Faculty of Fundamental Problems of Technology

COURSE CARD

Name in polish	:	**Metody Programowania w Logice**
Name in english	:	**Programming in Logic**
Field of study	:	Computer Science
Specialty (if applicable)	:	
Undergraduate degree and form of	:	masters, stationary
Type of course	:	optional
Course code	:	E2_W09
Group rate	:	Yes

	Lectures	Exercides	Laboratory	Project	Seminar
Number of classes held in schools (ZZU)	30	30			
The total number of hours of student workload (CNPS)	90	90			
Assesment	pass				
For a group of courses final course mark	X				
Number of ECTS credits	3	3			
including the number of points corresponding to the classes of practical (P)		3			
including the number of points corresponding occupations requiring direct contact (BK)	3	3			

PREREQUISITES FOR KNOWLEDGE, SKILLS AND OTHER POWERS

The prerequisites are not defined for this module.

COURSE OBJECTIVES

C1 Getting to know the theoretical foundations of logic programming

C2 Learning to use the methods of automatic theorem proving

COURSE LEARNING OUTCOMES

The scope of the student's knowledge:

W1 Student knows the issue of unification termów

W2 Student knows the issues related to the interpretation of first-order logic formulas

W3 Student knows the automated theorem proving methods based on the principle of resolution

The student skills:

U1 Student is able to apply the resolution to automatic theorem proving

U2 Student is able to apply the control strategies used to increase the efficiency of inference

U3 Student is able to use Prolog as a practical programming system based on the resolution

The student's social competence:

K1 Student is able to indicate the applications of automated theorem proving in various fields

COURSE CONTENT		
Type of classes - lectures		
Wy1	Terms and cyclic terms	2h
Wy2	Matching and unification	2h
Wy3	Semiunification	2h
Wy4	Interpretations of formulas in first order logic	2h
Wy5	Normal forms and Skolem standard forms	2h
Wy6	Herbrand procedure	2h
Wy7	The resolution principle	2h
Wy8	Semantic resolution	2h
Wy9	Lock resolution	2h
Wy10	Linear resolution	2h
Wy11	Control strategies	2h
Wy12	The equality relation	2h
Wy13	SLD(NF)-resolution	2h
Wy14	The least Herbrand model	2h
Wy15	Conclusions	2h
Type of classes - exercises		
Ćw1	Terms	2h
Ćw2	Unification	4h
Ćw3	Interpretation	4h
Ćw4	Skolem normal form and Herbrand procedure	4h
Ćw5	Resolution	4h
Ćw6	Linear rezolution	4h
Ćw7	Control strategies	4h
Ćw8	SLD(NF)-resolution and its semantics	4h

Applied learning tools
1. Traditional lecture 2. Multimedia lecture 3. Solving tasks and problems 4. Consultation 5. Self-study students

EVALUATION OF THE EFFECTS OF EDUCATION ACHIEVEMENTS		
Value	Number of training effect	Way to evaluate the effect of education
F1	W1-W3, K1-K1	Test
F2	U1-U3, K1-K1	Realization of exercises
P=60%*F1+40%*F2		

BASIC AND ADDITIONAL READING
1. C.L. Chang, R.C.T. Lee. Symbolic Logic and Mechanical Theorem Proving. Academic Press, Inc., 1973. 2. J.W. Lloyd. Foundations of logic programming. Springer-Verlag New York, 1987. 3. M. Wójcik. Zasada rezolucji. Metoda automatycznego wnioskowania. PWN, 1991.

SUPERVISOR OF COURSE
dr Przemysław Kobylański

RELATIONSHIP MATRIX EFFECTS OF EDUCATION FOR THE COURSE
Programming in Logic
WITH EFFECTS OF EDUCATION ON THE DIRECTION OF COMPUTER SCIENCE

Course training effect	Reference to the effect of the learning outcomes defined for the field of study and specialization (if applicable)	Objectives of the course**	The contents of the course**	Number of teaching tools**
W1	K2_W02	C1	Wy1-Wy15	1 2 4 5
W2	K2_W02	C1	Wy1-Wy15	1 2 4 5
W3	K2_W02	C1	Wy1-Wy15	1 2 4 5
U1	K2_U12_A	C2	Ćw1-Ćw8	3 4 5
U2	K2_U12_A	C2	Ćw1-Ćw8	3 4 5
U3	K2_U12_A	C2	Ćw1-Ćw8	3 4 5
K1	K2_K13 K2_K14_A	C1 C2	Wy1-Wy15 Ćw1-Ćw8	1 2 3 4 5