OBJECT ORIENTED PROGRAMMING USING JAVA	
Subject Code: MCA21	**Credits: 3:0:0**
Pre requisites: Nil	**Contact Hours: 42L**
Course Coordinator: Ms. Geetanjali R	

Course Content

Unit I

Introducing Classes: Introduction to Java, Class Fundamentals, Declaring Objects, Assigning Object Reference Variables, Introducing Methods, Constructors, The this Keyword, Garbage, The finalize() Method, Exploring the String Class, Using Command-Line Arguments, Varargs, Scanner class.

Inheritance: Inheritance Basics, Using super, Creating a Multilevel Hierarchy, When Constructors Are Called, Method Overriding, Dynamic Method Dispatch, Using Abstract Classes, Using final with Inheritance, The Object Class.

Unit II

Packages and Interfaces: Packages, Access Protection, An Access Example Importing Packages, Interfaces, Default Interface methods.

Exception Handling: Exception-Handling Fundamentals, Exception Types, Uncaught Exceptions Using try and catch, multiple catch Clauses, Nested try Statements, throw, throws, finally, Java's Built-in Exceptions, Creating Your Own Exception Subclasses.

Unit III

Multithreaded Programming: The Java Thread Model, The Main Thread, Creating a Thread, Creating Multiple Threads, Using isAlive() and join(), Thread Priorities, Synchronization, Inter-thread Communication, Suspending, Resuming, and Stopping Threads, Obtaining thread state, Using Multithreading.

Enumeration and Auto boxing: Enumeration, Type Wrappers, Auto boxing.

Generics: What are Generics? A Simple Generics Example, A Generics Class with two Type Parameters, The General Form of a Generic Class.

Unit IV

The Collections Framework: Collections Overview, The Collection Interfaces, The List Interface, The ArrayList Class, The LinkedList Class.

Networking: Networking Basics, Client-server communication using TCP and UDP.

Lambda Expressions: Introducing Lambda Expressions, Block Lambda Expression.

Design Patterns: Introduction to common design patterns like Singleton, Factory, Observer, and Strategy.

Unit V

Event Handling: Two Event Handling Mechanisms, The Delegation Event Model, Event Classes, The event class, The Key event, Class Sources of Events, Event Listener Interfaces, Using the Delegation Event Model, Adapter Classes, Inner Classes.

JavaFX: Introducing JavaFX GUI programming, Exploring JavaFX controls.
Web Development: Introduction to Servlets and JSP.
Database Programming: JDBC and Database Connectivity

Text Books:

1. Herbert Schildt: The Complete Reference JAVA, 9th Edition, TATA McGraw HILL, 2014. Chapters: 1, 3, 4, 8, 9, 10, 11, 12,13,14, 15,18,22,24,34,35

Reference Books:

1. Y. Daniel Liang: Introduction to JAVA Programming, 6th Edition, Pearson Education, 2006.
2. Cay S Horstmann, Gary Cornell: Core Java 2 volume 1 and volume 2, 7th Edition, Pearson Education, 2005.
3. Paul Deitel and Harvey Deitel: Java How to Program, 9th Edition, PHI, 2012.

Course Outcomes (COs):

1. Understand and apply the fundamental concepts of classes and inheritance in Java, including object creation, method definition, and class hierarchy. (PO-1, 2, 3, 5)
2. Implement Java packages and interfaces effectively and handle exceptions using exception-handling mechanisms. (PO-1, 2, 3, 5)
3. Develop multi-threaded applications in Java, use enumerations and autoboxing, and create generic classes and methods. (PO-1, 2, 3, 5)
4. Utilize the Collections Framework, implement network communication, apply lambda expressions, and understand basic design patterns. (PO-1, 2, 3, 5)
5. Design and implement event-driven applications using JavaFX, handle web development tasks with Servlets and JSP, and connect to databases using JDBC. (PO-1, 2, 3, 5)

Course Assessment and Evaluation:

Assessment Tool	**Marks**	**Course outcomes addressed**
Continuous Internal Evaluation (CIE): 50 Marks		
Internal test-I	30	CO1, CO2
Internal test-II	30	CO3,CO4,CO5
Average of the two internal tests shall be taken for 30 marks.		
Other Components		
Component 1(Quiz)	10	CO1, CO2, CO3,CO4,CO5
Component 2 (Assignment)	10	CO1, CO2, CO3,CO4,CO5
Semester End Examination (SEE)	**100**	