Devi Ahilya University, Indore, India Institute of Engineering & Technology				**II Year B.E. (INFORMATION TECHNOLOGY)**			
Subject Code & Name	**Instructions Hours per Week**			**Credits**			
3ITRC2	**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:

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

Pre-requisites : Computer 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:

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