Python Essentials for Networking & Systems Administration / SysAdmin

Gain Core Python Scripting Skills for Task Automation and Network Programming

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Course Snapshot

- **Course: Python Essentials for Networking & Systems Administration / SysAdmin (TTPS4824)**
- **Duration**: 4 days
- **Audience & Skill-Level**: This in an **introductory-level** course appropriate for advanced users, system administrators and web site administrators **new to Python**, who want to use Python to support their server installations, as well as anyone else who wants to automate or simplify common tasks with the use of Python scripts.
- **Hands-on Learning:** This hands-on course combines engaging expert lessons, demos and group discussions with real-world, skills-focused machine-based labs and exercises. Student machines are required.
- **Delivery Options**: This course is available for **onsite private classroom presentation**, **live online virtual presentation**, or can be presented in a **blended learning format**. Please also ask about our **Self-Paced** / **Video** / **QuickSkills** or **Mini-Camp** / **Short Course** flexible delivery options.
- **Public Schedule**: This course has active dates on our live-online open enrollment **Public Schedule**.
- **Customizable**: This course agenda, topics and labs can be further adjusted to target your specific training skills objectives, tools and learning goals. Please ask for details.

Overview

Python for Networking / Systems Administrators teaches you basic Python scripting skills, and then how to leverage Python to automate your day-to-day administrative and networking tasks across a set of distributed clients. Working in a hands-on lab environment, you'll learn solid Python scripting essentials, as well as how to perform and work with more advanced features such as file operations, regular expressions, working with binary data. You'll also explore using the extensive functionality of Python modules, with an emphasis on network-focused modules such as SSH, Git, and RESTful services.

This course provides you with real hands-on experience exploring and working with Python, so you gain real basic level scripting skills, learning by doing, not just getting a quick overview of syntax and grammar. You'll leave this course able to use basic Python to complete these automated tasks in the real world, on the job, right after class.

Learning Objectives

Working within in an engaging, hands-on learning environment, guided by our expert instructor, students will learn 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, dictionaries, and sets
- Understand Pythonic features such as comprehensions and iterators
- Write robust code using exception handling
- Automate network administrative tasks across distributed clients using SSH, REST, and More

Need different skills or topics? If your team requires different topics or tools, additional skills or custom approach, this course may be further adjusted to accommodate. We offer additional python, networking, web development, data science, machine learning and other related topics that may be blended with this course for a track that best suits your needs. Our team will collaborate with you to understand your needs and will target the course to focus on your specific learning objectives and goals.

Audience & Pre-Requisites

This **introductory-level** Python course is appropriate for advanced users, system administrators and web site administrators who want to use Python to support their server installations, as well as anyone else who wants to automate or simplify common tasks with the use of Python scripts. Students should have basic development experience in any programming language, along with a working, user-level knowledge of Unix/Linux, Mac, or Windows.

Follow On Courses: Our Python tracks include a wide variety of follow-on courses and learning paths for leveraging Python for next-level web development, data science / machine learning, networking, task automation, security and other topics. Please see the attached **Python Training Suite** list of courses, or inquire for recommendations based on your specific role and goals.

Enhanced Learning Services: Please also ask about our **Pre-Training Class OnRamp & Prep / Primer** offerings, **Skills Gap Assessment Services**, **Case Studies**, **Knowledge Check Quizzes**, **Skills Immersion Programs & Camps**, **Collaborative Mentoring Services** and **Extended Learning Support** & **Post Training** services.

Course Topics / Agenda

Please note that this list of topics is based on our standard course offering, evolved from typical industry uses and trends. We'll work with you to tune this course and level of coverage to target the skills you need most. Topics, agenda and labs are subject to change, and may adjust during live delivery based on audience needs, skill-level and participation.

1. An Overview of Python
- What is Python?
- The Birth of Python.
- About Interpreted Languages
- Advantages of Python
- Disadvantages of Python
- How to get Python
- Which version of Python?
- The end of Python 2
- Getting Help
- One day on Dagobah

2. The Python Environment
- Starting Python
- If the interpreter is not in your PATH
- Using the interpreter
- Trying out a few commands
- Running Python scripts (explicit)
- Running Python scripts (implicit)
- Using pydoc
- Python Editors and IDEs

3. Getting Started
- Using variables
- Keywords and Builtins
- Variable typing
- Strings
- Single-delimited string literals
- Triple-delimited string literals
- Raw string literals
- Unicode characters
- String operators and methods
- String Methods
- Numeric literals
- Math operators and expressions
- Converting among types
- Writing to the screen
- String Formatting
- Legacy String Formatting
- Command line parameters
- Reading from the keyboard

