

Maharashtra State Board of Technical Education, Mumbai

LABORATORY PLAN (LP)

K-2

Academic Year: 2026-27

Institute Name: K. K. Wagh Polytechnic, Nashik

Programme and Code: Artificial Intelligence and Machine Learning (AN)

Course Name: AI & ML ALGORITHM

Semester: ^{Vth} **Scheme:** 'K'

Allocated Hrs: 40

Date: 27/07/2026

Institute Code: 0078

Course Index: 502

Course Abbr. Code: AMA-315330

Name of Faculty: Ms. D. N. More

Class: TYAN

● **Course Outcomes (COs): Theory & Practical:**

By learning course AI & ML ALGORITHM (AMA-315330), Third Year students will be able to:

- **CO502.1** – Implement relevant search algorithms as applicable to Artificial Intelligence.
- **CO502.2** - Apply method for knowledge representation to make informed decisions for various application.
- **CO502.3** - Analyze different forms of data with respect to different phases of Machine Learning.
- **CO502.4** - Create data model for Machine Learning Algorithms.
- **CO502.5** - Classify the data by performing different Regression Techniques.

● **Teaching and Examination Scheme:**

Course Code	Course Title	Abbr	Course Category/s	Learning Scheme					Credits	Assessment Scheme												
				Actual Contact Hrs./Week				SLH		NLH	Paper Duration	Theory				Based on LL & TL				Based on SL		Total Marks
					CL	TL	LL					FA-TH	SA-TH	Total	Practical		SLA					
															FA-PR	SA-PR		Max	Min	Max	Min	
315330	AI&ML ALGORITHM	AMA	DSE	4	-	4	1	9	3	3	30	70	100	40	25	10	25@	10	25	10	175	

Abbreviations: CL- Class Room Learning , LL-Laboratory Learning, SLH-Self Learning Hours, NLH-Notional Learning Hours, FA - Formative Assessment, SA -Summative assessment, SLA - Self Learning Assessment Legends: @ Internal Assessment

● **Laboratory Learning Outcome (LLO)**

- LLO 1.1 Install given IDE for python.
- LLO 2.1 Implement Breadth First Search Algorithm.
- LLO 3.1 Develop Depth First Search Algorithm.
- LLO 5.1 Develop A* search Algorithm.
- LLO 6.1 Develop a program using Bayes's theorem.
- LLO 7.1 Analyze the process of turing test for given Dataset.
- LLO 8.1 Analyze different datasets with respect to its use.
- LLO 9.1 Develop program based on training and testing datasets.
- LLO 11.1 Implement Supervised Learning.
- LLO 12.1 Develop program on Unsupervised Learning.
- LLO 13.1 Implement cross validation in python.
- LLO 14.1 Develop program for Simple Linear Regression.
- LLO 16.1 Implement program for confusion matrix.

Laboratory Plan:

Sr. No.	Course Outcomes	LLO	Name of Practical	Planned Date		Actual Date	Remark/ Assessment Date with Staff sign
				From	To		
1.	CO502.1	1.1	a) Install given Python IDE software and Python “scikit learn” for ML	A: 20/08/2026 B: 18/08/2026 C: 20/08/2026	A: 21/08/2026 B: 22/08/2026 C: 22/08/2026		
2.	CO502.1	2.1	Write program to Implement Breadth First Search Algorithm (Uninformed) in Python	A: 21/08/2026 B: 22/08/2026 C: 22/08/2026	A: 27/08/2026 B: 25/08/2026 C: 27/08/2026		
3.	CO502.1	3.1	Write program to implement Depth First Search Algorithm (Uninformed) in Python	A: 27/08/2026 B: 25/08/2026 C: 27/08/2026	A: 28/08/2026 B: 29/08/2026 C: 29/08/2026		
4.	CO502.1	4.1	Write program to implement A* search (Informed Type) Algorithm in Python	A: 28/08/2026 B: 29/08/2026 C: 29/08/2026	A: 03/09/2026 B: 01/09/2026 C: 03/09/2026		
5.	CO502.1	5.1	Write program to implement Bayes’ Theorem	A: 03/09/2026 B: 01/09/2026 C: 03/09/2026	A: 04/09/2026 B: 05/09/2026 C: 05/09/2026		
6.	CO502.2	6.1	Analyze the given Case study: How Turing test is Performed between Responder and an Interrogator?	A: 04/09/2026 B: 05/09/2026 C: 05/09/2026	A: 10/09/2026 B: 08/09/2026 C: 10/09/2026		
7.	CO502.2	7.1	Explore different dataset finders e.g. Google Dataset Search, Kaggle	A: 10/09/2026 B: 08/09/2026 C: 10/09/2026	A: 11/09/2026 B: 12/09/2026 C: 12/09/2026		
8.	CO502.2	8.1	Write program in python to split any dataset into train and tests sets	A: 11/09/2026 B: 12/09/2026 C: 12/09/2026	A: 17/09/2026 B: 15/09/2026 C: 17/09/2026		
9.	CO502.2	9.1	Create and display a Decision Tree on given Dataset	A: 17/09/2026 B: 15/09/2026 C: 17/09/2026	A: 18/09/2026 B: 19/09/2026 C: 19/09/2026		
10.	CO502.2	10.1	Write program to calculate cross validation score for any Dataset like IRIS	A: 18/09/2026 B: 19/09/2026 C: 19/09/2026	A: 24/09/2026 B: 22/09/2026 C: 24/09/2026		
11.	CO502.2	11.1	Write program to implement Simple Linear Regression using Python	A: 24/09/2026 B: 22/09/2026 C: 24/09/2026	A: 25/09/2026 B: 26/09/2026 C: 26/09/2026		
12.	CO502.3	12.1	Write program to create confusion matrix to	A: 25/09/2026 B: 26/09/2026 C: 26/09/2026	A: 01/10/2026 B: 29/10/2026 C: 01/10/2026		
13	CO502.4	13.1	Write program to implement K-means Algorithm	A: 01/10/2026 B: 29/10/2026 C: 01/10/2026	A: 02/10/2026 B: 03/10/2026 C: 03/10/2026		

