Devi Ahilya University, Indore, India Institute of Engineering & Technology				**II Year B.E. (Computer Engineering) (Full Time)**			
Subject Code & Name	**Instructions Hours per Week**			**Credits**			
CER3C2	**L**	**T**	**P**	**L**	**T**	**P**	**Total**
OBJECT ORIENTED PROGRAMMING	**3**	**1**	**2**	**3**	**1**	**1**	**5**
Duration of Theory Paper: 3 Hours							

Learning Objectives:

1. To provide the knowledge of Object Oriented Programming Paradigm.
2. To learn basic constructs of programming language that are implementing tools for object oriented program development.
3. To develop skill to analyze and code for problem solution in object oriented approach.

Pre-requisites : Basic skills of Programming

COURSE CONTENTS

UNIT-I

Introduction to Object Oriented Programming: Object Oriented Concepts, Merits of Object Oriented Technology. Abstraction, Encapsulation, Information Hiding. Object Model: definition, State, behavior, Identity and messages. Concept of object initialization, constructors, constructor overloading. Access modifiers: Class attributes and methods. Introduction to object model of software development.

UNIT-II

Introduction to Java classes and objects: Java features: Java syntax, data types, data type conversions, control statements, operators and their precedence. Introduction to Class: Instance members and member functions. String Handling, Wrapper classes: Arrays and Vectors.

UNIT-III

Inheritance and Polymorphism : Class relationships: Inheritance and its types, Merits and Demerits. Association. Association inheritance, Polymorphism: Dynamic method dispatch, Runtime polymorphism, Abstract classes, Interfaces and Packages.

UNIT-IV

Exception Handling and Multithreading: Exceptions: Need for exceptions, Checked Vs Unchecked exceptions, creating custom exceptions. Multithreading: Introduction, Priorities and scheduling, Inter-thread communication, Thread Synchronization and its life cycle.

UNIT-V

Java I/O, Applets and Event Handling: Basic concept of streams I/O stream & reader-writer classes. File handling. Applet and its Life Cycle, Basic GUI elements, Event Delegation Model and event handling

Learning Outcomes:

Upon Completing the Course, Student will able to:

1. Analyze and code the solution to problem using object oriented paradigm.
2. Understand Java language constructs.
3. Apply object model for software development

BOOKS RECOMMENDED:

[1] Cay S.Horstmann, *Core JAVA Vol-1*, 9/e, Pearson Education 2012.

[2] Herbert Schildt, *The complete Reference*, 9/e, Tata McGraw Hill 2014.

[3] Scott W Amber, *The Object Primer*, 3/e, Cambridge 2004.

[4] Timothy Budd, *Object Oriented Programming*, 3/e, Pearson Education 2002.

[5] Kathy Sierra, Bert Bates, *Head First Java*, 2/e , Oreilly Publications 2005.

List of Practical Assignment:

1. Experiments to understand program development environment for Java language.
2. Writing program to learn basic language constructs like identifier, variables, data types and console input/output..
3. Writing program to learn control statements.
4. Writing program to use class and objects to model problem domain entity in program domain.
5. Writing program to use inheritance and polymorphism features.
6. Programs to use exception and understanding modeling errant condition in execution as class and objects.
7. Experiments to learn Multi-Thread execution.
8. Writing program to code applications needing concurrency and exploring inter-thread communication mechanism.
9. Experiments to understand stream concept and study various stream abstractions and implementation available in the language
10. Exploring GUI components and understanding Event Delegation Model. Understanding (GUI) objects and their communication based program to realize object oriented programming in action.
