

Python with Projects for Beginners – Level I

Duration: 5 Days (8Hours per day)

Hands-On Format: This hands-on class is approximately 80/20 lab to lecture ratio, combining engaging lecture, demos, group activities and discussions with comprehensive machine-based practical programming labs and project work.

Module 1 – Print, Input and Variables

Print to Console
Python Input Function
Python Variables
Variable Naming
Project 1 – Band Name Generator

Module 2 – Data Types and Manipulate Strings

Python Data Types
Type Error, Type Checking and Type Conversion
Mathematical Operations in Python
Task - BMI Calculator
Number Manipulation and F Strings in Python
Task - Life in Weeks
Project – Tip Calculator

Module 3 – Control Flow and Logical Operators

Control Flow with If/Else and Conditional Operators
Task – Odd or Even
Nested If Statements and Elif Statements
Task – BMI 2.0
Task – Leap Year
Multiple If Statements in Succession
Task – Pizza Order Practice
Logical Operators
Task – Love Calculator
Project – Treasure Island

Module 4 – Randomisation and Python Lists

Random Module
Task – Heads or Tails
Understanding the Offset and Appending Items to Lists
Task – Who Will Pay the Bill
IndexErrors and Working with Nested Lists
Task – Treasure Map
Project – Rock Paper Scissors

Module 5 – Python Loops

Using the Loop with Python Lists
Task – Average Height
Task – High Score
For Loop and Range Function
Task - Adding Even Numbers
Project – Create a Password Generator

Module 6 – Functions and While Loop

Defining and Calling Python Functions
The Hurdles Loop Challenge
Indentation in Python
While Loops
Challenge - Hurdles Challenge using While Loops
Challenge – Jumping Over Hurdles with Variable Heights
Project – Escaping the Maze

Module 7 – Hangman

How to Break a Complex Problem Down into a Flow Chart
Challenge 1 – Picking a Random Words and Checking Answers
Challenge 2 – Replacing Blanks with Guesses
Challenge 3 – Checking if Player has Won
Challenge 4 – Keeping Track of the Player Lives
Challenge 5 – Improving the User Experience

Module 8 – Function Parameters and Caesar Cipher

Functions with Inputs
Positional vs Keyword Arguments
Task – Paint Area Calculator
Task – Prime Number Checker
Caesar Cipher Encryption
Caesar Cipher Decryption
Caesar Cipher Recognizing our Code

Module 9 – Dictionaries, Nesting and the Secret Auction

Python Dictionary – Deep Dive
Task – Grading Program
Nesting Lists and Dictionaries
Task – Dictionary in List
The Secret Auction Program Flow Chart

Module 10 – Functions with Output

Functions with Outputs
Multiple Return Values
Task – Days in Month
Docstrings
Calculator – Combining Dictionaries and Functions
Print vs Return
While Loops, Flags and Recursion
Calculator Finishing Touches and Bug Fixes

Module 11 – Blackjack Capstone Project

Blackjack Program Requirements and Game Rules
Refactoring and Calling Calculate_score()

Module 12 – Scope and Number Guessing Game

Namespaces: Local vs Global Scope
How to Modify a Global Variable
Python Constants and Global Scope
Project – Number Guessing Game

Module 13 – Finding and Fixing Errors

Describe the Problem
Reproduce the Game
Play Computer and Evaluate Each Line
Fixing Errors and Watching for Red Underlines
Squash Bugs with print Statement
Debugging Tips

Module 14 – Higher Level Game Project

Introduction and Program Requirements for the Higher Lower Game