GANPAT UNIVERSITY

FACULTY OF COMPUTER APPLICATIONS

Programme	B.Sc. IT (Infrastructure Management Services) (Hons.)	**Branch/Spec.**	Computer Applications
Semester	IV	**Version**	1.0.0.0
Effective from Academic Year	2025-26	**Effective for the batch Admitted in**	June 2024
Subject Code	U44C4IAI	**Subject Name**	Introduction to Artificial Intelligence

Teaching scheme						**Examination scheme (Marks)**			
(Per week)	**Lecture (DT)**		**Practical (Lab.)**		**Total**		**CE**	**SEE**	**Total**
	L	TU	P	TW					
Credit	4	0	0	0	4	Theory	50	50	100
Hours	4	0	0	0	4				

Objective:

To provide foundational knowledge of AI concepts, methodologies, and applications, enabling learners to understand and apply basic AI principles in problem-solving and decision-making.

Pre-requisites:

Strong experience of programming languages, writing algorithm for finding patterns and learning, Strong data analytics skills, Good knowledge of Discrete mathematics.

Course Outcomes :

Name of CO	**Description**
CO1	Able to develop understanding of AI techniques
CO2	Learn the AI based intelligent searching techniques
CO3	Understand knowledge presentation and predicate logic.
CO4	Understand Planning, the expert system and expert learning

Mapping of CO and PO

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	0	3	1	3	1	1	1	1	1	2	1
CO2	1	1	2	1	2	1	2	2	2	1	1	1
CO3	1	2	1	0	1	2	2	1	1	0	2	1
CO4	1	0	0	2	3	1	1	0	0	1	1	1

Theory Syllabus

Unit	**Content**	**Hrs.**
1	**Introduction to AI:** What is AI? The History, The Foundation, Intelligent Agents: Agents and Environment, Concept of Rationality, Nature of Environments, Structure of Agents- Agent Programs, Simple reflex, Model based reflex, Goal and utility based, learning Agents.	**8**

2	**Problem Solving & Searching:** Solving problem by searching- Formulating Problem, Real World Problem, Toy Problem, Searching for Solution. Uninformed search strategies: Breadth-first, Depth-first,Depth-limited, Iterative deepening depth-first and Bidirectional search. Informed Search strategies: Greedy best-first, A*, Heuristic Functions	**8**
3	**Constraint Satisfaction Problems, Searching, FOPL, Knowledge Representation** CSP: CSP, Backtracking Search for CSPs. Adversarial Search: Games First Order Predicate Logic: Representation of Simple facts, Syntax and Semantics of FOPL, Models for First-order Logic Knowledge Representation: Introduction, Representation and mappings, Approaches of knowledge representation	**7**
4	**Slot and filler structure, Planning and Expert system** Weak Slot-and filler structure: Semantics Nets, Frames Strong Slot-and-Filler Structure: Conceptual Dependency, Scripts Planning: Introduction, Planning system components, Expert Systems: Introduction, MYCIN	**7**
Text Books:		
1	Artificial Intelligence-A Modern Approach by Stuart Russell and Peter Norvig, Second Edition Pearson Education.	
2	Artificial Intelligence by Elaine Rich, Kevin Knight, Shivashankar B. Nair, Third Edition, McGraw Hill	
Reference Books:		
1	Principles of Artificial Intelligence and Expert System Development by David W. Rolston, McGraw Hill.	
Web References / MOOC / Certification Course:		
1	https://onlinecourses.nptel.ac.in/noc21_ge20/preview	
2	https://nptel.ac.in/courses/106105077	
3	https://www.coursera.org/learn/introduction-to-ai#about	
Question Paper Scheme:		
	University Examination Duration:2Hours **Note for Examiner:** Q-1 Must be common from any topics from the syllabus. Q-2 And onwards must be from specific topics and internal choice or option can be given. **Paper Structure:** Q-1 Must be from all Unit Any Five out of seven **(25 Marks)** (CO1, CO2, CO3, CO4) Q-2 Must be from Unit 1: Any Two out of Three **(06 Marks)** CO1 Q-3 Must be from Unit 2: Only one question without any option **(05 Marks)** CO2 Q-4 Must be from Unit 3: Any Two out of Three **(08 Marks)** CO3 Q-5 Must be from Unit 4: Any Two out of Three **(06 Marks)** CO4	