

Module title		Abbreviation
Overview Algebra and Numerical Mathematics 1 for Teaching Degree (German Gymnasium)		10-M-ANUL-Ü-191-mo1
Module coordinator		Module offered by
Dean of Studies Mathematik (Mathematics)		Institute of Mathematics
ECTS	Method of grading	Only after succ. compl. of module(s)
10	numerical grade	--
Duration	Module level	Other prerequisites
2 semester	undergraduate	--
Contents		
<p>Topics in Group Theory (particularly finite abelian groups, normal subgroups, sub- and factorgroups, isomorphism theorems, solvability, group operations, Sylow theorems; examples: cyclic groups, alternating and symmetric groups, dihedral groups).</p> <p>Topics in ring theory (particularly ideals, divisibility, polynomial rings, irreducibility of polynomials).</p> <p>Topics in number theory (particularly Euclidean algorithm, Fermat's little theorem, Euler's theorem, Chinese remainder theorem, residue class rings and their unit groups, quadratic number rings).</p> <p>Topics in numerical mathematics: 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.</p>		
Intended learning outcomes		
The student is acquainted with fundamental concepts and methods in algebra and numerical mathematics. 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) + 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)		
<p>oral examination of one candidate each (20 to 40 minutes)</p> <p>Language of assessment: German and/or English</p> <p>Assessment will have reference to the contents of modules 10-M-ALGL und 10-M-NUL1</p>		
Allocation of places		
--		
Additional information		
--		
Workload		
300 h		
Teaching cycle		
--		
Referred to in LPO I (examination regulations for teaching-degree programmes)		
§ 73 I Nr. 2 (5 ECTS credits), § 73 I Nr. 5 (5 ECTS credits)		
Module appears in		
<p>First state examination for the teaching degree Gymnasium Mathematics (2019)</p> <p>First state examination for the teaching degree Gymnasium Mathematics (2023)</p>		

