**Module title**
Overview Stochastics and Numerical Mathematics 1 for Teaching Degree (German Gymnasium)

**Abbreviation**
10-M-SNL-Ü-152-m01

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

**Module offered by**
Institute of Mathematics

**ECTS**
8

**Method of grading**
Only after succ. compl. of module(s)

**Duration**
1 semester

**Module level**
undergraduate

**Other prerequisites**
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**Contents**
Discrete stochastics, in particular stochastic modelling, motivation of conceptualisation and discussion of basic assumptions: basic notions of descriptive statistics, discrete probability spaces, random variables, important discrete distributions, elements of combinatorics, principle of inclusion and exclusion, multistage experiments, conditional probability, stochastic independence, common distributions, expected value and variance, covariance and correlation, waiting time problems, law of large numbers, central limit theorem, confidence intervals and statistical tests in binomial models, stochastic paradoxes; solution of systems of linear equations and curve fitting problems, nonlinear equations and systems of equations, interpolation with polynomials, splines and trigonometric functions, numerical integration.

**Intended learning outcomes**
The student is acquainted with fundamental concepts and methods in stochastics and numerical mathematics as required for teaching mathematics at German Gymnasium. He/She is able to relate these concepts with one another, and realises the advantages of thinking across the borders of different branches in mathematics.

**Courses**
(type, number of weekly contact hours, language — if other than German)

V (4) + Ü (2)

**Method of assessment**
(type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

oral examination of one candidate each (20 to 40 minutes)
Assessment will have reference to the contents of modules 10-M-STL and 10-M-NUL1.
Language of assessment: German and/or English

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

§ 73 I Nr. 3 (4 ECTS credits)
§ 73 I Nr. 5 (4 ECTS credits)

**Module appears in**
First state examination for the teaching degree Gymnasium Mathematics (2015)