SYLLABUS

PYTHON PROGRAMMING FOR DATA ANALYSIS-SEM3

Unit I: Introduction to Python

- Basics of Python Programming
- Data Types and Variables
- Operators and Expressions
- Input and Output Functions
- Conditional Statements: if, if-else, if-elif-else
- Looping: for, while, break, continue, pass

Unit II: Functions and Modules

- Defining Functions
- Function Arguments and Return Values
- Built-in Functions
- Recursive Functions
- Anonymous (Lambda) Functions
- Python Modules: Importing and Creating
- Working with Standard Libraries (math, random, etc.)

Unit III: Data Structures in Python

- Lists and List Comprehensions
- Tuples
- Dictionaries
- Sets
- String Handling
- Iterating through Data Structures

Unit IV: File Handling and Exception Handling

- File Operations: Open, Read, Write, Append
- File Modes
- Reading/Writing Text and Binary Files
- Exception Types
- Try, Except, Finally
- Raising Exceptions

Unit V: Data Analysis using Pandas and NumPy

- Introduction to NumPy Arrays
- Array Operations
- Indexing, Slicing
- Introduction to Pandas
- DataFrames and Series
- Importing and Exporting Data (CSV, Excel)
- Data Cleaning, Filtering, Aggregation
- Basic Data Visualization (optional, if time permits)