Welcome to Programming with Python!

A course to learn Python for Business

Objectives

This module introduces **programming with python**. Python is a modern and powerful programming language that is widely used in industry and academic projects. Students will learn how to find a code-based solution to basic and complex problems. The course is based on many examples that illustrate how to tackle a potentially complex issue as well as how to implement a solution.

Learning Outcomes

Upon completion of the course, students …

- can implement solutions to complex problems in python
- know basic concepts of programming and algorithms such as loops, functions
- can apply basic data manipulation and visualization
- will be able to read and write code
- will have experience working with python libraries such as NumPy, Pandas, Matplotlib
- will know how to collaborate in a pair to find solutions for problems at hand

Please note that this course is **specifically designed for business students**. That is, it is **not required to have any prior knowledge or experience in programming** to attend this course. The teaching format will make it possible to account for different levels of programming skills such that every student can take the most out of the course.

Course Structure

The course is based on a hands-on approach with three elements:

1. **Lectures**: In the lectures, we will introduce concepts and illustrate them in reproducible examples.
2. **Hands-on Tutorials**: Right after each lecture, after a short break, students apply the concepts in a lab notebook in class. Whatever is left can be finished at home.
3. **Checkpoints**: Five short in-class checkpoints let you show what you have learned. They run in the browser, are solved individually, and are graded automatically.

Course Blocks

The core content of the course is organized in three blocks:

1. **Part I**: Introduction to Programming with Python
2. **Part II**: Data Science with Python
3. **Part III**: Programming Projects

You can find more information on the course blocks and the corresponding lectures in the syllabus.

How to see the slides

- This course is based on Quarto
- It uses revealjs to render the slides
- You find the slides for each lecture in the corresponding lecture
- To see the slides, click on `RevealJS` in the top right corner

Passing the Course

- 75% attendance is required to pass the course
- Five in-class checkpoints, worth 12 points each (60 points total). They open Sessions III, V, VI, VIII and X: the first 40 minutes, individual work, uploaded to Moodle before the time is up. No make-ups; the point math absorbs one miss. Full table in the syllabus
- One final project with a presentation, worth 40 points
- You need 60 of 100 points to pass
- Your project is done in pairs (solo works if the numbers don't come out even); each pair submits one GitHub repository

AI Policy

The course uses a phased AI policy that mirrors how the skills build on each other:

- **Part I (Sessions I–V): AI-free.** You are building foundations. The course chatbot on this website is the sanctioned helper: it gives hints, not solutions. Checkpoints 1–3 are taken without AI; Checkpoint 3 opens Session VI and is still AI-free.
- **Part II (Sessions VI–IX): AI allowed and taught.** We bring AI in deliberately: how to prompt with context and constraints, how to verify its output, and how to notice when it confidently makes things up. Checkpoints 4–5 explicitly allow AI tools.
- **Part III (Sessions X–XIII): AI encouraged.** Use what makes you productive on your project, and disclose what you used in your repository's README.

Whatever the phase: understand every line you submit. See the AI Tools guide for free options and setup.

Questions

If you have any questions regarding the course, please contact me under vlcek@beyondsimulations.com.

Contributors

Thanks to Phillip Bach whose previous course laid the foundation for this course.