OBJECT ORIENTED PROGRAMMING THROUGH PYTHON

III Semester: CSE / IT

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

I. COURSE OVERVIEW:

This course explains the fundamental ideas behind the object-oriented approach to programming. Knowledge of python helps to create the latest innovations in programming. Like the successful computer languages that came before, python is the blend of the best elements of its rich heritage combined with the innovative concepts required by its unique environment. This course involves OOP concepts, python basics, inheritance, polymorphism, interfaces, packages, Exception handling. This course is presented to students by power point projections, course handouts, lecture notes, assignments, objective and subjective tests.

II. 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.

III. COURSE OUTCOMES (COs):

COs	Course Outcome
CO 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
CO 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
CO 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.
CO 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.
CO 5	Knowledge the Root window, Fonts and colours, Working with containers, Canvas, Frames, Widgets, Button widget, Label Widget, Message widget, Text widget, Radio button Widget, Entry widget.

IV. SYLLABUS:

MODULE – I	INTRODUCTION TO PYTHON AND OBJECT-ORIENTED CONCEPTS	Classes: 09

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: 09
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**	**Classes: 09**
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**	**Classes: 09**
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**	**Classes: 09**
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.		

V. 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.

VI. Reference Books:

1. Michael H.Goldwasser, David Letscher, "Object Oriented Programming in Python", Prentice Hall, 1st Edition, 2007.

VII. 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/