Hanze

Course: Algorithms and Datastructures — credits: 5

Course code	BFVH24ALGODATA
Name	Algorithms and Datastructures
Study year	2026-2027
ECTS credits	5
Language	Dutch, with parts in English
Coordinator	B. Barnard
Modes of delivery	Tutorial
Assessments	Algoritmen en Datastructuren - Computer, organised by School

Learning outcomes

This module has the following learning outcomes:

You analyse the time or memory complexity of an algorithm.

You use data sorting and searching algorithms appropriate to the data structure in which the data is stored.

You use linear data structures such as arrays, stacks and queues and/or the various forms of (linked) lists to solve problems efficiently.

You use (binary) trees and/or other graphs to solve problems efficiently.

You use maps and/or dictionaries to solve problems efficiently.

You use recursion to solve problems efficiently.

Content

In this module, you will learn to think about a programme on a deeper level than the code; you will realise that it is not necessarily about the fact that a programme works, but also how it works. In doing so, we will look at the underlying algorithms and data structures that you can use when creating a programme. You will learn how to prove that a particular algorithm works or is faster than another algorithm.

We start by analysing and implementing algorithms and data structures for search and sorting problems; in doing so, we address how to analyse the performance of these algorithms, both experimentally and mathematically. Then, among other things, we take a closer look at problems that require a tree or digraph structure. Here you can think, for example, of finding the shortest route from A to B, a hierarchy in a classification or finding the best move in a game.

You will also work practically with these algorithms: you will implement them to solve concrete problems. You will also apply scientific sources to supplement and deepen your knowledge of these topics.

Included in programme(s)

Bio-Informatics

School(s)

Engineering, Life Sciences & ICT

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