

## Data Science: Programming with Python (S17) 08 – 12 July 2024

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Please note that on all days, both during the morning and afternoon session, a short break is scheduled. Coffee, tea and lunch will be provided.

| Day     | Time          | Type                         | Description   | Location  |
|---------|---------------|------------------------------|---|---|
| Monday  | 09:00 -10:30  | Lecture + exercise session 1 | <b>Introduction to the course (30 min)</b><br><br><b>Unit 1.1 (first part):</b><br><b>Getting started with Python: The programming environment, editing and running Python programs, “Hello World!”, simple output, sequential execution, comments, literal constants, strings, numbers</b> | <a href="#">Koningsberger building</a><br>Room 2.28 |
|         | 10:45 -12:15  | Lecture + exercise session 2 | <b>Unit 1.2 (rest): arithmetic expressions, variables, formatted output, interactive input + Exercises</b>  |   |
|         | 12:15 – 13:45 | Lunch                        | In <a href="#">Educatorium</a>  |   |
|         | 13:45 – 15:15 | Lecture + exercise session 3 | <b>Unit 1.3: conditional branching + Exercises</b>  |   |
|         | 15:30-17:00   | Lecture + exercise session 4 | <b>Unit 1.4: loops (while- and for-loops) + Exercises</b>   |   |
| Tuesday | 09:00 - 10:30 | Lecture + exercise session 1 | <b>Unit 2.1: Functions and modules, the Python standard library, the Python Package Index (PyPI) + Exercises</b>  | <a href="#">Koningsberger building</a><br>Room 2.28 |
|         | 10:45-12:15   | Lecture + exercise session 2 | <b>Unit 2.2: Data Structures (Lists, Tuples) + Exercises</b>  |   |
|         | 12:15 – 13:45 | Lunch                        | In <a href="#">Educatorium</a>  |   |
|         | 13:45 – 15:15 | Lecture + exercise session 3 | <b>Unit 2.3: Data Structures (Dictionaries and Sets) + Exercises</b>  |   |
|         | 15:30-16:45   | Project                      | Group/Individual projects (selection of dataset, formulation of research questions, find Python)  |   |
|         | 16:45-17:00   | Wrap up                      | Discussion and wrap up  |   |

**For information about the (online) Social Programme, please have a look at the [Utrecht Summer School website!](#)**

|           |               |                              |   |   |
|-----------|---------------|------------------------------|---|---|
| Wednesday | 09:00 -10:30  | Lecture + exercise session 1 | <b>Unit 3.1: Object-Oriented Programming (functions vs methods-objects) + Exercises</b>                 | <a href="#">Koningsberger building</a><br>Room 2.28 |
|           | 10:45-12:15   | Lecture + exercise session 2 | <b>Unit 3.2: What is a CSV file, Using pandas data frames for working with tabular data + Exercises</b> |   |
|           | 12:15 – 13:45 | Lunch                        | In <a href="#">Educatorium</a>  |   |
|           | 13:45 – 15:15 | Lecture + exercise session 3 | <b>Unit 3.3: Join two dataframes, group by and correlations of variables + Exercises</b>                |   |
|           | 15:30 – 16:45 | Project                      | Work on individual/group project (start coding, read your file/files, implement functions)              |   |
|           | 16:45-17:00   | Wrap up                      | Discussion and wrap up  |   |
| Thursday  | 09:00 -10:30  | Lecture + exercise session 1 | <b>Unit 4.1: Data visualization with matplotlib + Exercises</b>   | <a href="#">Koningsberger building</a><br>Room 2.28 |
|           | 10:45-12:15   | Lecture + exercise session 2 | <b>Unit 4.2: Working with date and time + Exercises</b>   |   |
|           | 12:15 – 13:45 | Lunch                        | In <a href="#">Educatorium</a>  |   |
|           | 13:45 – 15:15 | Lecture + exercise session 3 | <b>Unit 4.3: Matrix computations with the numpy package + Exercises</b>                                 |   |
|           | 15:30 – 16:45 | Project                      | Work on individual/group project (further analysis, produce plots, results)                             |   |
|           | 16:45-17:00   | Wrap up                      | Discussion and wrap up  |   |
| Friday    | 09:00 -10:30  | Lecture                      | <b>Lecture on error handling</b>  | <a href="#">Koningsberger building</a><br>Room 2.28 |
|           | 10:45-12:15   | Presentations                | <b>Project presentations (5-10 min each)</b>  |   |
|           | 12:15 – 13:45 | Lunch                        | In <a href="#">Educatorium</a>  |   |
|           | 13:45 – 15:15 | Presentations                | <b>Project presentations (5-10 min each)</b>  |   |
|           | 15:30 – 17:00 | Lecture                      | <b>Lecture on software engineering practices, licences, git), wrap up</b>                               |   |

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