



**Darrang College
(Autonomous),
Tezpur-784001**

Syllabus for Certificate Course

Course Name: Python Programming

Python Programming

Week 1: Introduction to Python (3 Hours Live Class, 3 Hours Self-Study)

Live Class:

1. **Introduction to Python:**
 - What is Python?
 - Installing Python and Setting Up Environment
 - Writing and Running Your First Python Script
2. **Basic Syntax:**
 - Variables and Data Types
 - Basic Operators
 - Comments and Documentation
3. **Control Structures:**
 - Conditional Statements (if, elif, else)
 - Loops (for, while)

Self-Study:

- Reading Material: Introduction to Python and its features.
- Assignment: Write a Python program to check if a number is even or odd etc..
- Tutorial: Online exercises on basic syntax and control structures.

Week 2: Python Data Structures (3 Hours Live Class, 3 Hours Self-Study)

Live Class:

1. **Lists and Tuples:**
 - Creating and Accessing Elements
 - List Operations
2. **Dictionaries and Sets:**
 - Key-Value Pairs
 - Set Operations

Self-Study:

- Reading Material: Python Data Structures.
- Assignment: Create a list of numbers and perform basic operations (addition, deletion).
- Tutorial: Practice problems on lists, dictionaries, and sets.

Week 3: Working with Strings and Files (3 Hours Live Class, 3 Hours Self-Study)

Live Class:

1. **Strings:**
 - String Operations and Methods

- String Formatting
- 2. **File Handling:**
 - Reading from and Writing to Files
 - Working with File Paths

Self-Study:

- Reading Material: Python Strings and File Handling.
- Assignment: Write a Python script to read a file and count the frequency of words.
- Tutorial: Exercises on string manipulation and file operations.

Week 4: Functions and Modules (3 Hours Live Class, 3 Hours Self-Study)

Live Class:

1. **Functions:**
 - Defining and Calling Functions
 - Function Arguments and Return Values
2. **Modules:**
 - Importing Modules
 - Standard Library Modules

Self-Study:

- Reading Material: Python Functions and Modules.
- Assignment: Write a Python function to calculate the factorial of a number using both recursion and iteration.
- Tutorial: Practice problems on defining and using functions, and importing modules.

Week 5: Practical Applications and Mini Projects (3 Hours Live Class, 3 Hours Self-Study)

Live Class:

1. **Mini Projects:**
 - Simple Calculator etc.
 - Number Guessing Game etc.
2. **Q&A Session:**
 - Review of Key Concepts
 - Open Q&A for Students

Self-Study:

- Reading Material: Review all previous materials and concepts.
- Assignment: Develop a mini project based on the examples provided.
- Tutorial: Further exercises on applying Python concepts in small projects.

Final Project (Optional)