

3CP03: OBJECT ORIENTED PROGRAMING USING JAVA
CREDITS - 4 (LTP: 3,0,1)

Course Objective:

To impart knowledge of principles of object oriented programming paradigm using JAVA to develop applications.

Teaching and Assessment Scheme:

Teaching Scheme (Hours per week)			Credits	Assessment Scheme				Total Marks
L	T	P		Theory Marks		Practical Marks		
			ESE	CE	ESE	CE	150	
3	0	2	4	60	40	20		30

Course Contents:

Unit No.	Topics	Teaching Hours
1	Basics of Java Introduction, Features of Java, byte code and JVM, three OOP principles (Inheritance, Polymorphism, Encapsulation), lexical issues, Data types, Operator, Control and loop Statements, Class Fundamentals, Object and Object reference, Object Life time and Garbage Collection, Creating Objects, Constructor and initialization code block, Access Control, Modifiers, Nested class, Inner Class, Anonymous Classes, Abstract Class and Interfaces, Defining Methods, Method Overloading, Dealing with Static Members, Use of “this” reference, Use of Modifiers with Classes & Methods, Generic Class Types	06
2	Array and String Single and Multidimensional Array, String class, StringBuffer class, Operations on string, Command line argument, Use of Wrapper Class.	02
3	Inheritance and Interfaces Use of Inheritance, Inheriting Data members and Methods, constructor in inheritance, Multilevel Inheritance, method overriding, Handle multilevel constructors – Super keyword, Final keywords, Creation and Implementation of an interface, Interface reference, instanceof operator, Interface inheritance, Dynamic method dispatch ,Understanding of Java Object Class, Comparison between Abstract Class and interface	06
4	Packages and Exception Handling Defining a package, finding packages and CLASSPATH, access protection, importing packages, java.lang package, Exception types, uncaught exceptions, try, catch, throw, throws, finally, multiple catch clauses, nested try statements, built-in exceptions, custom exceptions, Generic Programming – Generic class and Generic methods	06
5	Multithreading Java Thread Model, Use of Multithread programming, Thread class and Runnable interface, Thread priority, Thread synchronization, Thread communication, Deadlock	06

Unit No.	Topics	Teaching Hours
6	Managing I/O Operation Streams and the new I/O Capabilities, Understanding Streams, The Classes for Input and Output, The Standard Streams, Working with File Object, File I/O Basics, Reading and Writing to Files, Buffer and Buffer Management, Read/Write Operations with File, Channel, Serializing Objects	07
7	Applet, Event Handling and GUI design using Swing Applet Fundamental, Applet Architecture, Applet Skeleton, Requesting Repainting, status window, HTML Applet tag, passing parameters to Applets, various event handling mechanisms, Delegation Event Model, Events, Event Sources, Event Listeners, various classes related to event sources and event listeners, basics of AWT and JFC, Introduction To Swing, MVC Architecture, Applets, Applications and Pluggable Look and Feel, Basic swing components : Text Fields, Buttons, Toggle Buttons, Checkboxes, and Radio Buttons.	12
Total		45

List of References:

1. Herbert Schildt, *“The Complete Reference, Java”*, McGrawHill.
2. E.Balaguruswamy, *“Programming with Java A Primer”*, McGrawhill
3. Horstmann, Cornell, *“Core Java”* Volume-I Fundamentals, Pearson Education
4. Joseph O’neil, *“Teach yourself Java”*, TMH Publication
5. Patrick Niemeyer, Jonathan Knudsen, *“Learning Java”*, O’reilly Media

Course Outcomes (COs):

At the end of this course students will be able to ...

1. Implement object oriented programming concepts in Java.
2. Demonstrate use of Multithreading in Java application.
3. Design application using event based GUI handling principles.
4. Design an application incorporating features of Generic programing.
5. Develop application incorporating features like Package, Exception Handling, I/O handling.
6. Enhance logical reasoning and programming skills.