Study programme(s): Mathematics (PhD studies)	
Level: PhD studies	
Course title: Model theory 1 (AL06)	
Lecturer: Maja A. Pech, Boris B. Šobot	
Status: elective	
ECTS: 7	
Requirements: none	

Learning objectives

Introducing basics of model theory and its application in other fields of mathematics.

Learning outcomes

Minimal: Adopting basics and techniques of model theory.
Desirable: Application of model theory in algebra.

Syllabus

Basic notions of model theory. Classifying structures by formulas. Relation of preservation. Quantifier elimination. Skolem functions. Ehrenfeucht-Fraïssé type games. Compactness for first-order logic and consequences. Types. Elementary amalgamation. Countable models: Fraïssé construction. Omitting types. Ω-categoricity and Ryll-Nardzewski theorem. Completeness. Special models: homogeneous, homomorphism-homogeneous, polymorphism-homogeneous and weakly oligomorphic structures.

Literature

1. W. Hodges, *A Shorter Model Theory,* 1997.
2. C. C. Chang, H. J. Keisler, *Model Theory*, North-Holland, 1973
3. Žarko Mijajlović: *An Introduction to Model Theory,* Novi Sad, 1987.

Weekly teaching load				Other:
Lectures: 2	Exercises :0	Other forms of teaching: 0	Student research: 6	0

Teaching methodology

Lectures are presented using classical teaching methods supported by beamer presentations and continuous interaction with students. The abillity of application of theoretical knowledge is checked through independent solving of exercises on two colloquia. The final exam is oral and a student is supposed to demonstrate general understanding of the presented theoretical material.

Grading method (maximal number of points 100)			
Pre-exam obligations	**points**	**Final exam**	**points**
Colloquia	50	Oral exam	50