



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING (DATA SCIENCE)

LESSON PLAN

Course Code	Course Title	Semester	Branches	Conduct Periods /Week	A.Y	Date of commencement of Semester
20ME6E03	Machine learning	V	CSE(DS)	5	2024-25	03-06-2024

COURSE OUTCOMES

1	CO1: Explain the fundamental usage of the concept Machine Learning [K2]
2	CO2: Demonstrate on various regressions Technique.[K3]
3	CO3: Analyze the Ensemble Learning Methods.[K4]
4	CO4: Illustrate the Clustering Techniques and Dimensionality Reduction Models in Machine Learning.[K3]
5	CO5: Discuss the Neural Network Models and Fundamentals concepts of Deep Learning.[K2]

UNIT	Out Comes/ BTKL	Topic No.	Topics/Activity	Text Book / Reference	Conduct Hour	Delivery Method	
I	CO1: Explain the need for unconventional machining processes and its classification. [K2]	1. INTRODUCTION					Chalk, Talk, & Tutorials
		1.1	Artificial Intelligence		T ₁ & T ₂	1	
		1.2	Machine Learning		T ₁ & T ₂	1	
		1.3	Deep learning		T ₁	1	
		1.4	Types of Machine Learning Systems		T ₁ & R ₁	1	
		1.5	Main Challenges of Machine Learning		T ₁ & R ₁	1	
		1.6	Statistical Learning		T ₂ & R ₁	1	
		1.7	Introduction		T ₁ & T ₂	1	
		1.8	Supervised and Unsupervised Learning		T ₂ & R ₁	1	
		1.9	Training and Test Loss		T ₁	1	
			1.10	Tradeoffs in Statistical Learning		T ₁	



		1.11	Estimating Risk Statistics	T1	1		
		1.12	Sampling distribution of an estimator	T2	1		
		1.13	Empirical Risk Minimization	T ₁ & T ₂	1		
			Assignment 1		1		
Total					14		
II	CO2: Demonstrate on various regressions Technique.[K3]	2. Supervised Learning(Regression/Classification):					
		2.1	Basic Methods: Distance based Methods	T ₁ & T ₂	1	Chalk, Talk, & PDF	
		2.2	Nearest Neighbours	T ₁ & R ₁	1		
		2.3	Decision Trees	T ₁ & R ₁	1		
		2.4	Naive Bayes	T ₁ & R ₁	1		
		2.5	Linear Models: Linear Regression	T ₁ & R ₁	1		
		2.6	Logistic Regression	T ₁ & R ₁	1		
		2.7	Generalized Linear Models	T ₁ & R ₁	1		
		2.8	Support Vector Machines	T1&T2	1		
		2.9	Binary Classification	T1&T2	1		
		2.10	Multiclass/Structured outputs	T1&T2	1		
		2.11	MNIST	T1&T2	1		
		2.12	Ranking	T1&T2	1		
			Assignment 2		1		
Total					13		
CO3: Analyze the Ensemble Learning Methods.[K4]	3. Ensemble Learning and Random Forests:						
	3.1	Introduction	T ₂ & R ₁	1	Chalk, Talk & PPT		
	3.2	Voting Classifiers	T ₂ & R ₁	1			
	3.3	Bagging and Pasting	T ₁ & T ₂	1			
	3.4	Random Forests	T ₁ & T ₂	1			
	3.5	Boosting, Stacking	T ₁ & T ₂	1			
	3.6	Support Vector Machine	T ₁ & T ₂	1			
	3.7	Linear SVM Classification	T ₁ & T ₂				
	3.8	Nonlinear SVM Classification	T ₁ & T ₂	1			
	3.9	SVM Regression.	T ₁ & T ₂	1			



		3.10	Naïve Bayes Classifiers	T ₁ & T ₂	1		
			Assignment 3		1		
					Total	11	
IV	CO4: Illustrate the Clustering Techniques and Dimensionality Reduction Models in Machine Learning.	4. Unsupervised Learning Techniques:					
		4.1	Clustering	T ₁ & T ₂	1	Chalk, Talk, & Tutorials,	
		4.2	K-Means, Limits of K-Means	T ₁ & T ₂	1		
		4.3	Using Clustering for Image Segmentation	T ₁ & T ₂	1		
		4.4	Using Clustering for Preprocessing	T ₂ & R ₁	1		
		4.5	Using Clustering for Semi-Supervised Learning	T ₁ & R ₁	1		
		4.6	DBSCAN	T ₁ & T ₂	1		
		4.7	Gaussian Mixtures	T ₁ & T ₂	1		
		4.8	Dimensionality Reduction: The Curse of Dimensionality	T ₁ & R ₁	1		
		4.9	Main Approaches for Dimensionality Reduction	T ₁ & T ₂	1		
		4.10	PCA	T ₁ & T ₂	1		
		4.11	Using Scikit-Learn	T ₁ & T ₂	1		
		4.12	Randomized PCA	T ₁ & R ₁	1		
		4.13	Kernel PCA	T ₁ & T ₂	1		
			Assignment 4		1		
	C.B.S-2		Hands-on Labs and Practical Sessions		1		
					15		
V	CO5: Discuss the Neural Network Models and Fundamentals concepts of Deep Learning. [K2]	5. Neural Networks and Deep Learning:					
		5.1	Introduction to Artificial Neural Networks with Keras	T ₁ & T ₂	1	Chalk, Talk, & Tutorials	
		5.2	Implementing MLPs with Keras	T ₁ & T ₂	1		
		5.3	Implementing MLPs with Keras	T ₁ & T ₂	1		
		5.4	Installing Tensor Flow 2	T ₁ & T ₂	1		
		5.5	Installing Tensor Flow 2	T ₁ & T ₂	1		
		5.6	Loading and Preprocessing Data with Tensor Flow	T ₁ & T ₂	1		
		5.7	Loading and Preprocessing Data with Tensor Flow	T ₁ & T ₂	1		
			Assignment 5		1		
					Total	08	



**SWARNANDHRA
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Cumulative Proposed Periods

61

Where : **C.B.S** = Content Beyond the Syllabus

Text Books:

S.No	Authors, Book Title, Edition, Publisher, Year of Publication
T1	Dirk P. Kroese, Zdravko I. Botev, Thomas Taimre, Radislav Vaisman” Data Science and Machine Learning Mathematical and Statistical Methods” 25th November 2020
T2	Aurélien Géron ”Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow”, 2nd Edition, O’Reilly Publications, 2019.

Reference Books:

S.No.	Authors, Book Title, Edition, Publisher, Year of Publication
R1	Kevin P. Murphy, “Machine Learning Probabilistic Approach”, MIT Press, 2012.

Web Details

W1	https://www.ibm.com/topics/machine-learning
W2	https://www.geeksforgeeks.org/machine-learning/
W3	https://www.coursera.org/learn/machine-learning
W4	https://www.w3schools.com/python/python_ml_getting_started.asp

S.NO.	Details	Name	Signature
i.	Faculty	Mr. V DURGA RAO	
ii.	Course Coordinator	Mr. V DURGA RAO	
iii.	Module Coordinator	Dr. G. SUDHAKAR	
iv.	Program Coordinator	Dr. B. RAMA KRISHNA	

Principal