

Contact Hours:39

Course Learning Objectives (CLOs): This course focuses on following learning perspectives:

- To introduce the basic concepts, theories and state-of-the-art techniques of artificial intelligence and machine learning.
- Enable student with knowledge enough to be a self-learner in exploring the application of machine learning /AI algorithms in the different fields of science, medicine, finance etc.

Course Outcomes (COs):

Description of the Course Outcome: At the end of the course the student will be able to:		Mapping to POs(1-12)/ PSOs (13-16)		
		Substantial Level (3)	Moderate Level (2)	Slight Level (1)
CO-1	Explain the search techniques for any real time problems.	-	3,4	1,2
CO-2	Apply Knowledge representation using First order logic for making decisions.	-	3,4	1,2

CO-3	Apply regression and classification techniques for prediction	-	3,4	-
CO-4	Apply the concepts of machine learning to the real-world problems.	-	3,4	-
CO-5	Demonstrate machine learning techniques to solve complex problems.	3		

POs/PSOs	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Mapping Level	1.0	1.0	2.0	2.0	2.5	-	-	-	-	-	-	-	-	-	-	-

Pre-requisites: Knowledge of Python Programming Fundamentals

Contents:

Unit-I

Introduction: AI Problems Underlying Assumption, AI Techniques, Criteria for Success.

State Space Search & Heuristic Search Techniques: Defining the Problems as A State Space Search, Production Systems, Searching Techniques like Informed and Uniformed Search.

Generate And-Test: Hill Climbing, Best-First Search, Problem Reduction, Constraint Satisfaction, and Means-ends Analysis. **8 Hrs.**

Unit-II

Knowledge Representation: Issues, Representations and Mappings, Approaches to Knowledge Representation.

Using Predicate Logic: Representing, Computable Functions and Predicates, Resolution. Representing Knowledge Using Rules, Procedural Versus Declarative Knowledge, Forward Versus Backward Reasoning. **8 Hrs.**

Unit-III

Linear Regression: Multivariate Regression, Logistic regression, Polynomial Regression.

Linear Models for Classification: Decision Trees, Regression Trees, K-nearest neighbors (KNN) algorithm. Bayes Theorem. **8 Hrs.**

Unit-IV

Unsupervised learning and clustering – k-means clustering, hierarchical clustering, generative adversarial network, Dimensionality Reduction **7 Hrs.**