

Shree Rahul Education Society's (Regd.)

SHREE L. R. TIWARI COLLEGE OF ENGINEERING

(Approved by AICTE & DTE, Maharashtra State & Affiliated to University of Mumbai)
NAAC Accredited, NBA Accredited Program, ISO 9001:2015 Certified | DTE Code No. : 3423
Minority Status (Hindi Linguistic)

Teaching Plan

Sr. No.	Content
1	Sample Teaching Plan of Odd semester for the year 2022 - 2023
2	Sample Laboratory Plan of Odd semester for the year 2022 - 2023

PRINCIPAL

Shree L. R. Tiwari College of Engineering
Kanakiya Park, Mira Road (E).



SHREE L.R. TIWARI COLLEGE OF ENGINEERING

Kanakia Park, Mira Road(E), Thane-401107, Maharashtra.

TEACHING PLAN

Program: BE
 Course Code: CSC 701
 Course Name: Machine Learning
 Faculty: Prof. Rajesh Gaikwad

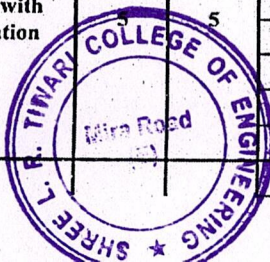
Department: Computer Engineering
 Class: BE
 Div: -
 Sem: VII

Academic Year: 2022-2023
 Lectures per week: 3
 Total Working Days in Semester: 70
 Total Lectures Planned: 40

M. No.	Chapter/Module	MU allocated Hrs.	Planned Hrs.	Lecture No.	Detail Topics	Week No.	Planned date	Execution date	Teaching Aids	Teaching Method	References
1	Introduction to Machine Learning	4	5	1	Orientation Lecture, Machine Learning, Types of Machine Learning,	1	11-Jul-22	11-07-22	MP	L	R1, T2
				2	Issues in Machine Learning,	1	12-Jul-22	12-07-22	MP	L	R1, T2
				3	Application of Machine Learning,	1	13-Jul-22	13-07-22	MP	L	R1, T1
				4	Steps in developing a Machine Learning Application. Training Error,	2	18-Jul-22	25-07-22	MP	L	T2
				5	Generalization error, Overfitting, Underfitting, Bias Variance trade off.	2	19-Jul-22	1-08-22	MP	L	T2
2	Learning with Regression and Trees	9	9	6	Learning with Regression: Linear Regression,	2	20-Jul-22	2-08-22	MP	L	T2
				7	Multivariate Linear Regression, Logistic Regression.	3	25-Jul-22	3-08-22	MP	L	T2
				8	Learning with Trees: Decision Trees,	3	26-Jul-22	8-Aug-22	MP	L	T2
				9	Constructing Decision Trees using Gini Index (Regression),	3	27-Jul-22	9-Aug-22	MP	L	T2
				10	Classification and Regression Trees (CART)	4	1-Aug-22	10-Aug-22	MP	L	T2
				11	Performance Metrics: Confusion Matrix,	4	2-Aug-22	16-Aug-22	MP	L	T2
				12	[Kappa Statistics], Sensitivity,	4	3-Aug-22	17-Aug-22	MP	L	T2
				13	Specificity, Precision, Recall, F-measure,	5	8-Aug-22	22-Aug-22	MP	L	T2
3	Ensemble Learning	3	3	14	ROC curv	5	9-Aug-22	28-Aug-22	MP	L	T2
				15	Understanding Ensembles,	5	10-Aug-22	29-Aug-22	CB	L	T2
				16	K-fold cross validation, Boosting,	6	16-Aug-22	30-Aug-22	CB	L	T2
				17	Stumping, XGBoost 3.2 Bagging,	6	17-Aug-22	31-Aug-22	MP	L	T2
				18	Subagging, Random Forest,	6	22-Aug-22	5-Sep-22	CB	L	T2
				19	Comparison with Boosting,	7	23-Aug-22	6-Sep-22	CB	L	T2
				20	Different ways to combine classifiers	7	24-Aug-22	12-Sep-22	CB	L	T1
4	Learning with Classification	5	5	21	Support Vector Machine	7	29-Aug-22	13-Sep-22	MP	L	T1
				22	Constrained Optimization, Optimal decision boundary,	8	30-Aug-22	14-Sep-22	MP	L	T1
				23	Margins and support vectors, SVM as constrained optimization problem,	8	31-Aug-22	14-Sep-22	CB	L	T1
				24	Quadratic Programming,	8	5-Sep-22	14-Sep-22	CB	L	T1
				25	SVM for linear and nonlinear classification,	9	6-Sep-22	17-Sep-22	MP	L	T1
				26	Basics of Kernel trick	9	7-Sep-22	20-Sep-22	CB	L	T1
				27	Support Vector Regression,	9	12-Sep-22	20-Sep-22	CB	L	T1
				28	Multiclass Classification	10	13-Sep-22	29-Sep-22	CB	L	T2
				29	Introduction to clustering with overview of distance metrics	10	14-Sep-22	21-Sep-22	MP	L	T2

