

4IZ617 LOGIKA A SÉMANTIKA

Course code	4IZ617
Course title in language of instruction	Logika a sémantika
Course title in Czech	Logika a sémantika
Course title in English	Logic and Semantics
Mode of completion and number of credits	Exam ECTS (6 credits), Exam (4 credits) One ECTS credit corresponds to 26 hours of workload for an average student.
Type of course	Daily attendance: 2/2 (hours of lectures per week / hours of seminars per week)
Language of instruction	Czech
Level of course and year of study	master: 4; master continuing: 1
Semester	Sklad FIS – FIS
Name of lecturer	doc. PhDr. Petr Jirků, CSc. (supervisor)
Prerequisites	none

Aims of the course

To make acquaintance with both fundamental concepts and methods of mathematical logic, possibilities of their applications and also with means of deductive theory building. Knowledge obtained in the course can be used in courses of logic programming and knowledge-based systems.

Learning outcomes and competences

Upon successful completion of this course, students will be able to apply the fundamental concepts and methods of mathematical logic and the logical means of deductive theory building.

Course contents

1. Topic and history of logic
2. Propositional logic
 - 2.1 Well-formed formulas of propositional logic
 - 2.2 Boolean function
 - 2.3 Types of propositional formulas
 - 2.4 Axiomatisation of propositional logic
3. First-order predicate logic
 - 3.1 Relational structures
 - 3.2 Formulas of first-order logic
 - 3.3 Interpretations, satisfiability and provability
 - 3.4 Axiomatization of logical derivability
4. Selected systems of non-classical logic
 - 4.1 Developing non-classical logical systems
 - 4.2 Many-valued logics and modal logics
 - 4.3 Fuzzy logic

Teaching methods and student workload

Type of teaching method	Hours of workload
	daily attendance
Participation in lectures	26
Preparation for lectures	13
Attendance at seminars/workshops/tutorials	26
Preparation for seminars/workshops/tutorials	13
Preparation for mid-term test(s)	26
Preparation for final oral exam	52
Total	156

Assessment methods

Requirement type	Weight
	daily attendance
Mid-term test(s)	50 %
Final oral exam	50 %
Total	100 %
Special requirements and details: none	

Recommended reading

Type*	Author	Title	Published in	Publisher	Year	ISBN
R	JIRKŮ, P. – VEJNAROVÁ, J.	Formální logika : neformální výklad základů formální logiky	Praha	Oeconomica	2005	80-245-0974-1
R	PEREGRIN, J.	Logika a logiky : systém klasické výrokové logiky, jeho rozšíření a alternativy	Praha	Academia	2004	80-200-1187-0
R	SOCHOR, A.	Klasická matematická logika	Praha	Karolinum	2001	80-246-0218-0
R	JIRKŮ, P. – KELEMEN, J.	Kapitoly z kognitivní vědy : racionalita z hlediska chování, jazyka a logiky	Praha	Vysoká škola ekonomická	1996	80-7079-787-8

* R – required reading, A – additional reading