

Course Code
UIT1505

Course Title
**ARTIFICIAL INTELLIGENCE CONCEPTS
AND ALGORITHMS**

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OBJECTIVES

- To study the basic concepts of Artificial Intelligence.
- To learn the methods of solving problems using model-driven (symbolic) AI and data- driven AI.
- To learn applications of AI to solve some of today's real world problems.

UNIT I PROBLEM SOLVING BY SEARCHING 8

Introduction to AI - Intelligent agents, Searching - Uninformed, Informed, Stochastic search strategies.

UNIT II CSPs AND GAMING 8

Constraints satisfaction problems, Gaming: minimax algorithm, alpha-beta pruning.

UNIT III LOGIC AND INFERENCE 9

Knowledge based agents, Knowledge representation using Propositional and First-Order logic, Resolution, Unification, Inference - Backward chaining, Forward chaining.

UNIT IV REASONING WITH UNCERTAINTY 10

Quantifying uncertainty - Semantics and Inference of Bayesian Networks, Inference in Temporal Models - Hidden Markov Models, Markov Decision Processes.

UNIT V DECISION MAKING AND LEARNING 10

Decision networks, Markov Decision Processes, Learning from examples, Reinforcement learning, Case study - Natural Language Processing.

TOTAL PERIODS : 45

OUTCOMES

At the end of the course, the students should be able to

- Explain autonomous agents that efficiently make decisions in fully informed, partially observable and adversarial settings.
- Choose appropriate algorithms for solving given AI problems.
- Illustrate the working of AI algorithms in Natural Language Processing / Computer Vision / Robotics

TEXT BOOK

1. Stuart Russell and Peter Norvig AI – A Modern Approach, 3rd Edition, Pearson Education 2010

REFERENCES:

1. Dan W. Patterson, Introduction to AI and ES”, Pearson Education, 2007. (Unit-III)
2. Kevin Night and Elaine Rich, Nair B., “Artificial Intelligence (SIE), McGraw Hill- 2008. (Unit- I,II, IV, & V).
3. Patrick H. Winston. "Artificial Intelligence", Third edition, Pearson Edition, 2006
4. Deepak Khemani Artificial Intelligence, Tata Mc Graw Hill Education 2013.
5. <http://nptel.ac.in/>