

Subject Code	Subject Name	Credits
26CS104	ARTIFICIAL INTELLIGENCE	4

Course Objectives:

1. To understand the basics of Artificial Intelligence
2. To get to know about Software Agents

Learning Objectives:

On successful completion of the course, students will be able to:

1. To familiarize with problem solving methods in AI

Unit 1 - Artificial Intelligence (12 hrs.):

Artificial Intelligence: An overview, Intelligent Systems: Evolution of the concept. Intelligent Agents: How agent should act, Structure of intelligent agents, Environments. Problem Solving: Solving problems by searching, Informed search methods, Game playing.

Unit 2 - Knowledge and Reasoning (12 hrs.):

A knowledge based agent, The wumpus world environment, Representation, Reasoning, Logic, Propositional logic, First order logic: Syntax and Semantics, Extensions and Notational variation, Using first order logic. Building a Knowledge Base: Properties of good and bad knowledgebase, Knowledge engineering, General ontology

Unit 3 - Interfacing First Order Logic (12 hrs.):

Interface rules involving quantifiers, An example proof, Forward and backward chaining, Completeness. Acting Logically: Planning, Practical planning: Practical planners, Hierarchical decomposition, Conditional planning. Uncertain Knowledge and Reasoning: Uncertainty, Representing knowledge in an uncertain domain, The semantics of belief networks, Inference in belief networks.

Unit 4 - Learning (12 hrs.):

Learning from observations: General model of learning agents, Inductive learning, learning decision trees, Learning in neural and belief networks: Introduction to neural networks, Perceptrons, Multilayer feed-forward network, Application of ANN, Reinforcement learning: Passive learning in a known environment, Generalization in reinforcement learning, Genetic algorithms. Agents that Communicate: Communication as action, Types of communicating agents, A formal grammar for a subset of English

Unit 5 - Expert System (12 hrs.):

Introduction to expert system, Representing and using domain knowledge, Expert system shells, Explanation, Knowledge acquisition. Applications: Natural language processing, Perception, Robotics.

Reference Books:

1. Artificial Intelligence: A Modern Approach by Stuart Russell and Peter Norvig.
2. Artificial Intelligence: Structures and Strategies for Complex Problem Solving by George F. Luger, Pearson Education
3. A New Guide to Artificial Intelligence by Derek Partridge
4. Artificial Intelligence by Michael C. Harris
5. Artificial Intelligence: A Modern Approach by Stuart Jonathan Russell, Peter Norvig Pearson Education.