

 **Introduction to Python**

Duration: 4 Days

Description

This course is a comprehensive four-day program designed to teach Python programming. It covers a range of topics including Python basics, data types, collections, functions, object-oriented programming, modules, exception handling, file management, and database access. The course is structured into nine modules, each focusing on a specific aspect of Python with hands-on labs in each module.

Audience

This course is well-suited for those looking to enhance their programming skills and understanding of Python for application development and data management tasks.

Objectives

In this Python course, you will learn how to:

* Efficiently develop Python applications by utilizing built-in functions and data structures.
* Apply object-oriented principles to structure your code, incorporating modules and classes.
* Demonstrate proficiency in working with functions and collections through practical exercises.
* Utilize external libraries to extend functionalities and manage various data formats effectively.
* Acquire hands-on experience in file and data handling within the Python environment.
* Develop comfort and competence in dealing with Exceptions through practical exception handling exercises.

Prerequisites

This course requires:

* Basic knowledge in a procedural or object-oriented language like C, C++, Java, or SQL
* Understanding of fundamental programming concepts such as variables, loops, and use of a text editor for coding

Outline

* Module 1: Python Introduction
	+ Background, Uses, and Characteristics
	+ Syntax and Writing Basic Code
	+ Data Types and Variables
	+ Operators
* Module 2: Control Structures
	+ Conditional Statements
		- **if**
		- **else**
		- **elif**
	+ Loops
		- **for**
		- **while**
	+ Loop Control Statements
		- **break**
		- **continue**
		- **pass**
	+ Nested Control Structures
* Module 3: Collections
	+ Lists
	+ Tuples
	+ Dictionaries
	+ Sets
	+ Membership Testing
	+ Iterate Collections
	+ List Comprehensions
* Module 4: Functions
	+ Create Functions Using **def** Keyword
	+ Arguments
		- Positional
		- Keyword
		- Default
		- Variable-Length
	+ Return Statements
	+ Scope and Lifetime of Functions
	+ Anonymous/Lambda Functions
	+ Higher Order Functions
* Module 5: Object-Oriented Programming with Python
	+ Basic Concepts of Object Oriented Programming
		- Classes
		- Objects
		- Inheritance
		- Encapsulation
		- Polymorphism
	+ Creating Classes and Instantiating Objects
	+ Instance Methods
	+ Class Variables and Instance Variables
	+ Inheritance and Subclassing
* Module 6: Python Modules
	+ Concept and Purpose of Modules in Python
	+ Creating and Using Modules
	+ **import** Statement
	+ Built-In Modules
	+ **sys** and **os** Modules
	+ Creating Custom Modules
* Module 7: Exceptions
	+ Exceptions vs. Syntax Errors
	+ Exception Handling
		- **try** Block
		- **except** Block
		- **else** Clause
		- **finally** Block
	+ Multiple Exception Handling
	+ Raising Exceptions
	+ Custom Exception Classes
* Module 8: Files
	+ File Operations
		- Open
		- Read
		- Write
		- Close
	+ File Modes
		- Read(**r**)
		- Write(**w**)
		- Append(**a**)
	+ File Iteration
	+ Streams
* Module 9: Relational Databases
	+ Database Connection
	+ SQL Basics
	+ Database Libraries
	+ Cursor Object