



Course syllabus

Faculty of Technology

Department of Computer Science and Media Technology

1DV533 Strukturerad programmering med C++, 7,5 högskolepoäng

1DV533 Structured programming with C++, 7.5 credits

Main field of study

Computer Science

Subject Group

Informatics/Computer and Systems Sciences

Level of classification

First Level

Progression

G1N

Date of Ratification

Approved by Faculty of Technology 2018-01-08

The course syllabus is valid from autumn semester 2018

Prerequisites

General entry requirements for university studies.

Objectives

The aim of the course is for the student to acquire knowledge and develop basic skills in structured programming with C++.

After finished course, the student shall be able to:

- account for different data types and simple data structures (1)
- use variables, expressions, statements and control structures appropriate to the context (2)
- create and use functions (3)
- manage dynamically allocated memory (4)
- manage input and output, as well as text and binary files (5)
- write code that complies with the requirements for good code quality (6)
- analyze a simple programming task in order to evaluate and select a suitable design and, based on this, implement a well-functioning solution (7)

Content

The course consists of two modules.

Module 1 Theory 3.5 credits

The theory module, which covers objectives 1-5, deals with the following elements:

- input and output
- simple data types, strings, arrays, structures, user defined types
- control structures for selection and iteration
- functions with and without return value, data transmission through parameters
- parameters
- pointers and dynamically created variables
- text files and binary files

Module 2 Practical assignments 4 credits

In the practical module, which covers objectives 1-7, the theoretical concepts are applied by analyzing given problems, which are then structured and solved with appropriate program logic according to techniques covered in current step. This means that the student practically applies the independently studied theory by creating his/her own applications written in C++. A large number of programming tasks are provided, among which the student selects difficulty level according to interest and ambition.

Type of Instruction

The course is conducted entirely at a distance and is based on self-studies of assigned literature and web based study material. The study material deals with the theory, as well as the students are assigned practical tasks in which the knowledge is applied. For the practical applications is offered personal online tutoring. Since only web-based communication is applied in this distance learning course, the student is required to have own access to computer, headset, webcam and internet connection.

The course is divided into 6 steps that build upon on each other. Each step includes a number of practical tasks of varying difficulty and extent, which are graded 1-3 points according to severity level. To pass, the student should perform and report tasks, which in total shall reach a certain number of points, determined for each step. Hence the student can choose difficulty level and tasks of his/her own interest and ambition.

Each step ends with a theoretical test, carried out online in a web-based test tool according to instructions given on the course web. Failed step test can be reexamined at least twice, normally in connection with the next regular examination session.

Examination

The course is assessed with the grades A, B, C, D, E, Fx or F.

The course is assessed with the grades A, B, C, D, E, or F. The grade A constitutes the highest grade on the scale and the remaining grades follow in descending order where the grade E is the lowest grade on the scale that will result in a pass. The grade F means that the student's performance is assessed as fail (i.e. received the grade F).

Module: Practical applications (4 credits): Objectives 1-7 are examined stepwise, through written presentations of programming tasks. The grades A-F are applied.

Module: Theory (3.5 credits): Objectives 1-5 are examined stepwise, through tests with multiple choice questions. The tests are individual and computer-based and carried out from optional location. The grades A-F are applied.

Final grade is only set after completion of the course and based on an overall assessment of respective examination results from the two modules (Practical Applications and Theory).

The grades A-F are applied for the final grade and are based on grading criteria which are published on the course website. For grade E, the approval level for respective examination module must be achieved. For higher grade than E is mainly required that the practical applications are implemented at a more advanced level, as well as comply with stated quality requirements and grading criteria for respective grade. Also the theoretical result should support the corresponding level.

Reexamination is offered within six weeks under the regular semester periods.

Course Evaluation

During the course or in close connection to the course, a course evaluation is to be carried out. The result and analysis of the course evaluation are to be communicated to the students who have taken the course and to the students who are to participate in the course the next time it is offered. The course evaluation is carried out anonymously. The compiled report will be filed at the Faculty.

Other

Grade criteria for the A–F scale are communicated to the student through a special document. The student is to be informed about the grade criteria for the course by the start of the course at the latest.

Since only online communication is used in this distance course, is required that the student has own access to computer, headset, webcam and internet connection.

The course is communicated in English or Swedish, depending on the student's choice and prerequisites. The self-study material is available in English and Swedish at the course web site.

Required Reading and Additional Study Material

Recommended literature

- Schildt, Herbert: C++ from the ground up, (McGrawHill/Osborne Media), latest available edition.
- Optional alternative beginner's book in C++ programming may be used after agreement with the course coordinator.
- Additional web-based study material is provided on the course's website.