**LESSON PLAN**

**(PVPSIT/ACD/01)**

**ACADEMIC YEAR : 2024-25**

**SUBJECT CODE & NAME : ARTIFICIAL INTELLIGENCE (20CS4501D)**

**YEAR & SEMESTER : III B. Tech / I Semester / G2 / PVP20 Regulations**

**FACULTY NAME : Manasa.Y**

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| **CO** | **COURSE OUTCOMES** | **LEVEL** |
| **CO1** | Understand the basic concepts of Artificial Intelligence. | **L2** |
| **CO2** | Apply the principles of AI in solutions that require problem solving, knowledge representation. | **L3** |
| **CO3** | Apply Planning and Learning for solving AI problems. | **L3** |
| **CO4** | Analyze a given problem and apply AI Techniques. | **L4** |

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| **Unit No** | **Topic of Syllabus to be covered** | **Learning outcomes** | **Course Outcomes And Cognitive Levels** | **Teaching Mode** | **Hours Required** | **Total No. of Hours**  **(Cumulative)** | **Expected date of completion (for each unit)** | **Review / Remarks**  **(By HOD)** |
| **L/T** |  |  |  | |
| 0 | Academic rules and regulations of PVP20.  Program Objectives  Course Objectives, Course Outcomes  Text Books  e-Resources | | | LCD | 1 | 1 |  |  | |
| I | **UNIT I:**  **Introduction to Artificial**  **Intelligence(AI)** | Understand Fundamentals of AI | CO1-L2 | LCD | 1 | 2 |  |  | |
| I | Definition of AI | Understand the definition of AI and scope of AI. | CO1-L2 | LCD | 1 | 3 |  |  | |
| I | Foundations of AI | Understand the basic fundamentals, and types of AI techniques. | CO1-L2 | LCD  Crossword Puzzle | 1 | 4 |  |  | |
| I | Applications of AI | Understanding various applications of AI. | CO1-L2 | LCD Flip Class | 1 | 5 |  |  | |
| I | Intelligent agents | Understanding various agents in AI. | CO1-L2 | LCD | 1 | 6 |  |  | |
| I | Agents and Environments | Understanding the various types of Agents and Environments in AI. | CO1-L2 | LCD  Team Activity | 1 | 7 |  |  | |
| I | Structure of agents | Understand the structure of agents. | CO1-L2 | LCD | 2 | 9 | 05-07-2024 |  | |
| II | **UNIT II:**  **Problem Solving**  **Techniques:** | Solve these problems by using general-purpose search algorithms. | CO2-L3 | LCD | 1 | 10 |  |  | |
| II | Solving Problems by Searching | Solve these problems by using general-purpose search algorithms. | CO2-L3 | LCD | 1 | 11 |  |  | |
| II | Problem Solving Agents | Apply goal based agents. | CO2-L3 | LCD | 1 | 12 |  |  | |
| II | Searching for Solutions | Apply various searches for problems to obtain solutions. | CO2-L3 | LCD | 1 | 13 |  |  | |
| II | Uninformed Search Strategies | Understand blind search. | CO1-L2 | LCD | 1 | 14 |  |  | |
| II | Breadth first search | Apply breadth first search. | CO2-L3 | LCD | 1 | 15 |  |  | |
| II | Depth first Search | Apply depth first search. | CO2-L3 | LCD | 1 | 16 |  |  | |
| II | Informed (Heuristic) Search Strategies | Understand informed search. | CO1-L2 | LCD | 1 | 17 |  |  | |
| II | Hill climbing | Apply hill climbing search. | CO2-L3 | LCD | 1 | 18 |  |  | |
| II | A\* Algorithm | Apply A\* Algorithm. | CO2-L3 | LCD | 1 | 19 |  |  | |
| II | Alpha-Beta Pruning | Apply Alpha-Beta pruning. | CO2-L3 | LCD | 1 | 20 |  |  | |
| II | Constraint Satisfaction Problem | Solve constraint satisfaction problem. | CO2-L3 | LCD | 1 | 21 | 02-08-2024 |  | |
| III | **Unit-III Knowledge Representation** | Understand Knowledge Representation. | CO1-L2 | LCD | 1 | 22 |  |  | |
| III | Logical Agents | Build logical agents that can represent information and draw conclusions. | CO1-L2 | LCD | 1 | 23 |  |  | |
| III | Knowledge Based Agents | Define knowledge base for agents. | CO1-L2 | LCD | 1 | 24 | 09-08-2024 |  | |
| III | Logic: Propositional logic | Describe the syntax an semantics of an agent. | CO1-L2 | LCD | 2 | 26 |  |  | |
| III | First order logic | Sufficiently expressive to represent a good deal of our commonsense knowledge. | CO1-L2 | LCD | 1 | 27 |  |  | |
| III | Syntax and Semantics in First order Logic | Deal with objects and the relations among them. | CO1-L2 | LCD | 1 | 28 |  |  | |
| III | Inference in first order logic:  propositional vs. First order inference | Apply inference rules to sentences with quantifiers to obtain sentences without quantifiers. | CO2-L3 | LCD | 1 | 29 |  |  | |
| III | Unification and lifting | Apply unification and lifting. | CO2-L3 | LCD | 1 | 30 |  |  | |
| III | Forward chaining and  Backward chaining | Apply efficient updates with very large rule sets. | CO2-L3 | LCD | 1 | 31 |  |  | |
| III | Resolution | Provides a complete proof system for first order logic. | CO2-L3 | LCD | 1 | 32 | 06-09-2024 |  | |
| IV | **UNIT IV:**  **Planning:** | Understand the planning problem. | CO1-L2 | LCD | 1 | 33 |  |  | |
| IV | Planning with state space search | Apply various state space searches. | CO3-L3 | LCD | 1 | 34 |  |  | |
| IV | Planning graphs | Give better heuristic estimates. | CO3-L3 | LCD | 1 | 35 |  |  | |
| IV | Planning with propositional logic | Solve planning problems that are expressed in propositional logic. | CO3-L3 | LCD | 1 | 36 |  |  | |
| IV | Analysis of planning approaches | Analyze various planning approaches. | CO4-L4 | LCD | 1 | 37 |  |  | |
| IV | Hierarchical planning | Create the very large plans required by many real-world applications. | CO3-L3 | LCD | 1 | 38 |  |  | |
| IV | Conditional planning | Apply conditional planning. | CO3-L3 | LCD | 1 | 39 |  |  | |
| IV | Continuous and Multi Agent planning | Apply continuous and multi agent planning. | CO3-L3 | LCD | 1 | 40 | 27-09-2024 |  | |
| V | **UNIT V:**  **Learning** | Understand Learning. | CO1-L2 | LCD | 1 | 41 |  |  | |
| V | Learning from Examples | Analyze improving agent behavior through diligent study of their own experiences. | CO4-L4 | LCD | 1 | 42 |  |  | |
| V | Knowledge in Learning | Find inductive hypotheses. | CO3-L3 | LCD | 1 | 43 |  |  | |
| V | Learning probabilistic Models | Learn their probabilistic theories of the world from experience. | CO4-L4 | LCD | 1 | 44 |  |  | |
| V | Reinforcement Learning | Agents learn what to do in the absence of labeled examples of what to do. | CO3-L3 | LCD | 1 | 45 | 19-10-2024 |  | |

Legend: Teaching mode: BB: Black Board LCD: Power Point Presentation L: Lecture Hour T: Tutorial Hours

Puzzles, Team Activity, Flip class.

**Signature of Faculty Signature of HOD**