



**GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY,
EAST DELHI CAMPUS,
SURAJMAL VIHAR-110092**

Semester: 3rd			
Paper code: AIDS207/AIML207/IOT207	L	T/P	Credits
Subject: Principles of Artificial Intelligence	3	0	3
Marking Scheme			

1. Teachers Continuous Evaluation: As per university examination norms from time to time
2. End term Theory Examination: As per university examination norms from time to time

INSTRUCTIONS TO PAPER SETTERS: Maximum Marks: As per university norms

1. There should be 9 questions in the end term examination question paper
2. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions.
3. Apart from Question No. 1, the rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, students may be asked to attempt only 1 question from each unit.
4. The questions are to be framed keeping in view the learning outcomes of course/paper. The standard/ level of the questions to be asked should be at the level of the prescribed textbooks.
5. The requirement of (scientific) calculators/ log-tables/ data-tables may be specified if required.

Course Objectives:

1.	To understand the basic concepts of Artificial Intelligence, its principles, and techniques.
2.	To analyse the applicability of the basic knowledge representation, reason under uncertainty, develop a plan for concrete computational problems, and learn from experiences to solve various problems
3.	To Investigate applications of AI techniques in intelligent agents, expert systems, artificial neural networks and other machine learning models.
4.	To devise development tools such as prediction models, expert systems, and data mining tools.

Course Outcomes:

CO1	Understand theories and concepts necessary for building an Artificial Intelligent System for knowledge representation.
CO2	Apply heuristic algorithms to develop better searching algorithms for solving real-world problems.
CO3	Analyse and understand concepts of Neural Networks and Fuzzy data to deal with uncertainty and imprecision, subsequently apply suitable soft-computing technique to do approximate reasoning and build computational models capable of learning meaningful patterns from data.
CO4	Create logic programming to build systems capable of making decision to solve real-world problems by applying critical thinking, problem-solving and AI algorithms.

CO/PO	PO01	PO02	PO03	PO04	PO05	PO06	PO07	PO08	PO09	PO10	PO11	PO12
CO1	2	3	3	3	1	-	-	-	-	-	1	2
CO2	2	3	3	3	1	1	1	1	1	1	1	1
CO3	2	3	3	3	1	-	-	-	-	-	2	2
CO4	2	3	3	3	1	1	1	1	1	1	2	3



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Course Overview:

Principles of artificial Intelligence is the simulation of intelligence process by computer systems. It gives understanding of the main abstractions and reasoning techniques used in artificial intelligence including understand of AI, reasoning by machines, planning techniques, and basic machine learning methods.

UNIT I:

[8]

Introduction to AI, History of Artificial Intelligence, Applications of AI in the real world (Gaming, Computer Vision, Expert Systems, Natural Language Processing, Robotics & others). AI techniques, Problem Solving: Production Systems, State Space Search, Depth First Search, Breadth First Search, Heuristic Search, Hill Climbing, Best First Search, best-first search, A*, Problem Reduction, AO*, Constraint Satisfaction, Means-End Analysis.

UNIT II:

[8]

Knowledge representation, Knowledge representation using Predicate logic, Propositional logic, Inferences, First-Order Logic, Inferences, Unification, Resolution, Natural Deduction, Procedural versus declarative knowledge, logic programming, forward versus backward reasoning.

UNIT III:

[8]

Reasoning, Introduction to Uncertainty, Bayesian Theory, Bayesian Network, Dempster-Shafer Theory. Overview of Planning and its Components. Overview of Learning and basic Techniques. Introduction of Fuzzy Reasoning and Neural Networks.

UNIT IV:

[12]

Game Playing and Current Trends in AI, MinMax search procedure, Alpha-Beta Cutoffs, Game Development using AI, Applications of AI, Emerging Trends in AI Research in various domains.

Text Books:

1. Rich and Knight. Artificial Intelligence, Tata McGraw Hill, 1992.
2. S. Russel and P. Norvig. Artificial Intelligence – A Modern Approach, Second Edition, Pearson Edu.

Reference Books:

1. Kheemani, Deepak, A First Course in Artificial Intelligence, McGraw Hill Education, 1 Edition, 2017.
2. Artificial Intelligence: foundations of computational agents, Cambridge University Press, 2017.
3. Poole, David L., and Alan K. Mackworth. Artificial Intelligence: foundations of computational agents. Cambridge University Press, 2010.
4. Luger, G.F. Artificial Intelligence -Structures and Strategies for Complex Problem Solving, 6th edition, Pearson, 2008.