

Introduction to Algorithms & Models of Computation

Total Hours: 60 (6 ECTS)

Target Audience: Beginners

Prerequisites: Introduction to Python Programming

Course Overview

This course provides a comprehensive introduction to the core concepts of algorithms and computational theory. The curriculum covers a wide range of topics, from basic algorithm design and analysis to the study of formal languages and computational complexity.

Module 1: Introduction to Algorithms

Module 2: Languages and Regular Expressions

Module 3: Finite automata and Turing Machines (TMs)

Module 4: Search and Sorting Algorithms

Module 5: Recursion, Divide and Conquer, and Backtracking

Module 6: Dynamic Programming and Greedy algorithms

Module 7: Basic graph algorithms

Module 8: Complexity theory. NP-completeness