

Devi Ahilya University, Indore, India Institute of Engineering & Technology				ME I Year Electronics (Sp. Digital Instrumentation) Semester- A				
Subject Code & Name		Instructions Hours per Week			Credits			
DIR1E2:Object Programming	Oriented	L	T	P	L	T	P	Total
		3	1	2	3	1	1	5
Duration of Theory Paper: 3 Hours								

Course Objectives: The aim of the course is to give a thorough grounding in object-oriented techniques for Java, as well as to examine the major uses of Java – internet programming, design pattern, user interfaces and Networking.

Prerequisite(s): Knowledge Object Oriented Programming concept using object oriented languages such as C++, Objective C.

COURSE CONTENTS

Unit I

Introduction: The History of Java, Java's Key Features, The Java Virtual Machine, The First Application. Basic Syntax - Identifiers, Comments, Keywords, The Eight Primitives, Using Objects. Expression and Arrays : Using Operators, The 'If-Else' Statements, Using 'While' Loop, Selecting with 'Switch' statement, Dealing with Primitive Casts. Using Arrays - Creating an Array, Array Initialization, Working with Arrays, Using Multi-dimensional Arrays. Classpath&JARs: The 'Classpath' in Java, Java Archives.

Unit II

Classes: Classes & Packages, The 'import' Statement, The Importance of Encapsulation, Java Constructors, Access Modifiers (private, default and public), Method Overloading. Polymorphism and Inheritance: The 'Protected' Modifier, Using 'this' and 'super', The 'final' keyword, Static Members & Methods. Interfaces & Abstract Classes, The Complete Construction Process, The Class 'Object', Nested Classes, Enums in Java.

Unit III

Basic Design Patterns:

Basic Concepts of Design Patterns, Iterators, The Pattern Concept, The OBSERVER Pattern, Layout Managers and the STRATEGY Pattern, components, Containers, and the COMPOSITE Pattern, Scroll Bars and the DECORATOR Pattern. The Java Object Model: The Java Type System, Type Inquiry, the Object Class, Shallow and Deep Copy, Serialization, Reflection

Unit IV

Exception, Collections and IO

Exceptions & Assertions: Types of Program Errors, The Exception Model, Checked and Unchecked Exceptions, Defining Custom Exceptions, Assertions. Working with Common Classes: java.lang.String, java.lang.System, java.util.Calendar. The Java Collection Framework & Generics: List Basics, Using Lists Wisely, Other Collection Classes. Java IO: Input Stream/Output Stream, JavaSerialization, Readers & Writers, Working with Files.

Unit V

Thread and Applet

Threads: The Java Thread Model, Thread Priorities, Synchronization, Messaging, Thread Class, Runnable Interface. Applet Architecture – Skeleton- Simple Applet Display Methods- HTML APPLET tag – Passing Parameters to the Applet- AudioClip and AppletStub Interface - Delegation Event Model – Event Classes. Networking: Overview, TCP/IP Sockets, Writing Your Own Web Server.

Text Books and References:

- [1] Herbert Schildt, "Java The Complete Reference", Eighth Edition, Tata McGraw-Hill Edition India, 2011.
- [2] Cay Horstmann, "Object Oriented Design & Patterns", John Wiley & Sons, 2004.
- [3] Bruce Eckel, "Thinking in Java", 4th edition, Pearson Education, 2006.
- [4] Ramesh Vasappanavara et al, "Object-oriented Programming Using C++ and Java", First Impression, Pearson, 2011.
- [5] Cay Horstmann, "Big Java 4e for Java 7 and 8", John Wiley & Sons, 2010.