BCSC 0063: COMPUTER PROGRAMMING- II

Course Objectives: *The course is designed to provide advance concepts of OOPS, GUI and Network Programming.*

Credits: 02 **L–T–P: 2–0–0**

Module No.	Content	Hours
I	**Introduction to Object-Oriented Programming:** Understanding the basics of OOP, Key concepts: classes, objects, attributes, methods, Benefits of OOP and its importance. **Classes and Objects:** Defining classes and creating objects, Instance variables and instance methods, Constructors and destructors, Class attributes and methods. **Inheritance and Polymorphism: Inheritance:** creating subclasses and superclasses, Overriding methods in subclasses, Understanding method resolution order (MRO), Polymorphism and its use cases. **Encapsulation and Abstraction:** Encapsulation: data hiding and access modifiers. Creating getter and setter methods**.** Abstraction: defining abstract classes and methods**,** Implementing interfaces and abstract classes **Introduction to GUI Programming:** Understanding the importance of GUI in software development, Overview of GUI frameworks available in Python (Tkinter, PyQt, wxPython, etc.), Setting up the development environment.	**16**
II	**Multithreading:** Thread, Starting a thread, Threading module. **Data Visualization in Python:** statistics, numpy, matplotlib and pandas. **Socket Programming Basics:** Introduction to socket programming in Python**,** creating client-server communication using sockets**,** setting up server and client sockets**,** Sending and receiving data over sockets. **Introduction selenium with Python:** Chrome WebDriver, Web Element, Locating Elements, Locating by Id, Locating by Name, Locating by XPath, Locating Hyperlinks by Link Text, Locating Elements by Tag Name, Locating Elements by Class Name, CSS Selectors.	**16**

Text Books:

- Irv Kalb: Object Oriented Python "O'Reilly".
- Python 3 Object Oriented Programming.

Reference Books:

- Python GUI Programming with Tkinter: Develop Responsive and Powerful GUI Applications with Tkinter.

Outcome: Upon completion of this course, the students will be able to:

- CO1: Understand to solve problems with OOP concepts.
- CO2: Apply the concepts of Function Decorators.
- CO3: Use in-built packages (numpy, pandas and matplotlib) defined in Python.
- CO4: Develop the programs using GUI Programming.
- CO5: Develop the programs using Network Programming.
- CO6: Web automation using selenium