☑ MSc Program: Logic and Algorithms

Length of Study: 3 Semesters
Form of Study: Full-time
Minimum ECTS credits: 90

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The Logic and Algorithms MSc program is aimed at graduates of Bachelor's programmes in Mathematics and Computer Science. It offers a specialisation in the field of Mathematical Logic. During the curriculum, the students will have the opportunity to learn about the current trends in Mathematical Logic. The program provides a solid theoretical background indispensable for solving non-trivial algorithmic problems in the field of Mathematics as well as in the field of Computer Science.

The curriculum of the program is divided in compulsory and elective courses. The compulsory courses give the basic knowledge in the field of Classical and Non-classical logic as well as in Computability and Set Theory. The elective courses focus on the study of special formal systems and abstract structures, providing a deeper knowledge in specific areas of the vast field of Mathematical Logic.

The program provides a solid background in the field of Classical Mathematical Logic and Modal Logic. The students will have the opportunity to specialize in the different areas the SU Logic Group is currently working in – Computability Theory, Proof Theory, Programming Language Theory, Modal Logic, Applications of Finite Automata and Transducers.

The graduates of the program will have a solid background that allows them to proceed with their studies as PhD students and then have a successful career in academia as professors and researchers. They will also be well suited for the high-tech industry, especially for companies

developing new technologies.

The entrance exam for the program covers the following subjects usually covered in the standard course of Discrete Mathematics: Basic notions in Set Theory, Finite Automata, Formal Languages and Grammars, Computable Sets, Undecidable Problems.

УЧЕБЕН ПЛАН

Courses	ECTS-kredits	total	per week
I semester			
Mathematical Logic (C)	8	75	3+2+0
Set Theory (C)	8	75	3+2+0
Modal Logic (C)	8	60	4+0+0
Computability and Complexity	7	75	3+2+0
Non-Classical Logics Seminar 1	4	30	0+2+0
II semester			
Computability Theory (C)	8	75	3+2+0
Model Theory	8	75	3+2+0
Applications of Finite Automata	8	75	3+2+0
Lambda Calculus and Proof Theory	7	60	3+1+0
Logics for Space and Time: Region-based Approach	7	60	3+1+0
Applied Modal Logics	7	60	4+0+0
Non-Classical Logics Seminar 2	4	30	0+2+0
Topics in Computability	7	60	4+0+0
Finite Model Theory	8	75	3+2+0
Consistency and Independence in Set Theory	7	60	2+2+0
III semester			
Descriptive Set Theory	6	45	3+0+0
Games, Logics and Models	6	60	3+1+0
Computability Theory Seminar	4	30	0+2+0
Thesis project (C)	15	150	10
Master Thesis	15	150	10

Number of classes