GHENT UNIVERSITY

Course Specifications

Valid in the academic year 2023-2024

Computer Programming (E017210)

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

Credits 6.0 **Study time 180 h**

Course offerings and teaching methods in academic year 2023-2024

A (semester 2)	Dutch	Gent	group work
			lecture
			seminar

Lecturers in academic year 2023-2024

De Turck, Filip	TWO5	lecturer-in-charge

Offered in the following programmes in 2023-2024	crdts	offering
Bachelor of Science in Engineering(main subject Computer Science Engineering)	6	A
Bachelor of Science in Engineering(main subject Electrical Engineering)	6	A
Preparatory Course Master of Science in Bioinformatics(main subject Engineering)	6	A

Teaching languages

Dutch

Keywords

Programming, software, C/C++

Position of the course

To introduce important programming concepts en methodologies, algorithms and algorithmic strategies, data structures and their applications.

Contents

- Generalities: Overview of programming languages, Translation.
- Procedural Programming in C: Elements of language and basic data types, Control structures, Functions, Arrays, pointers, and strings, Derived data types, Modularity in C, Self-referring structures, Input/output, Communications between JAVA and C, Program verification.
- Algorithms and data structures: Elementary data structures, Tree structures, Recursive algorithms, Sets and arrays, Sorting, Priority queues and heaps, Hashing tables, Search Algorithms.
- Hybrid Programming Language (C++): Reference Types, Operator Overloading, Inheritance and Multiple Inheritance, Difference between Interface and Implementation, Templates, Standard Template Library (STL), Polymorphism, Virtual Functions.
- Project Assignment: (in groups of 2 students) programming in the C/C++ programming languages.

Initial competences

This course builds further on the acquired competences from the courses Informatics en Discrete Mathematics.

Final competences

1 have a good overview of the various paradigms for computer programming
2 master the programming languages C and C++
3 be able to apply datastructures and algorithms in practical programming exercises
4 have an insight in available platforms (and their pros and cons) for programming of software projects
5 be able to work together in a team with other students to realize a programming assignment

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

Group work, Seminar, Lecture

Learning materials and price

Course notes. Copies of the presentations of the lectures and extra notes. Lab session material via the electronic learning platform with individual feedback. Recommended handbooks. The student association VTK organizes the distribution of the course notes.Estimated pice: €10.

References

- A Book on C., 4th editie. A. Kelley en I. Pohl Pearson Education, ISBN 90-4300-497-9 (version in English).
- Algorithms in C++, Third edition, Parts 1-4, R. Sedgewick, Addison-Wesley, ISBN 0201350882. (optional)

Course content-related study coaching

An e-learning environment including online fora and software development environments. Availability of the teacher and teaching assistants via e-mail and during lab sessions. Personal feedback to all students on submitted solutions to lab assignments and project.

Assessment moments

end-of-term and continuous assessment

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

Written assessment open-book

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

Written assessment open-book

Examination methods in case of permanent assessment

Skills test, Assignment

Possibilities of retake in case of permanent assessment

examination during the second examination period is possible in modified form

Extra information on the examination methods

During examination period: written open-book exam.
During semester: graded project code and project report.
Frequency: one project in teams of two students.
In the second examination period, the project code and project report can be resubmitted as follows: the updated project code, taking the received feedback into account, together with a report with a description of the performed updates need to be submitted.

Calculation of the examination mark

Evaluation throughout semester (submitted code for the project and project report counts for 30 % of the total evaluation) as well as during examination period.
In case of a clearly different amount of contributions from the team members, the score of the students from the same team can be different. In case of non-participation to either the evaluation during the examination period or during the semester, or when a score of less than 9/20 is obtained for one of the evaluations, the student can not pass the course. If the latter condition is met and the total score would be 10/20 or more, the total score will be reduced to 9/20.