**ARTIFICIAL INTELLIGENCE PVP20**

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| **Course Code** | **20CS4501D** | **Year** | III | **Semester** | I |
| **Course Category** | PEC | **Branch** | **CSE** | **Course Type** | **Elective**  **(Theory)** |
| **Credits** | 3 | **L – T – P** | 3-0-0 | **Prerequisites** | Linear algebra, data structures and algorithms, and probability |
| **Continuous Evaluation:** | 30 | **Semester**  **End Evaluation:** | 70 | **Total Marks:** | 100 |

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| **Course Outcomes** | | |
| Upon successful completion of the course, the student will be able to: | | |
| **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 Learning for solving AI problems. | L3 |
| **CO4** | Analyze a given problem and apply AI Techniques. | L4 |

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| **Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of**  **correlations (3:Substantial, 2: Moderate, 1:Slight)** | | | | | | | | | | | | | | |
|  | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** | **PSO1** | **PSO2** |
| **CO1** | 3 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **CO2** | 2 |  |  |  |  |  |  |  | 1 | 1 |  |  |  |  |
| **CO3** |  |  |  |  |  |  |  |  |  |  |  |  | 2 |  |
| **CO4** |  | 2 |  |  |  | 1 |  |  | 1 | 1 |  | 1 |  |  |

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| **Artificial Intelligence(AI)** | | |
| **Unit No.** | **Contents** | **Mapped CO** |
| **I** | **Introduction to AI:**  Definition of AI  Foundations of AI  Applications of AI  *Intelligent agents*  Agents and Environments  Structure of agents  Examples of agents | **CO1,CO4** |
| **II** | **Problem Solving Techniques:**  Solving Problems by Searching  Problem Solving Agents  Searching for Solutions  *Uninformed Search Strategies*  Breadth first search  Depth first Search  *Informed (Heuristic) Search Strategies*  Hill climbing  A\* Algorithm  Alpha-Beta Pruning  Constraint Satisfaction Problem | **CO1,CO2,CO4** |
| **III** | **Knowledge Representation**  *Logical Agents*  Knowledge Based Agents  Logic  Propositional logic  First order logic  Syntax and Semantics in First order Logic  *Inference in first order logic*  propositional vs. First order inference  Unification and Lifting  Forward chaining  Backward chaining  Resolution | **CO1,CO2,CO4** |
| **IV** | **Planning:**  The Planning problem  Planning with state space search  Planning graphs  Planning with propositional logic  Analysis of planning approaches  Hierarchical planning  Conditional planning,  Continuous and Multi Agent planning | **CO1,CO3,CO4** |
| **V** | **Learning:**  Learning from Examples  Knowledge in Learning  Learning probabilistic Models  Reinforcement Learning | **CO1,CO3,CO4** |

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| **Learning Resources** |
| **Text Books** |
| 1. “Artificial Intelligence – A Modern Approach”, S. Russel and P. Norvig, 3rd Edition, Pearson Education. |
| **Reference Books** |
| 1. A Classical Approach To Artificial Intelligence, Munesh Chandra Trivedi,   Khanna Publishing House , Second edition,   1. ARTIFICIAL INTELLIGENCE, Kevin Knight (Author), Elaine Rich (Author), Shivashankar B. Nair (Author), McGraw Hill Education; 3rd edition. 2. Artificial Intelligence, SarojKaushik, Cengage Learning India; 1st edition. |
| **E-Resources & other digital material** |
| 1. https://nptel.ac.in/courses/106105078 2. https://www.coursera.org/learn/introduction-to-ai |