I Year – II Semester	PYTHON PROGRAMMING (Common to all branches)	L	T	P	C
		3	0	0	3

Course Outcomes

- Describe the essential programming skills in computer programming concepts like data types, containers
- Solve coding tasks related conditional execution, loops
- Experiment with various Data structures in interpreted Language and to build modules and packages for real software needs.
- Understand the basic concepts of object oriented programming.
- Develop python programs with appropriate Exception handling

UNIT I

Introduction: Introduction to Python, Program Development Cycle, Input, Processing, and Output, Displaying Output with the Print Function, Comments, Variables, Reading Input from the Keyboard, Performing Calculations, Operators. Type conversions, Expressions, More about Data Output.

Data Types, and Expression: Strings Assignment, and Comment, Numeric Data Types and Character Sets, Using functions and Modules.

UNIT II

Decision Structures and Boolean Logic and Control Statement: if, if-else, if-elif-else Statements, Nested Decision Structures, Comparing Strings, Logical Operators, Boolean Variables.
Repetition Structures: Introduction, while loop, for loop, Calculating a Running Total, Input Validation Loops, Nested Loops.
Strings: Accessing Character and Substring in Strings, Data Encryption, Strings and Number Systems.

UNIT III

List and Dictionaries: Lists, defining a list, Defining Simple Functions, Dictionaries, Defining a Dictionaries
Design with Function: Functions as Abstraction Mechanisms, Design with Recursive Functions, Higher Order Function.
Modules: Modules, Standard Modules, Packages.

UNIT IV

Object Oriented Programming: Concept of class, object and instances, Constructor, class attributes and destructors, Real time use of class in live projects, Inheritance, overlapping and overloading operators, Adding and retrieving dynamic attributes of classes, Programming using Oops support
Design with Classes: Objects and Classes, Data modeling Examples, Structuring Classes with Inheritance and Polymorphism.

UNIT V

Errors and Exceptions Text Files: Syntax Errors, Exceptions, Handling Exceptions, Raising Exceptions, User-defined Exceptions, Defining Clean-up Actions, Redefined Clean-up Actions.

File Operations: Reading config files in python, Writing log files in python, Understanding read functions, read(), readline() and readlines(), Understanding write functions, write() and writelines(), Manipulating file pointer using seek, Programming using file operations Manipulating file pointer using seek().

TEXT BOOKS:

1. Fundamentals of Python First Programs, Kenneth. A. Lambert, Cengage.
2. Python Programming: A Modern Approach, Vamsi Kurama, Pearson.

REFERENCE BOOKS:

1. Mark Lutz,"Learning Python", 5th edition, Orielly, 2013.
2. Allen Downey "Think Python, How to Think Like a Computer Scientist",2nd edition, Green Tea Press, 2015.
3. W.Chun , "Core Python Programming", 2nd Edition, Prentice Hall, 2006.
4. Kenneth A. Lambert, "Introduction to Python", 1st edition, CengageLearning, 2011.

E-Resources and other digital material:

1. Charles Severance: University of Michigan, Python for Everybody [COURSERA]. (05-01-2021), Available: https://www.coursera.org
2. Prof. Sudarshan Iyengar, IIT Ropar, Prof. Yayati Gupta, IIIT Dharwad, The Joy Of Computing Using Python [NPTEL], (05-01-2021), Available: https://nptel.ac.in/courses/106/106/106106182/#
3. Charles Russell Sevarance, University of Michigan, Python for Everybody, 2019 https://www.coursera.org/learn/python