

# Fast Track to Python for Data Science and/or Machine Learning - TTPS4873

**Fast Track to Python for Data Science and/or Machine Learning** is a three-day, hands-on course geared to equip you with the knowledge and skills necessary to handle various data science projects efficiently using Python, one of the most popular languages in the industry. Python's ease of use, extensive libraries, and robust community make it a fantastic choice for professionals seeking to enhance their data science capabilities.

## What You'll Learn

### Overview

**Fast Track to Python for Data Science and/or Machine Learning** is a three-day, hands-on course geared to equip you with the knowledge and skills necessary to handle various data science projects efficiently using Python, one of the most popular languages in the industry. Python's ease of use, extensive libraries, and robust community make it a fantastic choice for professionals seeking to enhance their data science capabilities. From automating small tasks to building complex data models, Python can enable you to streamline your work or provide significant insights for your organization.

Working in a hands-on learning environment led by our expert instructor, you'll also gain experience with Python's core topics like flow control, sequences, arrays, dictionaries, and handling files. You'll delve into functions, sorting, essential demos, the standard library, and even dates and times. You'll learn how to manage syntax errors and exceptions effectively, enhancing your code's resilience and your productivity. You'll delve into how Python it operates within web notebooks such as iPython, Jupyter, and Zeppelin, where you'll practice writing, testing, and debugging your Python code.

You'll also gain practical experience with Python and key data science libraries, enabling you to optimize data handling and create insightful visualizations. You'll explore working with large number sets and transforming data in numpy, reading, writing, and reshaping data with pandas, and creating data visualizations with

matplotlib. You'll also gain experience optimizing data handling processes, creating insightful visualizations, or making data-driven decisions.

By the end of this journey, you'll have a solid understanding of Python for data science, including data analysis, manipulation, and visualization, ready to apply these new skills in your work. This course aims not just to teach Python but also to lay a strong foundation for you to continue building upon, enhancing your proficiency in Data Science and enabling you to contribute effectively to your team's data projects.

**NOTE:** For those interested in Leveraging AI with Python for Data Science and Analytics, optional chapters are available to extend the course to dive into some of the core innovative skills. Please inquire for details.

## Objectives

Working in a hands-on learning environment, guided by our expert team, attendees will learn about and explore:

- **Understand Python's Core Topics:** Gain a firm grasp of fundamental Python concepts such as flow control, sequences, arrays, dictionaries, and file handling. This understanding forms the cornerstone of your Python programming journey.
- **Navigate Key Python Libraries:** Develop proficiency in leveraging the power of Python's primary libraries, numpy and pandas. By the end of the course, you'll be confidently transforming, reshaping data, and handling large number sets.
- **Generate Insightful Visualizations:** Learn how to create meaningful and visually appealing data visualizations using matplotlib. These skills will enable you to better communicate data-driven insights.
- **Efficient Data Handling:** Acquire techniques to optimize your data handling processes, enhancing productivity and making your workflow more efficient.
- **Manage Errors Effectively:** Become proficient in handling common challenges like syntax errors and exceptions, enhancing the reliability and robustness of your Python code.
- **Hands-on Experience with Web Notebooks:** Gain practical experience using interactive web notebooks like iPython, Jupyter, and Zeppelin. These tools offer a dynamic platform for writing, testing, and debugging your Python code, enriching your learning experience.

## Audience

This course is geared for data analysts, developers, engineers or anyone tasked with utilizing Python for data analytics tasks. While there are no specific programming

prerequisites, students should be comfortable working with files and folders and should not be afraid of the command line and basic scripting.

