# 19CS41O2 - ARTIFICIAL INTELLIGENCE

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| Course Category: | Open Elective | Credits: | 3 |
| Course Type: | Theory | Lecture-Tutorial-Practical: | 3-0-0 |
| Prerequisite: | Fundamentals of Networking, Analytical capabilities and logic orientations are required | Sessional Evaluation:  Univ. Exam Evaluation:  Total Marks: | 40  60  100 |
| Objectives: | Students undergoing this course are expected to understand:   * To apply knowledge of computing and mathematics appropriate to the discipline. * To analyze a problem, and identify and define the computing requirements appropriate to its solution. * To design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs. | | |

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| Course Outcomes | Upon successful completion of the course, the students will be able to: | |
| CO1 | Understand the basics of AI and study different types of supporting agent characteristics |
| CO2 | Know various Problem-solving agents and their behavior in real-world environment |
| CO3 | Understand and apply the fundamentals of AI search algorithms |
| CO4 | Know various knowledge representation techniques and its applicability |
| CO5 | Observe first order logic for implementation of models |
| CO6 | Know the concepts of Knowledge in learning and utilization |
| Course Content | UNIT-I  **Introduction**: Overview on A.I, History, The state of the Art, Intelligent Agents - Agents and Environments, Good behavior, The nature of Environments, the Structure of Agents.  UNIT-II  **Problem Solving**: Problem solving agents, toy problems, Real-world problems.  **Uninformed Search strategies**: BFS, DFS, Depth-limited search.  UNIT-III  **Informed Search strategies**: GBFS, A\* search, Local search algorithms: Hill-climbing.  **Adversarial Search**: Games, optimal decision in games.  UNIT-IV  **Knowledge and reasoning**: Logical Agents: Knowledge -based Agents, The WUMPUS world, Logic, Propositional Logic. First-order Logic: Syntax and Semantics of First-Order Logic.  UNIT-V  **Inference in FOL:** Propositional Vs First order inference, forward chaining, backward chaining.  UNIT-VI  **Learning**: Forms of learning, supervised learning, Learning decision trees, Ensemble learning. | |
| Text Books &  References  Books | **TEXT BOOKS**   1. Artificial Intelligence- A Modern Approach, Stuart Russell, Peter Norvig (Person Education), 3rd edition.   **REFERENCE BOOKS**   1. Artificial Intelligence- Rich E & Knight K (TMH), 4th edition. 2. Artificial Intelligence Structures and Strategies complex problem Solving – George F. Lugar Pearson Education. 3. D.W. Patterson, “Introduction to AI and Expert Systems”, PHI, 1992... 4. R.J. Schalkoff, “Artificial Intelligence - an Engineering Approach”, McGraw Hill Int. Ed., Singapore, 1992. | |
| E-Resources | 1. <https://nptel.ac.in/courses> 2. <https://freevideolectures.com/university/iitm> | |