

Study programme(s): Mathematics (MD)				
Level: doctoral studies				
Course title: Mathematical logic 1 (AL-20)				
Lecturer: Rozália S. Madarász-Szilagyí				
Status: elective				
ECTS: 10				
Requirements: none				
Learning objectives: Acquainting the students with ideas, advanced methods and techniques of mathematical logic.				
Learning outcomes: Understanding of concepts of mathematical logic and gaining the ability to apply the methods and techniques of mathematical logic to research.				
Syllabus: Propositional logic. Horn formulae. Resolution. Completeness and compactness. Various formalizations. Predicate logic. Semantics. Embeddings. Substructures. Diagrams. Theories and models. Proof theory. Herbrand's theory. Resolution in first order logic. Properties of first order logic. Completeness, compactness, the Upper and Lower Löwenheim–Skolem theorems. Amalgamation. Formula preservation. Supermodels and submodels. Unions of chains. Completeness and decidability. Categoricity. Random graphs. Quantifier elimination. Boundaries of first-order logic.				
Literature 1. E. Mendelson, <i>Introduction to Mathematical Logic</i> , D.van Nostrand, 1964. 2. S. Hedman, <i>A First Course in Logic</i> , Oxford University Press, 2004. 3. H.-D. Ebbinghaus, J. Flum, W. Thomas, <i>Mathematical Logic</i> , Springer, 1994. 4. P. C. Rosenbloom, <i>The Elements of Mathematical Logic</i> , Dover Publications, 2005. 5. Ž. Mijajlović, <i>An Introduction to Model Theory</i> , Novi Sad, 1987.				
Weekly teaching load				Other:
				0
Lectures:	Exercises	Other forms of teaching:	Student research:	
2	0	0	6	
Teaching methodology Lecturing theory with constant student interaction.				
Grading method (maximal number of points 100)				
Pre-exam obligations	points	Final exam	points	
Colloquia	50	Oral exam	50	