CS204 *Object Oriented Programming*

L-T-P-Cr: 3-0-0-3
(For 1st year students of B.Tech Computer Science & Engineering)

Pre-requisites: CS10X/CS20X Introduction to Computing

Course Objectives:
1. To impart knowledge of fundamental object-oriented programming techniques using Java data abstraction, information hiding, encapsulation, inheritance, and polymorphism.
2. To make students proficient in Java syntax and semantics.
3. To impart ability to design and implement software solutions based on OOPS methodology.
4. To make students design and implement real life projects, e.g., screen saver, simple games etc.

Course Outcomes:
At the end of the course, a student should:

Sl. No	Outcome	Mapping to PO
1.	Recall basic OOP concepts and the corresponding JAVA features	PO2, PO3
2.	Explain JAVA fundamentals such as: arrays, objects and String, and use them for implementing sample problems	PO2, PO3
3.	Describe OOPS concepts of Inheritance, overriding and polymorphism in JAVA, and solve real life problems using them	PO2, PO3,PO4
4.	Relate importance of exceptions, File handling and threading in JAVA	PO2, PO3
5.	Experiment with Applet and Swings framework in JAVA for solving real life problems.	PO2,PO3, PO4 PO6, PO12

UNIT I: **Lectures: 4**
Introduction to OOP, Objects and classes, Characteristics of OOP, Difference between OOP and Procedure oriented programming. Introduction to Java, Features of Java, Applications and Applets, JDK, Source File Structure

UNIT II: **Lectures: 6**
Java language fundamentals, Building blocks of Java, Data Types, Variable declaration, Wrapper classes, Operators and Assignment, Control Structures, Method, Method Overloading, Static methods

UNIT III: **Lectures: 8**
Arrays, Array of objects , Constructor, Constructor overloading, Parameterized constructor, String and String Buffer classes with their functions

UNIT IV: **Lectures: 8**
Inheritance, Method overriding, Dynamic polymorphism, Abstract class, Interface

UNIT V: **Lectures: 7**
Exception Handling, Exception hierarchy, Constructors and methods of Throwable class, Unchecked and Checked Exceptions, Handling Exceptions in Java, Exception and Inheritance, Throwing user defined exceptions, Redirecting and rethrowing exceptions.

UNIT VI: Lectures: 3
Files and I/O Streams, Java I/O, File Streams, FileInputStream and FileOutputStreams, Filter streams, Random Access files, Serialization

UNIT VII: Lectures: 2
Frame class and its functions, Collection Frame work, AWT, Swing

UNIT VIII: Lectures: 2
Applets, Java Applications versus Java Application, Applet Life cycle, Working with Applets, The HTML APPLET Tag, java.Applet package

UNIT IX: Lectures: 2
Threading, Overview of threading, Creating threads, Thread Life-cycle

Text Book:
1. Patrick Naghton & H. Schildt – The Complete Reference Java 2, Tata McGraw Hill Publication, New Delhi.

Reference Books:
1. Balagurusamy -Programming in Java, 2nd Edition; Tata McGraw Hill Publication;   New Delhi.
2. Dietel,Dietel - Java How to program , 7th edition; Pearson Education , New Delhi.
3. C. Horstmann,G. Cornell - Core Java 2 Vol I & Vol II ; Pearson Education , New Delhi.

CSL204   *Object Oriented Programming Lab*
L-T-P-Cr: 0-0-3-1

Practical:
JAVA programming based on OOPS concepts which will cover the syllabus mentioned in CS204.