Curriculum Plan (Even Semester 2023-24)

Paper Name: Artificial Intelligence
Class Type: B.Sc. Hons. Computer Science
Semester: VI
Teacher Name: Ruby Gupta

S.No.	Schedule (Approximate)	Topic
1	January 2024	**UNIT 1:** **Introduction:** Introduction to artificial intelligence, background and applications, Turing test, rational agents, intelligent agents, structure, behaviour and environment of intelligent agents **UNIT 2:** **Knowledge Representation**: Propositional logic, first order predicate logic, resolution principle, unification **PROLOG**: Introduction to programming in PROLOG, Syntax and meaning of PROLOG program, Operators and Arithmetic ***Test (Unit 1 and 2)***
2	February 2024	**UNIT 2:** **Knowledge Representation**: Semantic nets, conceptual dependencies, frames, scripts, production rules, conceptual graphs. **UNIT 3:** **Reasoning with Uncertain Knowledge:** Uncertainty, non-monotonic reasoning, truth maintenance systems, default reasoning and closed world assumption **Reasoning with Uncertain Knowledge:** Introduction to probabilistic reasoning: Bayesian probabilistic inference, introduction to fuzzy sets and fuzzy logic, reasoning using fuzzy logic. **PROLOG**: Lists, Controlling Backtracking ***Test (Unit 2, 3)***
3	March 2024	**UNIT 4:** **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. **UNIT 5:** **Game Playing**: Min-Max Search, Alpha-Beta pruning

		PROLOG: Input and Output ***Test (Unit 4 and 5)***
4	April 2024	**UNIT 6:** **Understanding Natural Languages**: Parsing Techniques Context free and Transformational Grammars; Recursive and Augmented Transition Nets **UNIT 7:** Ethics in AI, Fairness in AI, Legal perspective **PROLOG:** Revision ***Test (Unit 6 and PROLOG)*** ***Mock Test and Mock Practical***

References:

[1] Rich & Knight. (2012). *Artificial Intelligence*. 3rd Edition. Tata McGraw Hill.

[2] Russell & Norvig. (2015). *Artificial Intelligence – A modern Approach*. 3rd Edition. Pearson Education.

[3] Dan W. Patterson. (2015). *Introduction to AI and Expert Systems*. 1st Edition. Pearson Education.

[4] Bratko. (2011). *Prolog Programming for Artificial Intelligence*. 4th Edition. Pearson Education.