JUSTUS-LIEBIG-UNIVERSITÄT GIESSEN

GGS Gießener Graduiertenzentrum Sozial-, Wirtschafts- und Rechtswissenschaften

Workshop [Online]

Python for Data Science

Organizational details

Instructor:	Dr Denis Düsseldorf
Date:	May 15 & 16, 2025, 10.00 am – 5.00 pm
Location:	Online via Teams
ECTS:	2
Max. number of participants:	15

Objectives

In this data science workshop, you will learn how to apply data analysis and techniques from machine learning (ML) to large datasets in Python. After the course, you will have a basic understanding of the underlying concepts and algorithms, and you will be able to apply these techniques to your own research data.

Content & Methods

To achieve the objectives, the course introduces you to powerful third-party Python packages for data handling, manipulation, and visualization. We cover the basic ideas of the most common ML techniques, including clustering, regression, dimensionality reduction and object classification. Using available Python implementations, you will learn how to prepare the input data, apply the algorithms, and interpret the output.

Topics and concepts covered in the course include

- „matplotlib“ for visualization
- "NumPy" and "pandas" for handling and manipulation of large datasets and time series
- "scikit-learn" for machine learning in Python
- Object classification
- Regression
- Clustering of data and dimensionality reduction

Methods: Short blocks of theory alternate with tasks so that what has been learnt can be processed in the best possible way.

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Target group & Course Language

PhD students and Postdocs

This is a follow-up course of “Python for Beginners” in order to fully benefit from this course, you should have attended to the first course or at least have basic knowledge of the Python programming language and its syntax and feel comfortable writing your own small programs for simple applications

Course language: English (Please note: As this is not an English language course, proficiency in English at the C1 level of competency is required).

Requirements for ECTS credits

In order to receive the ECTS credits for this course, participants should attend the course at all times and try to actively engage. At the end of the course, participants will be asked to fill out a form answering several conceptual questions.

About the instructor

Dr. Denis Düsseldorf earned his doctoral degree in Numerical Mathematics from the University of Bonn in 2024 and holds a certification as a 'Data Scientist Specialized in Machine Data Analytics' from the Fraunhofer Research Institute. He is passionate about teaching programming and mathematical topics to current and aspiring researchers to help them solve practical problems they face in their research.

Registration

By 5 May 2025 via e-mail at info@ggs.uni-giessen.de