4. Flow Control
- About flow control
- What's with the white space?
- if and elif
- Conditional Expressions
- Relational Operators
- Boolean operators
- while loops
- Alternate ways to exit a loop

5. Array types
- About Array Types
- Lists
- Tuples
- Indexing and slicing
- Iterating through a sequence
- Unpacking tuples
- Nested sequences
- Functions for all sequences
- Using enumerate()
- Operators and keywords for sequences
- The range() function
- List comprehensions
- Generator Expressions

6. Working with Files
- Text file I/O
- Opening a text file
- The with block
- Reading a text file
- Writing to a text file

7. Dictionaries
- About dictionaries
- When to use dictionaries?
- Creating dictionaries
- Getting dictionary values
- Iterating through a dictionary
- Reading file data into a dictionary
- Counting with dictionaries
- About sets
- Creating Sets
- Working with sets

8. Functions
- Defining a function
- Returning values
- Function parameters
- Variable scope

9. Sorting
- Sorting Overview

- The sorted() function
- Custom sort keys
- Lambda functions
- Sorting nested data
- Sorting dictionaries
- Sorting in reverse
- Sorting lists in place

10. Errors and Exception Handling
- Syntax errors
- Exceptions
- Handling exceptions with try
- Handling multiple exceptions
- Handling generic exceptions
- Ignoring exceptions
- Using else
- Cleaning up with finally

11. Using Modules
- What is a module?
- Creating Modules
- The import statement
- Where did __pycache__ come from?
- Module search path
- Packages
- Example
- Module Aliases
- When the batteries aren't included

12. An Introduction to Python Classes
- About O-O programming
- Defining classes
- Constructors
- Instance methods
- Properties
- Class methods and data
- Static Methods
- Private methods
- Inheritance
- Untangling the nomenclature

13. Regular Expressions
- Regular Expressions
- RE Syntax Overview
- Finding matches
- RE Objects
- Compilation Flags
- Groups
- Special Groups
- Replacing text
- Replacing with a callback
- Splitting a string

14. Network Programming
- Grabbing a web page
- Consuming Web services
- HTTP the easy way
- sending e-mail
- Email attachments
- Remote Access
- Copying files with Paramiko

15. Sockets
- Sockets
- Socket options
- Server concepts
- Client concepts
- Application protocols
- Forking servers

16. Multiprogramming
- Multiprogramming
- What Are Threads?
- The Python Thread Manager
- The threading Module
- Threads for the impatient
- Creating a thread class
- Variable sharing
- Using queues
- Debugging threaded Programs
- The multiprocessing module
- Using pools
- Alternatives to multiprogramming

17. Efficient Scripting
- Running external programs
- Parsing arguments
- Creating filters to read text files
- Logging

18. Serializing Data: XML, XPath, JSON, CSV
- About XML
- Normal Approaches to XML
- Which module to use?
- Getting Started With ElementTree
- How ElementTree Works
- Elements
- Creating a New XML Document
- Parsing An XML Document
- Navigating the XML Document
- Using XPath
- About JSON
- Reading JSON
- Writing JSON
- Customizing JSON
- Reading CSV data
- Nonstandard CSV
- Using csv.DictReader
- Writing CSV Data
- Pickle

Hands-on Setup Made Simple! All course software (limited versions, for course use only), courseware files, hands-on lab guides, labs and solutions, data sets and resources (as applicable) are provided for you in our "easy access / no install required" high-speed remote lab environment. In most cases, we can also offer local (non-cloud) set up as an alternative. Either way, our dedicated live tech team works with every student to ensure everyone is set up with working access and ready to go prior to every course start date, ensuring a smooth delivery and great hands-on experience. All your coursework can be accessed or downloaded after class, so you never lose your work or materials. Please ask for details.

For More Information

All courses can be presented **onsite** or **online,** or in a **combined / flex / blended learning format**, tailored to target your specific audience, needs and learning goals. We also offer focused, flexible **short courses, self-paced learning** options, **recorded sessions** and more. We train beginner to advanced skills in all areas we cover, and offer **New Hire / Cohort Training**, **Boot Camps**, **Skills Immersion Programs**, **Reskilling Programs**, **Skills Migration & Transition Programs**, and more. We collaborate with you to ensure

all courses are truly targeted to meet your specific needs and learning skills, maximizing your valuable training time, as well as your important budget.

Please also visit our extensive **Public Training Schedule** for training for smaller groups or individuals. Please contact us for course details, **Corporate Rates** and **Special Discount Offers**.

For more information about our dedicated training services, collaborative coaching services, courseware licensing options, public course schedule, training management services, partner programs, or to see our complete list of course offerings and special offers please visit us at **www.triveratech.com**, email **Info@triveratech.com** or call us toll free at **844-475-4559.** Our pricing and services are always satisfaction guaranteed.

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