● **Direct Assessment Criteria :(Practical):**

Sr. No.	Performance Indicators	Weightage
A	Process Related: 30 Marks	60%
1.	Logic Formation	40%
2.	Debugging Ability	10%
3.	Follow Ethical Practices:	10%
	Product related (Marks-20)	60%
4.	Expected Output	10%
5	Timely Submission	10%
6.	Answer to Sample questions	20%
	Total (50 Marks)	100%

● **Rules for Formative Assessment:**

1. Formative assessment of each practical is based on Process related (30 marks) and Product related (20marks) - Total out of 50 marks as per the assessment scheme prescribed by MSBTE,
2. Final assessment of practicals. Following is the distribution of Marks –
 - I. Summative Assessment (SA-PR) for 25 Marks will be conducted by MSBTE after completion of the term.
 - II. Formative assessment (FA-PR) will carry 25 Marks.
 - III. Self Learning Assessment (SLA) will carry 25 Marks.
3. Final Formative Assessment (F.A.) of 25 marks is calculated as follows:

$$FA\ Marks = ((Total\ obtained\ marks)*25)/ (25*Total\ Number\ of\ practicals)$$

A comprehensive Final Practical End Semester examination (SA-PR of 25 Marks) will be conducted by MSBTE at the end of semester. The examiner for this examination will be an internal examiner.

4. The schedule of MSBTE Practical Examination will be displayed on Notice board prior to examination.

● **Practical wise LLO-CO Mapping:**

PR. No.	LLO	CO502.1	CO502.2	CO502.3	CO502.4	CO502.5
Practical 1	1.1	✓				
Practical 2	2.1	✓				
Practical 3	3.1	✓				
Practical 4	4.1	✓				
Practical 5	5.1	✓				
Practical 6	6.1		✓			
Practical 7	7.1			✓		
Practical 8	8.1			✓		

Practical 9	9.1			✓		
Practical 10	10.1	✓				
Practical 11	11.1			✓		
Practical 12	12.1			✓		
Practical 13	13.1				✓	

● **References:**

1. Books:

Sr.No	Author	Title	Publisher with ISBN Number
1	Stuart Russell and Peter Norvig, Editors	Artificial Intelligence A modern Approach Third edition	Pearson Education, Inc ISBN-13: 978-0-13-604259-4 ISBN-10: 0-13-604259-7
2	Dr. Jeeva Jose	Introduction to Machine Learning with Python	Khanna Book Publishing Co.(P) Ltd. ISBN 9789389139068 ISBN 9789389139068
3	Dipanjan Sarkar Raghav Bali Tushar Sharma	Practical Machine Learning with Python A Problem-Solver's Guide to Building Real-World Intelligent Systems	Apress publication ISBN-13 (pbk): 978-1-4842-3206-4 ISBN-13 (electronic): 978-1-4842-3207-1
4	Andreas C. Müller & Sarah Guido	Introduction to Machine Learning with Python	O'Reilly Media, Inc ISBN 9352134575 ISBN 9789352134571
5	Manaramjan Pradhan, U Dinesh Kumar	Machine Learning using Python	Wiley India ISBN 978-81-265-7990-7 ISBN 9 788126 579907

2. Learning websites & portals:

Sr.No	Link / Portal	Description
1	https://www.python.org/downloads/	Python IDE download
2	https://www.pdfdrive.com/machine-learning-step-by-step-guide-to-implement-machine-learning-algorithms-with-python-d158324853.html	AI and ML E-Books
3	https://www.geeksforgeeks.org/how-to-install-python-pycharm-on-windows	Guidelines for Installation of python
4	https://stackabuse.com/courses/graphs-in-python-theory-and-implementation/lessons/a-star-search-algorithm	A* algorithm
5	https://www.javatpoint.com/turing-test-in-ai	Turing test
6	https://www.v7labs.com/blog/best-free-datasets-for-machine-learning	Datasets
7	https://www.geeksforgeeks.org/how-to-split-a-dataset-into-train-and-test-sets-using-python	Training and Testing Dataset
8	https://towardsdatascience.com/email-spam-detection-1-2-b0e06a5c0472	Filtering Dataset

3. Tools for conducting Practicals and Assessment:

1. Google classroom
2. You tube videos
3. MKCL Era Live Learn.

Ms. D. N. More
(Name & signature of Staff)
Cc: Course File – AMA (315330)
Notice board

Mrs. R. Y. Thombare
(Name & signature of HOD)

CC: 1. Lab File 2.Course File-SML (313307) 3. Notice Board-AN Lab-03 4. Progressive Assessment