Introduction to Python

This hands-on Python course is packed with more than 25 exercises. Like many programming courses, it begins with a simple "Hello, World!" exercise. From there, students learn about literals, data types, and variables and to collect input from users. Once they have those basics down, students will learn about functions and modules, to work with the math and random modules, to format strings, to index and slice sequences, and to work with the different types of iterables. In the lesson on flow control, students will learn to write conditionals and loops and work with ranges. They'll also learn to write basic list comprehensions. They will build upon this knowledge to learn how to read from and write to files. As part of this, they will learn to create a small list maintenance application. Students will then learn to use exception handling both to catch unexpected errors and as a form of flow control. The course ends with a lesson on dates and times in Python. In addition to teaching how the time and datetime modules work, this lesson provides students with a broader understanding of how computers understand time.

Audience: The course is aimed at students new to the language who may or may not have experience with other programming languages.

Prerequisites: Some programming experience would be beneficial.

Number of Days: 4 days

1. **Python Basics**
   - Running Python
   - Hello, World!
   - Literals
   - Python Comments
   - Data Types
   - Variables
   - Writing a Python Module
   - print() Function
   - Named Arguments
   - Collecting User Input
   - Getting Help
2. **Functions and Modules**
   - Defining Functions
   - Variable Scope
   - Global Variables
   - Function Parameters
   - Returning Values
   - Importing Modules
3. **Math**
   - Arithmetic Operators
   - Modulus and Floor Division
   - Assignment Operators
   - Built-in Math Functions
   - The math Module
   - The random Module
   - Seeding
4. **Python Strings**
   - Quotation Marks and Special Characters
   - String Indexing
   - Slicing Strings
   - Concatenation and Repetition
   - Common String Methods
   - String Formatting
   - Built-in String Functions
5. **Iterables: Sequences, Dictionaries, and Sets**
   - Definitions
   - Sequences
   - Unpacking Sequences
   - Dictionaries
   - The len() Function
   - Sets
6. **Flow Control**
   - Conditional Statements
   - The is and is not Operators
   - Python's Ternary Operator
   - Loops in Python
   - The enumerate() Function

Generators
List Comprehensions
*args and **kwargs

7. **File Processing**
   Opening Files
   The os and os.path Modules
8. **Exception Handling**
   Wildcard except Clauses
   Getting Information on Exceptions
   The else Clause
   The finally Clause
   Using Exceptions for Flow Control
   Exception Hierarchy
9. **Dates and Times**
   Understanding Time
   The time Module
   The datetime Module