Course: Programming 3 — credits: 5

Course code	BFVM23PROGRAM3
Name	Programming 3
Study year	2025-2026
ECTS credits	5
Language	English
Coordinator	F. Feenstra
Modes of delivery	Assignment Lecture
Assessments	Programming 3 - Assignment

Learning outcomes

1. Apply Python to effectively clean, transform, and structure raw signal data into a format suitable for analysis or machine learning tasks, demonstrating proficiency in pandas, Numpy, and other relevant libraries.
1. Develop a maintainable and effective preprocessing and evaluation pipeline for time series and streaming data. Critically assess trade-offs between different strategies and justify the chosen approach.
1. Implement mathematical algorithms in Python, applying vectorization and other performance optimizations when appropriate. Validate the correctness and accuracy of the implemented algorithm through testing.
1. Design and develop functional and visually appealing data visualizations that effectively communicate insights and findings. Use best practices and relevant libraries to create interactive and informative visualizations.
1. Deliver an organized solution that complies with FAIR principles.

Content

This course teaches practical skills for processing and analyzing time-series, streaming, and signal data using popular data science tools such as Jupyter Notebooks, NumPy, Pandas, and Bokeh. Throughout the course, you will practice programming techniques for loading, cleaning, analyzing, and visualizing streaming data, with an emphasis on creating maintainable solutions. By the end of the course, you will have a solid understanding of the data processing pipeline and be able to handle diverse streaming data, conduct exploratory data analysis, and create effective visualizations. The course is designed to equip you with the skills needed to work with complex data and provide new insights as a foundation for future research and exploration.

Included in programme(s)

Master Data Sciences for the Life Science

School(s)

Institute for Life Science & Technology

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