S. No.	Course Code	Course Name	Course Type	Cd	L	T	P	Marks		
								Sessional	Final Exam	Total
5	ECE-702(A)	Introduction to AI with Machine Learning	PEC	3	2	1	0	50	100	150

Course Outcomes:

At the end of the course the student will be able to:	
CO1	Explain basic concepts of artificial Intelligence and machine learning techniques.
CO2	Demonstrate proficiency in applying supervised learning models for specific use cases.
CO3	Implement unsupervised learning methods using various datasets.
CO4	Apply different machine leaning models on application specific datasets.
CO5	Develop splitting criteria for Decision Trees and be able to define its parameters.

Detailed Syllabus
Section-A
Unit 1: Introduction to Artificial Intelligence and Machine Learning: history of AI, Basics of AI, Artificial Neural Network Terminology, Model of a Neuron, Perceptron Model, Feature set, Dataset division, Introduction to Machine Learning Techniques and its applications, bias-variance trade off, overfitting-underfitting. Recent advancement in AI.

(10 Hrs)

Unit 2: Supervised learning: Classification and Regression- K-Nearest neighbours, Linear Regression, Logistic Regression, gradient descent algorithm, Support Vector Machine (SVM), Evaluation Measures: SSE, MME, R2, confusion matrix, precision, recall, F-Score, ROC-Curve.

(12Hrs)

Unit 3: Unsupervised learning: Introduction to clustering, Hierarchical clustering, K-means clustering, Density based clustering, Association rules, applications of Association Rule learning.

(6 Hrs)

Section-B
Unit 4: Reinforcement learning and ensemble methods: Reinforcement learning through feedback network, function approximation, bagging, boosting, stacking, and learning with ensembles, Random Forest.

(8 Hrs)

Unit 5: Decision trees: Representing concepts as decision trees, Recursive induction of decision trees, best splitting attribute: entropy and information gain, Overfitting, noisy data, and pruning.

(8 Hrs)

Text Books

S. No.	Name of the Books	Author	Publisher	Edition (Pub. Yr.)
1	Machine Learning	Tom. M. Mitchell	McGraw Hill International	1st (2014)
2	Introduction to Machine Learning	Ethern Alpaydin	Eastern Economy Edition, Prentice Hall of India	4th (2016)

Reference Books

S. No.	Name of the Books	Author	Publisher	Edition (Pub. Yr.)
1	Pattern Classification	Richard O. Duda, Peter E. Hart, David G. Stork	Wiley	2nd (2012)
2	Artificial Intelligence- A modern Approach	Stuart Russell & Peter Norvig	Prentice Hall	3rd (2016)

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