SANKALCHAND PATEL UNIVERSITY
।। अथातो ज्ञानजिज्ञासा ।।

FACULTY OF COMPUTER SCIENCE

Bachelor of Computer Application (Sem-V)

In Effect from Academic Year 2018-19

Subject Code : 1CS1010502	Subject Title: BUILDING APPLICATION USING CORE JAVA
Pre-requisite:	Basic Knowledge of Object Oriented Programming

Course Objective:

This course is intended to make the students aware of Core java concepts. Students are expected to learn various terminologies related to Java Programming such as JVM,JDK, Packages, Interfaces etc. The course aims to make the students formulate a program using Java programming language and solve it.

Teaching Scheme(Hours per week)				Evaluation Scheme(Marks)				
Lecture	Tutorial	Practical	Credit	Theory		Practical		Total
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
4	1	4	7	70	30	30	20	150

Subject Contents			
Sr. No.	Topics	Total Hours	Weight (%)
1.	**Fundamentals of Object Oriented Programming :** Object and Class, Data Abstraction and Encapsulation, Inheritance, Polymorphism, Dynamic Binding, Message Communication .Benefits and Applications of OOP. **Basics of Java:** History of Java, Java Features, JDK and its Components (Various Tools of JDK), Bytecode and JVM Language, JAVA Program Structure. **Basic Building Blocks :** Tokens, Identifiers, Keywords, Literals, Comments, Variables, Data Types, Operators, Type Conversion and Casting, Garbage Collection, Command Line Arguments, Creating Constants(Final Variable).	9	20
2.	**Array:**Introduction of Array, Types of Array **Control Statements :** **Selection Statement :** simple if , if-else , nested if-else, else- if ladder, Switch statements. **Iteration statements :** while, do…while , for Statements. **Jump Statements :** break , continue, return. **Class Fundamentals :** Defining Classes, Creating Objects, Accessing Class Members, Static Members, Method Overloading, Nesting of Methods. **Constructors :** Introduction, Default & Parameterized Constructors, Constructor Overloading.	10	20
3.	**Inheritance :** Introduction, Single, Multilevel, Hierarchical & Multiple Inheritance. Method Overriding, Final Methods & Final Class, Abstract Methods and Abstract Class. **Interfaces :** Defining an Interface, Extending Interfaces, Implementing Interfaces, Accessing Interface Variables.	10	20
4.	**Packages :** Defining Package, Creating and Accessing packages , Understanding of CLASSPATH, Adding a Class to Package, Importing	10	20

	Packages. **Access Modifiers** (Visibility Controls) – public, private, default, protected. **Introduction to Java API Packages** : java.applet, java.awt, java.io, java.lang, java.net, java.util, etc. – which package is used for what purpose. **java.lang Package Classes :** Math, String, StringBuffer, Wrapper classes. **java.util pacakage Classes** : Date, Random, Enumeration Interface, Vector, Stack.		
5.	**Exception Handling :** Introduction to various types of Errors, Exception & Exception Handling, Exceptions Types (Java's Built-in Exceptions) – Checked and Unchecked Exceptions, Exception Handling using try and catch, Nested try, Multiple catch, finally, throw, throws etc., Throwing Your own Exception.	**9**	**20**

Course Outcomes:
At the end of this course, the student would be able

- To solve a problem in Core java using object oriented programming.
- To have fundamental knowledge of java programming language.
- To understand the basic syntax/terminology used in Java programming language.
- To write, compile and interpret java programs.
- To design java programs involving interfaces, packages etc.

List of References:

1. Programming with JAVA By E Balagurusamy, Tata McGrow Hill .
2. The Complete Reference JAVA By Herbert Schildt, Tata McGrow Hill .
3. Teach Yourself JAVA. By Joseph O'Neil & Herb Schildt, Tata McGrow Hill .

E-Resources / Web Links:

- https://www.tutorialspoint.com/java/
- https://www.javatpoint.com/java-tutorial
- https://www.w3resource.com/java-tutorial/
- https://www.w3schools.in/java-tutorial/
- https://www.guru99.com/java-tutorial.html
- https://beginnersbook.com/java-tutorial-for-beginners-with-examples/

List of Experiments:
Note: The experiment list provided beneath is for reference only. The course teacher may change/formulate it as per his/her methodology and requirement.

1. Write a Java Program to display massage "My First Java Program".
2. Write a Java Program to find the Area of circle.
3. Write a Java Program that will accept Command-line Arguments and display the same.
4. Write a Java Program that will find the largest no from the given Two Nos.
5. Write a Java Program that will find the largest no from the given Three Nos.

6. Write a Java Program that shows the use of Switch Statement.
7. Write a Java Program to find the Sum of the Digits of given Number.
8. Write a Java Program that will display Factorial of the given number.
9. Write a Java Program that implements the use of break and continue statement.
10. Write a Java Program to create a Student class and generate result of student (Total, Per, Grade).
11. Write a Java Program to create an Employee class and generate Salary Slip for the employee.
12. Write a Java Program that pass object as a method argument.
13. Write a Java Program that for returning an object.
14. Write a java program which shows the use of Static Members.
15. Write a java program which shows the use of Methods Overloading.
16. Write a java program which shows the Nesting of Methods.
17. Write a java program which implements the Default Constructors.
18. Write a java program which implements the Parameterized Constructors.
19. Write a java program which implements the Overloading of Constructors.
20. Write a java program which explains the concept of Single Inheritance.
21. Write a java program which explains the concept of Multilevel Inheritance.
22. Write a java program which explains the concept of Hierarchical Inheritance.
23. Write a java program which shows the Method Overriding.
24. Write a Java Program to implement final method.
25. Write a Java Program to implement final class.
26. Write a Java Program to implement abstract class and abstract method.
27. Write a java program which implements Interface.
28. Write a java program which implements Multiple Interfaces.
29. Write a java program which access classes within the same Package.
30. Write a java program which shows importing of classes from other packages.
31. Write a Java Program to implement the visibility controls (private, public, friendly, protected) by using package.
32. Write a Java Program to implement the methods of Math Class.
33. Write a Java Program to implement the methods of String Class.
34. Write a Java Program to implement the methods of StringBuffer Class.
35. Write a Java Program to implement the methods of Integer and Float Class.
36. Write a Java Program to implement the methods of Date Class.
37. Write a Java Program to implement the methods of Random Class.
38. Write a Java Program to implement the methods of Vector Class.
39. Write a Java Program to implement the methods of Stack Class.
40. Write a java program which uses try and catch for Exception Handling.
41. Write a java program which uses finally Statement.
42. Write a java program which uses Multiple catch Blocks.
43. Write a java program which uses Nested try Statements.
44. Write a java program which shows the use of throw Statement.
45. Write a java program which shows the use of throws clause.
46. Write a java program which shows throwing our own Exception.