

Tutoring of Advanced Programming

Tutor: Dott. Pierluigi dell'Acqua

Room: SBA-T-1 and online:

<https://teams.microsoft.com/meet/38746597397874?p=IMwdokLcQa9ixjVlpT>

Important Student Requirement:

- *The tutor will take presence in the room*
- *Students are strongly recommended to bring their own personal laptop (with Python 3 installed) to actively participate in the daily hands-on lab sessions and practical coding activities.*

Day 1 - 07/09/2026

Fundamentals, Core Data Structures & Control Flow

- **09:00 – 11:00 | Session 1:**

Introduction to Python & Data Types: The Python interpreter, dynamic typing, variables, aliasing, and primitive types (`int`, `float`, `bool`, `str`).

- **11:00 – 13:00 | Session 2:**

Collections, Operators & Conditionals: Sequence and mapping types (`list`, `tuple`, `set`, `dict`), operators, precedence, and conditional branches (`if`, `elif`, `else`).

- **14:00 – 16:00 | Session 3:**

Loops & Hands-on Lab I: Iteration with `while` and `for` loops, `range()`, `break`, and `continue`. Supervised programming exercises on data handling and conditions.

- **16:00 – 18:00 | Session 4:**

Hands-on Lab II & Practical Review: Student problem-solving lab on data types and basic algorithms; interactive code walkthrough and Q&A.

Day 2 - 10/09/2026

Functions, File I/O, Exceptions & Pythonic Idioms

- **09:00 – 11:00 | Session 5:**

Functions & Built-ins: Defining functions (`def`, `return`), parameter passing by assignment, default values, and common built-in functions.

- **11:00 – 13:00 | Session 6:**

I/O, Exceptions & Advanced Syntactic Sugar: Console and File I/O (`open`, `read`, `write`), exception handling (`try-except-finally`), list comprehensions, and tuple unpacking.

- **14:00 – 16:00 | Session 7:**

Iterators, Generators & Hands-on Lab III: Understanding iteration protocols, generator functions (`yield`). Practical coding on file manipulation and robust input parsing.

- **16:00 – 18:00 | Session 8:**

Hands-on Lab IV & Group Debugging: Supervised implementation of small utility scripts handling text files with error management; solution review.

Day 3 - 15/09/2026

Object-Oriented Programming (OOP) & Modules

- **14:00 – 16:00 | Session 9:**

Classes, Objects & Encapsulation: Modular design, class syntax, constructors (`__init__`), instance vs. class namespaces, and operator overloading basics.

- **16:00 – 18:00 | Session 10:**

Inheritance, Special Methods & Modules: Class inheritance, method overriding, `super()`, multiple inheritance/MRO, importing standard library modules (`math`, `os`, `random`).

Day 4 - 18/09/2026

- **09:00 – 11:00 | Session 11:**

Hands-on Lab V (OOP Project): Designing and implementing class hierarchies and data models (e.g., banking/card system or progression classes).

- **11:00 – 13:00 | Session 12:**

Hands-on Lab VI & Course Wrap-up: Final capstone exercises, code style & best practices discussion, course review and Q&A.