Programming

Programme course

6 credits

Programmering grk

TND012

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

Course level

First cycle

Advancement level

G1X

Course offered for

- Electronics Design Engineering, M Sc in Engineering
- Communications, Transport and Infrastructure, M Sc in Engineering
- Media Technology and Engineering, M Sc in Engineering

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

Prerequisites: (valid for students admitted to programmes within which the course is offered)

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Intended learning outcomes

To provide foundations for constructing computer programs and to convey specific skills in a high level programming language, C++. Basic programming concepts and techniques are introduced. Upon completion of the course, the student should fulfill the following learning outcomes.

- To describe the output of a program from the source code.
- To describe the following concepts: compilation, source code, object code, executable code.
- To use built-in data types for integers, floating point numbers, text strings, arrays and records
- To use selection and iteration statements in programs.
- To construct sub-programs (functions) and use different types of parameters and return values.
- To construct a program that solves a given problem.
- To construct programs modularly from subprograms, where every sub program performs one task.
- To use the functionality from some basic standard C++ libraries.
- To write programs with basic file processing.

Course content

Introduce students to how to develop and structure a program.

Basic types: int, double, bool, char. Variables, declarations, and expressions.

If-statements and loops.

Arrays. Search and sorting an array.

Functions. Functions declaration and definition. Functions that return no value.

Call-by-value and call-by-reference.

Scope and visibility rules.

Structuring the code in header (.h) and source (.cpp) files.

Records.

Input/output. Files.

Basic standard C++ libraries.

Teaching and working methods

Lectures, lessons, laboratory work.

Examination

UPG1	Voluntary assignment	0 credits	U, G
LAB1	Laboratory Work	3 credits	U, G
DAT1	Computer examination	3 credits	U, 3, 4, 5

The computer exam consists of three parts. Passed Part 1 gives grade 3. Approved in Part 1 and Part 2 gives grade 4. Approved on all parts gives grade 5. The optional assignment consists of three quizzes. Approved on all three quizzes will be credited to the portion of the computer exam that gives grade 3. For higher grades must therefore the rest of the computer exam be conducted and passed.

Grades

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

Other information

Supplementary courses:Object-Oriented Programming (MT), Programming, continued course (ED, KTS).

Department

Institutionen för teknik och naturvetenskap

Director of Studies or equivalent

Camilla Forsell

Examiner

Aida Nordman

Course website and other links

http://www2.itn.liu.se/utbildning/kurs/index.html?coursecode=TND012&year=2013

Education components

Preliminary scheduled hours: 68 h
Recommended self-study hours: 92 h

Course literature

Additional literature

Books

Jan Skansholm, (2011) *C++ direkt* 3:e upplagan

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.