

Course Unit	Programming I	Field of study	Informatics
Bachelor in	Electrical and Computers Engineering	School	School of Technology and Management
Academic Year	2025/2026	Year of study	1
Type	Semestral	Semester	1
Level	1-1	ECTS credits	6.0
Code	9112-852-1104-00-25		
Workload (hours)	162	Contact hours	T - , TP 60, PL - , TC - , S - , E - , OT - , O -

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s) José Eduardo Moreira Fernandes

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:

1. Design a solution, build an algorithm, and implement a Python program that meets the objectives sought to solve problems of small/medium complexity.
2. Apply basic knowledge of imperative programming in the Python language, such as structuring a program in functions, understanding the passing of parameters, and processing data structures.

Prerequisites

Before the course unit the learner is expected to be able to:
Not applicable.

Course contents

Python programming fundamentals.
Python overview.
Concepts and operations in data structures
Control flow structures.
Functions.
Strings.
Fundamentals of file reading and writing.

Course contents (extended version)

1. Python programming fundamentals
 - Computer programming
 - Python programming language
 - Programs development process
 - Algorithms fundamentals
 - Python programming environments
2. Python overview
 - Console input and output
 - Variables, constants, and built-in data types
 - Comments, statements, and arithmetic operations
 - Functions (built-in, module) and methods
 - Basic control flow structures
3. Concepts and operations in data structures
 - Lists
 - Tuples
 - Sets
 - Dictionaries
4. Control flow structures
 - The statement if-elif-else
 - The statement match
 - The while loop
 - The for loop
 - The range and enumerate functions
5. Functions
 - Basic function definition
 - Parameters
 - Local, nonlocal, and global variables
6. Strings
7. Fundamentals of file reading and writing

Recommended reading

1. Eric Freeman, "Head First Learn to Code", O'Reilly, 2018.
2. Naomi Ceder, "The Quick Python book", 4ed, Manning, 2025.
3. Charles Severance, "Python for Everybody: Exploring Data in Python 3", Independently published, 2020.
4. Adelaide Carvalho, "Práticas de Python - Algoritmia e Programação", FCA, 2021.

Teaching and learning methods

The teaching method used in lecture classes is the expository method, which makes possible the transmission of knowledge in a continuous and less time consuming manner. Practical classes are mostly based on the active method, enhancing the activity of students through the resolution of practical exercises. Students are also required to perform practical assignments outside the classes.

Assessment methods

1. Alternative 1 - (Regular, Student Worker) (Final)
 - Portfolio - 30% (Classroom-based activities.)

Assessment methods

- Intermediate Written Test - 70%
- 2. Alternative 2 - (Student Worker) (Final)
 - Practical Work - 30%
 - Intermediate Written Test - 70%
- 3. Alternative 3 - (Regular, Student Worker) (Supplementary, Special)
 - Final Written Exam - 100%

Language of instruction

Portuguese

Electronic validation

José Eduardo Moreira Fernandes	Tiago Miguel Ferreira Guimaraes Pedrosa	José Luís Sousa de Magalhaes Lima	José Carlos Rufino Amaro
14-10-2025	15-10-2025	15-10-2025	01-11-2025