PARVATHANENI BRAHMAYYA
SIDDHARTHA COLLEGE OF ARTS & SCIENCE
Autonomous
Siddhartha Nagar, Vijayawada–520010
Re-accredited at 'A+' by the NAAC

22MA4D6 : ARTIFICIAL INTELLIGENCE
Semester : IV

Course Code	22MA4D6	Course Delivery Method	Blended Mode
Credits	4	CIA Marks	30
No. of Lecture Hours / Week	4	Semester End Exam Marks	70
Total Number of Lecture Hours	60	Total Marks	100
Year of Introduction : 2023-24	Year of offering : 2023-24	Year of Revision: --------	Percentage of Revision : ---

Course Objectives:

This course will help enable the students to understand and familiar with History, Foundations of AI, Problem Solving ,State-Space and control strategies, Logic Concepts, Knowledge Representation in propositional logic , Expert System and Applications, Fuzzy sets and fuzzy logic.

COURSE OUTCOMES	Upon successful completion of this course, students will be able to:
CO1	understand History, Foundations and Logic Concepts of AI
CO2	understand the Basic of knowledge representation, Fuzzy Sets and Fuzzy Logic.
CO3	Identify the current trends , constraint satisfaction used in AI.
CO4	Analyze expert systems, uncertainty measurement, and fuzzy logic.
CO5	understand methodologies for representing knowledge in AI applications.

Mapping of Course Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	**2**	**0**	**0**	**0**	**0**	**0**	**0**
CO2	**0**	**0**	**0**	**0**	**0**	**0**	**3**
CO3	**2**	**0**	**0**	**0**	**0**	**0**	**0**
CO4	**0**	**0**	**0**	**0**	**0**	**0**	**3**
CO5	**3**	**0**	**0**	**0**	**0**	**0**	**0**

UNIT-I (12 Hours)

Introduction: Introduction, History, Intelligent Systems, Foundations of AI, Applications, Tic-Tac-Toe Game Playing, Development of AI Languages, Current Trends.

UNIT-II (12 Hours)

Problem Solving State-Space and control strategies: Introduction, General Problem Solving, Characteristics of problem, Exhaustive searches, Heuristic Search Techniques, Iterative Deepening A*, Constraint Satisfaction.

UNIT-III (12 Hours)

Logic Concepts: Introduction, Propositional Calculus, Propositional Logic, Natural Deduction system, Axiomatic System, Semantic Tableau System in Propositional Logic, Predicate Logic.

UNIT-IV (12 Hours)

Knowledge Representation: Introduction, Approaches to Knowledge Representation, Knowledge Representation using Semantic Network, Extended Semantic Networks for KR, Knowledge Representation using Frames.

UNIT-V (12 Hours)

Expert System and Applications: Introduction Phases in Building Expert Systems, Expert System vs Traditional Systems.

Uncertainty Measure: Probability Theory, Introduction, Probability Theory, Bayesian Belief Networks, Certainty Factor Theory, Dempster-Shaffer Theory.

Fuzzy Sets and Fuzzy Logic: Introduction, Fuzzy Sets, Fuzzy Set Operations, Types of Membership Functions.

Prescribed Text Book		
Author	Title	Publisher
Saroj Kaushik	Artificial Intelligence	Cengage Learning, Second Edition, 2022 ISBN: 9789355730428

Reference Text Books			
	Author	Title	Publisher
1	Deepak Khemani	Artificial Intelligence	McGraw Hill Education, 2018, Sixth Reprint, ISBN: 9781259029981
2	Patterson	Introduction to Artificial Intelligence and Expert Systems.	PHI , 2015, ISBN: 978-8120307773
3	George F Lugar	Artificial Intelligence structures strategies for Complex Problem Solving	PEA, Fifth Edition ,2004 ISBN: 978-0321263186
4	Stuart Russel, Peter Norvig	Artificial Intelligence, A Modern Approach	PEA, 4th Edition,2022 ISBN: 978-9356063570

Course has focus on : Skill Development

Websites of Interest:
1. www. nptel.ac.in
2. www.epgp.inflibnet.ac.in
3. www.ocw.mit.edu

PARVATHANENI BRAHMAYYA
SIDDHARTHA COLLEGE OF ARTS & SCIENCE
Autonomous
Siddhartha Nagar, Vijayawada–520010
Re-accredited at 'A+' by the NAAC

M. Sc. Mathematics
Fourth Semester
22MA4D6 - ARTIFICIAL INTELLIGENCE

Time: 3 hours **Max. Marks: 70**

SECTION A

Answer all questions. **(5x4=20)**

1. (a) Define Artificial Intelligence. Write in short about Tic Tac Toe game. (CO1,L1)

(or)

(b) What are the applications of Artificial Intelligence ? (CO3,L1)

2. (a) What is Iterative Deepening A*? (CO2,L2)

(or)

(b) What is constraint Satisfaction? (CO3,L2)

3. (a) What is Axiomatic System ? (CO1,L2)

(or)

(b) Compare and Contrast Propositional Logic and Predicate Logic. (CO2,L2)

4. (a) What are different approaches for knowledge representation? (CO2,L1)

(or)

(b) What is extended semantic Network KR? (CO2,L1)

5. (a) What is Certainty Factor theory ? (CO2,L1)

(or)

(b) What are the operations of fuzzy sets? (CO2,L1)

SECTION-B

Answer Five Questions. All Questions Carry Equal Marks. **(5×10=50M)**

6. (a) Explain History of Artificial Intelligence briefly. (CO1,L2)

(or)

(b) Explain Current trends in Artificial Intelligence . (CO1,L2)

7 (a) Explain the different characteristics of a problem. (CO2, L5)

(or)

(b)Explain various Heuristic searches used to find a solution. (CO2, L5)

8(a) Explain Natural Deduction System to prove the validity of an argument. (CO1, L4)

(or)

(b) Explain Semantic Tableau System in Propositional Logic. (CO3, L4)

9 (a) Discuss Knowledge Representation using Semantic Networks. (CO6, L4)

(or)

(b) Elaborate Knowledge Representation using frames. (CO6, L4)

10 (a) How do you use Bayesian Belief Networks to represent probabilistic relations? (CO4, L2)

(or)

(b) Explain the components of an Expert System. (CO4, L2)

***