# PY 100 – Introduction to Python

**Days:** 2

**Prerequisites:** Basic Keyboard Proficiency: Ability to efficiently navigate and use a keyboard, including typing, copy-pasting, and basic text editing in terminal and/or text editors.

**Audience:** This course is designed for anyone seeking to establish a solid foundation in Python, particularly software developers.

**Description:** This Python fundamentals course provides essential skills required for anyone looking to advance in Python programming. It is ideal for both beginners taking their first steps in programming and seasoned developers transitioning to Python or seeking to fill gaps in their knowledge. Over two hands-on days, participants will master the core concepts that form the foundation of all Python programming and are critical for any further specialization. Additionally, this course includes all the necessary labs to prepare for and earn the **PCEP certification**, making it a perfect choice for those seeking official recognition of their Python proficiency. By the end of this course, students will have acquired the essential knowledge and practical skills in Python necessary for success in any Python-driven field or project. Whether you're just starting or refining your expertise, this course will solidify your Python foundation and prepare you for advanced applications.

**Course Objectives:** This workshop teaches participants to:

- Understand the Basics of Python Programming: Build foundational knowledge of Python, including functions, objects, and methods.
- Work with Core Data Structures: Learn how to create, manipulate, and apply Python lists and dictionaries for effective data handling.
- Master Conditional Logic and Control Flow: Use if-elif-else statements and loops (for and while) to build dynamic and responsive scripts.
- Interact with Files in Python: Gain hands-on experience reading from and writing to files for data storage and processing.
- Explore Python Modules and Libraries: Discover how to use built-in modules, third-party libraries, and manage dependencies with PIP.
- Handle Errors with Python's Try-Except: Learn how to write robust code by catching and managing runtime errors effectively.
- Work with Classes and Inheritance: Understand the basics of object-oriented programming in Python, including creating and extending classes.
- Develop Advanced Iteration Techniques: Refine your use of loops and iterations to solve complex problems with Pythonic efficiency.
- Explore Advanced Data Structures: Delve into advanced use cases for lists, tuples, and dictionaries to handle structured data.
- Prepare for Python Certification: Get introduced to the PCEP exam and tackle advanced Python topics to enhance your credentials.

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**OUTLINE:**

## LESSON 1: SOURCE CODE MANAGEMENT (SCM)

This session introduces version control concepts and explores different SCM platforms used in modern development environments.

**Topics include:**

- Lecture: What to Choose?
- Lecture + Lab: SCM Option #1 – GitHub
- Lecture + Lab: SCM Option #2 – GitLab

## LESSON 2: FOUNDATIONAL PYTHON

Participants will begin building a strong foundation in Python programming through hands-on practice and guided instruction.

**Topics include:**

- Lecture + Lab: Built-in Functions
- Lecture + Lab: Custom Functions
- Lecture + Lab: Objects and Methods
- Lecture: Python Lists
- Lecture + Lab: Python Lists
- Lecture: Python Dictionaries
- Lecture + Lab: Python Dictionaries
- Lecture: Conditionals
- Lecture + Lab: If, Elif, and Else Conditions
- Lecture + Lab: While Loops

## LESSON 3: FOUNDATIONAL PYTHON

This module continues exploring core Python concepts with a deeper look at loops, file handling, and essential libraries.

**Topics include:**

- Lecture + Lab: For Loops
- Lecture: Reading and Writing to Files
- Lecture + Lab: Reading Files
- Lecture + Lab: Using Modules
- Lecture + Lab: PIP and Third-Party Libraries
- Lecture + Lab: Try and Except
- Lecture + Lab: Python Classes and Inheritance

## OPTIONAL MODULE: PCEP CERTIFICATION GUIDE

For participants pursuing certification, this module introduces the exam structure and provides advanced practice topics.

**Topics include:**

- Lecture: Introduction to the PCEP Exam
- Lecture + Lab: Advanced Numbers and Operators
- Lecture + Lab: Pythonic Loops and Iteration
- Lecture + Lab: Advanced Lists and Tuples
- Lecture + Lab: Advanced Functionality and Error Handling

## PCEP MOCK EXAMS

Participants can assess their readiness by completing multiple practice exams.

**Topics include:**

- Lecture + Lab: Mock Exam 1
- Lecture + Lab: Mock Exam 2
- Lecture + Lab: Mock Exam 3
- Lecture + Lab: Mock Exam 4