Principal

Shree L. R. Tiwari College of Engineering
 Kanakia Park, Mira Road (E.)



M. No.	Chapter/Module	MU allocated Hrs.	Planned Hrs.	Lecture No.	Detail Topics	Week No.	Planned date	Execution date	Teaching Aids	Teaching Method	References
5	Learning with Clustering			30	major clustering approaches	10	19-Sep-22	21 Sep 22	MP	L	T2
				31	Graph Based Clustering:	11	20-Sep-22	21 Sep 22	CB	L	T2
				32	Clustering with minimal spanning tree Model based Clustering:	11	21-Sep-22	26 Sep 22	CB	L	T2
				33	Clustering with minimal spanning tree Model based Clustering:	11	26-Sep-22	27 Sep 22	MP	L	T2
				34	Expectation Maximization Algorithm,	12	27-Sep-22	28 Sep 22	CB	L	T2
				35	Density Based Clustering: DBSCAN	12	28-Sep-22	28 Sep 22	CB	L	T2
6	Dimensionality Reduction	3	3	36	Dimensionality Reduction Techniques,	12	3-Oct-22	3 Oct 22	CB	L	T2
				37	Principal Component Analysis,	13	4-Oct-22	4 Oct 22	MP	L	T3
				38	Linear Discriminant Analysis,	13	5-Oct-22	5 Oct 22	MP	L	T3
				39	Singular Valued Decomposition.	13	10-Oct-22	10 Oct 22	CB	L	T3
Total		39	39								

TEACHING AIDS: 1. Video Films (VF) 2. Multimedia Presentations (MP) 3. Models (M) 4. Overhead Projectors (OHP) 5. Chalk board (CB) 6. any other (AO)

TEACHING METHODS: 1. Lecture (L) 2. Active Learning (A) 3. Group Discussion (GD) 4. Quiz (Q) 5. Seminar (S) 6. Lab Visit (LV) 7. Industrial Visit (IV) 8. Demo (D) 9. Question Answers in classroom (5+50+5pattern)- (QA) 10. Any other.(AO)

Text Books:

T1. Peter Harrington, —Machine Learning in Action!, DreamTech Press Edition, Pearson Education, March 2013

T2. Ethem Alpaydm, —Introduction to Machine Learning!, MIT Press

T3. Tom M. Mitchell, —Machine Learning! McGraw Hill

T4. Stephen Marsland, —Machine Learning An Algorithmic Perspective!, CRC Press

Reference Books:

R1.1. Han Kamber, —Data Mining Concepts and Techniques!, Morgan Kaufmann Publishers

R2. 2. Margaret. H. Dunham, —Data Mining Introductory and Advanced Topics, Pearson Education

R3.3. Kevin P. Murphy, Machine Learning — A Probabilistic Perspective.

R3.3. Richard Duda, Peter Hart, David G. Stork, —Pattern Classification!, Second Edition, Wiley

Digital Material:

D1. //www.educba.com/data-science/courses/free-machine-learning-course/

Faculty
Prof. Rajesh Gaikwad

11/7/22



Neelam Phadnis

H.O.D.
Mrs. Neelam Phadnis

Deven Shah

Deven Shah

Principal
Dr. Deven Shah

Principal
Shree L. R. Tiwari College of Engineering
Kanakiya Park, Mira Road (E.)