## Pre-Requisites

TTDS6000	Data Science & Big Data Overview: Tools, Tech & Modern Roles in the Data-Driven Enterprise
TTPS4800	Introduction to Python Programming Basics

## Agenda

*Please note that this list of topics is based on our standard course offering, evolved from typical industry uses and trends. We will work with you to tune this course and level of coverage to target the skills you need most. Course agenda, topics and labs are subject to adjust during live delivery in response to student skill level, interests and participation.*

### An Overview of Python

- Why Python?
- Python in the Shell
- Python in Web Notebooks (iPython, Jupyter, Zeppelin)
- Demo: Python, Notebooks, and Data Science

### Getting Started

- Using variables
- Builtin functions
- Strings
- Numbers
- Converting among types
- Writing to the screen
- Command line parameters
- Running standalone scripts under Unix and Windows

### Flow Control

- About flow control
- White space
- Conditional expressions
- Relational and Boolean operators
- While loops

- Alternate loop exits

## **Sequences, Arrays, Dictionaries and Sets**

- About sequences
- Lists and list methods
- Tuples
- Indexing and slicing
- Iterating through a sequence
- Sequence functions, keywords, and operators
- List comprehensions
- Generator Expressions
- Nested sequences
- Working with Dictionaries
- Working with Sets

## **Working with files**

- File overview
- Opening a text file
- Reading a text file
- Writing to a text file
- Reading and writing raw (binary) data

## **Functions**

- Defining functions
- Parameters
- Global and local scope
- Nested functions
- Returning values

## **Sorting**

- The sorted() function
- Alternate keys
- Lambda functions
- Sorting collections
- Using operator.itemgetter()
- Reverse sorting

## **Errors and Exception Handling**

- Syntax errors

- Exceptions
- Using try/catch/else/finally
- Handling multiple exceptions
- Ignoring exceptions

### **Essential Demos**

- Importing Modules
- Classes
- Regular Expressions

### **The standard library**

- Math functions
- The string module

### **Dates and times**

- Working with dates and times
- Translating timestamps
- Parsing dates from text
- Formatting dates
- Calendar data

### **numpy**

- numpy basics
- Creating arrays
- Indexing and slicing
- Large number sets
- Transforming data
- Advanced tricks

### **Python and Data Science**

- Data Science Essentials
- Working with Python in Data Science

### **Working with Pandas**

- pandas overview
- Dataframes
- Reading and writing data
- Data alignment and reshaping
- Fancy indexing and slicing

- Merging and joining data sets

### **Working with matplotlib**

- Creating a basic plot
- Commonly used plots
- Ad hoc data visualization
- Advanced usage
- Exporting images

### **BONUS Day Four or Optional Topics For Dedicated / Private Classes:**

#### **Leveraging AI for Python in Data Science**

##### **Introduction to AI with Python for Data Analysis**

- Overview of AI Libraries
- Setting Up Your Environment:
- Understanding AI Models
- Creating Your First Model
- Evaluating Model Performance

##### **Practical AI Projects in Python**

- Set up a Python project for AI applications.
- Data Handling
- Model Development
- Test and validate your AI model's effectiveness.
- Applying Your Model

##### **Using GPT Tools for Record Analysis in Data Science**

- Introduction to GPT
- Setting Up GPT Tools
- Analyzing Text Data
- Generating Insights
- Practical Applications

## Follow On Courses

TTAI2305	Turbocharge Your Code! Generative AI Boot Camp for Developers
TTAI3030	NLP Boot Camp / Hands-on Natural Language Processing
TTML5503	Introduction to AI & Machine Learning JumpStart
TTML5506-P	Machine Learning Essentials with Python
TTML5510	Machine Learning Essentials Boot Camp / Part 1: Preparing Your Data
TTPS4876	Next-Level (Intermediate) Python for Data Science and /or Machine Learning
TTPS4878	Hands-On Data Analysis with Panda
TTPS4879	Hands-On Predictive Analytics with Python
TTAI3005	Introduction to AI, Machine Learning & Deep Learning Boot Camp
TTPS4883	Forecasting, Behavioral Analysis, and What-If Scenarios with Python

## Related Courses

TTPS4820	Mastering Python Programming Boot Camp
TTPS4824	Python Essentials for Networking & Systems Administration
TTPS4879	Hands-On Predictive Analytics with Python

## Attend a Course

Please feel free to Register Online or call 844-475-4559 toll free to connect with our Registrar for assistance. If you ever need additional date options, please [contact us](#) for scheduling.