

M110	Elective 2 nd Year	Mathematical Logic	L	P	S	ECTS 6
			2	2	0	

Course objectives. The course objective is to introduce the basic concepts of classical mathematical logic, primarily with propositional logic and the logic of the first order; to present the semantics of the theory, corresponding to formula and their interpretation; to introduce the concept of proof and theorems and derive theorems of consistency and completeness; to master the use of the concepts of mathematical logic in solving mathematical problems; to describe examples of the first order logic.

Prerequisites. Undergraduate mathematics and computer science study programme.

Course content.

1. Language of propositional logic, formulas and interpretations. Types of formulas.
2. Second normal form and validity tests.
3. The invoice courts, the concept of proof and theorem. Consistency and completeness.
4. The language of first order logic. Formula, structure and interpretation. Normal forms.
5. The final test. Derived rules of first order logic, deduction, consistency and completeness.
6. Examples of the application of first order logic.

LEARNING OUTCOMES

No.	LEARNING OUTCOMES
1.	Use the semantics of mathematical logic.
2.	Understand the terms of axioms, proofs and theorems.
3.	Analyze the consistency and completeness of the set of formulas.
4.	Use the main test for testing the formula.
5.	Apply the principles of mathematical logic in solving mathematical problems.
6.	Describe the fundamental theory of the first order logic.

RELATING THE LEARNING OUTCOMES, ORGANIZATION OF THE EDUCATIONAL PROCESS AND ASSESSMENT OF THE LEARNING OUTCOMES

TEACHING ACTIVITY	ECTS	LEARNING OUTCOME **	STUDENT ACTIVITY*	EVALUATION METHOD	POINTS	
					min	max
Attending lectures and exercises	1	1-6	Lecture attendance, discussion, team work and independent work on given tasks	Attendance lists, tracking activities	0	4
Written exam (Mid-terms)	2	1-6	Preparing for written exams	Verification of correct answers (evaluation)	25	48
Final exam	2	1-6	Revising	Oral exam	25	48
TOTAL	5				50	100

Teaching methods and knowledge assessment. Lectures and exercises are obligatory. The exam consists of written and oral part, which can be taken after the completion of lectures and exercises. During the semester, student can take mid-terms which replace the written examination.

Can the course be taught in English: Yes

Basic literature:

1. M.Vuković, Matematička logika, Element, 2009.

Recommended literatura:

1. R. Cori, D. Lascar, *Mathematical Logic: a Course with Exercises*, Oxford University Press, 2000
2. A. Margaris, *First Order Mathematical Logic*, Dover Publications, 1990
3. G. Tourlakis, *Lectures in Logic and Set Theory, Vol. I: Mathematical Logic*, Cambridge University Press, 2003