# Artificial Intelligence (ECTS 5)

# Contact person: Dr. Lívia Szedmina (slivia@vts.su.ac.rs)

The course is taught both in Serbian and Hungarian languages. The course has two theoretical and two practical lessons on each week.

The course covers introductory concepts of Artificial Intelligence. Intelligent agents are discussed. Uninformed search algorithms. Depth first, breadth first, uniform cost search. Informed search. Heuristics. Greedy, A\*, local search. Constraint satisfactory problems. Genetic algorithms. Solving optimization problems with genetic algorithms. The traveling salesman problem. Particle-swarm optimization. Game theory. Two-person games. Artificial neural networks. Supervised learning, unsupervised learning.

The course covers the following topics:

1. Concepts of Artificial Intelligence

2. Solving simple problems using search

3. Intelligent agents

4. Solving the 8-queens problem

5. Finding the shortest path using greedy and A\* algorithms

6. The traveling salesman problem, SAT problem

7. Nature inspired algorithms

8. Genetic algorithms. Ant-colony optimization

9. Particle -swarm optimization methods

10. Games for two persons. Mimimax algorithm, alpha-beta pruning

11. Logical agents. Generating a knowledge base

12. Artificial neural networks

13. Solving simple problems using artificial neural networks

14. Supervised learning. Back-propagation

15. Unsupervised learning. Kohonen networks

Aims of the course:

After completing the course, students will be able to understand research directions and methods in artificial intelligence. Students will be capable of writing programs for solving different problems of artificial intelligence such as search, constraint satisfaction problems or neural networks.