COURSE SYLLABUS

Python Data Science & Machine Learning Bootcamp

Master Python for data analysis, machine learning, and automation. Build predictive models, create dynamic dashboards, and unleash the power of data visualization. Launch your career in data science and Python engineering, equipped with Python, NumPy, Pandas, and Matplotlib.

Group classes (Live Online) and onsite training are available for this course. For more information, email onsite@graduateschool.edu or visit: https://sdfm.graduateschool.edu/certificates/python-programming



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Course Outline

This package includes these courses

- Python for Data Science Bootcamp (30 Hours)
- Python Machine Learning Bootcamp (30 Hours)
- Python Automation Course (6 Hours)
- Python Data Visualization & Interactive Dashboards (30 Hours)

Choose one free elective. Contact us after registration to select your dates.

- Python for AI: Create AI Apps with Flask & OpenAI
- Python Machine Learning Advanced

Python for Data Science Bootcamp

- Learn Python fundamentals, including variables, data types, functions, loops, and control flow, for building robust programs
- Work with complex data structures such as dictionaries and lists to efficiently organize and access data
- Use NumPy and Pandas to import, clean, and manipulate datasets for analysis and exploration
- Generate descriptive statistics and apply filtering, grouping, and pivoting techniques to gain deeper insights
- Visualize data using Matplotlib and create clear, customized charts, including bar graphs, histograms, and scatter plots
- Gain the practical skills needed to transition into machine learning with a solid understanding of data science workflows

Python Machine Learning Bootcamp

- Explore foundational techniques like linear and logistic regression for modeling numerical and categorical data
- Understand the difference between regression and classification problems and when to apply each approach
- Build and evaluate models using k-nearest neighbors, decision trees, and ensemble methods like random forest

- Learn key concepts such as cross-validation, training vs. test sets, and performance metrics like mean squared error
- Apply feature engineering techniques to improve model accuracy while managing overfitting and bias-variance tradeoffs
- Use Python's essential data science libraries, NumPy, Pandas, and scikit-learn, to structure data and implement algorithms
- Gain insights into how machine learning powers systems at companies like Netflix, Spotify, and Amazon
- Complete a final portfolio project that demonstrates your ability to apply machine learning to solve real problems

Python Automation Course

- Understand how websites are structured with HTML and CSS to identify elements for data extraction
- Learn Python fundamentals, such as variables, data types, conditionals, loops, and list manipulation
- Use the Requests and Beautiful Soup libraries to perform web scraping and target specific content
- Write loops to automate web scraping across multiple pages and streamline repetitive tasks
- Store scraped data in different formats, such as text files and CSVs, for analysis and reporting
- Schedule Python scripts to run on a regular basis, enabling continuous data collection and automating workflows

Python Data Visualization & Interactive Dashboards

Transform raw data into interactive visual insights by building dashboards with Python’s top visualization tools. This course blends analysis, design, and deployment to help you showcase data professionally.

- Work with real-life datasets using Python’s core libraries, including NumPy for numerical computing and Pandas for data manipulation
- Create static and interactive visualizations using Matplotlib, Seaborn, and Plotly to clearly communicate trends and patterns
- Build multi-component dashboards using Dash Enterprise, incorporating callbacks, sliders, date pickers, and more
- Practice hands-on development by applying new skills to personalized projects with guided instructor support
- Publish your dashboards online using GitHub and Heroku to demonstrate your work to potential employers or clients
- Explore best practices for styling and structuring visual narratives that are clear, persuasive, and engaging