

II YEAR SEM-II B.Tech CSE	CORE	L	T	P	C
CODE:CS2206	Introduction to Artificial Intelligence	1	1	0	2

## SYLLABUS

### UNIT I (Introduction to AI, Intelligent Agents and Searching)

Definition of AI, birth of AI, brief history, Turing test, Types of environment, Types of agents, PEAS( Performance measure , Environment, Actuators, Sensors), Introduction to searching, State Space, SAGP (State, Action, Goal test, Path cost), DFS, BFS (Completeness, Time complexity, Space complexity, Optimality), Heuristics, Local Search Algorithm, Hill Climbing.Applications of Artificial Intelligence in real word.

### Unit II (CSP, Game Playing and Logics)

Constrain Satisfaction Problems examples, Approaches to solve CSPs, Test and generate method, back tracking. Game Playing, Optimal decision in games, Min Max algorithm, Evaluation functions, Introduction to Propositional Logic and First Order Logic, Syntax, Substitution, Unification, Deduction, Soundness, Completeness, Consistency, Satisfiability, Expert Systems.

### Unit III (Uncertain Knowledge, Reasoning and Machine Learning)

Probabilistic Reasoning, Review of Probability Theory, Probabilistic Inference Rules, Bayes Theorem,examples of Bayes theorem, Introduction to Learning, Taxonomy of Learning Systems,Concept Learning, Find-S algorithm, Candidate Elimination Algorithm.Introduction to Neural Networks, Biological Neural Networks, Artificial Neural Networks, Perceptron, Perceptron Learning Rule, Delta Rule,Applications of Neural Networks.

## Text Books

1. Stuart Russell and Peter Norvig – Artificial Intelligence A Modern Approach, PEARSON Education.
2. Simon Haykin -Neural Networks PHI.

## Reference Books

1. N. P. Padhy – Artificial Intelligence and Intelligence Systems, OXFORD publication.
2. B. YagnaNarayana - Artificial Neural Networks, PHI

**Video Reference:**

1. NPTEL Lecture: Prof. Sudeshna Sarkar, <http://nptel.ac.in/courses/106105077/>
2. NPTEL Lecture: Prof. P.Das Gupta, <http://nptel.ac.in/courses/106105079/>
3. NPTEL Lecture: Prof. Deepak Khemani, <http://nptel.ac.in/courses/106106126/>

**OUTCOMES:**

**After successful completion of the course, the learners would be able to**

1. Understand concepts of Artificial Intelligence and different types of intelligent agents and their architecture.
2. Formulate problems as state space search problem & efficiently solve them.
3. Understand the working of various informed and uninformed searching algorithms and different heuristics
4. Understand concept of knowledge representation i.e. propositional logic, first order logic.
5. Reasoning with uncertainty and Machine learning algorithms.
6. Understand how learning happens in neural networks