

Module title		Abbreviation
Overview Stochastics and Discrete Mathematics for Teaching Degree (German Gymnasium)		10-M-SDL-Ü-152-m01
Module coordinator		Module offered by
Dean of Studies Mathematik (Mathematics)		Institute of Mathematics
ECTS	Method of grading	Only after succ. compl. of module(s)
8	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	undergraduate	--
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; techniques from combinatorics, introduction to graph theory (including applications), cryptographic methods, error-correcting codes.		
Intended learning outcomes		
The student is acquainted with fundamental concepts and methods in stochastics and discrete 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-DIML. Language of assessment: German and/or English		
Allocation of places		
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Additional information		
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Workload		
240 h		
Teaching cycle		
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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)		