



SWARNANDHRA COLLEGE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS)

Accredited by National Board of Accreditation, AICTE, New Delhi, Accredited by
NAAC with "A" Grade – 3 32 CGPA, Recognized under 2(f) & 12(B) of UGC Act 1956,
Approved by AICTE, New Delhi, Permanent Affiliation to JNTUK, Kakinada
Seetharampuram, W.G.D.T., Narsapur-534280, (Andhra Pradesh)

DEPARTMENT OF INFORMATION TECHNOLOGY TEACHING PLAN

Course Code	Course Title	Semester	Branch	Contact Periods /Week	Academic Year	Date of commencement	
23CD5T01	Machine Learning	V	CSE(DS)	6	2025-2026	09-07-2025	
COURSE OUTCOMES							
1	Examine the Fundamentals of Machine Learning (K1)						
2	Construct Nearest neighbor-based models (K3)						
3	Distinguish Models based on decision trees and Bayes rule (K2)						
4	Make use of Linear discriminants for machine Learning (K3)						
5	Choose appropriate clustering technique (K3)						
UNIT	Out Comes / Bloom's Level	Topic s No.	Topics/ Activity	Text Book/ Ref	Contact Hour	Delivery Method	
I	CO – 1	INTRODUCTION TO MACHINE LEARNING					
		1.1	Evolution of Machine Learning	T1, R1	1	Chalk & Board	
		1.2	Paradigms for ML	T1, R1	1		
		1.3	Learning by Rote, Learning by Induction	T1, R1	1		
		1.4	Reinforcement Learning	T1, R1	1		
		1.5	Types of Data	T1, R1	1	Power point presentations Video Lecture	
		1.6	Matching	T1, R1	1		
		1.7	Stages in Machine Learning	T1, R1	1	E-Learning through NPTEL Assignment	
		1.8	Data Acquisition	T1, R1	1		
		1.9	Feature Engineering	T1, R1	1		
		1.10	Data Representation	T1, R1	1		
		1.11	Model Selection, Model Learning	T1, R1	1	Test	
		1.12	Model Evaluation, Model Prediction	T1, R1	1		
		1.13	Search and Learning, Data Sets	T1, R1	1		
Content beyond syllabus		1.14	Federated Learning	T1, R2	1		
Total					14		
II	CO – 2	NEAREST NEIGHBOR-BASED MODELS					
		2.1	Introduction to Proximity Measures, Distance Measures	T1, T2	1	Chalk & Board	
		2.2	Non-Metric Similarity Functions	T1, T2	1		
		2.3	Proximity Between Binary Patterns Estimation	T1, T2	1		
		2.4	Different Classification Algorithms Based on the Distance Measures	T1, T2	1	Power point presentations Video Lecture	
		2.5	K-Nearest Neighbor Classifier	T1, T2	1		
		2.6	Radius Distance Nearest Neighbor Algorithm	T1, T2	1	E-Learning through NPTEL Assignment	
		2.7	KNN Regression	T1, T2	1		
		2.8	Performance of Classifiers	T1, T2	1		
		2.9	Performance of Regression Algorithms	T1, T2	1		
Content beyond syllabus		2.10	Hybrid Distance Models	T1, T2	1	Test	



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				Total	10
III	CO - 3	MODELS BASED ON DECISION TREES			
		3.1	Decision Trees for Classification	T1, T2	1
		3.2	Impurity Measures, Properties	T1, T2	1
		3.3	Regression Based on Decision Trees	T1, T2	1
		3.4	Bias-Variance Trade-off	T1, T2	1
		3.5	Random Forests for Classification and Regression	T1, T2	1
		THE BAYES CLASSIFIER			
		3.6	Introduction to the Bayes Classifier	T1, T2	1
		3.7	Bayes' Rule and Inference	T1, T2	1
		3.8	The Bayes Classifier and its Optimality	T1, T2	1
		3.9	Multi-Class Classification	T1, T2	1
		3.10	Class Conditional Independence	T1, T2	1
	3.11	Naive Bayes Classifier (NBC)	T1, T2	1	
Content beyond syllabus		3.12	Cost - Sensitive Decision Trees	T1, R1	1
Total				12	
IV	CO - 4	LINEAR DISCRIMINANTS FOR MACHINE LEARNING			
		4.1	Introduction to Linear Discriminants	T1, T2	1
		4.2	Linear Discriminants for Classification	T1, T2	1
		4.3	Perceptron Classifier	T1, T2	1
		4.4	Perceptron Learning Algorithm	T1, T2	1
		4.5	Support Vector Machines	T1, T2	1
		4.6	Linearly Non-Separable Case	T1, T2	1
		4.7	Non-linear SVM	T1, T2	1
		4.8	Kernel Trick	T1, T2	1
		4.9	Logistic Regression	T1, T2	1
		4.10	Linear Regression	T1, T2	1
		4.11	Multi-Layer Perceptrons (MLPs)	T1, T2	1
		4.12	Backpropagation for Training an MLP	T1, T2	1
Content beyond syllabus		4.13	Principal Component Analysis (PCA)	T1, R2	1
Total				13	
V	CO - 5	CLUSTERING			
		5.1	Introduction to Clustering	T1, T2	1
		5.2	Partitioning of Data	T1, T2	1
		5.3	Matrix Factorization	T1, T2	1
		5.4	Clustering of Patterns	T1, T2	1
		5.5	Divisive Clustering	T1, T2	1
		5.6	Agglomerative Clustering	T1, T2	1
		5.7	Partitional Clustering	T1, T2	1
		5.8	K-Means Clustering	T1, T2	1
		5.9	Soft Partitioning	T1, T2	1
		5.10	Soft Clustering, Fuzzy C-Means Clustering	T1, T2	1
		5.11	Rough Clustering, Rough K-Means Clustering	T1, T2	1
		5.12	Expectation Maximization-Based Clustering	T1, T2	1
		5.13	Spectral Clustering	T1, T2	1



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Content beyond syllabus	5.14	Density- Based Clustering (DBSCAN)	T1, R1	1	Test
Total				14	
Cumulative Proposed Periods				63	
Text Books:					
S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION				
1	M N Murthy, V S Ananthanarayana, "Machine Learning Theory and Practice", Universities Press (India), 2024				
2	Tom M. Mitchell, "Machine Learning", McGraw-Hill Publication, 2017				
Reference Books:					
S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION				
1	Peter Harrington, "Machine Learning in Action", Dream Tech.				
2	Pang-Ning Tan, Michel Stenbach, Vipin Kumar, "Introduction to Data Mining Practices", 7th Edition, 2019.				
Web Details:					
1	https://nptel.ac.in/courses/106106139				
2	https://www.tutorialspoint.com/machine_learning/index.htm				
3	https://www.geeksforgeeks.org/machine-learning/machine-learning/				
4	https://en.wikipedia.org/wiki/Machine_learning				

	Name	Signature with Date
i. Faculty	Mr. Ch Praveen	
ii. Module Coordinator	Mr. KVV Nagendra Babu	
iii. Programme Coordinator	Dr. RVVSV Prasad	

Principal