

Annexure

Detailed Syllabus of the Course:

Module-1: Python Programming

1. Introduction to Python Language and Pycharm IDE:

- ✓ About Python Language
- ✓ Companies using Python
- ✓ Features of Python
- ✓ Getting Started with Pycharm IDE

2. Basic Syntax:

- ✓ First Python Program
- ✓ Identifiers
- ✓ Keywords/Reserved Words
- ✓ Lines and Indentation
- ✓ Multi-Line Statements
- ✓ Quotation & Comments

3. Data types:

- ✓ Numbers
- ✓ String
- ✓ Lists
- ✓ Dictionaries
- ✓ Tuple
- ✓ Set

4. Operators:

- ✓ Operator & its Types
- ✓ Arithmetic Operators
- ✓ Comparison (Relational) Operators
- ✓ Assignment Operators
- ✓ Logical Operators
- ✓ Bitwise Operators
- ✓ Membership Operators
- ✓ Identity Operators

5. Flow Control in Python:

- ✓ Decision Making statements & Types
 - IF Statement
 - IF... ELSE... Statements
 - If...Elif Statement
- ✓ Loop statements & Types
 - while loop statements

- for loop statements
- break statement
- continue statement

6. Functions & Modules:

- ✓ Function definition and call
- ✓ Function Scope
- ✓ Arguments
- ✓ Pass by Reference
- ✓ Anonymous Functions
- ✓ The import Statement
- ✓ The from...import Statement

7. File I/O:

- ✓ Printing to the Screen
- ✓ Reading Keyboard Input
- ✓ Opening and Closing Files
- ✓ Reading and Writing Files
- ✓ Renaming and Deleting Files

8. Exception Handling:

- ✓ Standard Exceptions
- ✓ Assertions in Python
- ✓ What is an Exception?
- ✓ Handling an Exception
- ✓ Argument of an Exception
- ✓ Raising an Exception

9. Classes:

- ✓ Overview of OOP Terminology
- ✓ Creating Classes
- ✓ Creating Instance Objects
- ✓ Class Inheritance
- ✓ Overriding Methods

Module-2: Data Analytics

• Introduction

- ✓ Need for Data Science
- ✓ What is Data Science?
- ✓ Data Life Cycle
- ✓ Languages used for Data Science
- ✓ Basics of Python
 - Why learn Python?
- ✓ Python Libraries for Data Analysis

- **Numpy**

- ✓ What is Numpy?
- ✓ How do I install NumPy?
- ✓ NumPy Array
- ✓ NumPy Array v/s Python List
- ✓ Create an Array
 - linspace()
 - arange()
 - random.rand()
 - ones() & Zeros()
 - logspace()
 - Reshaping an Array
- ✓ Array Dimension
- ✓ Numpy operations-Addition
- ✓ Accessing Components of an Array
- ✓ Subset of Array
- ✓ Modifying Subset
 - Transpose()
 - Append()
 - Insert()
 - Delete()
- ✓ Matrices
 - Create
 - Properties
 - Matrix Modifying
 - Accessing Elements of Matrix
 - Matrix Addition
 - Matrix Subtraction
 - Matrix Multiplication
 - Matrix Division
- ✓ Linear Algebra
 - Linear Algebra operations
 - Determinant of Matrix
 - Rank & Inverse of Matrix
 - System of Linear Equations

- **Matplotlib**

- ✓ Why do we need Data Visualization?
- ✓ What is Data Visualization?
- ✓ What Is Python Matplotlib?
- ✓ Types Of Plots
 - Bar Graph
 - Histogram
 - Scatter Plot
 - Area Plot
 - Pie Chart

- **Pandas**
 - ✓ Why do we need Pandas?
 - ✓ Data Structures used in Pandas
 - ✓ Series Data Structures
 - From ndarray/List
 - From Dictionary
 - From scalar value
 - Slicing a Series
 - Accessing a value in Series
 - Vectorized operations with Series
 - Name attribute
 - ✓ Data Frame
 - 2-dimension

Module 3: Machine Learning

1) Data Pre-processing

- ✓ Getting Started
- ✓ Importing the Libraries
- ✓ Importing the Dataset
- ✓ Taking care of Missing Data
- ✓ Encoding Categorical Data
- ✓ Splitting the dataset into the Training set and Test set
- ✓ Feature Scaling

2) Regression

- ✓ Simple Linear Regression

3) Classification

- ✓ Logistic Regression
- ✓ K-Nearest Neighbors (K-NN)
- ✓ Decision Tree
- ✓ Random Forest

4) Clustering

- ✓ K-Means Clustering

5) Dimensionality Reduction

- ✓ Principal Component Analysis

6) Boosting

- ✓ XGBoost