2MCACC4: JAVA PROGRAMMING

Total No. of Hours: 52   **Hours/Week: 04**

Course Objective: To understand Object Oriented Programming Concepts and to map those concepts to the real world entities.

Course Outcome: Students will be able to

CO1: Understand the concepts and features of object oriented programming to solve any given problem

CO2: Learn the concept of classes and objects to implement inheritances, Interfaces and Packages

CO3: Learn the methods of creating Multi-threaded programs and handle Exceptions

CO4: Design GUI applications using applets and swings

CO5: Develop skills in internet programming using Socket programming, servlets and JSP

CO6: Implement distributed computing using RMI and JDBC

Unit I	**Introduction to Object-Oriented Programming**: Evolution of programming methodologies, Procedural Approach Vs Object-Oriented Approach **Principles of OOP**: Encapsulation, Inheritance and Polymorphism **Concepts of OOP**: Abstraction, Overloading, Reusability, Extensibility, Dynamic Binding and Message passing. **Introduction to Java Programming:** History of Java, Characteristics of Java, JVM, Data types, Expressions, Keywords, Operators and control Flow Statements, Arrays – Special types. Creating and Running Java Programs.	10 hrs
Unit II	**Class**: Creating class and objects, methods, this key word, Constructors. Garbage Collection, finalize () method. Overloading – method overloading, operator overloading and Constructor overloading. Access Control, Static Blocks. Final, Nested and Inner Classes. String Class. Command Line Arguments. **Inheritance**: Basics, super key word, Method overriding, Dynamic Method dispatch, Abstract classes, Using final with inheritance, the object class. **Interfaces**: Defining interfaces, Implementing interfaces.	12 hrs
Unit III	**Packages**: Defining package and CLASSPATH, Access protection, importing packages. **Exception Handling in Java**: Try-catch-finally mechanism, throw and throws keyword, Package and classes for exception handling. **I/O streams**: Reading Console Input, Writing Console Output, PrintWriter, Reading and Writing Files. **Multithreading**: Java Thread model, Main Thread, Creating Threads, Creating Multiple threads, Thread Priorities, Synchronization, and Inter-thread Communication.	12 hrs

Unit IV	**Applets**: Applet fundamentals, Life cycle of Applet, Applet architecture, Simple Applet, The HTML Applet tag, passing parameters to Applets. Event Handling, Introduction to AWT, Windows, Graphics and text. Using AWT Controls, Layout Managers and Menus, Introduction to Swings.	10 hrs
Unit V	**Distributed Computing**: Remote Method Invocation. Socket Programming, JDBC (Java Database Connectivity). Basics of Servlets, Java Server Pages.	8 hrs

REFERENCE BOOKS

[1] Schildt Herbert, "*Java 2: The Complete Reference*", Tata McGraw-Hill, Eighth Edition.

[2] Deitel and Deitel, "*Java How to Program*", Pearson Education Asia, Tenth Edition.

[3] Horton Ivor, "*Beginning Java2*", Wiley publishing Inc., Fifth Edition.

[4] Holzner Steven, "*Java 2, Black Book*", Dreamtech press, Fifth Edition.

[5] Gaddis Tony, "*Stating out with Java*", Dreamtech press, 2004

[6] Eckel Bruce, "*Thinking in Java*", Pearson Education Asia, Fourth Edition.

[7] Flanagan David, "*Java in a nutshell*", O'Reilly, Sixth Edition.

[8] Kathy Sierra, Bert Bates, "*Head First Java*", O'Reilly, Second Edition.