Title of Paper :Core Java

Sr.No.	Heading	Particulars
1	**Description the course :** **Including but Not limited to:**	Core Java course focuses on teaching students how to design, develop, and maintain software applications using the Java programming language. The course covers fundamental to advanced concepts of Java, enabling students to understand object-oriented programming (OOP) principles, data structures, algorithms, and real-world application development.
2	**Vertical :**	Major
3	**Type :**	Theory
4	**Credits :**	2 credits (1 credit = 15 Hours for Theory in a semester, Total 30 hours)
5	**Hours Allotted :**	30 Hr
6	**Marks Allotted:**	50
7	**Course Objectives(CO):** **CO 1:** Understand and Apply Object-Oriented Programming (OOP) Concepts. **CO 2:** Identify the key components of a class and object in Java, including attributes (fields), methods, and constructors. **CO 3:** Apply sound software engineering principles in Java by organizing code into classes and methods with proper access control identifiers **CO 4:** Use tools and techniques like unit testing, as well as IDE debugging tools to find and fix issues within Java programs. **CO 5.** Effectively use Java's collection framework (e.g., Lists, Sets, Maps) to manage and process groups of related objects. **CO 6.** Use OOP concepts in designing and building solutions to real-world problems, ensuring the application is modular, maintainable, and reusable.	
8	**Course Outcomes (OC):** OC1. Understand the basics of Java and its runtime environment. OC2. Be proficient in using Java's data types, control flow statements, and OOP principles such as classes, inheritance, and exception handling. OC3. Creating own classes and objects OC4. Develop mini projects using Class, Interface and exception handling	
9	**Modules:-** **Module 1:**	
	Introduction to Java Programming-History of Java and its Evolution,Features of Java (Platform Independence, Object-Oriented),Data Types and Variables,Operators Constants and Literals,Type Casting **Decision Making and Loops** :If-else Statements,Switch Statement, Loops (For, While, Do-While),Break and Continue Statements **Classes and Objects** :Array,ArraysString class and String methods, StringBuffer and StringBuilder, Object-Oriented Programming Concepts, Defining Classes and Creating Objects, Instance Variables and Methods, Constructors, this Keyword, super keyword, Types of Classes, Scope Rules, Access Modifier, constants, static members of a class, garbage collection.	**15 Hrs**

	Inheritance: Its types, Superclass and Subclass, Final classes and methods **Polymorphism**: Compile-time and Runtime Polymorphism	
	Module 2:	
	Interfaces: Defining and Implementing Interfaces,Abstract Classes and Methods,Multiple Interface Implementation **Packages**: Introduction to predefined packages, User Defined Packages, Access specifier, Java Built-in packages **Exception handling**- Try, Catch, and Finally Blocks, Throw and Throws Keywords **Introduction to Threads**: Creating and Running Threads,Thread Lifecycle	**15 Hrs**
10	**Books and References:** 1. Java: The Complete Reference Herbert Schildt MC-Graw HILL 12th EDITION 2022 2. Core Java, Volume I: Fundamentals Hortsman Pearson 9th 2013 3. Core Java, Volume II: Advanced FeaturesGary Cornell and Hortsman Pearson 8th 2008	
12	**Internal Continuous Assessment: 40%**	**Semester End Examination: 60%**
13	**Continuous Evaluation through:** Class test of 1 of 15 marks Class test of 2 of 15 marks Average of the two: 15 marks Quizzes/ Presentations/ Assignments: 5 marks Total: 20 marks	**Format of Question Paper: External Examination (30 Marks)– 1 hr duration**
14	**Format of Question Paper: (Semester End Examination: 30 Marks. Duration:1 hour)** Q1: Attempt any two (out of four) from Module 1 (15 marks) Q2: Attempt any two (out of four) from Module 2 (15 marks) Or Q1: Attempt any three (out of five) from Module 1 (15 marks) Q2: Attempt any three (out of five) from Module 2 (15 marks)	