

Syllabus

for course at first level

Program System Construction Using C++
Programsystemkonstruktion med C++

**7.5 Higher Education
Credits**
7.5 ECTS credits

Course code:	DA3019
Valid from:	Spring 2018
Date of approval:	2017-03-13
Department	Department of Mathematics (incl. Math. Statistics)
Main field:	Computer Science
Specialisation:	G1F - First cycle, has less than 60 credits in first-cycle course/s as entry requirements

Decision

This syllabus has been approved by the Board of the Faculty of Science at Stockholm University, August 31, 2007.

Prerequisites and special admittance requirements

For course admission knowledge equivalent to Object Oriented Programming, FL, 7.5 HECs (DA3002) is required.

Course structure

Examination code	Name	Higher Education Credits
LABO	Practical Exercises	6
THEO	Theory	1.5

Course content

a. The course covers: Techniques for effective construction of large program systems in C++. Development of C++ from C and Simula to ISO standard. All parts of C++ according to the ISO standard, including classes, simple and multiple inheritance, superpositioning, generic functions and classes, exceptions, constant declarations, streams, name spaces, type equivalence and type compatibility, the pre-processor. Program construction using C++: good programming style, object oriented development in C++, rules of thumb and hints for design and implementation of programs in C++, support for modularization and memory handling, making the code effective, common errors and traps, Unicode and localisation, use of the standard library, tools for testing and debugging, static and dynamic linking and name mangling, portability.

b. The course includes the following elements:

- Theory, 1.5 HECs
- Practical Exercises, 4.5 HECs

Learning outcomes

It is expected that the student after taking the course will be able to:

- program using dynamic memory allocation
- apply the standard library
- write correct C++ syntax
- write test code

- relate to advanced C++ literature
- do generic programming using type parameterisation
- apply his/hers previous knowledge of object oriented programming to C++
- model an extensive object oriented project
- present and motivate an object oriented model

Education

The education consists of lectures, exercises, presentations, and practical exercises.

Participation in the practical exercises and group education associated with this is compulsory. An examiner may rule that a student is not obliged to participate in certain compulsory education, if there are special grounds for this, after consultation with the relevant teacher.

Forms of examination

a. Examination for the course is in the following manner: measurement of knowledge takes place through written and oral presentation of the element Practical Exercises.

b. Grading is carried out according to a 7-point scale related to learning objectives:

A = Excellent

B = Very Good

C = Good

D = Satisfactory

E = Sufficient

Fx = Fail

F = Fail

c. Grading criteria for the course will be distributed at the start of the course.

d. A minimum grade of E is required to pass the course, together with completion of the element Theory and all compulsory education, followed by its presentation and award of a "Sufficient" grade.

e. Students who fail to achieve a pass grade in an ordinary examination have the right to take at least further four examinations, as long as the course is given. The term "examination" here is used to denote also other compulsory elements of the course. Students who have achieved a pass grade on an examination may not retake this examination in order to attempt to achieve a higher grade. Students who have failed to reach a pass grade on two occasions have the right to request that a different teacher be appointed to set the grade of the course. A request for such appointment must be sent to the departmental board.

Interim

Students may request that the examination is carried out in accordance with this syllabus even after it has ceased to apply. This right is limited, however, to a maximum of three occasions during a two-year-period after the end of giving the course. A request for such examination must be sent to the departmental board.

Limitations

The course may not be included in a degree together with the course item Program System Construction using C++ within any of the courses Computer Science, Advanced Course II (NA3190), Specialized Course in Computer Science (NA4020), First Degree Programme in Mathematics-Computer Science, Computer Science Branch, 4th year (NA8660–NA8710), First Degree Programme in Mathematics-Computer Science, Computer Science Branch, 4th year (NA8750–NA8760), or the equivalents.

Misc

The course is a component of the Bachelor's Programme in Scientific Computing, and it can also be taken as an individual course. The course can also be included in the main field of Scientific Computing for in-depth studies according to the Degree Ordinance.

Required reading

Course literature is decided by the departmental board and is described in an appendix to the syllabus.