



SWARNANDHRA COLLEGE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS)

Accredited by National Board of Accreditation, AICTE, New Delhi, Accredited by NAAC with "A" Grade – 3.32 CGPA, Recognized under 2(f) & 12(B) of UGC Act 1956, Approved by AICTE, New Delhi, Permanent Affiliation to JNTUK, Kakinada Seetharampuram, W.G.DT., Narsapur-534280, (Andhra Pradesh)

DEPARTMENT OF COMPUTER SCIENCE ENGINEERING (DATA SCIENCE)

LESSON PLAN

Course Code	Course Title	Semester	Branches	Conduct Periods /Week	Academic Year	Date of commencement of Semester	
20AD4T02	ARTIFICIAL INTELLIGENCE	IV	CSDS	5	2023-24	03 - 02 -2024	
COURSE OUTCOMES							
1	Define the fundamentals of AI techniques and search techniques. [BLT 1]						
2	Use appropriate search algorithms for any AI problem. [BLT 1]						
3	Represent a problem using first order and predicate logic. [BLT 2]						
4	Understand the concepts of non-monotonic reasoning. [BLT 2]						
5	Acquire the knowledge of various AI applications [BLT 3]						
UNIT	Out Comes / Blooms Level	Topics No.	Topics/Activity	Text Book /Reference	Conduct Hour	Delivery Method	
I	CO1: Define the fundamentals of AI techniques and search techniques. [BLT 1]	1. Introduction					
		1.1	Artificial Intelligence definition	T1, & W1	1	Chalk, Talk, Tutorials, & Web Resources	
		1.2	AI problems	T2	1		
		1.3	Problem Spaces	T2	1		
		1.4	Defining the Problem as a State Space Search	T1	1		
		1.5	problem characteristics	T1	1		
		1.6	production Systems	T1	1		
		1.7	Future of Artificial Intelligence	T1 & R1	1		
		1.8	Characteristics of Intelligent Agents	T1 & R1	1		
		1.9	Typical Intelligent Agents	T1& R1	1		
1.10	Problem Solving Approach to Typical AI problems.	T1	1				
Content beyond Syllabus		AI in Healthcare: Explore the applications of AI in healthcare, including medical image analysis, clinical decision support systems, drug discovery, personalized medicine, and patient monitoring.		Web Resources	1		
		Assignment 1				1	
Total						12	



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		2. Problem solving Methods				
II	CO2: Use appropriate search algorithms for any AI problem. [BLT 1]	2.1	Issues in the design of search programs	T1, &W3	1	Chalk, Talk, PPT & W Resources
		2.2	Search Strategies	T1& T2	1	
		2.3	Uninformed (Breadth-First, Depth-First Search)	T1& T2	1	
		2.4	Uninformed (Breadth-First, Depth-First Search)	T1	1	
		2.5	Informed (Heuristic)	T1	1	
		2.6	Local Search Algorithms and Optimization Problems	T1& T2	1	
		2.7	Generate-And- Test	T1	1	
		2.8	Hill Climbing	T1	1	
		2.9	Best-First Search	T1	1	
		2.10	A* Algorithm	T1	1	
		2.11	Problem Reduction	T1& T2	1	
		2.12	AO* Algorithm	T1& T2	1	
		2.13	Constraint Satisfaction Problems	T1& R2	1	
		2.14	Backtracking Search	T1& T2	1	
		2.15	Game Playing	T1	1	
		2.16	Optimal Decisions in Games	T1	1	
		2.17	Minimax Search,	T1	1	
		2.18	Alpha - Beta Pruning	T1	1	
		2.19	Stochastic Games	T1& T2	1	
Content beyond Syllabus		Multi-Agent Systems: Learn about multi-agent systems and distributed AI, including topics such as game theory, swarm robotics, decentralized decision-making, and coordination mechanisms.		Web Resources	1	
		Assignment 2			1	
				Total	21	
		3. Knowledge Representation				
III	CO3: Represent a problem using first order and predicate logic. [BLT 2]	3.1	Representing Simple Facts in Predicate Logic	T1	1	Chalk, Talk & Web Resource
		3.2	First Order Predicate Logic	T1& T2	1	
		3.3	Prolog Programming	T1& R2	1	
		3.4	Unification	T1& R2	1	
		3.5	Forward Chaining	T1& T2	1	
		3.6	Backward Chaining	T1& T2	1	
		3.7	Resolution	T1& T2	1	
		3.8	Natural Deduction	T1	1	
		3.9	Knowledge Representation	T2	1	
		3.10	Ontological Engineering	T1, T2 & R1, RW3	1	



