Data Structures

Datastrukturer
6 credits

Programme course

TND004

Valid from: 2025 Spring semester

Determined by	Main field of study	
Board of Studies for Computer Science and Media Technology	Computer Science and Engineering, Media Technology and Engineering	
Date determined	**Course level**	**Progressive specialisation**
2024-08-28	First cycle	G2F
Revised by	**Disciplinary domain**	
	Technology	
Revision date	**Subject group**	
	Computer Technology	
Offered first time	**Offered for the last time**	
Spring semester 2009		
Department	**Replaced by**	
Institutionen för teknik och naturvetenskap		

Course offered for

- Master of Science in Media Technology and Engineering
- Master of Science in Electronics Design Engineering

Prerequisites

Programming in C++, mathematical concepts like series from Calculus II

Intended learning outcomes

The aim of the course is to give students the tools to independently be able to create programs that solve practical problems dealing with large amounts of data, considering efficient use of time and memory. Upon completion of the course the student should fulfill the following learning outcomes.

1. To understand fundamental data structures concepts.
2. To apply data structures to solve computational problems considering given requirements.
3. To analyze and evaluate various data structures in solving computational problems with respect to efficiency and appropriateness.
4. To implement and use the data structures and algorithms in application programs.

Course content

Algorithm analysis. Recursion. Lists, stacks and queues. Trees and tree traversals. Binary search trees and balanced trees. Hashing and hash tables. Priority queues and binary heaps. Sorting och searching. Graphs and graph traversals. Fundamental graph algorithms.

Teaching and working methods

Lectures, lessons, and laboratory work.

Examination

UPG1	Optional assignment	0 credits	U, G
LAB1	Laboratory work	3 credits	U, G
TEN1	Written examination	3 credits	U, 3, 4, 5

The optional assignment consists of two quizzes. Results on the quizzes will give credits to the computer examination (and re-examination until the month of January after the course is completed).

Grades for examination modules are decided in accordance with the assessment criteria presented at the start of the course.

Grades

Four-grade scale, LiU, U, 3, 4, 5

Other information

About teaching and examination language

The teaching language is presented in the Overview tab for each course. The examination language relates to the teaching language as follows:

- If teaching language is “Swedish”, the course as a whole could be given in Swedish, or partly in English. Examination language is Swedish, but parts of the examination can be in English.
- If teaching language is “English”, the course as a whole is taught in English. Examination language is English.
- If teaching language is “Swedish/English”, the course as a whole will be taught in English if students without prior knowledge of the Swedish language participate. Examination language is Swedish or English depending on teaching language.

Other

The course is conducted in such a way that there are equal opportunities with regard to sex, transgender identity or expression, ethnicity, religion or other belief, disability, sexual orientation and age.

The planning and implementation of a course should correspond to the course syllabus. The course evaluation should therefore be conducted with the course syllabus as a starting point.

The course is campus-based at the location specified for the course, unless otherwise stated under “Teaching and working methods”. Please note, in a campus-based course occasional remote sessions could be included.