Subject Name : Object Oriented Programming with Java
Subject Code : IT 505 / CE 505

Teaching Scheme (Credits and Hours)

Teaching scheme				Total Credit	Evaluation Scheme					
L	T	P	Total		Theory		Mid Sem Exam	CIA	Pract.	Total
Hrs	Hrs	Hrs	Hrs		Hrs	Marks	Marks	Marks	Marks	Marks
03	00	04	07	5	3	70	30	20	30	150

Learning Objectives:

- This subject will help to improve the analytical skills of object oriented programming
- Overall development of problem solving and critical analysis
- Formal introduction to Java programming language

Outline of the Course:

Sr. No	Title of the Unit	Minimum Hours
1	Introduction to Java	8
2	Objects and Classes	7
3	Inheritance and Polymorphism	8
4	Event and GUI programming	12
5	I/O programming	4
6	Multithreading in java	6

Total hours (Theory): 45

Total hours (Lab): 60

Total hours: 105

Detailed Syllabus

Sr. No	Topic	Lecture Hours	Weightage(%)
1	**Introduction to Java :** Basics of Java programming, Data types, Variables, Operators, Control structures including selection, Looping, Java methods, Overloading, Math class, Arrays in java.	8	10
2	**Objects and Classes :** Basics of objects and classes in java, Constructors, Finalizer, Visibility modifiers, Methods and objects, Inbuilt classes like String, Character, StringBuffer, File, this reference.	7	20
3	**Inheritance and Polymorphism :** Inheritance in java, Super and sub class, Overriding, Object class, Polymorphism, Dynamic binding, Generic programming, Casting objects, Instance of operator, Abstract class, Interface in java, Package in java, UTIL package.	8	20
4	**Event and GUI programming :** Event handling in java, Event types, Mouse and key events, GUI Basics, Panels, Frames, Layout Managers: Flow Layout, Border Layout, Grid Layout, GUI components like Buttons, Check Boxes, Radio Buttons, Labels, Text Fields, Text Areas, Combo Boxes, Lists, Scroll Bars, Sliders, Windows, Menus, Dialog Box, Applet and its life cycle, Introduction to swing.	12	25
5	**I/O programming :** Text and Binary I/O, Binary I/O classes, Object I/O, Random Access Files.	4	10
6	**Multithreading in java :** Thread life cycle and methods, Runnable interface, Thread synchronization, Exception handling with try-catch-finally, Collections in java, Introduction to JavaBeans and Network Programming.	6	15
	Total	**45**	**100**

Instructional Method and Pedagogy:

- At the start of course, the course delivery pattern, prerequisite of the subject will be discussed.
- Lectures will be conducted with the aid of multi-media projector, black board, OHP etc.
- Attendance is compulsory in lecture and laboratory which carries 10 marks in overall evaluation.
- One internal exam will be conducted as a part of internal theory evaluation.
- Assignments based on the course content will be given to the students for each unit and will be evaluated at regular interval evaluation.
- Surprise tests/Quizzes/Seminar/tutorial will be conducted having a share of five marks in the overall internal evaluation.

- The course includes a laboratory, where students have an opportunity to build an appreciation for the concepts being taught in lectures.
- Experiments shall be performed in the laboratory related to course contents.

Learning Outcome:

On successful completion of this course, the student should be able to:

- Show competence in the use of the Java programming language in the development of small to medium-sized application programs that demonstrate professionally acceptable coding and performance standard
- Understand the basic principles of the object-oriented programming
- Demonstrate an introductory understanding of graphical user interfaces, multi-threaded programming, and event-driven programming.

Reference Books:

1 Introduction to Java Programming (Comprehensive Version), Daniel Liang, Seventh Edition, Pearson.
2 Programming in Java, Sachin Malhotra & Saurabh Chaudhary, Oxford University Press.
3 Murach's Beginning Java 2, Doug Lowe, Joel Murach and Andrea Steelman, SPD.
4 Core Java Volume-I Fundamentals, Eight Edition, Horstmann & Cornell, Pearson Education.
5 The Complete Reference, Java 2 (Fourth Edition), Herbert Schild, TMH.
6 Java Programming, D. S. Malik, Cengage Learning.

List of experiments:

Sr. No	Name of Experiment
1	Program to define a structure of a basic JAVA program
2	Program to define the data types, variable, operators, arrays and control structures.
3	Program to define class and constructors. Demonstrate constructors.
4	Program to define class, methods and objects. Demonstrate method overloading.
5	Program to define inheritance and show method overriding.
6	Program to demonstrate Packages.
7	Program to demonstrate Exception Handling.
8	Program to demonstrate Multithreading.
9	Program to demonstrate I/O operations.
10	Program to demonstrate Network Programming.
11	Program to demonstrate Applet structure and event handling.
12	Program to demonstrate Layout managers.