Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058-India
(Autonomous Institute Affiliated to University of Mumbai)

Course Code	Course Name	Teaching Scheme (Hrs/week)			Credits Assigned			
		L	T	P	L	T	P	Total
CPC703	**Artificial Intelligence**	**4**	**-**	**--**	**4**	**-**	**--**	**4**
		Examination Scheme						
		ISE	MSE		ESE			
		10	**30**		**100 (60% Weightage)**			

Pre-requisite Course Codes	-

At end of successful completion of this course, student will be able to

Course Outcomes	CO1	Ability to develop a basic understanding of AI building blocks presented in intelligent agents.
	CO2	Ability to choose an appropriate problem solving method and knowledge representation technique.
	CO3	Ability to analyze the strength and weaknesses of AI approaches to knowledge – intensive problem solving.
	CO4	Ability to design models for reasoning with uncertainty as well as the use of unreliable information.
	CO5	Ability to design and develop the AI applications in real world scenario.

Module No.	Topics	Ref.	Hrs.
1	**Introduction to Artificial Intelligence** 1.1Introduction , History of Artificial Intelligence, Intelligent Systems: Categorization of Intelligent System, Componentsof AI Program, Foundations of AI, Sub-areas of AI,Applications of AI, Current trends in AI.	1-10	**04**
2	**Intelligent Agents** 2.1Agents and Environments, The concept of rationality, Thenature of environment, The structure of Agents, Types ofAgents, Learning Agent.	1-10	**04**
3	**Problem solving** 3.1Solving problem by Searching: Problem Solving Agent, Formulating Problems, Example Problems. 3.2Uninformed Search Methods: Breadth First Search (BFS), Depth First Search (DFS), Depth Limited Search, DepthFirst Iterative Deepening(DFID), Informed Search Methods:Greedy best first Search ,A* Search , Memory boundedheuristic Search. 3.3 Local Search Algorithms and Optimization Problems: Hill-climbing search Simulated annealing, Local beam search,Genetic algorithms. 3.4 Adversarial Search: Games, Optimal strategies, The minimax algorithm, Alpha-Beta Pruning.	1-10	**14**
4	**Knowledge and Reasoning**		

	Knowledge based Agents, The Wumpus World, ThePropositional logic, First Order Logic: Syntax and Semantic,Inference in FOL, Forward chaining, backward Chaining, Knowledge Engineering in First-Order Logic, Unification, Resolution, Introduction to logic programming (PROLOG), Uncertain Knowledge and Reasoning:Uncertainty, Representing knowledge in an uncertaindomain, The semantics of belief network, Inference in beliefnetwork.		
5	**Planning and Learning** The planning problem, Planning with state space search,Partial order planning, Hierarchical planning, Conditional Planning, Learning: Forms of Learning, Inductive Learning, Learning Decision Tree, Expert System: Introduction, Phases in building Expert Systems, ES Architecture, ES vs Traditional System.	1-10	**10**
6	**Applications** Natural Language Processing(NLP), Expert Systems.	1-10	**04**
		Total	**48**

References:

[1] Stuart J. Russell and Peter Norvig, "Artificial Intelligence A Modern Approach "Second Edition" Pearson Education.

[2] Saroj Kaushik "Artificial Intelligence" , Cengage Learning.

[3] George F Luger "Artificial Intelligence" Low Price Edition , Pearson Education., Fourth edition.

[4] Ivan Bratko "PROLOG Programming for Artificial Intelligence", Pearson Education, Third Edition.

[5] Elaine Rich and Kevin Knight "Artificial Intelligence" Third Edition

[6] Davis E.Goldberg, "Genetic Algorithms: Search, Optimization and Machine Learning", Addison Wesley, N.Y., 1989.

[7] Hagan, Demuth, Beale, "Neural Network Design" CENGAGE Learning, India Edition.

[8] Patrick Henry Winston , "Artificial Intelligence", Addison-Wesley, Third Edition.

[9] Han Kamber, "Data Mining Concepts and Techniques", Morgann Kaufmann Publishers.

[10] N.P.Padhy, "Artificial Intelligence and Intelligent Systems", Oxford University Press.