II Year II Semester	L	T	P	C
Code:20CS4614	3	0	0	3

PYTHON APPLICATION PROGRAMMING (Honors)

Course Objectives:
The objectives of Python Application Programming are
1. To learn about Python programming language syntax, semantics, and the runtime environment.
2. Illustrate the process of structuring the data using lists, dictionaries, tuples, strings and sets.
3. Illustrate the Object-oriented Programming concepts in Python.
4. Illustrate the Error Handling In Python, File Access Modes and Exceptions.
5. Demonstrate the basic database design for storing data as part of a multi-step data gathering, analysis, and processing.

Course Outcomes:
Upon the completion of the course the student will learn
1. Interpret the basic of Python programming language
2. Interpret the basic principles of lists, tuples, sets and dictionaries
3. Articulate the Object-Oriented Programming concepts such as encapsulation, inheritance and polymorphism as used in Python
4. Identify the commonly used operations involving file systems and regular expressions.
5. Implement database and GUI applications

UNIT-I
Introduction to Python, use IDLE to develop programs, Basic coding skills, working with data types and variables, working with numeric data, working with string data, Boolean expressions, selection structure, iteration structure

UNIT-II
Python functions, working with lists, work with a list of lists, work with tuples, work with sets, get started with dictionaries

UNIT-III
Classes in Python: OOPS Concepts, Classes and objects , Classes in Python, Constructors, Data hiding, Creating Classes, Instance Methods, Special Methods, Class Variables, Inheritance, Polymorphism, Type Identification, Iterators, generators and decorators.

UNIT-IV
I/O and Error Handling In Python :Introduction, Data Streams, Creating Your Own Data Streams, Access Modes, Writing Data to a File, Reading Data From a File, Additional File Methods, Handling IO Exceptions, Errors, Run Time Errors, The Exception Model, Exception Hierarchy, Handling Multiple Exceptions, Working with Directories.

UNIT-V
An Introduction to relational databases: SQL statements for data manipulation, Using SQLite Manager to work with a database, Using Python to work with a database, Creating a GUI that handles an event, working with components.

Text Books:
1. Michael Urban and Joel Murach, Python Programming, Shroff/Murach, 2016
2. Fundamentals of Programming Python, Richard L Halterman
3. Mark Lutz, Programming Python, O`Reilly, 4th Edition, 2010

Online Resources:
1. https://www.w3schools.com/python
2. https://docs.python.org/3/tutorial/index.html
3. https://www.python-course.eu/advanced_topics.php