UCLouvain

lepl1401

2019

In view of the health context linked to the spread of the coronavirus, the methods of organisation and evaluation of the learning units could be adapted in different situations; these possible new methods have been - or will be - communicated by the teachers to the students.

5 credits	30.0 h + 30.0 h	Q1

Teacher(s)	Mens Kim ;Nijssen Siegfried ;Pecheur Charles ;SOMEBODY ;
Language :	French
Place of the course	Louvain-la-Neuve
Main themes	• Introduction to programming; • The Python programming language; • Analysis of a computer science problem, design, specification and implementation of a solution; • Linear data structures; • Fundamental concepts of object-oriented programming.
Aims	1 At the end of this learning unit, the student is able to: Given the learning outcomes of the "Bachelor in Engineering" program, this course contributes to the development, acquisition and evaluation of the following learning outcomes: • AA 1.1, 1.2 • AA 2.4, 2.5 • AA 3.1 • AA 4.2, 4.3, 4.4 Students who have successfully completed this course will be able to : • Apply the concepts and reasoning in the discipline of computer science to a problem of delimited complexity. • Describe the tools, techniques and computations needed to solve this disciplinary problem. • Model a problem and design one or more technical solutions that respect the specifications. • Implement and test a solution in the form of a prototype. • Work in pairs or in group and commit collectively to a work plan, a timetable (and roles to play). • Communicate in graphical and schematic form, be able to interpret diagrams, present the results of a work, structure information. • Read, analyse and exploit technical documents (standards, plans, specifications, specifications, ...). • Write written summary documents taking into account the requirements of the missions (projects and problems). • Demonstrate a good understanding of the concepts and methodology of programming, including object-oriented programming. • Make good use of the elements of an programming language like Python, including its object-oriented concepts. - - - - *The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled “Programmes/courses offering this Teaching Unit”.*
Evaluation methods	**Due to the COVID-19 crisis, the information in this section is particularly likely to change.** A mid-term evaluation will take place in the middle of the first semester. The score obtained for this exam will count for 1/3 of the final grade, but only if it is greater than the examination mark. The end-term exam aims to assess both the understanding of the course material and the capacity to apply it to correctly write simple Python programs.
Teaching methods	**Due to the COVID-19 crisis, the information in this section is particularly likely to change.** The chosen teaching method relies on active student participation in their own learning process, through a mixture of : • lectures, • partical exercice sessions with tutors, • programming exercices on the INGInious platform.
Content	• Programs, source code and program execution • Identifiers, variables, values, types, assignment • Expressions, instructions

	• Conditional structures and loops • Functions, parameters, calls, results, execution, variable scoping • Specifications and tests • Modules • Data structures, lists, strings and their operations • References and nested data structures • Nestsed lists, tuples, matrices, dictionnaries • Dichotomic search algorithms • File handling, input/output • Exception handling • Object-oriented programming and garbage collection • Classes, objects, constructors, methods • References to an object, self-references and self-calls • Class, instance and local variables, scope, visibility • Class composition, inheritance and encapsulation • Polymorphism, super calls and dynamic binding • Object equality • Linked data structures
Inline resources	All course material: slides, syllabus and exercices will be made available online.
Faculty or entity in charge	BTCI

Programmes containing this learning unit (UE)

Program title	Acronym	Credits	Prerequisite	Aims
Bachelor in Engineering	FSA1BA	5		🔍