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

Offered to: M.C.A

22CA4E1: ARTIFICIAL INTELLIGENCE

Course Description and Purpose: Artificial Intelligence is a course that illustrates concepts *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 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:
On successful completion the students should be able to
CO1: Recall History, Foundations and Logic Concepts of AI
CO2: Summarize the Basic of Knowledge Representation, Fuzzy Sets and Fuzzy Logic, Strategies for State Space
Problem Solving and Uncertainty Measurement.
CO3: Identify the Current Trends, Constraint Satisfaction used in AI.
CO4: Analyze Expert Systems, Uncertainty Measurement, and Fuzzy Logic.
CO5: Perceive Methodologies for representing knowledge in AI Applications.

CO-PO MATRIX								
COURSE CODE	**CO-PO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**
	CO1	M						M
	CO2	M		M				
	CO3	M				M		
	CO4	M		M		H		
	CO5	H		H				

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 SolvingState-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
1	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

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M.C.A **Semester:IV**

Course Code: 22CA4E1 Course Name: Artificial Intelligence

Time: 3 Hours **MaxMarks: 70**

SECTION-A

Answer the following questions. (5×4=20Marks)

1. (a)DefineArtificialIntelligence.Writeinshortabout Tic_ Tac_ Toegame.(CO1,L1)
   (or)
   (b) What are the applications of Artificial Intelligence?(CO3,L1)
2. (a)WhatisIterativeDeepeningA*?(CO2,L2)
   (or)
   (b) What is Constraint Satisfaction?(CO3,L2)
3. (a)What is Axiomatic System? (CO1,L1)
   (or)
   (b) Define Propositional Logic and Predicate Logic. (CO1,L1)
4. (a)Whataredifferentapproachesfor Knowledge Representation?(CO2,L1)
   (or)
   (b) Whatis Extended Semantic NetworkKR?(CO2,L1)
5. (a)WhatisCertaintyFactorTheory?(CO2,L1)
   (or)
   (b) Whataretheoperationsof Fuzzy Sets?(CO2,L1)

SECTION-B

Answer the following questions. (5×10=50Marks)

6. (a)ExplainHistoryofArtificialIntelligencebriefly.(CO1,L1)
   (or)
   (b) ExplainCurrentTrendsinArtificialIntelligence.(CO1,L1)

7.(a)Explainthedifferentcharacteristics of a problem.(CO2,L5)
   (or)
   (c) ExplainvariousHeuristicsearchesusedtofindasolution.(CO2,L5)

8. (a)ExplainNaturalDeductionSystemtoprovethevalidityofanargument.(CO1,L4)
   (or)
   (b)ExplainSemanticTableauSysteminPropositionalLogic.(CO3,L4)

9.(a) Elaborate KnowledgeRepresentationusingSemanticNetworks.(CO6,L6)
   (or)
   (b)ElaborateKnowledgeRepresentationusingFrames.(CO6,L6)

10.(a)HowdoyouuseBayesianBeliefNetworkstorepresentprobabilisticrelations? (CO4,L2)

   (or)
   (b) ExplainthecomponentsofanExpertSystem.(CO4,L2)