Branch: BCA	Semester-V
Subject Code: 5102	Lecture: 04 Credit: 04
Course Opted	Core Course – 16
Subject Title	ARTIFICIAL INTELLIGENCE

Course Objectives:

- To understand the basic principles, techniques, and applications of Artificial Intelligence.
- To understand the historical perspective of AI and its foundations.
- To understand a basic understanding of the building blocks of AI.
- To understand intelligent agents: Search, Knowledge representation, inference, logic, and learning.

Course Outcomes:

- Students will be able to demonstrate fundamental understanding of the history of artificial intelligence (AI) and its foundations.
- Students will be able to understand the fundamentals of various applications of AI techniques in intelligent agents, expert systems models.

Modules	Sr. No.	Topic and Details	No. of Lectures Assigned	Marks Weightage %
UNIT-I	1	**Introduction:** History and Application of AI, AI Techniques, Types, Intelligent Agent: Types, Environment, Solving problems by searching-Toy problems, Real-World problems, 8 puzzle game, chess-board problem, tic-tac toe, Water-jug Problem, Travelling salesman Problem, The wampus world Problem.	12	24
UNIT-II	2	**Informed Search Strategies:** Greedy best first search, A* algorithm, Heuristic function, Games: Single player and multiplayer game. The minimax strategy, Maximin Strategy, Alpha Beta Pruning and cut-off.	6	12
	3	**Uniformed Search Strategies**: Breadth-first search, Depth-first search, Comparing uniformed search techniques. Informed search strategies: Generate-and-test, Hill climbing, Best-first search, problem reduction, constraint satisfaction, Mean-ends analysis.	8	16
UNIT-III	4	**Knowledge Representation**: Issues in knowledge representation, Approaches to knowledge representation, introduction to ontology Logic and Inferences: Formal logic, history of logic and knowledge, propositional logic, resolution method in propositional logic.	6	12

UNIT-IV	5	**Expert System:** Knowledge acquisition methods, knowledge engineering process, goals in knowledge system development, basic architecture of expert system, problem domain versus knowledge domain, Development of ES and life cycle of ES. Advantages of expert system, structure of Rule based expert system, characteristics of conventional system and expert system.	10	20
	6	**Statistical Reasoning:** Probability and Bayes theorem, Certainty factor, Dempster-Shafer theory, Fuzzy logic: crisp sets, application of fuzzy logic.	8	16
TOTAL			**50**	**100**

Text Book:

1. Artificial Intelligence (Third Edition) McGraw-Hill Elaine Rich, Kevin Knight.

Reference Books:

1. A First course in Artificial Intelligence (McGraw-Hill) Deepak Khemani.
2. Artificial Intelligence A modern approach (Second Edition) Pearson, Stuart Russell, and Peter Norvig.
3. Fuzzy Logic with Engineering application (Third edition) Timothy J. Rose.
4. Artificial Intelligence and Intelligence system: N. P. Padhy
5. Artificial Intelligence: Patrick Henry Winston
6. Artificial Intelligence (Structure & Strategies for Complex Problem solving): George F. Luger