Faculty of Mathematics, Informatics and Mechanics, the University of Warsaw: topics of the entrance examination into the PhD program in computer science.

Each candidate should have a broad knowledge on the level of Master's programs in computer science in the following topics:


2. Homomorphisms and congruence relations. Defining classes of algebras by equations.

3. Syntax and semantics of the propositional logic and the first-order predicate calculus. The notion of formal proof. The completeness theorem.


10. Abstract data structures (dictionary, priority queue, stack), their implementations and applications.


15. Concurrent programming: correctness, examples of correctness violation, classical problems.

16 Operating systems: tasks, typical implementation problems and solutions.

17. Distributed systems: hardware and software aspects, methods of distributed communication, file systems, distributed shared memory, examples of distributed algorithms.