Shastri- I Year II Semester

GENERIC COURSE 2 (GE-2)

Course Name: - OBJECT-ORIENTED PROGRAMMING WITH JAVA

Introduction: It introduces students to the fundamentals of Java programming language, covering essential concepts and syntax.

Objective: Provide students with a thorough understanding of object-oriented programming principles.

Learning Outcomes: They will have a solid understanding of Java's object-oriented concepts and how to apply them effectively.

Theory **:** 60Marks

Internal Assessment **:** 40 Marks

Unit	Content	Hours	Credits
Unit - 1	**Introduction and Features:** Fundamentals of object-oriented programming procedure-oriented programming Vs. Object-oriented programming (OOP), Object-oriented programming concepts – Classes, objective, object reference, abstraction, encapsulation, inheritance, polymorphism, Introduction of Eclipse (IDE) for developing programs in Java **Language Constructs:** variables, types, and type declarations, data types: Integer, floating point type, character, Boolean, all Operators, iteration and jump statement, if then else clause; conditional expressions, input using scanner class and output statement, loops, switch case, arrays, methods.	15	01
Unit - 2	**Classes and Objects:** Class fundamentals, constructors, declaring objects (Object & Object Reference), creating and accessing variables and methods, static and non-static variables/methods defining packages. **Inheritance:** Definition of inheritance, protected data, private data, public data, constructor chaining, order of invocation, types of inheritance, single inheritance, multilevel inheritance, hierarchical inheritance, hybrid inheritance. access control (Private Vs Public Vs Protected Vs Default)	15	01
Unit - 3	**Abstract Class and Interface:** Defining an interface, difference between classes and interface, Key points of Abstract class & interface, difference between an abstract class & interface. **Polymorphism:** Method and constructor overloading, method overriding, up-casting and down-casting.	15	01
Unit - 4	**Exception Handling:** Definition of exception handling, implementation of keywords like try, catches, finally, throw& throws, built-in exceptions. **Multithreading:** Difference between multithreading and multi-tasking, thread life cycle, thread priorities, synchronizing threads.	15	`01

Sanskrit Centric exercises should be devised for Practical's.

Reference Text Books:

1. Programming with Java: A Primer; E.Balagurusamy
2. Head First Java, O-REILLY, Kathy Sierra & BertBates.
3. Core Java black book by Dr. Nageswara Rao
4. Let us JAVA by Yashwant Kanetkar
5. Learn Java from Basic to Advanced - Hindi Version by C. Campbell