Object oriented programming in C# (E741060)

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

     Credits 4.0   **Study time**   **120 h**

Course offerings and teaching methods in academic year 2023-2024

A (semester 1)	Dutch	Gent	practical	
			independent work	0.0h

Lecturers in academic year 2023-2024

Ongenae, Veerle	TWO5	lecturer-in-charge

Offered in the following programmes in 2023-2024	**crdts**	**offering**
Bachelor of Science in Engineering Technology(main subject Electromechanical Engineering Technology)	4	A
Linking Course Master of Science in Electrical Engineering Technology(main subject Automation)	4	A
Linking Course Master of Science in Electrical Engineering Technology(main subject Electrical Engineering)	4	A

Teaching languages

     Dutch

Keywords

     Object oriented programming, C#, programming language, Computer networks, Computer Science (P170), Informatics (P175), Computer Technology (T120).

Position of the course

     This course learns the student the principles of object oriented programming in C#. Furthermore, this course has a broad educational value: it gives insight into abstract structures and processes, it develops analytical skills, the students learn to think modularly, they learn to solve problems themselves and to formulate appropriate solutions. The acquired theoretical knowledge and skills are used in many other areas (design, planning, optimization, ...)
This course is a fundamental course for other courses, like web technologies. To achieve this, an introduction to networking will also be covered.

Contents

     Among other things following topics are covered:
- Basic principles of structured programming: variables, sequences, selection, iteration.
- Basic principles of object oriented programming: classes, objects, methods, constructors, inheritance, overriding, overloading, polymorphism, dynamic binding.
- Exception handling.
- Simple console applications and graphical applications in WPF.
- Basic algorithms: searching, sorting, manipulating arrays, ...
- Use of collections and data structures.
- Database access
- Introduction computer networks

Initial competences

     A good experience with some programming language (like for example Python): methods, sequence, selection, iteration, collections, ...

Final competences

     1   Analyze, structure and translate a problem into a computer program in C#.
     2   Knowing and applying the basic concepts of object oriented programming in C# (types, variables, iteration and selection, classes, objects, methods, constructors, inheritance,

overriding, polymorphism, dynamic binding, exception handling, collections and data structures, …).

3 Program a simple GUI in WPF using a database.

4 Know the basic concepts of computer networking.

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

Practical, Independent work

Extra information on the teaching methods

The course is organised according to the principle of flipped classroom. In preparation for the lab, knowledge clips are read through. In the knowledge clips (~18h), the theory is explained step by step, partly on the basis of examples.

At the start of the lab, a response lecture is organised in which questions about the knowledge clips are addressed.
During the exercise sessions (30 h) the student works independently on a PC or laptop.

Learning materials and price

Knowledge clips, slides, examples and exercises with solutions are provided on the electronic learning environment.
Some books about the course topics are available in the library.
Bundled slides are distributed via Hermes at approximately 3 €.
Software: Visual Studio

References

• Head First C#, Andrew Stellman & Jennifer Greene, ISBN 978-1-4493-4350-7
• Microsoft Visual C# Step by Step, John Sharp, ISBN 978-1-5093-0104-1
• Essential C# 7.0, M.Michaelis, ISBN 978-1-5093-0358-8
• C# 7.0 in a Nutshell: The Definitive Reference, Joseph & Ben Albahari, ISBN 978-1-4919-8765-0

Course content-related study coaching

The student can always make an appointment with the teacher.

Assessment moments

end-of-term and continuous assessment

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

Skills test, Written assessment

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

Skills test, Written assessment

Examination methods in case of permanent assessment

Skills test

Possibilities of retake in case of permanent assessment

examination during the second examination period is not possible

Extra information on the examination methods

The exam is a practical exam, consisting mainly of computer exercises, possibly complemented by a few theoretical questions.
For the lab section, there are one or more skills tests on PC.

Calculation of the examination mark

PE (written exam): 60%
NPE (skills test(s)): 40%
During the second exam chance the points of the NPE disappear and only the points obtained on the exam count.