**Course Objective**:  
This course covers programming for both single system software distribution and across networks/devices. In particular, the course focus is on the advanced topics that a Java programmer will need to know so that they will be in a position to do commercial Java development both for single services and also for distributed processes across multiple devices. The course provides an in depth coverage of object serialization, Java Beans, XML, Servlets, JSP's, networking, remote objects (RMI), distributed computing, and Java database Connectivity.

1. **Introduction [2 hours]**
   1. Overview
   2. Java Programming Review

1. **GUI  Programming and Components [4 hours ]**
   1. Swing Introduction
   2. Frame Creation/Positioning
   3. Working with Shape, Color, Text, Images
   4. Basics of Event Handling
   5. AWT Event Hierarchy
   6. Low Level Event Types
   7. User Interface Components
   8. Layout Management
   9. Text Input/Choice Components/Menu/Dialog Box

1. **Applets and Application Deployment [4 hours]**
   1. Applet Basics
   2. Applet HTML Tags & Attribute
   3. Multimedia, URL Encapsulation
   4. JAR files
   5. Application Packaging
   6. Storage of Application Preferences

1. **Streams and File Handling [4 hours]**
   1. Streams
   2. Text Input and Output
   3. Working with Binary Data
   4. Object Streams & Serialization
   5. File Management, Buffer , Lock etc.

1. **XML Programming [3 hours]**
   1. Introducing XML
   2. Parsing an XML Documents
   3. Validating XML Documents
   4. XPath, SAX Parsers, XSL Transformations

1. **Network Programming[4 hours]**
   1. Server Connection
   2. Implementing Servers
   3. Socket Timeouts / Interruptible Sockets
   4. Sending E-mail
   5. URL Connection Establishment
   6. Posting Form Data

1. **Database Programming [6 hours]**
   1. The design of JDBC and types
   2. The Structured  Query Language (SQL)
   3. JDBC Configuration
   4. Executing SQL Statements
   5. Query execution
   6. Scrollable and Updateable result sets
   7. Row sets /Cached row sets
   8. Metadata
   9. Transactions
   10. Enterprise Application and Connection management in Web
   11. LDAP / LDAP Server configuration and accessing LDAP

1. **Distributed Objects [4 hours]**
   1. Client – Server model
   2. RMI Programming model
   3. Parameters and return values in remote methods
   4. Remote Object Activation
   5. Web services and JAX-WS

1. **Advanced Swing and advanced AWT[5 hours]**
   1. Swing: Lists, Tables, Trees, Text Components
   2. Swing : Progress Indicators, Component Organizers, Split/tabbed Panes
   3. AWT : Rendering, Shapes, Areas, Strokes, Coordinate Transformations
   4. AWT : Clipping and Image manipulation, Printing, The Clipboard

1. **Java Beans Components[5 hours]**
   1. Introducing Beans
   2. Using Beans in Application Building
   3. Packaging Beans in JAR files
   4. Naming Patterns for Beans
   5. Bean property types
   6. JavaBeans Persistence

1. **Miscellaneous [4 hours]**
   1. Security : Bytecode verification, User Authentication, Encryption, Digital Signature
   2. Scripting : Scripting Engine, Script Binding, Script compilation
   3. Other recent trends

**Practicals:**  
There should be substantial program design and implementation assignments related to every chapter of the syllabus content.

**References:**

1. Car S. Horstmann, *Core Java Volume I and II – Advanced Features*, 8th  Edition, 2008, Prentice Hall.
2. Y. Daniel Liang, *Introduction to Java Programming*, 9th Edition, Comprehensive Version,  Pearson/ Prentice Hall.
3. H. Deitel, P. Deitel. *Java How To Program*. 7th  Edition, 2007, Prentice Hall.

**Evaluation Scheme:**  
The question will cover all the chapters of the syllabus. The evaluation scheme will be as indicated in the table below:

|  |  |  |
| --- | --- | --- |
| **Chapters** | **Hours** | **Marks Distributions\*** |
| 1 | 2 | 4 |
| 2 | 4 | 7 |
| 3 | 4 | 7 |
| 4 | 4 | 7 |
| 5 | 3 | 5 |
| 6 | 4 | 7 |
| 7 | 6 | 11 |
| 8 | 4 | 7 |
| 9 | 5 | 9 |
| 10 | 5 | 9 |
| 11 | 4 | 7 |
| **Total** | **45** | **80** |

\*There may be minor variation in marks distribution.