CSEG 2016	OBJECT ORIENTED PROGRAMMING	L	T	P	C
Version 1.0		4	0	0	4
Pre-requisites/Exposure	Knowledge of programming.				
Co-requisites	–				

Course Objectives

The objectives of this course are to:

1. Develop Java programs that leverage the object-oriented features.
2. Design & implement multithreading and data structure.
3. Learn the concepts of JDBC and Servlets.

Course Outcomes

On completion of this course, the students will be able to

CO1. Describe object oriented programing concepts and architecture of Java.

CO2. Analyze real world object-oriented concepts and incorporate into the Java programs.

CO3. Implement Interfaces, Design Pattern and Exceptions handling.

CO4. Use Multithreading, Collections and JDBC.

CO5. Develop server side applications using JSP and Servlets.

Catalog Description

This course introduces JAVA programming language with object-oriented programming principles. It moves on to introduce the object-oriented programming paradigm, focusing on the definition and use of classes along with the fundamentals of object-oriented design. Further, emphasis is placed on event-driven programming methods, including creating and manipulating objects, classes, and using object-oriented tools such as the class debugger. The concept of design patterns is presented to develop interactive applications. The course sums up with the introduction to the fundamentals of advance JAVA concepts including Servlets, JSP etc.

Course Content

UNIT I

Introduction **[6 Lectures]**

Feature of Java, JVM, JRE, class path, classes, fields, access control, objects creation, initialization, methods, this, overloading methods, main method, native methods, class design, lexical elements, types and literals, variables, array variables, naming, operators, expressions, member access, precedence, associativity, statements & blocks, if-else, switch, while and do-while, for, labels, break, continue, return, goto.

UNIT II

Inheritance, Interfaces and Packages **[7 Lecture Hours]**

Extended class, constructors in extended classes, inheriting and redefining members, type compatibility, conversion, protected, final methods and classes, abstract methods and classes, Object class, cloning objects, designing extended classes, single inheritance versus multiple inheritance. Interface, interface declarations, extending interfaces, working with interfaces, marker interfaces, when to use interfaces. Package naming, type imports, package access, package contents, package objects and specifications.

UNIT III

Exception and String Handling **[8 Lecture Hours]**

Creating exception types, throw, throws, try, catch, finally, custom exception, when to use exception, Wrapper classes, loading classes. String operations, String comparisons, utility methods, making related strings, String conversions, Strings and char arrays, String and byte arrays, String Buffer, String Builder.

UNIT IV

Nested Classes and Threads **[9 Lecture Hours]**

Static nested types, inner classes, local inner classes, anonymous inner classes, inheriting nested types, nesting in interfaces, implementation of nested types. Creating threads, using runnable, synchronization, wait, notify, notifyall, waiting and notification, thread scheduling, deadlocks, ending thread execution, thread management, security, and threadgroup, threads and exceptions, debugging threads.

UNIT V:

Collections, Design Pattern and JDBC **[8 Lecture Hours]**

Collections, iteration, Collection interface, set, sortedset, list, map, sortedmap, wrapped collections and collections class, arrays, legacy collection, properties. Object composition principles singleton design pattern, DAO design pattern, factory design pattern. JDBC: types of drivers, characteristic, components, database connectivity, Statement, Prepared Statement, CallableStatement, Resultset.

UNIT VI:

Advanced Java **[10 Lecture Hours]**

Servlets: Introduction, Benefits, Architecture, GET, POST methods, Servlet container, Servlet's Life Cycle, ServletConfig, ServletContext, Requests & Responses, GenericServlet, Thread-Safe Servlets, HttpServlet Class, HttpServletRequest, HttpServletResponse interface, Deployment Descriptor; Session Management: URL Rewriting, Hidden Fields, Cookies, Session Objects, Servlet Filter, Servlet Listeners. JSP: Introduction, problem with servlets, how JSP work, implicit object, directives, scripting elements, comments, JSP life cycle Attributes: Application, request, session, page; web application deployment, Security.

Text Books

1. The Java Programming Language 3rd Edition, Ken Arnold, James Gosling, Pearson.
2. Head First Servlets and JSP 2nd Edition.
3. The Complete Reference Java 7th Edition, Herbert-Schild, TMH.
4. Java SE7 Programmer I &II Study Guide, Kathy Sierra and Bert Bates, McGraw Hill.

Reference Books

1. A premier guide to SCJP 3rd Edition, Khalid Mughal, Pearson.
2. Thinking in Java, 3rd Edition, Bruce Ackel, Pearson.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme:

Components	MSE	Presentation/Assignment/ etc	ESE
Weightage (%)	20%	30%	50%

Relationship between the Course Outcomes (COs), Program Outcomes (POs) and Program Specific Objectives(PSOs)

Course Outcomes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	1	2	2		2								1	3	
CO2	1	2	2	2	2								1	3	
CO3	1	2	2	1	2								1	3	
CO4	1	2	2		2								1	3	
CO5	1	2	2		2								1	3	
Average	1	2	2	1.5	2								1	3	

1=weak 2= moderate 3=strong