SYLLABUS

SUBJECT: ELEMENTS OF LOGIC AND SET THEORY

TEACHER: Prof. UR MARIA KWAŚNIK, PhD, DSc

COURSE DESCRIPTION:
The purpose of the course is to provide the students with the fundamentals of mathematics used in computer science applications.

LECTURE:
Mathematical logic: propositional logic, tautologies, inference rules, first-order logic, predicates, quantifiers, formal proofs. Information on non-classical logics. Set theory and its generalizations: set algebra, laws of set algebra, power sets, multi-sets, fuzzy sets, rough sets, Cartesian product, relations, functions as relations, equinumerous sets, cardinal numbers, ordered sets.

CLASSES:
Practical exercises concerning logical operators, tautologies, realization of logic functions, set operations, Cartesian product and relations, equinumerous sets, cardinal numbers, ordered sets.

LEARNING OUTCOMES:
Students should receive a basic knowledge about fundamentals of mathematics.

GRADING POLICY:
LECTURE: Written test.
CLASSES: Two written tests and short questions before classes.

TIMETABLE:
LECTURE: 1 hour/every week
CLASSES: 2 hours/every week

TEXTBOOK AND REQUIRED MATERIALS:

1. Rasiowa H., Introduction to Contemporary Mathematics (Wstęp do matematyki współczesnej), PWN, Warszawa 2003 (in Polish).
2. Marek W., Onyszkiewicz J., Elements of Logic and Set Theory in Exercises (Elementy logiki i teorii mnogości w zadaniach), PWN, Warszawa 2003 (in Polish).
3. Trzęsicki K., Logic and Set Theory (Logika i teoria mnogości), EXIT, Warszawa 2003 (in Polish).
4. Ben-Ari M., Mathematical Logic for Computer Science, Springer, 2003 (Polish translation: Logika matematyczna w informatyce, WNT, Warszawa 2005).

PREREQUISITES:
Mathematics in comprehensive school.