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

Offered to: M.Sc. (Computational Data Science)

CourseName	Artificial Intelligence		**L**	**T**	**P**	**C**	**CIA**	**SEE**	**TM**
CourseCode	22DS4E5		4	0	0	4	30	70	100
Year of Introduction: 2022	**Year of Offering:** 2022	**Year of Revision**: Nil			**Percentage of Revision:**				
L-Lecture, T-Tutorial, **P**-Practical, **C**-Credits, **CIA**-InternalMarks, **SEE**-ExternalMarks, **TM**-TotalMarks									

CourseDescriptionandPurpose: 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: Thiscoursewillhelp 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.*

SpecificObjectivesinclude:
- Gain knowledge regarding History, Foundations, and Trends in AI.
- Identify how solve a specific problem and provide the best result using different Search Strategies.
- Learn Logic Concepts utilized in AI.
- Understand Knowledge Representation.
- Laying foundation and learning tools for quantifying, handling, and harness in guncertainty in applied Machine learning, Fuzzy Logic.

CourseOutcomes:
Onsuccessfulcompletionthestudentsshouldbeableto
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: Identifythe Current Trends,Constraint Satisfaction used in AI.
CO4: Analyze ExpertSystems, Uncertainty Measurement, and FuzzyLogic.
CO5: Perceive Methodologies for representing knowledge in AI Applications.

CO-PO MATRIX								
COURSE CODE	**CO-PO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**
22DS4E5	**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.Sc.(Computational Data Science) **Semester :IV**

Course Code: 22DS4E5Course Name: ArtificialIntelligence

Time: 3 Hours **Max Marks: 70**

SECTION-A

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

1. (a)DefineArtificialIntelligence.Writeinshortabout Tic_ Tac_ Toegame.(CO1,L1)
   (or)
   (b) WhataretheapplicationsofArtificialIntelligence?(CO3,L1)

2. (a)WhatisIterativeDeepeningA*?(CO2,L2)
   (or)
   (b) What is Constraint Satisfaction?(CO3,L2)
3. (a)WhatisAxiomaticSystem?(CO1,L1)
   (or)
   (b) CompareandContrastPropositionalLogicandPredicateLogic.(CO2,L2)

4. (a)Whatarediffferentapproachesfor Knowledge Representation?(CO2,L1)
   (or)
   (b) Whatis Extended Semantic NetworkKR?(CO2,L1)

5. (a)WhatisCertaintyFactorTheory?(CO2,L1)
   (or)
   (b) What are the operations of 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)
   (b) ExplainvariousHeuristicsearchesusedtofindasolution.(CO2,L5)

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

9. (a)DiscussKnowledgeRepresentationusingSemanticNetworks.(CO6,L6)
   (or)
   (b) Elaborate Knowledge Representation using Frames.(CO6,L6)
10. (a)HowdoyouuseBayesianBeliefNetworkstorepresentprobabilisticrelations? (CO4,L2)
    (or)
    (b) ExplainthecomponentsofanExpertSystem.(CO4,L2)