



Course Specification Document

Title	Intelligent Search Algorithms
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Credits	2.5 ECTS
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Aims	This course aims to introduce the student to the difference between traditional search algorithms in computer science and intelligent search algorithms in the field of artificial intelligence. Additionally, it covers the representation of complex problems using graphs or trees, depending on the nature of the problem, and the study of game programs, enabling him to solve complex problems.
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Intended learning outcomes
On successful completion of this course, the student will be able to: <ul style="list-style-type: none">• Understand the general techniques for problem representation.• Familiarize himself with search algorithms in graph state and partial problem.• Apply search algorithms in graph state.• Utilize MiniMax and AlphaBeta game algorithms.

Syllabus
<ul style="list-style-type: none">• General techniques for problem representation: Introduction to artificial intelligence, Graph theory, problem representation (states, actions, initial state, solution path).• Blind search: Blind search strategies, breadth-first search algorithm, depth-first search algorithm, iterative deepening search algorithm, depth-limited search algorithm, recursive best-first search algorithm.• Informed search: Informed search strategies, concept of heuristics, hill climbing algorithm, A* algorithm.• Traveling Salesman Problem: Problem definition, available heuristics for solving the problem.• Game Trees: Problem representation using AND/OR statements, AO* algorithm, two-player games, MiniMax algorithm, AlphaBeta algorithm.