Course Contents

Theory Contents
Introduction to Python, Unique features of Python, Python versions, Install Python and Environment Setup, First Python Program. Python Identifiers, Keywords and Indentation, Python Data Types, Variables, Operators in Python – Assignment, Logical, Arithmetic etc. Taking User Input (Console), Conditional Statements – If else and Nested If else and elif. List, Tuple, Sets and Dictionary, Understanding Iterators, Generators, Comprehensions Loops in Python – For Loop, While Loop & Nested Loops, String Manipulation – Basic Operations, Slicing & Functions and Methods, User Defined Functions, Lambda Function, Importing Modules – Math Module. Reading and writing text files writing Text Files Appending to Files and Challenge Writing Binary Files Manually Using Pickle to Write Binary Files. Regular expressions, the match Function, The search Function, Matching vs searching, Search and Replace, Extended Regular Expressions, Wildcard. Basics of Object Oriented Programming, Creating Class and Object, Constructors in Python – Parameterized and Non-parameterized, Inheritance in Python, In built class methods and attributes, Multi-Level and Multiple Inheritance, Method Overriding and Data Abstraction, Encapsulation and Polymorphism. Numpy-Introduction, Creating arrays, Using arrays and Scalars, Indexing Arrays, Array Transposition, Universal Array Function, Array Processing, Array Input and Output. Pandas: Introduction, uses of Panda, Series in pandas, Index objects, Reindex, Drop Entry, Selecting Entries, Data Alignment, Rank and Sort Summary Statics, Missing Data, Index Hierarchy. Matplotlib: Introduction, uses of Matplotlib, Data Visualization. Scikit-Learn: Introduction, Predictive Analysis, and Introduction to Machine Learning in Python.

Practical Contents
Python Programming Languages Lab interprets the use of procedural statements like assignments, conditional statements, loops and function calls. Infer the supported data structures like lists, dictionaries and tuples in Python. Also describe the need for Object-oriented programming concepts in Python, and the use of standard libraries in python.