OBJECTIVES:

The objective of this course is to enable the students to

• Understand the basic concepts of intelligent agents

• Develop general-purpose problem-solving agents, logical reasoning agents, and agents that reason

under uncertainty

• Employ AI techniques to solve some of today's real-world problems.

UNIT I - INTELLIGENT AGENTS

Introduction to AI – Agents and Environments – concept of rationality – nature of environments – structure

of agents. Problem solving agents – search algorithms – uninformed search strategies.

UNITII - PROBLEM SOLVING

Heuristic search strategies – heuristic functions. Local search and optimization problems – local search in

continuous space – search with non-deterministic actions – search in partially observable environments –

online search agents and unknown environments

UNITIII - GAME PLAYING AND CSP

Game theory – optimal decisions in games – alpha-beta search – monte-carlo tree search – stochastic games – partially observable games. Constraint satisfaction problems – constraint propagation – backtracking

search for CSP – local search for CSP – structure of CSP.

UNITIV - LOGICAL AGENTS

Knowledge-based agents – propositional logic – propositional theorem proving – propositional model

checking – agents based on propositional logic. First-order logic – syntax and semantics – knowledge

representation and engineering – inferences in first-order logic – forward chaining – backward chaining –

resolution.

UNITV -PROBABILISTIC REASONING

Acting under uncertainty – Bayesian inference – naïve bayes models. Probabilistic reasoning – Bayesian

networks – exact inference in BN – approximate inference in BN – causal networks.