



Course title LOGIC FOR INFORMATICIANS

ECTS credit allocation (and other scores): 3,5

Semester: spring

Level of study: ISCED-6 - first-cycle programmes (EQF-6)

Branch of science: Natural sciences

Language: English

Number of hours per semester: 30 lectures + 30 classes = 30 hours

Course coordinator/ Department and e-mail: Erasmus coordinator Anna Szczepkowska/ WMil,
erasmuswmil.uwm.edu.pl

Type of classes: classes and lectures

Substantive content

CLASSES:

1. Basic notions of propositional calculus. Checking the satisfiability and truthness of formulas. 2. The method of analytic tables for propositional calculus. 3. Axiom Systems for propositional calculus. Gentzen's System. Hilbert's System. The examples of proves. 4. Conjunctive normal form and disjunctive normal form of formulas. Logical gates. Logical networks. 5. Resolution rule for propositional calculus and its applying in checking the truthness of formulas. 6. First order logic. The method of analytic tables for predicate calculus. 7. Resolution rule for first order logic and its applying in checking the truthness of formulas.

LECTURES:

1. Propositional calculus. The operators, the formulas, logic equivalence, the satisfiability of formulas, the truthness of formulas, logical consistency. 2. The method of analytic tables for propositional calculus. 3. Axiom Systems for propositional calculus. Gentzen's System. Hilbert's System. 4. Resolution rule for propositional calculus. 5. First order logic. The formulas, logic equivalence, the models. 6. The method of analytic tables for first order logic. 7. Resolution rule for first order logic.

LEARNING PURPOSE:

the introduction with basic notions of mathematical logic, introduction with sections of logic associated with theoretical computer science.

On completion of the study programme the graduate will gain:

Knowledge:

Student has the extended knowledge in the field of logic, knows and understands strong association some sections of logic with theoretical computer science. Student well understands the role and the importance of proof in mathematics and also the notion of assumptions.

Skills:

Student possesses the skill of applying the notions of mathematical logic in computer science problems. Student possesses the skill of applying the method of analytic tables in checking the truthness and satisfiability of formulas, possesses the skill of applying the method of resolution in checking the truthness of formulas. Student is able to construct direct logical networks.



Student is able to gain information from literature, to work severally with problems left to independent solution.

Social competence:

Student is able to work collectively over solution of given tasks or problems, to think and to act in enterprising way.

Basic literature:

1) Mordechai Ben Ari, Logika matematyczna w informatyce; 2) J. Słupecki, K. Hałkowska, K. Piróg-Rzepecka, Logika matematyczna; 3) H. Rasiowa, Wstęp do matematyki współczesnej