

Paper Code: BCADSC 6.2	Paper title: Artificial Intelligence	Teaching Hours – 5hrs/week
Total Teaching Hours: 60 Hrs.	Marks: Th-80+IA-20	Credits: 4

Unit -1

What is Artificial Intelligence: The AI Problems, The Underlying assumption, What is an AI Technique?, The Level of the model. Problems, problem spaces, and search: Defining the problem as a state space search, Production systems, Problem characteristics, Production system characteristics. Heuristic search techniques: Generate-and-test, Hill climbing, Best-first search, Problem reduction, Constraint satisfaction, Mean-ends analysis. **12 Hrs**

Unit -2

Knowledge representation issues: Representations and mappings, Approaches to knowledge representation, Issues in knowledge representation, The frame problem. Using predicate logic: Representing simple facts in logic, representing instance and ISA relationships, Computable functions and predicates, Representing knowledge using Rules : Procedural verses Declarative Knowledge, Logic Programming, Forward verses Backward Reasoning, Matching. **12 Hrs**

Unit – 3

Symbolic Reasoning Under Uncertainty: Introduction to nonmonotonic reasoning, Logic for nonmonotonic reasoning, Implementation Issues, Augmenting a problem-solver, Implementation: Depth-first search, Implementation: Breadth-first search. Statistical Reasoning: Probability and Bayes Theorem, Certainty factors and rule-based systems, Bayesian Networks, Dempster-Shafer Theory, Fuzzy logic. Weak Slot-and-filter structures: Semantic Nets, Frames. **12 Hrs**

Unit -4

Strong slot-and –filler structures: Conceptual dependency, scripts, CYC. Game Playing: Overview, The minimax search procedure, Adding Alpha-beta cutoffs, Additional Refinements, Iterative Deepening. **12 Hrs**

Unit -5

Natural Language Processing: Semantic Analysis, Discourse and Pragmatic Processing, Statistical Natural Language Processing, Spell checking. Learning: What is learning?, Rote Learning. Learning by taking advice, Learning in Problem-Solving, Learning from Examples, Discovery, Analogy, Formal Learning Theory, Neural Net Learning and Genetic Learning. **12Hrs**

References:

1. Elaine Rich, Kevin Knight, Shivashanka B Nair: Artificial Intelligence, Tata McGraw Hill 3rd edition. 2013

Additional Reading:

1. Stuart Russel, Peter Norvig: Artificial Intelligence A Modern Approach, Pearson 3rd edition 2013.
2. Nils J. Nilsson: "Principles of Artificial Intelligence", Elsevier, ISBN-13: 9780934613101