Science (2010)