Machine Learning

Course Code	19CS3602	Year	III	Semester	II
Course Category	Program Core	Branch	CSE	Course Type	Theory
Credits	3	L-T-P	3-0-0	Prerequisites	Linear, algebra, Statistics and Probability
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:Substantial, 2: Moderate, 1:Slight)

	PO1	PO2	PO3	PO4	PO5	PO 6	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**
IV	**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 itemsets with FP-growth.	**CO1,CO2,CO3**
V	**Reinforcement learning**: The learning Task, Elements of Reinforcement learning, Q-Learning, Model based Learning, Temporal Difference learning.	**CO1,CO4**

Learning Resources
Text Book
1. Introduction to Machine Learning, Ethem Alpaydin, Second Edition, 2010, Prentice Hall of India. 2. Machine Learning, Anuradha Srinivasaraghavan, and Vincy Joseph, Kindle Edition, 2020, WILEY.
References
1. Machine Learning by Tom M. Mitchell, International Edition 1997, McGraw Hill Education. 2. "Deep Learning", Ian Goodfellow, Yoshua Bengio, Aaron Courville, 2016, MIT Press. 3. Machine Learning a Probabilistic Perspective, Kevin P Murphy & Francis Bach, First Edition, 2012, MIT Press. 4. Introduction to Data Mining, Tan, Vipin Kumar, Michael Steinbach, Nineth Edition, 2013, Pearson
e-Resources and other Digital Material
1.https://www.coursera.org/learn/machine-learning 2.https://nptel.ac.in/courses/106/106/106106139/