

## Data Science: Programming with Python (Course code S17) 23.8.2021-27.8.2021 (week 33)

Course Director: *dr. Peter Lugtig*

Lecturers: *dr. Anna-Lena Lamprecht, dr. Anastasia Giachanou*

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Saturday and Sunday (21 & 22 August)		
Time	Activity	Description
12.00-18.00	Key pick up	You will find the exact key pick up location in the pre-departure information, which becomes available after you have paid the course fee.

Please note that on all days, both during the morning and afternoon session, a short break is scheduled. For participants taking the course on-location, coffee, tea and lunch will be provided.

In order to get the course to a flying start on Monday, we ask participants to install Python version V3.5 or 3.6, as well as the Anaconda library. Please follow the download links for all platforms and installation instructions at <https://docs.anaconda.com/anaconda/install/>,

Day	Time	Type	Description	Location
Monday	09:00 - 11:00	Lecture + exercise session 1	<b>Introduction to the course</b> <b>Getting started with Python: The programming environment, editing and running Python programs, "Hello World!"</b>	
	11:00-12:30	Lecture + exercise session 2	<b>Input, formatted output, variables, basic data types</b>	
	12:30 – 13:30	Lunch		
	13:30 – 15:00	Group assignment	Students work in small groups on a real-life dataset, and apply the lessons learned so far to that dataset.	
	15:00-17:00	Lecture + exercise session 3	<b>Arithmetic expressions, conditional branching</b>	
Tuesday	09:00 - 11:00	Lecture + exercise session 1	<b>Loops (while- and for-loops)</b>	
	11:00-12:30	Lecture + exercise session 2	<b>Functions and modules, the Python standard library</b>	
	12:30 – 13:30	Lunch		
	13:30 – 15:00	Group assignment	Continuation from day 1	
	15:00-17:00	Lecture + exercise session 3	<b>Data Structures (Lists, Tuples, Dictionaries and Sets)</b>	

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

Wednesday	09:00 -11:00	Lecture + exercise session 1	File Input/Output, especially CSV files	
	11:00-12:30	Lecture + exercise session 2	Using pandas data frames for working with tabular data. Performing Indexing, merging and joining operations.	
	12:30 – 13:30	Lunch		
	13:30 – 15:00	Group assignment	Continuation from day 2	
	15:00-17:00	Lecture + exercise session 3	Using pandas statistical analysis functions for manipulating and analyzing data.	
Thursday	09:00 -11:00	Lecture + exercise session 1	Data visualization with matplotlib.	
	11:00-12:30	Lecture + exercise session 2	Matrix computations with the numpy package.	
	12:30 – 13:30	Lunch		
	13:30 – 15:00	Group assignment	Continuation from day 3	
	15:00-17:00	Lecture + exercise session 3	The Python Package Index (PyPI) and how to learn using new packages.	
Friday	09:00 -11:00	Lecture + exercise session 1	Introduction to Object-Oriented Programming with Python	
	11:00-12:30	Lecture + exercise session 2	Error handling, tips and best practices for running research software projects.	
	12:30 – 13:30	Lunch		
	13:30 – 17:00	Group assignment	Group project presentations and wrap-up discussions	
	17:00		End of course	