Data Structures and Algorithms

Programme course

6 credits

Datastrukturer och algoritmer

TDDI16

Valid from: 2017 Spring semester

Determined by

Board of Studies for Computer Science
and Media Technology

Date determined

2017-01-25

Main field of study

Computer Science and Engineering, Programming

Course level

First cycle

Advancement level

G1X

Course offered for

- Computer Engineering, B Sc in Engineering
- Programming, Bachelor's Programme

Entry requirements

Note: Admission requirements for non-programme students usually also include admission requirements for the programme and threshold requirements for progression within the programme, or corresponding.

Prerequisites

Basic course in programming in C++. Discrete mathematics.

Intended learning outcomes

Upon completion of this course the student should be able to describe how frequently used data structures and algorithms are constructed, explain their different properties, e.g. regarding efficiency in different aspects, and to use them in application programs.

Course content

The lectures covers data structures and algorithms from a principal point of view, but based on concrete examples. Data structures covered are lists, stacks, queues, graphs, special trees, and hash tables, which also include algorithms for operating on these data structures. The general algorithms covered are algorithms for searching and sorting. Basic analysis of requirements regarding time and space for the data structures and algorithms is included. The lessons are dedicated to some preparation of the programming exercises but mainly for solving problems concerning data structures and algorithms, and are in that respect preparing for the written exam. The programming exercises is a series of smaller programming exercises.

Teaching and working methods

The course is arranged as a series of lectures, lessons and programming exercises. Self-study hours must be set aside for literature studies and programming.

Examination

UPG1	Computer based hand-in assignment	2 credits	U, G
LAB1	Programming assignments	2 credits	U, G
DAT1	Computer examination	2 credits	U, 3, 4, 5

The computer exam tests the students knowledge about data structures and algorithms.

The programming exercises give the student opportunity to analyze, design, implement and use, in various extent, a selection of data structures and algorithms.

Grades

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

Department

Institutionen för datavetenskap

Director of Studies or equivalent

Ahmed Rezine

Examiner

Rita Kovoranyi

Course website and other links

http://www.ida.liu.se/~TDDI16/

Education components

Preliminary scheduled hours: 42 h
Recommended self-study hours: 118 h

Course literature

Additional literature

Other

Common rules

Regulations (apply to LiU in its entirety)

The university is a government agency whose operations are regulated by legislation and ordinances, which include the Higher Education Act and the Higher Education Ordinance. In addition to legislation and ordinances, operations are subject to several policy documents. The Linköping University rule book collects currently valid decisions of a regulatory nature taken by the university board, the vice-chancellor and faculty/department boards.

LiU's rule book for education at first-cycle and second-cycle levels is available at http://styrdokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva.