GHENT UNIVERSITY

Course Specifications

Valid as from the academic year 2018-2019

Programming in C++ (E765019)

Course size (nominal values; actual values may depend on programme)

Credits 3.0	Study time 90 h	Contact hrs	30.0 h

Course offerings and teaching methods in academic year 2018-2019

A (semester 1)	Dutch	lecture	15.0 h
		practicum	15.0 h

Lecturers in academic year 2018-2019

Naessens, Helga	TW05	lecturer-in-charge
Van Den Breen, Wim	TW05	co-lecturer

Offered in the following programmes in 2018-2019	crdts	offering
Master of Science in Electrical Engineering Technology (main subject Automation)	3	A

Teaching languages

Dutch

Keywords

Informatics, Programming Language, Object oriented Programming, C++, Computer Science (P170), Informatics (P175), Computer Technology (T120).

Position of the course

An in-depth course in C++ for those already familiar with programming in C.

Contents

An in-depth and a rather complete survey of C++, including the following topics:

- Basic concepts: basic data types, reference type, function templates, console input and output, namespaces, working with files, dynamic memory management
- Collections: introduction, iterators, sequences, sequence adapters, associative containers
- OGP in C++: classes in C++, class templates, constructor-destructor, copy constructor, separate compilation, friend functions and classes, operator overloading
- Inheritance: public vs. private inheritance, constructor/destructor in derived class, overriding =-operator, keyword protected, polymorphism and dynamic binding, abstract classes, virtual destructor, multiple inheritance
- Exception handling
- C++ 11: automatic type derivation, move constructor and move operator, defaulted and deleted functions, functions as parameters and lambda functions, nullptr, smart pointers (unique_ptr and shared_ptr)

Initial competences

Programming skills in C: basic concepts, pointers, structs, dynamic memory management, linked lists, bit fiddling.
Having followed the course programming in C.

Final competences

1 To be able to independently implement, test and execute a computer program in C++.
2 To be able to transform an object oriented design into a working computer program in C++.
3 To be able to analyze and to structure a problem and to translate it into a computer program in C++.

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences

assessment

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Lecture, practicum

Extra information on the teaching methods

During the lectures the theory is explained step by step, partly based on examples.
During the exercise sessions (attendance required) the student works independently on a PC.

Learning materials and price

Slides, examples and exercises are provided on the electronic learning environment.
Book (English) "C++ Primer, 5th Edition, Lippman & Lajoie & Moo, Addison-Wesley".
Purchase without obligation. Estimated cost: max. 55 euro

References

- The C++ Programming Language, Special Edition, Bjarne Stroustrup, Addison-Wesley 2000
- C++ for Java Programmers, M.A. Weiss, Pearson 2004
- C++ Primer, 5th Edition, S.B. Lippman, J. Lajoie, B. Moo, Addison-Wesley 2012
- Accelerated C++, A. Koenig, B. Moo, Addison-Wesley 2000

Course content-related study coaching

Additional explanation on appointment.

Evaluation methods

end-of-term evaluation and continuous assessment

Examination methods in case of periodic evaluation during the first examination period

Written examination with open questions

Examination methods in case of periodic evaluation during the second examination period

Written examination with open questions

Examination methods in case of permanent evaluation

Skills test

Possibilities of retake in case of permanent evaluation

examination during the second examination period is possible

Extra information on the examination methods

The exam is a practical exam, consisting mainly of exercises, probably complemented by a few theoretical questions.
The evaluation of the lab consists of a test.

Calculation of the examination mark

Theory: written examination (50%).
Labs: test (50%).
A weighted average is used to compute the final score for a training item. However, if a student gains a score of 7 or less on 20 on one of the different parts of this course, there will be deviated from the calculated final score if it is 10 or more and the score of the student will be a 9/20.
The test of the labs can be retaken (possibly in modified form).