PYTHON SYLLABUS

Module 1: Introduction to Problem Solving

- Definition and Steps of Problem Solving
- Problem Analysis Chart
- Developing an Algorithm
- Flowchart and Pseudocode

Module 2: Python Programming Fundamentals

- Introduction to Python
  - Interactive and Script Mode
  - Indentation
  - Comments
  - Variables
- Reserved Words
- Data Types
- Operators and their Precedence
- Expressions
- Built-in Functions
- Importing from Packages

Module 3: Control Structures

- Decision Making and Branching:
  - if, if-else, nested if, multi-way if-elif statements
- Looping:
  - while loop, for loop statements
  - else clauses in loops
  - nested loops
  - break, continue, and pass statements

Module 4: Collections

- Lists:
  - Create, Access, Slicing, Negative Indices
  - List Methods
  - List Comprehensions
- Tuples:
  - Create, Indexing, and Slicing
  - Operations on Tuples
- Dictionary:
  - Create, Add, and Replace Values
  - Operations on Dictionaries
- Sets:
  - Creation and Operations

Module 5: Strings and Regular Expressions

- Strings:
  - Comparison
  - Formatting
  - Slicing, Splitting, Stripping
- Regular Expressions:
  - Search and Replace
  - Patterns

Module 6: Functions and Files

- Functions:
  - Parameters and Arguments: Positional, Keyword, Default values
  - Local and Global Scope of Variables
  - Functions with Arbitrary Arguments
  - Recursive Functions
  - Lambda Function

- Files:
  - Create, Open, Read, Write, Append, Close
  - tell and seek Methods

Module 7: Modules and Packages

- Built-in Modules
- User-Defined Modules
- Overview of Numpy and Pandas Packages