

KCA301: Artificial Intelligence		
Course Outcome (CO)		Bloom's Knowledge Level (KL)
At the end of course, the student will be able to understand		
CO 1	Define the meaning of intelligence and study various intelligent agents.	K ₁
CO 2	Understand, analyze and apply AI searching algorithms in different problem domains.	K ₂ , K ₃ , K ₄
CO 3	Study and analyze various models for knowledge representation.	K ₁ , K ₃
CO 4	Understand the basic concepts of machine learning to analyze and implement widely used learning methods and algorithms.	K ₂ , K ₄ , K ₆
CO 5	Understand the concept of pattern recognition and evaluate various classification and clustering techniques	K ₂ , K ₅
DETAILED SYLLABUS		3-0-0
Unit	Topic	Proposed Lecture
I	Artificial Intelligence: Introduction to artificial intelligence, Historical development and foundation areas of artificial intelligence, Tasks and application areas of artificial intelligence. Introduction, types and structure of intelligent agents, Computer Vision, Natural language processing.	08
II	Searching Techniques: Introduction, Problem solving by searching, Searching for solutions, Uniformed searching techniques, Informed searching techniques, Local search algorithms, Adversarial search methods, Search techniques used in games, Alpha-Beta pruning.	08
III	Knowledge Representation and Reasoning: Propositional logic, Predicate logic, First order logic, Inference in first order logic, Clause form conversion, Resolution. Chaining- concept, forward chaining and backward chaining, Utility theory and Probabilistic reasoning, Hidden Markov model, Bayesian networks.	08
IV	Machine Learning: Introduction, types and application areas, Decision trees, Statistical learning methods, Learning with complete data - concept and Naïve Bayes models, Learning with hidden data- concept and EM algorithm, Reinforcement learning.	08
V	Pattern Recognition: Introduction and design principles, Statistical pattern recognition, Parameter estimation methods - Principle component analysis and Linear discrimination analysis, Classification techniques - Nearest neighbor rule and Bayes classifier, K-means clustering, Support vector machine.	08
Suggested Readings: <ol style="list-style-type: none"> 1. Russell S. and Norvig P., "Artificial Intelligence – A Modern Approach", Pearson Education. 2. Rich E. and Knight K., "Artificial Intelligence", McGraw Hill Publications. 3. Charnik E. and McDermott D., "Introduction to Artificial Intelligence", Pearson Education. 4. Patterson D. W., "Artificial Intelligence and Expert Systems", Prentice Hall of India Publications. 5. Khemani D., "A First Course in Artificial Intelligence", McGraw Hill. 6. Winston P. H., "Artificial Intelligence", Pearson Education. 7. Thornton C. and Boulay B., "Artificial Intelligence- Strategies, Applications and Models through Search", New Age International Publishers. 		

