

Informatics (E001730)

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

Credits 3.0 **Study time 90 h**

Course offerings and teaching methods in academic year 2023-2024

A (semester 1)	Dutch	Gent	lecture
			independent work

Lecturers in academic year 2023-2024

Dhoedt, Bart	TW05	lecturer-in-charge
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Offered in the following programmes in 2023-2024

Switching Track to Engineering	crdts	offering
	3	A

Teaching languages

Dutch

Keywords

Algoritme, programmeren, Python

Position of the course

This course is the first contact with computer science; it aims at introducing the basic terminology, the basic computer programming knowledge, and the "algorithmic thinking", using the Python programming language. This course is a prerequisite for the engineering disciplines "electrical engineering" and "computer science".

Contents

- Basic data types (variables, operations, operators)
- Control structures and lists (loops, decisions, functions, recursion)
- Exception handling (applied tot input/output)
- Introduction to algorithms and complexity
- Arrays in NumPy (homogenous arrays, arrays in higher dimensions, vectorisation, visualisation)
- More advanced data structures (strings, dictionaries and sets)
- Object orientation (class definition, (static) fields and methods, operator overloading, aggregation/composition, inheritance, polymorfism)

Initial competences

Basic concepts on programming, e.g. as acquired through succeeding in the course "Informatica (I)"

Final competences

- 1 To master the structured programming paradigm and to realize a Python program, using this structured programming paradigm.
- 2 To master the basic concepts of objectorientation and to realize an objectoriented program in Python.
- 3 To design an algorithm solving a given problem, and to assess the complexity of this solution.

Conditions for credit contract

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

Conditions for exam contract

Access to this course unit via an exam contract is unrestricted

Teaching methods

Lecture, Independent work

Extra information on the teaching methods

hoorcollege, begeleide zelfstudie: PC-oefeningen

Learning materials and price

Course material is freely available through Ufora.

References

- 1 A primer on scientific computing with Python, Hans Petter Langtangen, Springer
- 2 An introduction to Computation and Programming using Python, John V. Guttag, MIT Press
- 3 Learning Python, Mark Lutz, O'Reilly

Course content-related study coaching

The lecturer is available before and after classroom lectures. Personal coaching by the lecturer as scheduled. Additional tutoring services are available.

Assessment moments

end-of-term assessment

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

Written assessment

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

Written assessment

Examination methods in case of permanent assessment

Possibilities of retake in case of permanent assessment

not applicable

Extra information on the examination methods

Written exam with open book, on the PC.

Calculation of the examination mark

Final score is based on exam score.