Machine Learning

Course Code	20CS3602	Year	III	Semester	II
Course Category	PCC	**Branch**	CSE	**Course Type**	Theory
Credits	3	**L-T-P**	3-0-0	**Prerequisites**	Linear, algebra, Vectors Statistics and Probability, Data Structures and Algorithms
Continuous Internal Evaluation :	30	**Semester End Evaluation:**	70	**Total Marks:**	100

COURSE OUTCOMES		
Upon successful completion of the course, Student will be able to		
CO1	Understand the basic concepts of Machine Learning.	**L2**
CO2	Apply Supervised Learning algorithms for solving various problems	**L3**
CO3	Apply Unsupervised Learning and Reinforcement learning algorithms for solving various problems.	**L3**
CO4	Analyze the given application and use suitable machine learning algorithm	**L4**

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3:High, 2: Medium, 1:Low)

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3													
CO2						1	1							3
CO3	2					1								
CO4		2				1	1		1	1				

Unit No.	SYLLABUS CONTENTS	Mapped CO
I	**Introduction: Well Posed Learning Problems, Designing a Learning System, Perspectives and Issues in Machine Learning, Examples of Machine learning Applications.** **Decision Tree Learning: Decision Tree Representation, Appropriate Problems for Decision Tree Learning, Decision Tree Learning Algorithm.**	CO1, CO2
II	**Artificial Neural Networks: Neural Network Representation, Appropriate Problems for Neural Network Learning, Perceptions, Multilayer Networks and the Back Propagation Algorithm.**	CO1,CO2,CO4
III	**Bayesian Learning: Introduction, Bayes Theorem: An Example, Naïve Bayes Classifier, Evaluating Hypothesis: Motivation, Estimating hypothesis accuracy, Measuring Classifier Accuracy, Ensemble Methods: Bagging, Boosting.**	CO1,CO2,CO4
IV	**Support Vector Machines: The Case When the Data are Linearly Separable, The Case When the Data are Linearly Inseparable,** **Instance Based Learning: k-Nearest Neighbor Learning-Distance- Weighted Nearest Neighbor Algorithm, Case Based Reasoning**	CO1,CO2. CO4
V	**Unsupervised Learning: Cluster Analysis, Partition Methods, Hierarchical Methods, Density based Methods, Grid based Methods. Measuring Clustering Quality.**	CO1,CO3.CO4

Learning Resources
Text Book
1. Machine Learning by Tom M. Mitchell, Indian Edition 2013, McGraw Hill Education. 2. Machine Learning Saikat Dutt,Subramanian Chandramouli, Amit Kumar Das, First Edition,2019,Pearson Education 3. Data Mining Concepts and Techniques,Jiawei Han,Micheline Kamber,Jian Pei,Third Edition,2012.
References
1. Introduction to Machine Learning by ETHEM ALPAYDIN, Fourth Edition, Prentice Hall of India, MIT Press, 2020. 2. C Bishop – Pattern Recognition and Machine Learning – Springer, 2006. Machine Learning, Anuradha Srinivasaraghavan , and Vincy Joseph ,Kindle Edition, September 2020, WILEY. 3. Machine Learning in Production:Developing and optimizing Data Science Workflows and Applications,Andrew Kelleher,Adam Kelleher, First Edition,2012,Pearson Education 4. Introduction to Data Mining, Pearson, Tan,Vipin Kumar,Michael Steinbach,Ninth Impression,2013.
e-Resources and other Digital Material
1.https://www.coursera.org/learn/machine-learning 2.https://nptel.ac.in/courses/106/106/106106139/