SHREE L.R. TIWARI COLLEGE OF ENGINEERING

Kanakia Park, Mira Road(E), Thane-401107, Maharashtra.

LABORATORY PLAN

Program: BE
Course Code: CSC 701/CSL701
Course Name: Machine Learning LAB
Faculty incharge: Prof. Rajesh Gaikwad

Department: CS
Class: BE
Div: -
Sem: VII

Academic Year: 2022-2023
Practical Hrs. per week: 2
Total Working Days in Semester: 70
Total Practicals Planned: 10

Exp. No.	Name of Experiment/ Assignment	Equipment/ tools/Software required	Planned Hrs.	Objectives	Reference	Date of Performance Planned			Date of completion		
						Batch-1	Batch-2	Batch-3	Batch-1	Batch-2	Batch-3
1	To implement Linear Regression.	Python/R	2	LO1. To implement an appropriate machine learning model for the given	T1, R1,	14/07/2022	11/7/2022	12/7/2022	14/7/22	11/7/22	12/7/22
2	To implement Logistic Regression.	Python/R	2	LO1. To implement an appropriate machine learning model for the given	T1, R1,	21/7/2022	18/6/2022	19/07/2022	21/7	25/7/22	19/8
3	To implement Ensemble learning (bagging/boosting)	Python/R	2	LO2. To implement ensemble techniques to combine predictions from different	T1, R1,	28/07/2022	25/07/2022	26/07/2022	28/7	25/7	26/7
4	To implement multivariate Linear Regression.	Python/R	2	LO2. To implement ensemble techniques to combine predictions from different	T1, R2,	4/8/2022	1/8/2022	2/8/2022	4/8	1/8/2	2/8
5	To implement SVM	Python/R	2	LO2. To implement ensemble techniques to combine predictions from different	T1, R2,	11/8/2022	8/8/2022	9/8/2022	11/8	8/8	9/8
6	To implement PCA/SVD/LDA	Python/R	2	LO3. To implement the dimensionality reduction techniques.	T1, R1,	18/08/2022	22/8/2022	16/8/2022	18/8	22/8	16/8
7	To implement Graph Based Clustering	Python/R	2	LO3. To implement the dimensionality reduction techniques.	T1, R3,	25/08/2022	29/08/2022	23/08/2022	25/8	29/8	23/8
8	To implement DB Scan	Python/R	2	LO3. To implement the dimensionality reduction techniques.	T1, R1,	1/9/2022	5/9/2022	30/08/2022	1/9	5/9	30/8
9	To implement CART	Python/R	2	LO3. To implement the dimensionality reduction techniques.	T1, R3,	8/9/2022	12/9/2022	6/9/2022	8/9	12/9	6/9
10	To implement LDA	Python/R	2	LO3. To implement the dimensionality reduction techniques.	T1, R3,	15/9/2022	19/9/2022	13/9/2022	15/9	19/9	13/9
11	Project/Case Studies	Python/R	4	Two /three combination of ML Algo for Project with GUIs		22/9/2022	26/9/2022	20/9/2022	22/9	26/9	20/9
			24								

Text Books:

T1. Tom M. Mitchell, —Machine Learning! McGraw Hill

Reference Books:

- R1.1. Han Kamber, —Data Mining Concepts and Techniques!, Morgan Kaufmann Publishers
- R2. 2. Margaret. H. Dunham, —Data Mining Introductory and Advanced Topics, Pearson Education
- R3.3. Kevin P. Murphy, Machine Learning — A Probabilistic Perspective.
- R3.3. Richard Duda, Peter Hart, David G. Stork, —Pattern Classification!, Second Edition, Wiley

Digital Material:

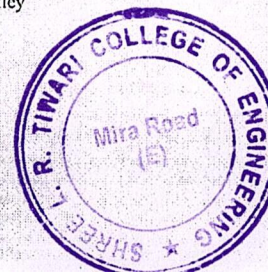
D1. //www.educba.com/data-science/courses/free-machine-learning-course/

Faculty
Prof. Rajesh Gaikwad

Principal

Shree L. R. Tiwari College of Engineering
Kanakia Park, Mira Road (E.)

12/7/22



Neelam Phadnis

H.O.D.
Prof. Neelam Phadnis

Deven Shah

Principal
Dr. Deven Shah