**Artificial Intelligence**

**UNIT‐I:** Introduction: What is AI? History & Applications, Artificial intelligence as representation & Search, Production system, Basics of problem solving: problem representation paradigms, defining problem as a state space representation, Characteristics.

**UNIT‐II:** Search Techniques: Uninformed Search techniques, InformedHeuristic Based Search, Generate and test, Hill-climbing, Best-First Search, Problem Reduction, and Constraint Satisfaction.

**UNIT‐III:** Knowledge representation: Knowledge representation Issues: First order logic, Predicate Logic, Structured Knowledge Representation: Backward Chaining , Backward Chaining , Resolution ,Semantic Nets, Frames, and Scripts, Ontology.

**UNIT‐IV:** Uncertainty: Handing uncertain knowledge, rational decisions, basics of probability, axioms of probability, Baye’s Rule and conditional independence , Bayesian networks , Exact and Approximate inference in Bayesian Networks, Fuzzy Logic .

**UNIT‐V:** Learning: What is learning?, Knowledge and learning, Learning in Problem Solving, Learning from example, learning probabilistic models, Formal Learning Theory

**UNIT‐VI:** Expert Systems: Fundamental blocks, Knowledge Engineering, Knowledge Acquisition, Knowledge Based Systems, Automated Reasoning, Understanding Natural language

**Text Books:** 1. E.Rich and K. Knight, Artificial Intelligence, Tata McGraw Hill, 2008. 2. Artificial intelligence and soft computing for beginners by Anandita Das Bhattachargee, Shroff Publishers 3. Artificial Intelligence – A Practical Approach : Patterson , Tata McGraw Hill, 3rd Edition

**Reference Books:** 1. Introduction to Artificial Intelligence – Charniak (Pearson Education)