

Course Name : Certificate Course in Python

Course Code : C22

Eligibility : 10+2

Fee : Rs 4,000/-

Duration : 03 Months (120 Hrs)

Subject Code	Subject	Syllabus	Total Duration (Hrs)	Theory (Hrs)	Practical (Hrs)
C22- 01	Elementary Programming	<p>Introduction:</p> <p>What is Python? History and Evolution, Python vs Other Languages</p> <p>Setting Up the Environment: Installing Python, IDEs and Code Editors, Running Python Scripts</p> <p>Basic Syntax: Writing and Running Simple Programs, Understanding Python's Indentation and Syntax Rule</p> <p>Data Types and Variables: Numeric Types (int, float), String and Boolean Types, Variable Assignment and Type Conversion</p> <p>Conditional Statements:</p> <p>if, Nested if statements, else, elif Statements, Logical Operators (and, or, not), Combining Conditions, Conditional Expressions, Ternary Operator</p> <p>Looping:</p> <p>for and while Loops, Loop Control (break, continue, pass), Nested Loops</p> <p>Control Statements:</p> <p>break, continue, pass statement, Exception Handling Basics (try, except, finally)</p> <p>String Manipulation:</p> <p>Basic Operations: String Creation and Concatenation, Accessing Characters and Slicing</p> <p>String Methods: upper(), lower(), title(), strip(), find(), replace(), split(), join()</p> <p>String Formatting: Using format(), f-strings</p>	25	10	15

		(Formatted String Literals) String Interpolation: Concatenation and Insertion			
C22-02	Python Collections	<p>Collections:</p> <p>Lists: Creating Lists, Accessing, Modifying, and Deleting Elements, List Methods (append, extend, pop, etc.)</p> <p>Tuples: Creating Tuples, Accessing Elements, Immutable Properties</p> <p>Dictionaries: Creating Dictionaries, Accessing, Adding, and Removing Key-Value Pairs, Dictionary Methods (keys, values, items, etc.)</p> <p>Sets: Creating Sets, Set Operations (union, intersection, difference), Adding and Removing Elements</p> <p>Functions:</p> <p>Defining Functions, Function Syntax, Parameters and Return Values, Function Arguments: Positional and Keyword Arguments, Default Parameters & Variable-Length Arguments, Lambda Functions: Syntax, Usage and examples, Scope and Lifetime of Variables</p> <p>Modules/Packages:</p> <p>Importing Modules, Standard Library Modules (eg. math, date, time etc.), Custom Modules, Creating Modules, Writing and Saving Python Files, Importing Functions from Modules, Understanding and using Packages</p> <p>Input-Output:</p> <p>Reading from Input: input() Function, Handling User Input, Writing to Output: print() Function, Formatting Output File Operations: Opening and Closing Files, Reading from and Writing to Files, File Mode (r, w, a)</p> <p>Exception Handling: Basic Exception Handling: try and except Blocks, Catching Multiple Exceptions, Finally and Else Clauses, Using finally for Cleanup,</p>	45	20	25

		Using else with try Blocks, Raising Exceptions: Using raise to Trigger Exceptions, Creating Custom Exceptions			
C22-03	Oops Concepts	<p>Object-Oriented Programming (OOP) Concepts:</p> <p>Introduction to OOP: Definition and features, Comparison with procedural programming</p> <p>Basic Principles of OOP: Encapsulation, Abstraction, Inheritance, Polymorphism</p> <p>Classes and Objects: Definition of classes and objects, Creating classes and instantiating objects, Constructors and destructors</p> <p>Access Modifiers: Public, private, and protected access levels, Friend classes and functions</p> <p>Inheritance: Types of inheritance (single, multiple, hierarchical, etc.), Base and derived classes, Overriding method</p> <p>Polymorphism: Compile-time (method overloading), Runtime (method overriding), Virtual functions and abstract classes</p> <p>Interfaces and Abstract Classes: Difference between interfaces and abstract classes, Implementing interfaces</p> <p>Exception Handling: Try, catch, throw, Custom exceptions</p> <p>Practical Applications: Real-world examples and use cases, Implementing OOP concepts in a programming language Python</p> <p>Regular Expressions:</p> <p>Introduction to Regular Expressions: Basic syntax and special characters, Simple patterns for matching text, Using Python's re Module, Functions to search, match, and replace text</p> <p>Database & GUI Programming:</p> <p>Database Basics: Introduction to databases and SQL, Performing simple SQL operations (create, read, update, delete), Using SQLite in Python, Connecting to a database and executing queries</p> <p>GUI Programming: Basics of GUI design, Creating simple applications, Using common</p>	50	10	40

		widgets (buttons, labels, entry fields), Layout management			
Total			120	40	80