Indraprastha College for Women
University of Delhi

Course Name:	B.Sc.Hons Computer Science
Paper Title:	Artificial Intelligence
Unique Paper Code:	32341601
Semester:	III
Faculty(s):	Prof Archana Singhal
Year:	2025

Work Plan			
Unit No.	**Learning Objective**	**Lecture No.**	**Topics to be Covered**
I	Introduction	1	Introduction to artificial intelligence
		2	background and applications, Turing test
		3	rational agents, intelligent agents
		4	structure, behaviour of intelligent agents.
		5	environment of intelligent agents.
II	Knowledge Representation	6	Propositional logic
		7	first order predicate logic
		8	first order predicate logic
		9	resolution principle
		10	unification
		11	semantic nets
		12	semantic nets
		13	conceptual dependencies
		14	frames
		15	scripts
		16	production rules
		17	Conceptual graphs

		18	Conceptual graphs
III	Reasoning with Uncertain Knowledge	19	Uncertainty, non-monotonic reasoning
		20	Truth maintenance systems
		21	default reasoning and closed world assumption
		22	Introduction to probabilistic reasoning
		23	Introduction to probabilistic reasoning
		24	Bayesian probabilistic inference
		25	introduction to fuzzy sets
		26	introduction to fuzzy logic
		27	reasoning using fuzzy logic
VII	Unit 7	28	Legal perspective

Syllabus		
Unit	**Contents**	**Contac t Hours**
I	**Introduction:** Introduction to artificial intelligence, background and applications, Turing test, rational agents, intelligent agents, structure, behaviour and environment of intelligent agents.	5
II	**Knowledge Representation:** Propositional logic, first order predicate logic, resolution principle, unification, semantic nets, conceptual dependencies, frames, scripts, production rules, conceptual graphs.	13
III	**Reasoning with Uncertain Knowledge**: Uncertainty, non-monotonic reasoning, truth maintenance systems, default reasoning and closed world assumption, Introduction to probabilistic reasoning, Bayesian probabilistic inference, introduction to fuzzy sets and fuzzy logic, reasoning using fuzzy logic.	9
IV	**Problem Solving and Searching Techniques:** Problem characteristics, production systems, control strategies, breadth first search, depth first search, hill climbing and its variations, heuristics search techniques: best first search, A* algorithm, constraint satisfaction problem, means-end analysis.	14

V	**Game Playing**: introduction to game playing, min-max and alpha-beta pruning algorithms. **Prolog Programming:** Introduction to Programming in Logic (PROLOG), Lists, Operators, basic Input and Output.	8
VI	**Understanding Natural Languages**: Overview of linguistics, Chomsky hierarchy of grammars, parsing techniques.	4
VII	Ethics in AI, Fairness in AI, Legal perspective	3
	Total	**56**

Text Books/Suggested Readings:

S. No.	Name of Authors/Books/Publishers	Year of Publication/ Repr int
1.	Rich, E. & Knight,K. (2012). Artificial Intelligence. 3rd edition. Tata McGraw Hill.	2012
2.	Russell, S.J. & Norvig, P. (2015) Artificial Intelligence - A Modern Approach. 3rd edition. Pearson Education	2015
3.	Bratko, I. (2011). Prolog Programming for Artificial Intelligence. 4th edition. Pearson Education	2011
4.	Patterson, D.W. (2015). Introduction to Artificial Intelligence and Expert Systems. 1st edition. Pearson Education.	2015
5.	Clocksin, W.F. & Mellish (2003), Programming in PROLOG. 5th edition. Springer	2003
6.	Kaushik, S. (2011). Artificial Intelligence. Cengage Learning India.	2011

	Paper Components		
Credits	**Lecture (L)**	**Tutorial (T)**	**Practical (P)**
6	**4**	**0**	**2**
Assessment Scheme			
S.No.	**Component**	**Marking Scheme**	**Total Marks**
1	Internal Assessment		30
	● Assignment/Quiz/Project/ Presentation	12	
	● Class Test	12	
	● Attendance	6	
3.	Practical		50
	● Continuous Assessment	20	
	● End Term Written/Practical Exam	20	
	● Viva	10	
4.	End Semester Examination		90