Data structures and algorithms 7.5 credits D0041D

Datastrukturer och algoritmer

Course syllabus admitted: Autumn 2023 Sp 1 - Present

DECISION DATE
2022-02-11

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Data structures and algorithms 7.5 credits D0041D

Datastrukturer och algoritmer

First cycle, D0041D

Education level	Grade scale	Subject	Subject group (SCB)
First cycle	G U 3 4 5	Datalogi	Computer Technology

Entry requirements

In order to meet the general entry requirements for first cycle studies you must have successfully completed upper secondary education and documented skills in English language and and knowledge in object-oriented programming corresponding to the course D0037D - Object-oriented programming 7.5 credit. Good knowledge in English, equivalent to English 6.

Selection

The selection is based on 1-165 credits.

Course Aim

After course completion, the student should be able to demonstrate:

1. knowledge about a) the scientific foundation for developing and analysing algorithms and data structures that accurately and efficiently solve different problems and b) the proven experience programmers in this field of Computer Science;
2. ability to create, analyse and critically evaluate various technical solutions for evaluating computer software in situations when they become so complex that they are not transparent;
3. ability to plan and use appropriate methods to undertake advanced programming tasks within predetermined parameters.

Contents

This course provides skills in algorithmic problem solving. The course includes algorithms and data structures, especially for searching and sorting of large data sets and graphical problems. Queues, stacks, lists, priority queues, trees and search trees, graphs, sets, and tables and recurrence equations, efficiency analysis and upper limits. Analysis of asymptotic time and memory complexity for algorithms.

Realization

Each course occasion´s language and form is stated and appear on the course page on Luleå University of Technology's website.
Lectures and laboratory work. In the practical lab work we use an object oriented programming language (usually C++).

Examination

If there is a decision on special educational support, in accordance with the Guideline Student's rights and obligations at Luleå University of Technology, an adapted or alternative form of examination can be provided.
Examination consists of a final written exam and mandatory programming assignments.
The course objectives are examined as follows:

1. Final written exam. Individual lab assignments;
2. Final written exam. Individual lab assignments;
3. Lab assignments.

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Unauthorized aids during exams and assessments

If a student, by using unauthorized aids, tries to mislead during an exam or when a study performance is to be assessed, disciplinary measures may be taken. The term "unauthorized aids" refers to aids that the teacher has not previously specified as permissible aids and that may assist in solving the examination task. This means that all aids not specified as permissible are prohibited. The Swedish version has interpretative precedence in the event of a conflict.

Overlap

The course D0041D is equal to ISI732, W0040E, D0012E, D0010D, D0034D

Course offered by

Department of Computer Science, Electrical and Space Engineering

Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0002	Laboratory work	U G#	3	Mandatory	S10	
0003	Written exam	G U 3 4 5	4.5	Mandatory	S22	

Study guidance

Study guidance for the course is to be found in our learning platform Canvas before the course starts. Students applying for single subject courses get more information in the Welcome letter. You will find the learning platform via My LTU.

Last revised

by Jonny Johansson, HUL SRT 2022-02-11

Syllabus established

by LTU Skellefteå 2008-11-19

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