Course Title : **Artificial Intelligence**
Course Code : COM 713.3
Credit : 3
Class Load : 3 hours
Evaluation :

	Theory	Practical	Total
Sessional	50	-	50
Final	50	-	50
Total	100	-	100

Course Objective:
The objective of the course is to understand modeling of real world problem solving techniques to fit into AI domain. Also techniques of knowledge representation are also covered.

Course Contents:

1. **Introduction (3 hrs)**
   Introduction, Foundation of AI, History of AI, Intelligent Agents, Structure of Intelligent Agents, Environments.

2. **Problem Solving & Searching (9 hrs)**
   Problem Solving, State Space Approach, Search Techniques (Breadth first, Uniform Cost, Depth First, Depth Limited, Iterative Deepening, Bi-Directional Search, Constraint Satisfaction Search), Informed Search Methods (Best First, Greedy Search, A* Search, Heuristics)

3. **Knowledge, Logic & Inferencing (8 hrs)**
   Knowledge Representation, Propositional Logic, Rules of Inference, First Order Predicate, Logic, Inference Rules, Forward and Backward Chaining, Resolution.

4. **Uncertain Knowledge (9 hrs)**
   Uncertainty, Handling Uncertain Knowledge, Basic Probability (Prior, Conditional, Axioms, Baye's Rule), Knowledge Representation, Semantics of Belief Networks, Inference in Belief Networks, Knowledge Engineering for Uncertain Reasoning, Other Approaches to Uncertain Reasoning.

5. **Learning (12 hrs)**
   Learning, Learning Models, Inductive Learning, Learning from Observations, Decision Trees, Computational Learning Theory, Neural Networks, Learning in Neural Networks. Reinforcement Learning, Knowledge in Learning.

6. **Other Applications (4 hrs)**
   Introduction to Expert system and Natural Language Processing.

Laboratory:

Programming exercises as assigned by the instructor are to be done using Prolog/ Visual Prolog, LISP.

References :

1. S. Russell and P. Norvig, *Artificial Intelligence A Modern Approach*, Pearson Education, 2001
2. Nilson A. J., *Artificial Intelligence – A New Synthesis*, Harcourt India Private Limited, 2000.