

Python Data Analysis with JupyterLab Training (2 Day)

Overview

If you or your team are using or plan to use Python for data science or data analytics, then this is the right Python course for you. The course assumes that you already have had a good amount of Python training and/or experience. Your live instructor will start the class by teaching you how to use Jupyter Notebook, a great tool for writing, testing, and sharing quick Python programs. Even if you do not end up using Jupyter Notebook as your main Python IDE, you will appreciate having it as a tool in your Python toolkit.

You will learn [NumPy](#), which makes working with arrays and matrices (in place of lists and lists of lists) much more efficient, and [pandas](#), which makes manipulating, munging, slicing, and grouping data much easier. You will also learn some simple data visualization techniques with [matplotlib](#).

CLASS PREREQUISITES

Experience in the following *is required* for this Python class:

- Basic Python programming experience. In particular, you should be very comfortable with:
 1. Working with strings.
 2. Working with lists, tuples and dictionaries.
 3. Loops and conditionals.
 4. Writing your own functions.

COURSE BENEFITS

- JupyterLab.
- Jupyter notebooks.
- Markdown.
- The purpose of NumPy.
- One-dimensional NumPy arrays.
- Two-dimensional NumPy arrays.
- Using boolean arrays to create new arrays.
- The purpose of pandas.
- Series objects and one-dimensional data.
- DataFrame objects to two-dimensional data.
- Creating plots with matplotlib.

Course Outline

JupyterLab

- Exercise: Creating a Virtual Environment
- Exercise: Getting Started with JupyterLab
- Jupyter Notebook Modes
- Exercise: More Experimenting with Jupyter Notebooks
- Markdown
- Exercise: Playing with Markdown
- Magic Commands
- Exercise: Playing with Magic Commands
- Getting Help

NumPy

- Exercise: Demonstrating Efficiency of NumPy
- NumPy Arrays
- Exercise: Multiplying Array Elements
- Multi-dimensional Arrays
- Exercise: Retrieving Data from an Array
- More on Arrays
- Using Boolean Arrays to Get New Arrays
- Random Number Generation
- Exploring NumPy Further

pandas

- Getting Started with pandas
- Introduction to Series
- np.nan
- Accessing Elements in a Series
- Exercise: Retrieving Data from a Series
- Series Alignment
- Exercise: Using Boolean Series to Get New Series
- Comparing One Series with Another
- Element-wise Operations and the apply() Method
- Series: A More Practical Example
- Introduction to DataFrames
- Creating a DataFrame using Existing Series as Rows
- Creating a DataFrame using Existing Series as Columns
- Creating a DataFrame from a CSV
- Exploring a DataFrame
- Exercise: Practice Exploring a DataFrame
- Changing Values
- Getting Rows
- Combining Row and Column Selection
- Boolean Selection
- Pivoting DataFrames
- Be careful using properties!
- Exercise: Series and DataFrames
- Plotting with matplotlib
- Exercise: Plotting a DataFrame
- Other Kinds of Plots