

MACHINE LEARNING

Course Code	20EE4703E	Year	IV	Semester(s)	I
Course Category	Professional Elective-V	Branch	EEE	Course Type	Theory
Credits	3	L-T-P	3-0-0	Prerequisites	
Continuous Internal Evaluation:	30	Semester End Evaluation:	70	Total Marks:	100

Course Outcomes	
Upon successful completion of the course, the student will be able to	
CO1	Understand the basic concepts of machine learning. (L2)
CO2	Apply learning techniques on appropriate problems. (L3)
CO3	Apply Evaluation, hypothesis tests and compare learning techniques for various problems. (L3)
CO4	Apply Reinforcement learning to address the real time problems in different areas. (L3)

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3:High, 2: Medium, 1:Low)														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3													
CO2	3					2	2							
CO3	3								1	1			1	1
CO4	3					1	1							2

SYLLABUS		
Unit No.	Contents	Mapped CO
I	Introduction: What is Machine learning, Designing a Learning System, Perspectives and Issues in Machine Learning, Applications of Machine learning.	CO1
II	Supervised Learning: Decision Trees, Bayes Theorem, Naive Bayes Classifier, Measuring Classifier Accuracy, Estimating Hypothesis Accuracy.	CO1, CO2, CO3
III	Instance Based Learning – Support vector machine, Ensemble Methods, k-Nearest Neighbor Learning, Expectation Maximization Algorithm, Case Based Reasoning.	CO1, CO2, CO3
I V	Un Supervised Learning: Partition methods of Clustering, Hierarchical methods, Density based clustering, Scalable Clustering Algorithms, Cluster Evaluation measures. Association analysis: Apriori algorithm, efficiently finding frequent item	CO1, CO2, CO3

	sets with FP-growth.	
V	Reinforcement learning: The learning Task, Elements of Reinforcement learning, Q-Learning, Model based Learning, Temporal Difference learning.	CO1, CO4

Learning Resources

Text Books

1. Ethem Alpaydin, Introduction to Machine Learning, Prentice Hall of India, Second Edition, 2010.
2. Anuradha Srinivasaraghavan, and Vincy Joseph, Machine Learning, WILEY, Kindle Edition, 2020.

Reference Books

1. Tom M. Mitchell, Machine Learning McGraw Hill Education, International Edition 1997,.
2. ", Ian Goodfellow, Yoshua Bengio, Aaron Courville, "Deep Learning, MIT Press,2016.
3. Kevin P Murphy & Francis Bach, Machine Learning a Probabilistic Perspective, MIT Press, First Edition, 2012.
4. Tan, Vipin Kumar, Michael Steinbach, Introduction to Data Mining, Pearson, Ninth Edition, 2013.

e-Resources and other Digital Material

1. <https://www.coursera.org/learn/machine-learning>
2. <https://nptel.ac.in/courses/106/106/106106139/>