ONLINE AND SELF-PACED TRAINING

Introduction to Data Analysis with Python

TARGET AUDIENCE

Any professionals who work with data and want to use Python to improve their skills in data analysis and data-driven decision making.

No computer science background is needed: Python is straightforward and intuitive, making it accessible to those new to programming.

ORGANIZATION

- EPFL (Swiss Federal Institute of Technology in Lausanne), Switzerland

OVERVIEW

Data processing and analysis are at the core of your work, and when using Excel or other spreadsheet software, you may sometimes find it challenging to extract valuable insights from large or complex datasets. What if Python - a programming language accessible to anyone, even without a background in computer science - could help you unlock the full potential of your datasets?

When combined with a solid understanding of Probabitilty and Statistics, Python offers a robust toolkit for analyzing and leveraging datasets. From data cleaning and filtering to advanced statistical analysis and machine learning, Python enables efficient manipulation and analysis of complex data.

As organizations increasingly rely on data-driven insights, proficiency in Python has become a highly sought-after skill. In this concise online course, you will acquire the essential skills to analyze, manipulate, and visualize data using Python, while also gaining a strong foundation in the core principles of data science.

OBJECTIVES

- Become familiar with Python, its environment and its role in data analysis
- Be able to efficiently analyze, clean, and manipulate datasets using Python
- Create clear and impactful data visualizations using Python libraries
- Understand core principles in probability and statistics used in data analysis
- Complete a hands-on data analysis project using real-world datasets
- Build a strong foundation for more in-depth topics in data science such as advanced data analytics and machine learning

Online, self-paced training accessible 24/7 to study at your convenience

CHF 300.–
10% special discount for contributing members of EPFL Alumni & EPFL partners

LEARN MORE

The course takes approximately 24 hours to complete

Flexible Learning: 100% online and self-paced

Online registration

Certificate of Completion

PROGRAM

PART 1: PYTHON BASICS AND SETUP

- **Introduction to Data Analysis with Python**: Overview of data analysis and the role of Python in data science
- **Setting Up Our Python Environment**: Installing Python, necessary libraries, and managing environments

PART 2: WORKING WITH DATA IN PYTHON

- **JupyterLab and Jupyter Notebooks**: Introduction to JupyterLab interface, running, and organizing notebooks
- **Exploring Our First Dataset**: Loading, inspecting data, and handling missing values
- **Introduction to NumPy**: Working with arrays, matrices, and mathematical operations

PART 3: DATA MANIPULATION AND VISUALIZATION

- **Introduction to Pandas**: Creating and manipulating DataFrames, merging, reshaping, and summarizing data
- **Data Visualization Basics**: Using Matplotlib and Seaborn to visualize distributions, relationships, and trends

PART 4: STATISTICAL AND MATHEMATICAL FOUNDATIONS

- **Probability for Data Science**: Basic probability concepts, and their applications to real-world problems
- **Statistical Data Analysis with Python**: Descriptive and inferential statistics, hypothesis testing

PART 5: COURSE PROJECT

- **Hands-on Project**: Working with real-world datasets, performing end-to-end data analysis, and presenting findings

This program is an extract of the Certificate of Open Studies (COS) "Applied Data Science: Machine Learning". It is designed by by EPFL instructors and regularly updated to incorporate the latest advancements in the field.

It serves as an essential first step in establishing a solid foundation for more advanced courses, including Machine Learning, Data Science, Bayesian A/B Testing, etc.

PROGRAM DIRECTOR

- **Prof. Negar Kiyavash,**
  Full Professor, Chair of Business Analytics, EPFL

ONLINE TEACHING APPROACH

To complete the course, you will be granted access to our learning platform during 3 months and it includes:

- Q&A forum managed by EPFL instructors
- Personalized feedback on your assignments

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