Module title			Abbreviation
Overview Algebra and Logic			10-M-ALLO-Ü-232-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)
12	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	undergraduate	--

Contents

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). Topics in ring theory (particularly ideals, divisibility, polynomial rings, irreducibility of polynomials). Fundamentals of predicate logic, in particular models, formal proofs, completeness and compactness. Gödel's incompleteness theorems. Selected topics from areas such as computability, proof theory, model theory and set theory.

Intended learning outcomes

The student has extensive knowledge of the mathematical ways of thinking and working as well as of proof methods, so that he/she masters the basic notions of algebra and mathematical logic and can apply them to elementary problems in other fields of mathematics.

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

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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 two topics in pure mathematics as agreed upon with the examiner. Each topic may only be selected as the subject of one examination in the sub-fields Gesamtüberblick (Overview).
Language of assessment: German and/or English

Allocation of places

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Additional information

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Workload

360 h

Teaching cycle

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

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Module appears in

Bachelor's degree (1 major) Mathematics (2015)
Bachelor's degree (1 major) Mathematics (2023)