

Maharashtra State Board of Technical Education, Mumbai

TEACHING PLAN (TP)

K-1

Academic Year: 2025-26

Date: 15/12/2025

Institute Name & Code: K. K. Wagh Polytechnic, Nashik-3 (0078)

Program & Code: Artificial Intelligence & Machine Learning (AN) **Course Code & Abbr.:** 314317 (JPR)

Course Name: Java Programming

Name of Faculty: Mrs. P. H. Nawale

Class: SYAN

Course Index: 402

Semester: IV

Scheme: K

Total Hrs: 60

● Teaching-Learning and Assessment Scheme:

Course Code	Course Title	Abbreviation	Course Category/s	Learning Scheme					Credits	Paper Duration	Assessment Scheme										
				Actual Contact Hrs/Week			SLH	NLH			Theory				Based on LL Practical				Based on SL		Total Marks
				CL	TL	LL					FA-TH	SA-TH	Total		FA-PR		SA-PR		SLA		
													Max	Min	Max	Min	Max	Min	Max	Min	
314317	Java Programming	JPR	DSC	4	-	4	2	10	5	3	30	70	100	40	25	10	50#	20	25	10	200

Abbreviations: CL- Class Room Learning, TL- Tutorial Learning, LL-Laboratory Learning, SLH-Self Learning Hours, NLH-Notional Learning Hours, FA - Formative Assessment, SA -Summative assessment, IKS - Indian Knowledge System, SLA - Self Learning Assessment

Legends: @ Internal Assessment, # External Assessment, *# On Line Examination , @\$ Internal Online Examination

● Course Outcomes (COs) & Theory Learning Outcomes (TLOs):

By learning course, Linux Basics (JPR-314317) Second Year students will be able to:

CO No.	TLO No.	Course Outcomes (COs) / Theory Learning Outcomes (TLOs)
CO402.1		Basic Syntactical Constructs in Java
	TLO 1.1	Write programs to create classes and objects for the given problem.
	TLO 1.2	Describe characteristics of the given java token.
	TLO 1.3	Write program to evaluate given expressions
	TLO 1.4	Write programs using relevant control structure to solve the given problem.
	TLO 1.5	Develop programs using vectors and wrapper classes for the given problem.
	TLO 1.6	Use constructors for the given programming problem.
CO402.2		Inheritance, Interface and Packages
	TLO 2.1	Apply identified type of inheritance for the given programming problem.
	TLO 2.2	Differentiate between overloading and overriding with the help of examples.
	TLO 2.3	Develop program using interface.
	TLO 2.4	Create user defined package for the given problem.
CO402.3		Exception Handling and Multithreading
	TLO 3.1	Distinguish the errors and exceptions with example.
	TLO 3.2	Develop program for handling the given exception.
	TLO 3.3	Create threads to run multiple processes in a program.
	TLO 3.4	Develop program using different thread life cycle methods.
CO402.4		Event handling using Abstract Window Toolkit (AWT) & Swings Components
	TLO 4.1	Write steps to develop Graphical User Interface (GUI) using AWT components with frame for the given problem.

	TLO 4.2	Develop program using menu and dialog boxes for the given problem.
	TLO 4.3	Write steps to develop Graphical user interface (GUI) using advanced swing components for the given problem.
	TLO 4.4	Use delegation event model to develop event driven program for the given problem.
	TLO 4.5	Use relevant AWT/ Swing component(s) to handle the given event.
CO402.5		Basics of Network Programming.
	TLO 5.1	Use relevant AWT/ Swing component(s) to handle the given event.
	TLO 5.2	Use networking classes to retrieve host details.
	TLO 5.3	Develop program for Client/Server communication through TCP/IP Server sockets for the given problem.
CO402.6		Interacting with Database
	TLO 6.1	Choose relevant database connectivity methods.
	TLO 6.2	Describe two tier and three tier architecture of JDBC.
	TLO 6.3	Choose relevant type of JDBC driver for the specified environment.
	TLO 6.4	Elaborate steps with example to establish connectivity with the specified database.

