Kadi Sarva Vishwavidyalaya

Faculty of Engineering & Technology

Second Year Bachelor of Engineering (CE/IT) – Semester IV

(With effect from: Academic Year 2018-19)

Subject Code: CT405-N	**Subject Title:** Object Oriented Programming Using Java
Pre-requisite	-

Teaching Scheme (Credits and Hours)

Teaching Scheme				Total Credit	Evaluation Scheme					
L	T	P	Total		Theory		Mid Sem Exam	CIA	Practical	Total
Hours	Hours	Hours	Hours		Hours	Marks	Marks	Marks	Marks	Marks
03	00	04	07	05	03	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	06
2	Objects and Classes	06
3	Inheritance and Polymorphism	08
4	Collection Interface and classes	04
5	Exception Handling in Java	04
6	Multithreading in java	06
7	I/O programming	06
8	Event and GUI programming	08
	Total	**48**

Total hours (Theory): 48
Total hours (Lab): 64
Total hours: 112

Detailed Syllabus:

Sr. No	Topic	Lecture Hours	Weight age (%)
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.	06	13
2	**Basics of objects and classes in java:** Constructors, Finalizer, Visibility modifiers, Methods and objects, Inbuilt classes: String, Character, StringBuffer, File, this reference	06	13
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.	08	17
4	**Introduction to Collection:** Collections Interface, ArrayList, LinkList and TreeSet classes.	04	07
5	**Exception Handling in java:** Exception handling with try-catch-finally, Run-time Exceptions	04	07
6	**Multithreading in Java:** Thread life cycle and methods, Runnable interface, Thread synchronization	06	13
7	**I/O programming:** Text and Binary I/O, Binary I/O classes, Character I/O classes, Object I/O, Random Access Files	06	13
8	**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.	08	17
	Total	48	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
- Demonstrate an introductory understanding of graphical user interfaces, multi-threaded programming, and event-driven programming.

E-Resources:

- https://www.udemy.com/java-tutorial/
- http://javavideotutorials.net/
- http://www.learnjavaonline.org/
- https://www.tutorialspoint.com/java/index.htm

Reference Books:

1 Core Java Volume-I Fundamentals, Eight Edition, Horstmann & Cornell, Pearson Education.
2 The Complete Reference, Java 2 (Fourth Edition), Herbert Schild, TMH.
3 Introduction to Java Programming (Comprehensive Version), Daniel Liang, Seventh Edition, Pearson.
4 Programming in Java, Sachin Malhotra & Saurabh Chaudhary, Oxford University Press.
5 Murach’s Beginning Java 2, Doug Lowe, Joel Murach and Andrea Steelman, SPD.
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 and control structures.
3	Program to demonstrate the use of arrays.
4	Program to define class and constructors. Demonstrate constructors with this keyword
5	Program to define class, methods and objects. Demonstrate method overloading
6	Program to define class Inheritance. Demonstrate method overriding and super keyword.
7	Program to demonstrate Interface Implementation and runtime polymorphism
8	Program to demonstrate Packages.
9	Program to explain ArrayList and LinkList
10	Program to explain TreeSet.
11	Program to demonstrate Exception Handling with try and catch
12	Program to demonstrate the creation of custom exception and throw statement
13	Program to demonstrate Multithreading with Thread class
14	Program to demonstrate Multithreading with Runnable Interface
15	Program to demonstrate binary stream I/O classes
16	Program to demonstrate character stream I/O classes
17	Program to demonstrate Applet structure and event handling
18	Program to demonstrate Applet with threading concept
	As part of experimentation, a small project / model / seminar / poster / other should be prepared / presented by student(s) based on the practical knowledge gained by this course at the end of the curriculum. The concerned laboratory faculty (in consultation with course coordinator) is empowered to design/decide the type/execution of this experiment. The student(s) are expected to present the same before their batch-mates.