21AID06	ALGORITHM FOR INTELLIGENT SYSTEMS	L	T	P	C
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Course Objectives

- The main objective of this course is to become familiar with principles of AI towards problem solving, inference, perception, and learning.

UNIT I	INTRODUCTION	9 Hours

Course overview. Intelligent System: Core terms and definitions. Artificial Intelligence: applications, benefits and challenges. Artificial general intelligence (AGI).

UNIT II	FUZZY LOGIC	9 Hours

Biological analogues. Applications. Basic elements of fuzzy systems. Fuzzification. Fuzzy inference.

UNIT III	ARTIFICIAL NEURAL NETWORKS (ANN)	9 Hours

Biological analogues. ANN structures. Basic units. Network topology

UNIT IV	ANN TRAINING ALGORITHMS	9 Hours

Supervised learning. Gradient methods. Reinforcement learning. Unsupervised learning. Deep Learning

UNIT V	INTELLIGENT AGENT	9 Hours

Structure and architecture of agents, Classification, Applications, Cooperative Sensing and Tracking. Particle swarm optimisation (PSO), Ant colony optimisation (ACO), Multi-Agent Systems.

UNIT VI	CASE STUDY	

Case Study on Training Algorithms

TOTAL PERIODS: 45

Course Outcomes:

- Understand the history of artificial intelligence (AI) and its foundations
- Understand new and promising methods using in AI, including evolutionary computation
- Understand the specifics of various methods of artificial intelligence and their application in intelligent agents, control systems, artificial neural networks and other AI models.
- Formalize real-world problems, select, and apply relevant AI models in projects that require inferences, perceptions, problem solving, intelligent control, and training
- Conduct scientific discussions on AI, its current scope and limitations, as well as social implications.

Text Books:

1. SS, V. C., & Hareendran, A. (2014). Artificial intelligence and machine learning. PHI Learning Pvt. Ltd.
2. Timothy J. Ross (2017). Fuzzy Logic with Engineering Applications, Fourth edition. 2017.

Reference Books:

1. Bishop, C. M. (2014). Pattern recognition and machine learning. Springer.
2. Rothman, D. (2018). Artificial Intelligence by Example: Develop machine intelligence from scratch using real artificial intelligence use cases. Packt Publishing Ltd