● **Teaching Plan:**

Unit No. (Allotted Hrs.)	TLO s	Title/Topic Details with CO	Plan (From- To & No. of Lectures)	Actual Execution (From-To & No. of Lectures)	Pedagogy used (Teaching Method/ Media)	Remark
1 (8 hrs) 12M		Unit-1: Introduction to Linux Operating System [CO402.1]				
	1.1 1.2	1.1 Java features and the Java programming environment 1.2 Defining a class, creating object, accessing class members	15/12/25 To 15/12/25 (1)		Chalk, Board, PPTs, Web References	
	1.3 1.4	1.3 Java tokens and data types, symbolic constant, scope of variable, typecasting, and different types of operators and expressions, decision making and looping statements	16/12/25 To 19/12/25 (2)			
	1.5	1.4 Arrays, strings, string buffer classes, vectors, wrapper classes	20/12/25 To 20/12/25 (1)			
	1.6	1.5 Constructors and methods, types of constructors, method and constructor overloading, nesting of methods, command line arguments, garbage collection, visibility control: public, private, protected, default, private protected	22/12/25 To 27/12/25 (4)			
		Unit-2: General Purpose Utilities [CO402.2]				
2 (10 hrs) 12M	2.1 2.2	2.1 Inheritance: concept of inheritance , types of Inheritance: single inheritance, multilevel inheritance, hierarchical inheritance, method overriding, final variables, final methods, use of super, abstract methods and classes	29/12/25 To 02/01/26 (3)		Chalk, Board, PPTs, Web References	
	2.3	2.2 Interfaces: Define interface, implementing interface, accessing interface variables and methods, extending interfaces	03/01/26 To 05/01/26 (2)			
	2.4	2.3 Package: Define package, types of package, naming and creating package, accessing package,	06/01/26 To 13/01/26			

		import statement, static import, adding class and interfaces to a package	(5)			
3 (12 hrs) 12M		Unit-3: Exception Handling and Multithreading [CO402.3]				
	3.1 3.2	3.1 Errors and Exception: Types of errors and exceptions, try and catch statement, throws and finally statement, built-in exceptions, throwing our own exception	16/01/26 To 24/01/26 (6)		Chalk, Board, PPTs, Web References	
	3.3 3.4	3.2 Multithreaded programming : creating a thread: By extending to thread class and by implementing runnable Interface, Life cycle of thread: Thread methods, thread exceptions, thread priority and methods, synchronization	30/01/26 To 07/02/26 (6)			
4 (14 hrs) 16M		Unit-4: The vi Editor and Shell [CO402.4]				
	4.1 4.2	4.1 Component, container, window, frame, panel, use of AWT controls: labels, buttons, checkbox, checkbox group, textfield, textarea 4.2 Use of layout managers: flowLayout, BorderLayout, GridLayout, GridBagLayout, menubars, menus, file dialog	09/02/26 To 13/02/26 (3)		Chalk, Board, PPTs, Web References	
	4.3	4.3 Introduction to swing: Swing features, difference between AWT and Swing. 4.4 Swing components: Icons and Labels, TextField, ComboBox, Button, Checkbox, RadioButton 4.5 Advanced Swing Components: Tabbed Panes, Scroll Panes, Trees, Tables, Progress bar, tool tips	14/02/26 To 17/02/26 (3)			
	4.4	4.6 Introduction to Event Handling: The delegation Event Model: Event sources, Event listeners	20/02/26 To 21/02/26 (2)			
	4.5	4.7 Event classes: The action event class, the Item event class, the Key event class, the mouse event class, text event 4.8 Event listener interfaces: ActionListener , ItemListener , KeyListener , MouseListener , MouseMotion , TextListener	23/02/26 To 03/03/26 (6)			
		Unit-5: Basics of Network Programming [CO402.5]				
5 (8 hrs) 10M	5.1	5.1 Socket Overview: Client/Server , reserved Sockets , proxy servers , Internet Addressing	06/03/26 To 07/03/26 (2)		Chalk, Board, PPTs, Web References	
	5.2	5.2 Java and the Net: The networking classes and interfaces, InetAddress : Factory Methods , Instance Methods	09/03/26 To 10/03/26 (2)			
	5.3	5.3 TCP/IP Client and Server Sockets, datagram sockets, datagram packets	13/03/26 To 14/03/26 (2)			
	5.3	5.4 The URL Class, URLConnection class	16/03/26 To 17/03/26 (2)			
6 (8 hrs) 8M		Unit - VI Interacting with Database [CO402.6]				
	6.1	6.1 Introduction to JDBC, ODBC	20/03/26 To 20/03/26		Chalk, Board, PPTs,	

			(1)		Web References	
	6.2	6.2 JDBC architecture: Two tier and three tier models	23/03/26 To 23/03/26 (1)			
	6.3 6.4	6.3 Types of JDBC drivers, Class Class , DriverManager class, Connection interface, Statement interface, PreparedStatement interface, ResultSet Interface	24/03/26 To 04/04/26 (1)			
60 Hrs.		Total	60 Hrs.			

