Savitribai Phule Pune University, Pune
First year of MCA (2020 Course)
310914: Java Programming

Teaching Scheme:	Credit	Examination Scheme:
TH: 03 Hours/Week	03	Internal: 30 Marks External : 70 Marks

Prerequisites: Basic Computer Programming Concepts

Course Objectives:

1. To learn the core concept of Java programming
2. to introduce the working environment of Java Program using the multithreading and file handling
3. To get acquainted the purpose of applet and AWT in Java programming
4. To study the use of database connectivity in Java Programming
5. To gain knowledge of Java Servlet and JSP concept in Java

Course Outcomes:

On completion of the course, learner will be able to–

CO1: Describe the core concept of Java programming
CO2: Discover the need for working with the multithreading and file handling
CO3: Illustrate the purpose of applet and AWT in Java programming
CO4: Indicate the use of database connectivity using Java Programming
CO5: Articulate the networking concepts in Java
CO6: Implement Java Servlet and JSP concept in Java

Course Contents

Unit I	An Introduction to Core Java	08 Hours

An Introduction to Java:

- A Short History of Java, Features of Java, Creating and Running Java Programs using Command Line Arguments and IDE
- Programming Construct (Decision making statement, switch statement, looping statement)
- Class and Object (Defining a class, Adding variables, Adding Methods, Creating Objects, Accessing Class Members, Constructors)
- Object Oriented concepts with respect to Java (Inheritance:
- Extending a class, Overriding Method, using super, Final variable and Methods, this keyword)
- Interfaces, Packages (Java API package, Using system packages, Creating Packages & Using a Package, Interface Introduction, creating and using interfaces)
- Exception Handling (Types of error, exceptions, try and catch statement, nested try statement, throws and finally statement, build it exceptions, chained exceptions, creating own exception)

Unit II	Multithreading and File Handling	07 Hours

Multithreading:

- Multithreading concepts
- Thread Life cycle
- Creating multithreaded application
- Thread priorities

- Thread synchronization
- Java Input Output:
- Java IO package
- Byte/Character Stream
- Buffered reader / writer
- File reader / writer
- Print writer
- File Sequential / Random

Unit III	Applets and AWT Programming	07 Hours

Applet As Java Applications:

- Life cycle of Applet
- Creation and Execution of Java Applets,
- Displaying it using Web Browser with appletwiewer.exe
- Advantages and Disadvantages of Applet Vs Applications
- Parameter Passing to applet

Abstract Windows Toolkit:

- Components and Graphics
- Containers, Frames and Panels
- Layout Managers
- AWT basic components
- Event delegation Model: Event source and handler, Event categories, Listeners, interfaces
- Anonymous classes
- Swing Libraries: Model view Controller design pattern, Different layout, menus dialog boxes,
- text input

Unit IV	JDBC	07 Hours

- Java database connectivity, Types of JDBC drivers
- Writing first JDBC applications
- Types of statement objects (Statement, PreparedStatement and CallableStatement)
- Types of resultset, ResultSetMetadata
- Inserting and updating records
- JDBC and AWT
- Connection pooling

Unit V	Networking with Java	07 Hours

- Networking basics: Sockets, port, Proxy servers, Internet addressing 7 URL
- java.net – networking classes and interfaces
- Implementing TCP/IP based Server and Client
- Datagrams – Datagram packet, Datagram server and client
- URL connections

Unit VI	Java Servlet and JSP	06 Hours

Servlet:

- Introduction
- Life cycle of servlet

- Handling HTTP Get Request
- Handling HTTP Post Request
- Introduction to JSP:

- Getting Familiar with JSP Server
- First JSP
- Adding Dynamic contents via expressions
- Scriptlets, Mixing Scriptlets and HTML
- Directives, Declaration, Tags and Session

Books:

Text Books:

1. Programming with Java , A primer ,Forth edition , By E. Balagurusamy
2. Herbert Schilt, "JAVA Complete Reference", 7th Edition, Tata McGraw Hill, ISBN: 9780070636774
3. Java 2 programming black books, Steven Horlzner

Reference Books:

1. Eckel B., "Thinking in Java", 3rd Edition, Pearson Education
2. "Complete Reference Java" by Herbert Schildt(5th edition)
3. Core Java 2 Volume - I Cay S Horstmann, Fary Cornell
4. Core Java 2 Volume - II Cay S Horstmann, Fary Cornell
5. Developing Java Servlets James Goodwill
6. Beginning Java Networking Chad Darby, John Griffin & others

Websites links

1. **http://tutorialpoint.com**
2. **https://www.w3schools.in/java-tutorial**

MOOC Courses:

1. https://moocfi.github.io/courses/2013/programming-part-1/
2. https://java-programming.mooc.fi/
3. https://education.oracle.com/java-se-programming-i-mooc