Artificial Intelligence - Syllabus

CS3104PC: ARTIFICIAL INTELLIGENCE

B.Tech – III Year – I Semester : CSE									
Course Code	Category	Subject Area	Hours/Weak			Credits	Max Marks		
CS3104PC	Core	PCC	L	T	P	C	CIA	SEE	Total
			3	0	0	3	30	70	100
Contact Classes:45	Tutorial Classes:15		Practical classes: Nil				Total Classes:60		
	Prerequisites: None								

Course Objectives:

- To train the students to understand different types of AI agents, various AI search algorithms, fundamentals of knowledge representation, building of simple knowledge – based systems and to apply knowledge representation, reasoning.
- Study of Markov Models enables the students ready to step into applied AI.

Course Outcomes: Upon completion of the Course, the students will be able to

- Identify problems that are amenable to solution by AI methods.
- Describe the way of representation of knowledge.
- Formalize a given problem in the language / framework of different AI methods.
- Design and summarize different types of Activity Planning.
- Outline the concepts of Experts Systems and illustrate its applications.

MODULE – I:
Introduction: AI Problems, Agents and Environments, Structure of Agents, Problem Solving Agents Basic Search Strategies: Problem Spaces, Uninformed Search (Breadth-First, Depth-First Search, Depth-First with Iterative Deepening), Heuristic Search (Hill Climbing, Generic Best-First, A*), Constraint Satisfaction (Backtracking, Local Search)

MODULE – II:
Advanced Search: Constructing Search Trees, Stochastic Search, A* Search Implementation, Minimax Search, Alpha – Beta Pruning
Basic Knowledge Representation and Reasoning: Propositional Logic, First – Order Logic, Forward Chaining and Backward Chaining, Introduction to Probabilistic Reasoning, Bayes Theorem

MODULE – III:

Advanced Knowledge Representation and Reasoning: Knowledge Representation Issues, Non-monotonic Reasoning, Other knowledge Representation Schemes

Reasoning under Uncertainty: Basic Probability, Acting under Uncertainty, Bayes Rule, Representing Knowledge in an Uncertain Domain, Bayesian Networks

MODULE - IV:

Learning: What is Learning? Rote Learning, Learning by Taking Advice, Learning in Problem Solving, Learning from Examples, Winston's Learning Program, Decision Tress.

MODULE - V:

Expert Systems: Representing and using Domain Knowledge, Shell, Explanation, Knowledge Acquisition.

TEXT BOOKS:

1. Russell S, and Norvig P: Artificial Intelligence, A Modern Approach, Third Education, Prentice – Hall, 2010.

REFERENCE BOOK:

1. Artificial Intelligence, Elaine Rich, Kevin Right, Shivasankar B. Nair, The McGrow Hill Publications, Third Edition, 2009.
2. George F. Lugar, Artificial Intelligence: Structures and Strategies for Complex Problem Solving, Pearson Education, 6th ed., 2009.