OBJECT ORIENTED PROGRAMMINGS THROUGH PYTHON

III Semester: **CSE / IT**

Course Code	Category	Hours / Week			Credits	Maximum Marks		
		L	T	P	C	CIA	SEE	Total
AITB01	Core	3	0	0	3	30	70	100
Contact Classes: 45	Tutorial Classes: Nil	Practical Classes: Nil				Total Classes: 60		

OBJECTIVES:

The course should enable the students to:

I. Understand the fundamentals of Python programming concepts and its applications.
II. Understand the object-oriented concepts using Python in problem solving.
III. Apply string handling and function basics to solve real-time problems.
IV. Illustrate the method of solving errors using exception handling.
V. Design and implement programs using multi threading concepts.

COURSE OUTCOMES (COs):

1. Describe Features of Python, Data types, Operators, Input and output, Control Statements, Features of Object oriented programming system (OOPS).Classes and Objects, Encapsulation, Abstraction, Inheritance, Polymorphism.
2. Determine Creating a class, The Self variable, Constructor, Types of Variable, Namespaces, Types of Methods, Inheritance and Polymorphism Constructors in inheritance, The super() method, Types of inheritance, Polymorphism, Abstract classes and Interfaces.
3. Understand Creating strings and basic operations on strings, String testing methods, Defining a function, Calling a function, Returning multiple values from a function, Functions are first class objects, Formal and actual arguments, Positional arguments, Recursive functions.Explore the concept of non linear data structures such as trees and graphs.
4. Explore the concept of Errors in a Python program, Exceptions, Exception handling, Types of exceptions, The Except block, the assert statement, user-defined exceptions.
5. Knowledge The Root window, Fonts and colors, Working with containers, Canvas, Frames, Widgets ,Button widget, Label Widget, Message widget, Text widget, Radio button Widget, Entry widget.

COURSE LEARNING OUTCOMES (CLOs):

1. Describe the Features of Python, Data types.
2. Summarize the concept of Operators, Input and output, Control Statements.
3. Identify the features of Object Oriented Programming System (OOPS).
4. Use the concept of Classes and Objects, Encapsulation.
5. Describe Abstraction, Inheritance, and Polymorphism.
6. Determine Creating a class, The Self variable.
7. Understand types of variable, Namespaces.
8. Determine types of Methods, Inheritance and Polymorphism.
9. Use Constructors in inheritance, the super() method.
10. Illustrate types of inheritance, Polymorphism, Abstract classes and Interfaces.
11. Understand Creating strings and basic operations on strings.
12. Analyze the concept of String testing methods, Defining a function.
13. Illustrate Calling a function, Returning multiple values from a function.
14. Contrast the Usage of Functions are first class objects, Formal and actual arguments.
15. Define Positional arguments, Recursive functions.
16. Discuss the concept of Errors in a Python program.
17. Understand Exceptions, Exception handling.
18. Summarize the concept of types of exceptions.
19. Discuss the Except block, the assert statement.

20. Understand the concept of user-defined exceptions.
21. Knowledge about the Root window, Fonts and colors.
22. Apply Working with containers, Canvas.
23. Understand Widgets, Button widget, Label Widget.
24. Implement Message widget, Text widget.
25. Illustrate Radio button Widget, Entry widget.

MODULE-I	INTRODUCTION TO PYTHON AND OBJECT ORIENTED CONCEPTS
Introduction to Python: Features of Python, Data types, Operators, Input and output, Control Statements. Introduction to Object Oriented Concepts: Features of Object oriented programming system (OOPS) – Classes and Objects, Encapsulation, Abstraction, Inheritance, Polymorphism.	
MODULE-II	**PYTHON CLASSES AND OBJECTS**
Classes and Objects: Creating a class, The Self variable, Constructor, Types of Variable, Namespaces, Types of Methods, Inheritance and Polymorphism – Constructors in inheritance, the super() method, types of inheritance, polymorphism, abstract classes and interfaces.	
MODULE-III	**STRINGS AND FUNCTIONS**
Strings: Creating strings and basic operations on strings, string testing methods. Functions: Defining a function, Calling a function, returning multiple values from a function, functions are first class objects, formal and actual arguments, positional arguments, recursive functions.	
MODULE-IV	**EXCEPTION HANDLING**
Exception: Errors in a Python program, exceptions, exception handling, types of exceptions, the except block, the assert statement, user-defined exceptions.	
MODULE-V	**GRAPHICAL USER INTERFACE**
GUI in Python: The root window, fonts and colors, working with containers, Canvas, Frames, Widgets – Button widget, Label widget, message widget, text widget, radio button widget, entry widget.	
Text Books:	
1. R Nageswara Rao, "Core Python Programming", Dreamtech press, 2017 Edition. 2. Dusty Philips, "Python 3 Object Oriented Programming", PACKT Publishing, 2nd Edition, 2015.	
Reference Books:	
1. Michael H.Goldwasser, David Letscher, "Object Oriented Programming in Python", Prentice Hall, 1st Edition, 2007.	
Web References:	
1. https://realpython.com/python3-object-oriented-programming/ 2. https://python.swaroopch.com/oop.html 3. https://python-textbok.readthedocs.io/en/1.0/Object_Oriented_Programming.html 4. https://www.programiz.com/python-programming/	