COURSE SYLLABUS

Python for Data Science Bootcamp

Unlock the power of Python for data-driven decision-making as you master Python programming fundamentals and dive into data analysis. Acquire essential skills to clean and manipulate data, create insightful visualizations, and perform statistical analysis, all through hands-on projects with real-world datasets.

> Group classes in Live Online and onsite training is available for this course. For more information, email onsite@graduateschool.edu or visit: https://sdfm.graduateschool.edu/courses/python-data-science-bootcamp

CustomerRelations@graduateschool.edu • (888) 744-4723

Course Outline

Python Fundamentals

Python Fundamentals: Variables & Data Types

- Declare variables of basic types: integers, floats, strings, booleans
- Perform input/output with print() and input()
- Apply arithmetic, relational, and logical operators

Control Flow I: Conditional Logic

- Use Boolean operators ==, !=, <, >, <=, >=
- Write if/else and nested conditionals
- Combine conditions with and/or for complex logic

Control Flow II: Loops & Iteration

- Implement for loops over ranges and lists; understand iterables
- Understand map and filter operations.
- Use list comprehensions to simplify operations.

DataFrames & Data Manipulation with Pandas

- Construct DataFrames from various data formats via pd.DataFrame()
- Concatenate multiple DataFrames using pd.concat()
- Inspect DataFrame shape and handle missing values (NaN)
- Perform Panda data analysis operations to glean insight

Data Visualization: Charting Basics

- Plot time series with plt.plot() for line charts
- Create scatter plots using plt.scatter() to reveal correlations
- Decide between line vs. scatter based on data context and purpose

Trend Analysis with Regression Lines

- Understand least-squares regression concept and its interpretation
- Compute a best-fit line via numpy.polyfit()
- Overlay regression lines on scatter plots and make predictions

Advanced Plot Customization

- Annotate charts with titles, axis labels, and legends
- Highlight key data points (e.g., min/max) directly on plots
- Use stacked bar charts, pie charts, and animated charts to visualize data