**Document Generated: 11/29/2026**

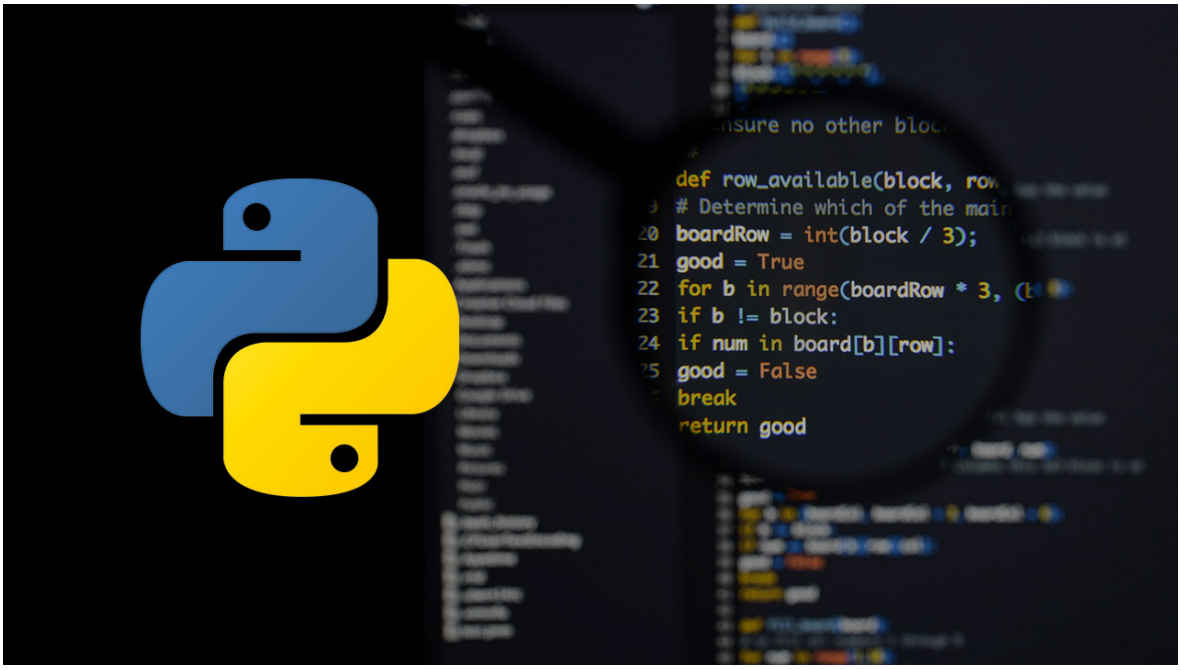
**Learning Style: Online Instructor-Led**

**Technology:**

**Difficulty: Intermediate**

**Course Duration: 5 Days**

# Mastering Python Programming Boot Camp (TTPS4820)




## About This Course:

As a cornerstone of our Python Skill Journey series, our Mastering Python Programming Boot Camp stands as a top-tier training experience, acclaimed for transforming Python novices into capable developers. Whether you aim to streamline routine tasks through automated Python scripts or venture into the world of web development, this course serves as both a launchpad and a compass, guiding you toward exciting horizons in analytics, data science, machine learning, and beyond.

## Course Objectives:

This course combines engaging instructor-led presentations and useful demonstrations with valuable hands-on labs and engaging group activities. Throughout the course you'll learn how to

- Create working Python scripts following best practices
- Use python data types appropriately
- Read and write files with both text and binary data
- Search and replace text with regular expressions
- Get familiar with the standard library and its work-saving modules
- Use lesser known but powerful Python data types
- Create real-world, professional Python applications
- Work with dates, times, and calendars
- Know when to use collections such as lists, tuples, dictionaries, and sets
- Understand Pythonic features such as list comprehensions and generators
- Write robust code using exception handling
- Create and use virtual environments

## Audience:

This course is geared for technical users who are new to Python. Roles might include developers, software engineers, data analysts who want to enhance data processing, system administrators and web site administrators who want to use Python to support their server installations, developers who want more efficient web solutions, as well as anyone else who wants to automate or simplify common tasks with the use of Python scripts.

## Prerequisites:

To ensure a smooth learning experience and maximize the benefits of attending this course, you should have the following prerequisite skills:

- At least some prior hands-on experience with scripting or programming. You don't need to be an expert in either, but you should have had some exposure and should be coming from a technical background.
- Working with Unix or Linux, and familiarity with using the command line interface for simple tasks, such as file navigation and executing commands.

- Basic familiarity working with text editors like Notepad, or IDEs, would be helpful as the course includes hands-on lab sessions requiring code editing.

## Course Outline:

### The Python Environment

- Starting Python
- Using the interpreter
- Running a Python script
- Editors and IDEs

### Variables and Values

- Using variables
- Builtin functions
- String data
- Numeric data
- Converting types

### Basic input and output

- Writing to the screen
- String formatting
- Command line arguments
- Reading the keyboard

### Flow Control

- About flow control
- The **if** statement
- Relational and Boolean values
- **while** loops
- Exiting from loops

### Array types

- Sequence types in general
- Lists and list methods
- Tuples
- Indexing and slicing
- Iterating through a sequence
- Sequence functions, keywords, and operators
- List comprehensions and generators

### Working with files

- File I/O overview
- Opening a text file

- Reading a text file
- Writing to a text file

**Dictionaries and Sets**

- About dictionaries
- Creating dictionaries
- Getting values
- Iterating through a dictionary
- About sets
- Creating sets
- Working with sets

**Functions**

- Defining functions
- Returning values
- Parameters and arguments
- Variable scope

**Sorting**

- The sorted() function
- Custom sort keys
- Lambda functions
- Sorting in reverse
- Using min() and max()

**Exception handling and logging**

- Exceptions
- Using try/catch/else/finally
- Handling multiple exceptions
- Logging setup
- Basic logging

**Modules and Packages**

- Creating Modules
- The import statement
- Module search path
- Using packages
- Function and Module aliases

**Introduction to Classes**

- About object-oriented programming
- Defining classes
- Constructors
- Understanding self

- Properties
- Instance Methods and data
- Class methods and data
- Inheritance

**Regular Expressions**

- RE syntax overview
- RE objects
- Searching and matching
- Compilation flags
- Groups and special groups
- Search-and-replace
- Splitting strings

**Dates and times**

- Date and time representations
- Parsing dates from text
- Formatting as text
- Converting representations
- Calendar data
- Time zones

**Working with the file system**

- Paths, directories, and filenames
- Checking for existence
- Permissions and other file attributes
- Walking directory trees
- Using shutil for file operations

**Advanced data handling**

- Defaultdict and Counter
- Pretty-printing data structures
- Compressed archives (zip, gzip, tar, etc.)
- Persistent data

**Network programming**

- Using requests
- Grabbing web content
- Sending email
- Using SSH for remote access
- Using FTP

**Effective Scripts**

- Reading input files a la Unix

- Parsing command-line options
- Detecting the current platform
- Implementing logging

**Virtual Environments**

- Why are virtual environments needed
- Creating a virtual env
- Replicating an environment
- Virtual environment issues

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