BC-201 OBJECT ORIENTED PROGRAMMING THROUGH JAVA

Course Description andObjectives:
On Completion of this course, the student will be able to understand fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries. Have the ability to write a computer program to solve specified problems. Be able to use the Java SDK environment to create, debug and run simple Java programs.

Course Outcomes: After Completion of the subject student should able to
- Understanding of OOP concepts and basics of java programming (Console and GUI based)
- The skills to apply OOP and Java programming in problem solving
- Should have the ability to extend his knowledge of Java programming further on his/her own.

UNIT -1 Introduction, Classes and Objects
Creation of Java, Byte code, Java buzzwords, OOP Principles- Encapsulation, Inheritance and Polymorphism, Compiling and running of simple Java program, Data types, Variables, declaring variables, Dynamic initialization, Scope and life time of variables, Arrays, Operators, Control statements, Type conversion and casting.

UNIT-2 Concepts of classes and objects:
 Class fundamentals – Declaring objects, assigning object reference variables, Introducing methods, Constructors, Usage of static with data and methods, Usage of final with data, Access control, this key word, Garbage collection, Overloading methods and constructors, Call by value, Recursion, Nested classes and Inner classes, Exploring the String class.

UNIT -3 Inheritance, Packages and Interfaces
Basic concepts, Member access rules, Usage of super key word, Forms of inheritance, Method overriding, Abstract classes, Dynamic method dispatch, Using final with inheritance, the Object class. Defining, Creating and Accessing a Package, Understanding CLASSPATH, Importing packages.

UNIT -4Differences between classes and interfaces:
Defining an interface, implementing interface, applying interfaces, Variables in interface and Extending interfaces.
Concepts of Exception handling, Types of exceptions, Usage of try, Catch, Throw, Throws and Finally keywords, Built-in exceptions, Creating own exception Sub classes.

UNIT -5 Concepts of Multithreading:
Differences between process and thread, Thread life cycle, creating multiple threads using Thread class, Runnable interface, Synchronization, Thread priorities, Inter thread communication, Daemon threads, deadlocks, Thread groups.
Applet Class, Applet Architecture, Applet Skeleton - Applet Initialization and Termination, Overriding update(), Simple Applet, Display Methods, Requesting Repainting - A simple banner Applet, Using The Status Window, The HTML APPLET Tag, Passing parameters to Applets.

TEXT BOOK(S)

1. Herbert Schildt, "The Complete Reference Java J2SE", 7th ed., TMH Publishing Company Ltd, New Delhi, 2008.
2. Joe Wiggles worth and Paula McMillan, "Java Programming Advanced Topics", 3rd ed., TMH, 2009.

REFERENCE BOOK(S)

1. Cay Horstmann, "Big Java", 2nd ed., John Wiley and Sons, 2006.