## GHENT UNIVERSITY

## 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 |

| **Offered in the following programmes in 2023-2024** | **crdts** | **offering** |
| --- | --- | --- |
| Switching Track to Engineering | 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 succedding 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.