C.U.SHAH UNIVERSITY – Wadhwan City

FACULTY OF: -Technology and Engineering (Diploma Engineering)
DEPARTMENT OF: -Computer Engineering
SEMESTER: - V   **CODE**: - 2TE05JVP1
NAME– Java Programming

Teaching & Evaluation Scheme:-

Subject Code	Name of the Subject	Teaching Scheme				Evaluation Scheme							Total
						Theory				Practical (Marks)			
		Th	Tu	Pr	Total	Sessional Exam		University Exam		Internal		University	
						Marks	Hours	Marks	Hours	Pr/Viva	TW	Pr	
2TE05JVP1	Java Programming	03	00	04	07	30	1.5	70	03	....	20	30	150

Objectives: - This subject introduces OOP using Java as the implementation language. It emphasizes proper formulation and abstraction of the problem domain in the programming process in order to build programs that are robust, secure, and portable.
The objective of course is,

- To get familiar with the concepts of Object oriented Programming using Java Language.
- Understand Java's importance, uses, strengths and weaknesses.
- Understand Java language basics.
- Write, compile, and run Java programs.
- Understand the Object Model and Object Oriented Programming.
- To get familiar with various real world Java Applications.
- Learn good Java coding style.
- Create well-structured Java programs.

Prerequisites: - Basic Knowledge of object oriented programming.

Course Outlines:-

Sr. No.	Course Contents	Hours
1	**Fundamental of Java** Introduction, Background/History, Java & Internet , Advantages , Byte Code , JVM , JRE , Program Structure , Basics of OOP(Class, Object , Abstraction , Encapsulation , Inheritance , Polymorphism) , Compiling & Running "Hello World" Program	04
2	**Basic Building Blocks of Java** Data types(Primitive , Non Primitive , User Defined Data Types) , Identifiers , Literals , Constants , Variables , Type Casting & Conversion , Wrapper Class , Scope & Lifetime of a Variable , Garbage Collection , Arrays, Types of Arrays, Strings , String Buffer , Operators , Decision & Control Statements (if, if..else, switch) , Loops (for , while , do while), Jump Statements (Break , Continue , Exit & Return)	08

3	**Working with Class & Objects**	**06**
	Creating Class , Fields & Methods , Creating Objects, this keyword , static keyword , method overloading, Object as Parameter ,Constructor , Creating constructors , Constructor types(Default , Parameterized , Copy) ,Constructor Overloading	
4	**Working with Inheritance & Interface**	**07**
	Introduction , Types of Inheritance (Single , Multiple , Multilevel ,Hierarchical ,Hybrid) , Method Overriding , super keyword , Interface , Creation of Interface ,Multiple Inheritance using Interface, Interface Inheritance , Abstract Class , Final class	
5	**Working with Packages**	**03**
	Introduction , Creating Package, Importing packages, access rules of package , hiding classes using package	
6	**Exception Handling & Multithreading**	**08**
	Introduction , Types of errors , Exception , Exception Handling using try , catch , finally , throw & throws keyword , user defined exception Thread , Creating Thread using Thread Class & Runnable Interface , Life cycle of thread , Thread Methods , Thread Priorities , Thread Synchronization	
7	**File Handling in Java**	**04**
	Basics of streams, stream classes , Reading & Writing contents from/to file	

List of Experiments:-

- Write a simple java application to print hello world on output screen.

- Write a simple java application to print following:

 *
 * *
 * * *
  * * * *

- Write a java application to make a simple calculator using switch case.

- Write a java program to create an integer array and find minimum and maximum element of array.

- Write a java program to create an integer array and display sorted array(in ascending order)

- Write a java application to check if the entered number is even or odd.(Using command line argument)

- Write a java application to print following using while or for loop:

   1 || 1
   2 3 || 1 2
    4 5 6 || 1 2 3

- Write a java application that has class name rect with methods getdata ( ) and rectarea ( ) and using class find area for given dimensions.

- Write a java program to calculate the factorial of given number using recursion.

- Write a java application to find sqrt, sin, cos, tan, log of given number using Math class.

- Write a java application that implements method overloading.

- Write a java application that implements constructor overloading.

- Write a java application to demonstrate the use of static variables and static methods.

- Write a java application to create a class player and inherit the classes cricket_ player, football_ player and hockey player from player class.

- The abstract class shape has 3 subclass circle, triangle and rectangle. Write a java application that calculates area for java shape object and avoid using method overloading.

- Write a java application to demonstrate use of final keyword.

- Write a java application to demonstrate use of inner class.

- Write a java application to make a package balance in which it has account class with display_balance method. Import balance package in another program to access display_balance method of account class.

- Create an interface having two methods division and modules and create an class which overrides this method.

- Write a java application that implements interface student which has two method display_grade and attendance for pg_student and ug_student (pg_student and ug_student are two different class for post graduate and undergraduate students).

- Write a java application to display name and roll number of students and initialize respective variable for 10 students, handle array index out of bound exception so that any such problem doesn't cause illegal termination of program.

- Create an exception class, which throws an exception if operand is non numeric in calculating modules (Using command line argument).

- Write a java program which demonstrates the use of finally block in exception handeling.

- Write a java application for generating two threads one for printing even numbers and one for printing odd numbers.

- Write a java application to create string object with your name. Find length of your name using appropriate string method. Find whether character 'a' is in your name or not, if gets than find the number of times 'a' appear in your name and also print location of occurrence of 'a' and try the same for different string object.

Learning Outcomes:-
- Clarify object oriented programming concepts of java.
- Figure out building blocks of OOPs language, inheritance, package and interfaces.
- Figure out how to use different command of JDK.
- Implement programming skills for real world problems.

Books Recommended:-
- The Complete Reference Java – **By: Herbert Schildt** , TMH publication
- Teach yourself Java **– By: Joseph O'Neil**, TMH publication
- Programming With Java – **By: E Balagurusamy,** Tata Mac Graw Hill.

E- Reference:-
- www.java.sun.com
- www.javaarchives.com
- www.freewarejava.com
- www.codeguru.com
- www.tutorialspoint.com/java/java_collections.htm