



Swarnandhra College of Engineering & Technology

Autonomous and recognized under 2(F) and 12(B) by UGC

Recognized by AICTE, permanently affiliated to JNTUK Kakinada

Accredited by NAAC with 'A' Grade (2nd Cycle)

Seetharamapuram, Narsapur – 53028 (Andhra Pradesh)

DEPARTMENT OF INFORMATION TECHNOLOGY TEACHING PLAN

Course Code	Course Title	Semester	Branch	Contact Periods /Week	Academic Year	Date of commencement
20IT6T01	Machine Learning	VI	IT	6	2024-25	18-11-2024

COURSE OUTCOMES

1	Formulate a machine learning problem
2	Develop and apply regression and classification algorithm
3	Create a model for decision tree learning
4	Understand the Bayesian approach for machine learning
5	Apply unsupervised learning models for handling unknown pattern

UNIT	Out Comes / Bloom's Level	Topics No.	Topics/ Activity	Text Book/ Ref	Contact Hour	Delivery Method
I	CO – 1		Unit-1 Introduction			
		1.1	Well-Posed learning problems	T2	2	Chalk & Board Power point presentations
		1.2	Basic concepts, Types of Machine Learning	T2	1	
		1.3	Supervised, unsupervised and reinforcement	T2	2	
		1.4	Goals and applications of machine learning	T2	1	
		1.5	Aspects of developing a learning system: training data, concept representation	T2	1	
		1.6	Function approximation.	T2	1	Assignment
		1.7	Concept learning Introduction	T2	1	
		1.8	Version Spaces and the	T2	1	Test
		1.9	Candidate Elimination Algorithm	T2	1	
Content beyond syllabus		1.10	Trends in Machine Learning	T1, T3	1	
Total					12	

II	CO – 2		Unit-2 Supervised Learning			
		2.1	Regression: Linear regression	T1,T2	1	Chalk & Board
		2.2	Polynomial regression,	T1,T2	1	
		2.3	Metrics for accessing regression,	T1,T2	1	
		2.4	Overfitting-Underfitting problems, The bias / Variance tradeoff.	T1,T2	1	
		2.5	Classification: KNN	T1,T2	1	Power



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		2.6	SVM-Optimal Separation-Kernels	T1,T2	1	point presentations Assignment Test
		2.7	Kernel Optimization	T1,T2		
		2.8	Linear Discriminant Analysis	T1,T2	1	
		2.9	Metrics for accessing classification	T1,T2	1	
Content beyond syllabus		2.10	Modelling of Bias and Variance	T1,T3	1	
Total					10	
III	CO – 3		Unit-3 Decision Tree Learning			Chalk & Board
		3.1	Decision tree representation, appropriate problems for decision tree learning	T1,T2	1	
		3.2	Univariate Trees (Classification and Regression)	T1,T2	1	
		3.3	Multivariate Trees	T1,T2	1	
		3.4	Basic Decision Tree Learning algorithms	T1,T2	2	Power point presentations
		3.5	Hypothesis space search in decision tree learning	T1,T2	1	
		3.6	Inductive bias in decision tree learning	T1,T2	1	
		3.7	Issues in decision tree learning	T1,T2	1	
		3.8	Random Forest	T1,T2		Assignment Test
Content beyond syllabus		3.9	Introduction to Ensemble techniques	T3,R1	1	
Total					10	
IV	CO – 4		Unit-4 Bayesian Learning			Chalk & Board
		4.1	Bayes theorem and concept learning,	T1,T2,T ₃	1	
		4.2	Bayes optimal classifier	T1,T2,T ₃	1	
		4.3	Gibbs algorithm	T1,T2,T ₃	1	
		4.4	Naive Bayes Classifier	T1,T2,T ₃	1	Power point presentations
		4.5	Bayesian belief networks	T1,T2,T ₃	2	
		4.6	The EM algorithm	T1,T2,T ₃	1	
		4.7	Gaussian Mixture Model	T1,T2,T ₃	1	
		4.8	MLE and Bayesian Estimate	T1,T2,T ₃	1	Assignment Test
Content beyond syllabus		4.9	Comparison of Gaussian Models	T1,T2,T ₃	2	
Total					11	
V	CO – 5		Unit-5 Unsupervised Learning:			



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		5.1	Curse of Dimensionality, Dimensionality Reduction Techniques	T1,T2,T 3	1	Chalk & Board Power point presentations Assignment Test
		5.2	Principal component analysis	T1,T2,T 3	1	
		5.3	Singular Value Decomposition	T1,T2,T 3	1	
		5.4	Introduction to clustering	T1,T2,T 3	1	
		5.5	Hierarchical: AGNES, DIANA	T1,T2,T 3	1	
		5.6	Partitional: K-means clustering, K-Mode Clustering	T1,T2,T 3	1	
		5.7	Hierarchical, Spectral, subspace clustering	T1,T2,T 3	1	
		5.8	Association rule mining	T1,T2,T 3	1	
Content beyond syllabus		5.9	Shopping example using mining rules	T1, R1	2	
Total					10	
Cumulative Proposed Periods					53	
Text Books:						
S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION					
1	Peter Flach, Machine Learning-The Art and Science of Algorithms that Make Sense of Data, Cambridge University Press, 2017					
2	T.M. Mitchell, "Machine Learning", McGraw-Hill, 199					
3	Saikat Dutt, Subramanian Chandramouli, Amit Kumar Das, "Machine Learning", Pearson, 2019					
Reference Books:						
S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION					
1	Ethern Alpaydin, "Introduction to Machine Learning", MIT Press, 2004.					
2	Stephen Marsland, "Machine Learning -An Algorithmic Perspective", Second Edition, Chapman and Hall/CRC Machine Learning and Pattern Recognition Series, 2014.					
3	Andreas C. Müller and Sarah Guido "Introduction to Machine Learning with Python: A Guide for Data Scientists", Oreilly					
Web Details:						
1	Andrew Ng, "Machine Learning Yearning" https://www.deeplearning.ai/machine-learning-yearning/					
2	Shai Shalev-Shwartz, Shai Ben-David, "Understanding Machine Learning: From Theory to Algorithms", Cambridge University Press https://www.cse.huji.ac.il/~shais/UnderstandingMachineLearning/index.html					



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		Name	Signature with Date
i	Faculty	Mr. K.Raja	K. Raja
ii	Module Coordinator	Dr. RVVSV Prasad	Dr. RVVSV Prasad
iii	Programme Coordinator	Dr. RVVSV Prasad	Dr. RVVSV Prasad

A. K. K. .
Principal