

**School of Computer Engineering**

**Kalinga Institute of Industrial Technology (KIIT)**

**Deemed to be University**

**Bhubaneswar-751024**

**LESSON PLAN**

Program: B.Tech.(Computer Science)/ B.Tech(CSCE)

Academic Session : 2024-2025 (Spring Semester)

Semester : 4th

Subject Code : CS20004

Subject : Object Oriented Programming using Java

Credit : 3 (L-T-P:3-0-0)

Prerequisite(s) : Programming in C

Faculty : Dr. Rinku Datta Rakshit

Contact No. - 8918612472

**Course Objectives: -** This course provides a basic overview of object oriented programming concepts. Also, it develops programming skills of students in Java and enables students to design object-oriented applications with Java.

**Course Outcomes: -** At the end of the course the students will be able to:

**CO1**-Examine the basic concepts of Object Oriented Programming

**CO2**- Perceive syntax and semantics of Java Programming language

**CO3**- Design Java application programs using basic concepts of OOP principles, abstract classes, interfaces and packages

**CO4** - Develop robust and multitasking Java programs using exception handling and multithreading techniques

**CO5**-Design java programs using string classes and I/O operations.

**CO6**-Design GUI applications using Swing and interactive application using event handling and java database connectivity.

**Lesson Plan**

Total Lectures ≈ 40

Pre mid-semester≈ 20

Post mid-semester≈ 20

|  |  |  |  |
| --- | --- | --- | --- |
| **Module No. &Name** | **Topics/Coverage** | **No. Of Lectures** | **Lecture Serial No.** |
| 1. Object Oriented Paradigm | * Programming paradigm - Procedure oriented, Object oriented * OOP concept - Class,Object * Encapsulation and Abstraction, Inheritance, Polymorphism | 2 | 1-2 |
|  |  |  |  |
| 1. Java basics | * Introductions to Java and java Applications * Java Architecture: JDK, JRE, JVM, Byte code * Characteristics of java * A simple java program, compiling and   executing   * Data types, Operators, Expressions, scope of the variable, type conversion and casting * Branch Control Statements, Selection   statements, Iteration statements, Jump statements   * Examples |  | 3-5 |
|  |  |  |  |
| 1. Class & object | * Introduction to class, class members, Creating instances of class * Static variable, object, block, methods and final * Array :1D & 2D * Command line arguments, Scanner class * Constructors * Overloading: method, constructor | 4 | 6-9 |
|  |  |  |  |
| 1. Inheritance | * Inheritance basics, Use of Super Keyword * Different types of Inheritance, Single, and Multilevel, Hierarchical * Method overriding * Runtime Polymorphism: Dynamic method dispatch * Abstract class | 4 | 10-13 |
|  |  |  |  |
| 1. Interface and Package | * Interface * Package, access control mechanism * Dynamic Method lookup * Nested Class | 3 | 14-16 |
|  |  |  |  |
| 1. Exception handling | * Java Exception handling mechanism * Exception types, try, catch, throw, throws and finally. * Built in Exceptions: Checked and Unchecked Exceptions * User defined exception | 4 | 17-20 |
|  | **MID SEMESTER** |  |  |
| 1. String handling | * String, String constructor * String operations:String extractions,string comparison,Searching strings, modifying a String, toString() and valueOf() methods * String Buffer, String Buffer Constructor, String Buffer operations   & methods | 2 | 21-22 |
| 1. Input/Output   Stream | * I/O basics * Stream: Byte stream, Character Stream, * Reading console Input:   InputStreamReader, BufferedReader,  DataInputStream   * Writing console output:   OutputStreamReader,  BufferedWriter,  DataOutputStream   * Reading and writing files:   FileInputStream,  FileOutputStream, FileReader, FileWriter, PrintStream, PrintWriter | 4 | 23-26 |
|  |  |  |  |
| 1. Multithreading | * Basic thread concept, Life cycle of thread, Thread Priorities, Thread Class and Runnable Interface * Synchronization * Inter Thread Communication | 5 | 27-31 |
| 1. Java Database Connectivity | * Type of Drivers * JDBC Architecture * JDBC classes and interfaces * Basic steps in Developing JDBC Applications * Creating Table with JDBC * Statement and PreparedStatement object * Working with DataBase Data- ResultSet | 4 | 32-35 |
| 1. GUI Programming & Event handling | * Introduction to Swing, Swing controls * Event handling: Delegation event model, event classes, sources, listeners, ActionEvent | 5 | 36-40 |
|  | **END SEMESTER** |  |  |

**Text Books:**

1. Java - The Complete Reference, Herbert Schildt, 10th edition, McGraw Hill Education.

**Reference Books:**

1. Java Programming – for Core and Advanced Users, Sagayaraj, Denis, Karthik and Gajalakshmi, Universities Press.
2. Java - One Step Ahead, by Anita Seth and B L Juneja, published by Oxford University Press.

**Evaluation Scheme:**

Mid-semester : 20 Marks

Activities/Quiz /Assignment : 30 Marks

End-semester : 50 Marks

**Tentative Activity Calendar:**

|  |  |
| --- | --- |
| **Task** | **Marks** |
| **Before Mid-semester** | |
| Assignment/Class Test | 5 |
| Quiz | 5 |
| Coding Assignment | 5 |
| **After Mid-semester** | |
| Assignment/Class Test | 5 |
| Quiz | 5 |
| Coding Assignment/Mini Project | 5 |