MCPC1005 OBJECT ORIENTED PROGRAMMING USING JAVA (3-0-0)

Course Objectives:

- To provide an understanding of basic programming concepts using the Java programming language.
- To develop problem-solving skills using Java programming constructs.
- To introduce students to algorithmic thinking and program design techniques and enable students to write, compile, and debug programs in Java.

Course Outcomes (CO):

CO1: Understand the fundamental concepts of programming using the Java language.
CO2: Develop problem-solving skills through the application of programming constructs in Java and design & implement functions and algorithms to solve complex problems.
CO3: Demonstrate proficiency in using pointers, arrays, and structures in Java programming.
CO4: Apply error handling and debugging techniques to identify and resolve programming errors.
CO5: Utilize file handling mechanisms in Java for input/output operations and appreciate the importance of data structures and their implementation in Java.

Module-I

JAVA BASICS: Review of Object-oriented concepts, History of Java, Java buzzwords, JVM architecture, Data types, Variables, Scope and life time of variables, arrays, operators, control statements, type conversion and casting, simple java program, constructors, methods, Static block, Static Data, Static Method String and String Buffer Classes, Using Java API Document.

Module-II

INHERITANCE AND POLYMORPHISM: Basic concepts, Types of inheritance, Member access rules, Usage of this and Super key word, Method Overloading, Method overriding, Abstract classes, Dynamic method dispatch, Usage of final keyword. PACKAGES AND INTERFACES: Defining package, Access protection, importing packages, Defining and Implementing interfaces, and Extending interfaces. I / O STREAMS: Concepts of streams, Stream classes- Byte and Character stream, Reading console Input and Writing Console output, File Handling.

Module-III

EXCEPTION HANDLING: Exception types, Usage of Try, Catch, Throw, Throws and Finally keywords, Built-in Exceptions, Creating own Exception classes. MULTI THREADING: Concepts of Thread, Thread life cycle, creating threads using Thread class and Runnable interface, Synchronization, Thread priorities, Inter Thread communication. AWT CONTROLS: The AWT class hierarchy, user interface components- Labels, Button, Text Components, Check Box, Check Box Group, Choice, List Box, Panels – Scroll Pane, Menu, Scroll Bar. Working with Frame class, Colour, Fonts and layout managers.

Module-IV

EVENT HANDLING: Events, Event sources, Event Listeners, Event Delegation Model (EDM), Handling Mouse and Keyboard Events, Adapter classes, Inner classes. SWINGS: Introduction to Swings, Hierarchy of swing components. Containers, Top level containers - JFrame, JWindow, JDialog, JPanel, JButton, JToggleButton, JCheckBox, JRadioButton,

JLabel,JTextField, JTextArea, JList, JComboBox, JScrollPane. APPLETS: Life cycle of an Applet, Differences between Applets and Applications, Developing applets, simple applet.

Books:

1. Herbert schildt (2010), The complete reference, 7th edition, Tata Mc graw Hill, New Delhi
2. Programming with Java, E. Balagurusamy, McGraw-Hill Education, 6th Edition.
3. Head First Java, O'rielly publications 2. T. Budd (2009), An Introduction to Object Oriented Programming, 3rd edition, Pearson Education, India.
4. J. Nino, F. A. Hosch (2002), An Introduction to programming and OO design using Java, John Wiley & sons, New Jersey.
5. Y. Daniel Liang (2010), Introduction to Java programming, 7th edition, Pearson education, India.