24UAMPC202	Java Programming	L/T/P
		3/0/2
Nature of Course	Theory and Practical	
Prerequisites	Basic understanding of computers and programming concepts	

Course Objectives:

1.	To understand common Java libraries, operators, and decision statements.
2.	To Understand the concepts of control statements and their role in building complex ML systems.
3.	To introduce Java string libraries for developing memory efficient applications.
4.	To Utilize Java streams to develop concise and efficient in AI applications.
5.	To introduce java event handler for interactive programming.

Course Outcomes: Upon completion of the course, students shall have the ability to

CO1	**Apply** Java Programming Fundamental Concepts For Application Development.	[AP]
CO2	**Apply** Java control statements for user friendly application development.	[AP]
CO3	**Develop** efficient application using Java string.	[A]
CO4	**Apply** Java stream to make the code more concise and efficient.	[AP]
CO5	**Apply** Java event handler to controls the event and decides what should happen if an event occurs in the code.	[AP]

CO-PO Mapping

Mapping of Course Outcomes to Program Outcomes (POs) & Program Specific Outcomes (PSOs):

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	POS3
CO1	3	3	2	2	1	1	-	-	1	1	1	1	2	2	-
CO2	3	3	2	2	1	-	-	-	1	1	1	1	1	1	1
CO3	3	2	3	3	1	-	-	-	1	1	-	1	2	1	-
CO4	3	2	3	3	1	-	-	-	1	1	-	1	2	1	-
CO5	3	3	2	2	1	-	-	-	1	1	-	1	-	-	1

Teaching -Learning & Assessment Scheme

Learning Scheme			Credits	Assessment Scheme			Summative Assessment	Total
				Formative Assessment			End Semester Exam	
L	T	P		CIA-I	CIA-II	Model PR Exam		
3	0	2	4	25	25	20	60 Scaled Down 30	100

Course Contents

UNIT I	Introduction to Java Programming	9hrs

Introduction to Java: Java Architecture- JVM, JRE & JDK, Keywords, Features of Java, Console input and output statements, variables and Identifiers, Scope of Variables, Data types, Type Conversion, Comments, Command Line Arguments, Access Modifiers **Operators** - Unary Operator- Arithmetic Operator- Shift Operator - Relational Operator - Bitwise Operator - Logical Operator - Ternary Operator and Assignment Operator. **Decision Statements** - if Statements, if-else Branching, switch Statements.

Case Study: Library Management System

Scenario: A university library wants to modernize its book management system. They need a software solution to keep track of books, borrowers, and transactions efficiently.

UNIT II	Control Statements	9hrs

Looping Statements: using for loop, using while Loops, Using do Loops. **Jump Statements:** using break and continue, Unlabeled Statements, Labelled Statements. **Arrays:** Declaration, Instantiation and Initialization of Java Array, Types of Array - Single Dimension array, Multi- dimension array

Case Study: Flight Reservation System

Scenario: An airline company wants to upgrade its flight reservation system to handle a large volume of bookings efficiently

UNIT III	Strings	9hrs

Strings: String, String Builder, and String Buffer, The String Class, Important Facts About Strings and Memory, Important Methods in the String Class, The string Buffer and String Builder Classes, Important Methods in the string Buffer and String Builder Classes, File Navigation and I/O.

Case Study-: Banking application

Scenario: Develop an application for customer bank transaction management

UNIT IV	Streams	9hrs

Streams: Types of Streams, The Byte-stream I/O hierarchy, Character Stream Hierarchy, Random Access File class, The java.io.Console Class, Serialization, Dates, Numbers, and Currency,
Working with Dates, Numbers and Currencies, Parsing, Tokenizing, and Formatting, Locating Data via Pattern Matching, Tokenizing.

Case Study: Online Shopping Platform

Scenario: An e-commerce company wants to revamp its online shopping platform to provide a seamless shopping experience for customers.

UNIT V	Event handling	9hrs

Basics of event handling – event handlers – adapter classes – actions – mouse events – AWT event hierarchy – introduction to Swing – Model-View-Controller design pattern – buttons – layout management – Swing Components – exception handling – exception Hierarchy – throwing and catching exceptions.

Case Study-: Intelligent Personal Assistant

Scenario: A java Application for Intelligent Personal Assistant to kept records of all day-to-day activities.

Total Contact Hours:	45hrs

Text Book:

1. Java: A Beginner's Guide" by Herbert Schildt (Latest Edition).
2. Data Structures and Algorithms in Java" by Robert Lafore (Latest Edition).
3. “Machine Learning in Java" by Bostjan Kaluza (2018)
4. Artificial Intelligence: A Modern Approach" by Stuart Russell and Peter Norvig (Latest Edition)

Reference Book:

1. Java: The Complete Reference" by Herbert Schildt (2024 Edition).
2. Java Programming 24-Hour Trainer" by Yakov Fain (2021 Edition)
3. Head First Java" by Kathy Sierra and Bert Bates (2021 Edition)
4. Java Concurrency in Practice" by Brian Goetz, Tim Peiperl’s, Joshua Bloch, Joseph Bowbeer, David Holmes, and Doug Lea (2020 Edition)

Web References:

1. https://education.oracle.com/ko/java-developer-training-guide
2. https://www.w3schools.com/java/default.asp
3. https://www.oracle.com/java/technologies/java-technology-reference.html
4. https://www.oracle.com/java/technologies/

Online Resources:

1. https://www.tutorialspoint.com/java/index.html
2. **https://www.javatpoint.com/java-tutorial**
3. **https://www.coursera.org/specializations/java-programming**