Course title: Artificial intelligence 1 (code: I151)

Status: obligatory for the module of *Computer science,* optional for module of *Information technology*

ECTS : 7

Requirements: Data structures and algorithms 1 (I021); Elements of mathematical logic (I111) or Theoretical foundations of informatics 1 (I211)

Learning objectives

Teaching students theoretical basics of artificial intelligence (AI) principles as well as a practical implementation of the software applications with the elements of knowledge representation, search and inference.

Learning outcomes

Minimum: Students should understand the basic AI concepts and should be able to implement software application for solving problems by searching state space, implementation of the intelligent player in two-player games, as well as the implementation of the knowledge-based agent.
Desirable: Students should be able to implementat the knowledge-based systems with deep understanding of logical inference and complex principles of AI.

Syllabus

Theoretical instruction

The history of AI. Intelligent agents. Solving problems by searching: uninformed and informed (heuristic) search strategies. Adversarial search: Minimax. The example of Minimax implementation in two-player game. Knowledge representation and inference in first-order logic. Ontological engineering and semantic networks. Dealing with uncertainty in AI systems. Making decisions in AI systems. The basics of machine learning. The basic principles of natural language processing.

Practical instruction

Implementation of the problem-solving systems using standard AI search algorithms using object-oriented programming language. Implementation of the Minimax algorithm in two-player game. Implementation of knowledge representation and inference in declarative programming language.

Weekly teaching load	**Theory:** 2	**Practice:** 3