

# Wave Techtronics

**Address:** 219 Indira Nagar Near Asian School Dehradun, Dehradun Uttarakhand, Bharat-248001  
**Contact:** 9720335341, 8755999176 **Email:** wavetechtronics.co@gmail.com , **Web:** www.wavetechtronics.in

---

## Course Content: Python Basics

### **Module 1: Getting Started with Python**

Introduction to Python  
Installing Python and setting up the environment  
Writing your first Python program  
Understanding Python's interactive mode and script mode  
Practise questions

### **Module 2: Python Basics**

Variables and data types (integers, floats, strings, Boolean)  
Basic operators (arithmetic, comparison, logical)  
Working with strings (string concatenation, indexing, slicing)  
Type conversion (casting between data types)  
Practise questions

### **Module 3: Control Structures**

Conditional statements (if, elif, else)  
Loops (for loops, while loops)  
Control flow statements (break, continue)  
Using loops and conditionals together  
Practise questions

### **Module 4: Data Structures in Python**

- **Strings**
  - Explanation of strings as sequences of characters
  - Creating strings using single quotes, double quotes, or triple quotes
  - String concatenation and replication
  - String indexing and slicing
  - Common string methods: len(), upper(), lower(), strip(), split(), join(), find(), replace(), startswith(), endswith(), etc.
  - Examples and exercises to practice string manipulation
- **Lists:**
  - Introduction to lists as ordered collections of items
  - Creating lists using square brackets
  - Accessing elements in a list using indexing and slicing
  - Modifying lists: appending, inserting, removing, and extending elements
  - List methods: append(), insert(), remove(), pop(), index(), count(), sort(), reverse(), etc.
  - Nested lists and list comprehension
  - Examples and exercises to practice list operations
- **Tuples**
  - Explanation of tuples as immutable sequences
  - Creating tuples using parentheses
  - Accessing elements in a tuple using indexing and slicing
  - Immutable nature of tuples and its advantages
  - Tuple packing and unpacking

- Tuple methods: count(), index()
- Using tuples as keys in dictionaries
- Examples and exercises to practice tuple usage
- **Dictionaries**
  - Introduction to dictionaries as key-value pairs
  - Creating dictionaries using curly braces and key-value pairs
  - Accessing elements in a dictionary using keys
  - Modifying dictionaries: adding, updating, and deleting key-value pairs
  - Dictionary methods: keys(), values(), items(), get(), pop(), update(), clear(), etc.
  - Checking for the existence of keys in a dictionary
  - Dictionary comprehension
  - Examples and exercises to practice dictionary operations

### **Module 5: Functions**

Defining and calling functions

Parameters and arguments

Return statement

Scope and lifetime of variables

Practise questions

### **Module 6: File Handling**

Opening and closing files

Reading from and writing to files

Working with different file modes

Working on Text files

Copying data from one file to other

Working on Binary Files

Working on CSV Files

Handling exceptions related to file operations

Practise questions

### **Module 7: Introduction to Python Libraries**

Overview of popular Python libraries (e.g., NumPy, pandas, matplotlib)

Installing and importing libraries

Basic operations and functionalities of selected libraries

### **Module 8: Introduction to Modules and Packages**

What are modules and packages?

Importing modules and using functions from modules

Creating and using custom modules

Installing and using third-party packages using pip

### **Module 9: Introduction to Object-Oriented Programming (OOP)**

Understanding objects and classes

Creating classes and objects

Instance variables and methods

Constructors and destructors

Inheritance and polymorphism

Practice question