

Programming in C++

Programme course

6 credits

Programmering i C++

TNG033

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

G2X

Course offered for

- Media Technology and Engineering, M Sc in Engineering
- Electronics Design Engineering, M Sc in Engineering
- Communication and Transportation 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

Programming, Object-Oriented Programming.

Intended learning outcomes

The aim of the course is to equip students with the necessary knowledge to develop programs in C++. To pass the course, the student must fulfill following learning outcomes:

- To use pointers and dynamic memory allocation.
- To program dynamic data structures.
- To write object oriented programs with inheritance, association and aggregates.
- To use polymorphism and dynamic binding.
- To define classes with overloaded operators.
- To write and use class/function templates.
- To write programs using different types of streams.
- To use data structures, algorithms and iterators from the C++ standard library

Course content

Pointers and dynamic memory allocation/deallocation. Singly-linked lists. Classes and inheritance. Constructors and destructors. Operator overloading. Friends. Virtual functions. Abstract classes. Streams and data files. Templates. Namespaces. C++ standard library: container classes, iterators, and algorithms.

Teaching and working methods

Lectures, lessons, laboratory work.

Examination

LAB1	Laboratory work	3 credits	U, G
DAT1	At-computer exam	3 credits	U, 3, 4, 5
UPG2	Voluntary assignment	0 credits	U, G

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 two quizzes. Approved on all quizzes will be credited to the portion of the computer exam that gives grade 3. For higher grades the rest of the computer exam must be conducted and passed.

Grades

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

Other information

Supplementary courses: Data structures, Software Engineering, Design patterns

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=TNG033>

Education components

Preliminary scheduled hours: 60 h

Recommended self-study hours: 100 h

Course literature

Additional literature

Books

Jan Skansholm, *C++ direkt* 3. upplaga

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://stydokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva.