MCA206:Advanced Java Programming	
Teaching Scheme Lectures: 3 hrs/Week Tutorials: 1 hr/Week Credits: 4	**Examination Scheme** Class Test – 12 Marks Teachers Assessment – 6 Marks Attendance – 12 Marks End Semester Exam – 70 Marks

Prerequisite: C Programming, and OOPs Concepts.

Course Objectives:

1. To understand the basic concepts of Java, Importance of Classes & objects along with Method overloading and overriding.
2. To understand the conditional construction, arrays as well as Packages.
3. To learn the Exception Handling and I/o file handling with buffer reader and scanner class.
4. To understand importance of Multi-threading and AWT that respond to different user events.
5. To learn experience of Java swing and JDBC.
6. To understand Java beans and Java servlets for web development.

Detailed Syllabus:

Unit-1 **Introduction of Java**: Features of Java Language, Platform Independency, JVM, Byte-code, Operator, Data type, Variables, Robustness. **OOPS:** Object, Class, Classifications, Methods & classes, Inheritance, Static and non Static methods, Call by Value, Call by Reference, Method Overloading, Method Overriding, Abstraction, Interface, Polymorphism, Inner Class & Anonymous Classes, Abstract Class.
Unit-2 **Conditional Construct in Java:** if, if else, nested if else, if else ladder, Ternary Operator, Switch. **Array:** Introduction of arrays, Understanding and working with single, double dimensional arrays, Initialization of array, Linear and Binary Search. **Packages and Exception Handling:** Data Encapsulation, Concept of Package, creating package, Importing packages, Child Packages.
Unit-3 **Exception Handling:** Exceptions & Errors, Types of Exception, Control Flow in Exceptions, Use of try, catch, finally, throw, throws in Exception Handling. Checked and Un-Checked Exceptions. **I/O and File Handling:** Buffered Reader class, InputStreamReader class, Scanner class, Creating File, Reading File and Writing File
Unit-4 **Multi Threading:** Understanding Threads, Needs of Multi-Threaded Programming, Solution of Producer consumer problem by Multi Thread, Thread Life-Cycle, Thread Priorities, Synchronization of Thread. **AWT:** Introduction to AWT, AWT controls, Layout managers, Menus, Images.
Unit-5 **Java Swing:** Creating a Swing Applet and Application, Programming using Panes, Labels, Text fields, Buttons, Toggle buttons, Checkboxes, Radio Buttons, Scroll Panes, Scroll Bars, Lists, Combo box, Progress Bar, Menus and Toolbars, Layered Panes, Tabbed Panes, Split Panes, Layouts, Windows, Dialog Boxes. **JDBC:** The connectivity Model, JDBC/ODBC Bridge, java.sql package, connectivity to remote database, navigating through multiple rows retrieved from a database.

Unit-6

Java Beans: Application Builder tools, The bean developer kit (BDK), Developing a simple bean, The Java Beans API.

Java Servlets: Servlet basics, Servlet API basic, Life cycle of a Servlet, Running Servlet, Debugging Servlets, Thread-safe Servlets, HTTP Redirects, Cookies, Introduction to Java Server pages (JSP).

Text and Reference Books:

1. The Complete Reference: Java, Herbert Schieldt, TMH, 7th Edition 2006
2. Programming in JAVA, E. Balagurusamy, TMH, 2nd Edition 2007
3. Object Oriented Modeling and Design, James Rumbaugh et al, PHI, 4th Edition 2003
4. Object Oriented Analysis & Design with Application, Booch Grady, Pearson Education, New Delhi, 3rd Edition, 2006.

Course Outcomes:

After completing the course, students will be able to:

1. Implement Object Oriented programming concept using basic syntaxes of controls Structures, strings and function for developing skills of logic building activity.
2. Demonstrates how to achieve reusability using inheritance, interfaces and packages and describes faster application development can be achieved.
3. Demonstrate understanding and use of different exception handling mechanisms and concept of multithreading for robust faster and efficient application development.
4. Demonstrate understanding and use of multi threading and AWT.
5. Identify, Design & develop complex Graphical user interfaces using Java Swing classes.
6. Demonstrates how to implement Java Beans and Java Servlets.

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