● COs-POs & PSOs Matrix:

Course Outcomes (COs)	Programme Outcomes (POs)							PSOs	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO-1	PSO-2
CO402.1	2	2	1	2	-	1	1	2	2
CO402.2	2	2	2	2	-	1	1	2	2
CO402.3	2	2	2	2	-	1	1	2	2
CO402.4	2	2	2	2	1	2	2	2	2
CO402.5	2	2	3	2	1	2	2	2	2
CO402.6	2	2	3	3	1	2	2	2	2

Legends: High:03, Medium:02, Low:01, No Mapping: -

PSO1: Apply fundamental concepts of Computer Engineering and Artificial Intelligence and machine learning to solve technical problems.

PSO2: Implement the domain knowledge to achieve successful career as an engineering professional.

● Formative Assessment(FA-TH):

- Two offline class tests of 30 marks each will be conducted. Average of two class tests marks will be considered as Formative Assessment for Theory marks out of 30.

● Summative Assessment(SA-TH):

- End semester assessment of 70 marks through paper based examination by MSBTE.
- Total theory marks (100) will be calculated as marks of Formative Assessment (30) + marks of Summative Assessment (70)

● Self-Learning Activities

1. Micro project

- Develop mini-ATM machine system. It should accept account_no, account_holder_name, account_balance and perform operations such as withdrawal, Deposit and balance check.
- Develop Quiz Management System. Quiz should accept student credentials and contain 10 MCQ type questions. Determine the final result. Save the result in table along with student credentials.
- Energy Billing System: Expected to develop bill amount module based on usage of energy consumption.
- Develop Employee Management System. Insert employee details such as employee_name, emp_id, emp_salary etc.. into database and retrieve data from table.
- Any other micro project as suggested by course teacher.

2. Assignments

Solve assignment covering all COs given by course teacher.

3. Other

● References:

1. Suggested Books:

Sr. No	Author	Title	Publisher
1	E Balaguruswamy	Programming with JAVA	Mcgraw Hill Education (India) Private Limited
2	Schildt Herbert	Java Complete Reference	Mcgraw Hill Education,
3	Holzner, Steven et al	Java 8 Programming Black Book	Dreamtech Press

2. Learning Web Sites:

Sr. No.	Link /Portal	Description
1	https://www.javatpoint.com/java-tutorial	All content
2	https://www.w3schools.com/java/	All content
3	https://www.tutorialspoint.com/java/index.htm	All content
4	https://www.programiz.com/java-programming/online-compiler/	Online compiler for java
5	https://onecompiler.com/java	Online compiler for java
6	https://www.odbms.org/wp-content/uploads/2013/11/009.01-Arlo-w-JDBC-Tutorial-July-2005.pdf	Database Connectivity
7	https://infyspringboard.onwingspan.com/web/en/app/toc/lex_29959473947367270000_shared/overview	All content
8	https://infyspringboard.onwingspan.com/web/en/app/toc/lex_auth_0138420095549112329730_shared/overview	All content
9	https://onlinecourses.nptel.ac.in/noc22_cs47/preview	All content

3. Learning URLs of referenced YouTube Videos:

Sr. No.	URL of YouTube Video	Topic
1	https://youtu.be/s7UgQ7_1KQY?si=enkfm42RWQuGNjc_	Java features and the Java programming environment
2	https://youtu.be/Znmz_WxMxp4?si=Oyi5fssPmC-9D1vO	Java Classes and Objects
3	https://youtu.be/Fyc86kVlePE?si=2mowZEjTMei-TBDm	Wrapper Classes in Java
4	https://youtu.be/SVXyBkwYySA?si=9UHCodxaE1Ffytip	Need of Inheritance
5	https://youtu.be/A1uqgEz3hB0?si=6dkEq1QkBStmjFKX	Interfaces in Java
6	https://youtu.be/RMqNAiFhkZA?si=vKsCNZ3aCn9X7Jh2	Packages and Classpath
7	https://youtu.be/IZu5rZTN7PI?si=JDi615Xnf-P2UfzT	Exception Handling
8	https://youtu.be/BqBKEXLqdVl?si=KB7QFAJt87Pwo0CX	Socket programming
9	https://youtu.be/7v2OnUti2eM?si=OGtl8PsTY311vF4c	Java Database Connectivity

4. Tools used:, MKCL LMS-Learn Live, YouTube, Google Classroom

Mrs. P.H. Nawale
(Subject Teacher)

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