

The Maharaja Sayajirao University of Baroda Polytechnic Higher Payment Program Diploma in Computer Engineering			ACADEMIC YEAR 2021-2022	
Year	II	JAVA PROGRAMMING (CSE3429)	Lecture Hrs per week	4
Semester	II		Max marks	100
Pre-Requisite: Core OOPs concepts				
CO1	Explain the fundamentals of Java programming including its features, OOP principles and basic program structure.			
CO2	Illustrate Java data types, variables, operators, type conversions and arrays to develop basic Java programs.			
CO3	Describe control statements such as selection, iteration, and jump statements to implement logical program flow in Java applications.			
CO4	Implement object-oriented Java programs using classes, objects, methods, constructors, inheritance, method overloading, method overriding, access control, and inner classes.			
CO5	Implement packages, interfaces, exception handling mechanisms and multithreading concepts to build robust and efficient Java applications.			
BT	1. Remember 2. Understand 3. Application 4. Analysis 5. Evaluation 6. Creation			
COURSE CONTENT/SYLLABUS				
Unit	Unit Name	Hrs	Weightage	CO
1	An Overview Of Java: Java’s Lineage, The Creation of Java, Java and the Internet: Java Applets, Security, Portability, Java’s Magic: The Bytecode, Servlets: Java on the Server Side, The Java Buzzwords: Simple, Object-Oriented, Robust, Multithreaded, Architecture-Neutral, Interpreted and High Performance, Distributed, Dynamic, The Evolution of Java. Overview Object-Oriented Programming: Two Paradigms, Abstraction, The Three OOP Principles, A First Simple Program, A Second Short Program, Two Control Statements: The if Statement, The for Loop, Using Blocks of Code, Lexical Issues, The Java Keywords, The Java Class Libraries.	5	10	CO1, CO2
2	Data Types, Variables, Arrays & Operators: The simple Types, Integers: byte, short, int, long, Floating - Point Types: Float, double, Characters, Booleans, Literals: Integer Literals, Floating-Point Literals, Boolean Literals, Character Literals, String Literals, Variables: Declaring a variable, Dynamic Initialization, The scope and Lifetime of Variables, Type Conversion and Casting: Java Automatic Conversions, Casting Incompatible type, Automatic Type Promotions in Expressions: the Type Promotion Rules, Arrays: One Dimensional Arrays, Multidimensional Arrays, Alternative Array Declaration Syntax. Operators: Arithmetic Operator, The Bitwise Operator, Relational Operator, Boolean Logical Operator, The Assignment Operator, The ? Operator, Operator Precedence, Using Parenthesis.	6	12	CO2
3	Control Statements: Java’s Selection Statements: if statement & switch, Iteration Statements: while, do-while, for, The For-Each Version of the for Loop, Nested Loops, Jump Statements: Using break, Using continue & return.	5	10	CO1, CO3
4	Introducing Classes: Class Fundamentals, Declaring Objects, Introducing Methods, Constructors: Parameterized Constructors, The This Keyword: Instance Variable Hiding, Garbage Collection, The Finalize () Method, A Stack Class. Methods And Classes: Overloading Methods: Overloading Constructors, Using Objects as Parameters, A Closer Look at Argument Passing, Returning Objects, Recursion, Introducing Access Control, Understanding static, Introducing final, Arrays Revisited, Introducing Nested and Inner Classes, Exploring the String Class, Using Command-Line Arguments, Varargs: Variable-Length Arguments, Overloading Vararg Methods, Varargs and Ambiguity.	10	18	CO1, CO4
5	Inheritance: Inheritance Basics, Using Super: Using Super To Call Superclass Constructors, A Second Use For Super, Creating A Multilevel	10	18	CO2, CO3, CO4

	Hierarchy, Method Overriding, Dynamic Method Dispatch, Using Abstract Classes, Using Final With Inheritance, Using Final To Prevent Overriding, Using Final To Prevent Inheritance, The Object Class.			
6	Packages And Interfaces: Packages: Defining a Package, Finding Packages and CLASSPATH, A Short Package Example, Access Protection: An Access Example, Importing Packages, Interfaces: Defining an Interface, Implementing Interfaces, Nested Interfaces, Applying Interfaces, Variables in Interfaces.	8	14	CO2, CO5
7	Exception Handling: Exception Handling Fundamentals, Exception Types, Uncaught Exceptions, Using Try And Catch, Multiple Catch Clauses, Nested Try Statements, Throw, Throws, Finally, Java's Built-In Exception, Creating Your Own Exception Subclasses, Chained Exceptions, Using Exceptions. Multithreaded Programming: The Java Thread Model, Thread Priorities, Synchronization, Messaging, The Thread Class And The Runnable Interface, The main thread, Creating a thread, Implementing runnable, Extending thread, Choosing an approach, Creating Multiple Thread, Using isAlive() and Join(), Thread priorities, Synchronization, Interthread communication, Deadlock.	10	18	CO2, CO5
		54	100	

REFERENCE BOOKS:

1.	The Complete Reference: Java by Herbert Schildt.
2.	Let Us Java by YashvantKanetkar.
3.	Programming With Java by E. Balaguruswami