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		3.11	Categories and Objects, Events, Mental Events and Mental Objects	T1, T2 & R1, RW3	1		
		3.12	Reasoning Systems for Categories	T1, T2 & R1, RW3	1		
		3.13	Reasoning with Default Information	T1, T2	1		
			Assignment 3		1		
					Total	14	
IV	CO4: Understand the concepts of non-monotonic reasoning. [BLT 2]	4. Uncertain Knowledge and Reasoning					
		4.1	Introduction to Non-Monotonic Reasoning	T1 & R1	1	Chalk, Talk, PPT, Tutorials, & Web Resources	
		4.2	acting under Uncertainty	T1, T2, R1 & W3	1		
		4.3	Basic Probability Notation	T1 & T2	1		
		4.4	Inference Using Full Joint Distributions	T1, T2 & R1	1		
		4.5	Independence, Bayes' Rule and Its Use	T1, T2 & R1	1		
		4.6	Representing Knowledge in an Uncertain Domain Probability	T1 & T2	1		
		4.7	Bayes Theorem	T1 & T2	1		
		4.8	The Semantics of Bayesian Networks	T1, T2 & R1	1		
			Assignment 4		1		
					Total	09	
V	CO5: Acquire the knowledge of various AI applications [BLT 2]	5. Applications					
		5.1	AI applications	T1 & T2	1	Chalk, Talk, PPT & Tutorials	
		5.2	Language Models	T1, T2 & R1	1		
		5.3	Information Retrieval-	T1, T2 & R1	1		
		5.4	Information Extraction	T1, T2 & R1	1		
		5.5	Expert Systems	T1 & T2	1		
		5.6	Natural Language Processing	T1 & T2	1		
		5.7	Machine Translation	T1 & T2	1		
		5.8	Speech Recognition	T1, T2 & R1	1		
		5.9	Robot – Hardware – Perception	T1, T2 & R1	1		
		5.10	Planning – Moving	T1 & T2	1		
	Content beyond Syllabus	AI Ethics and Bias: Examine the ethical implications of AI technologies and strategies for mitigating bias and ensuring fairness in AI systems. Explore topics such as algorithmic fairness, accountability, transparency, and the		Web Resources	1		



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	societal impacts of AI.		
	Assignment 5		1
		Total	12
CUMULATIVE PROPOSED PERIODS			68

Text Books:

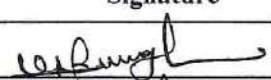
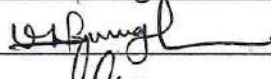
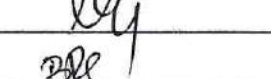

S.No.	Authors, Book Title, Edition, Publisher, Year of Publication
T1	S. Russell and P. Norvig, "Artificial Intelligence: A Modern Approach", Prentice Hall, Third Edition, 2009.
T2	Saroj Kaushik, "Artificial Intelligence", Cengage Learning India, 2011
T3	Elaine Rich, Kevin Knight, Shiva Sankar B. Nair, Artificial Intelligence, The McGraw Hill publications, Third Edition, 2017.
T4	Bratko, Prolog: Programming for Artificial Intelligence, Fourth edition, Addison-Wesley Educational Publishers Inc., 2011.

Reference Books:

S.No.	Authors, Book Title, Edition, Publisher, Year of Publication
R1	George F. Luger, Artificial Intelligence: Structures and Strategies for Complex Problem Solving, Pearson Education, 6th ed., 2009.
R2	David Poole and Alan Mackworth, "Artificial Intelligence: Foundations for Computational Agents", Cambridge University Press 2010.
R3	Dan W Patterson, Introduction to Artificial Intelligence & Expert Systems, PHI, 2010.

Web Details

W1	https://nptel.ac.in/courses/106105077
W2	https://nptel.ac.in/courses/106106126
W3	https://aima.cs.berkeley.edu
W4	https://ai.berkeley.edu/project_overview.html

S.No.	Details	Name	Signature
i.	Faculty	Mr. V DURGA RAO	
ii.	Course Coordinator	Mr. V DURGA RAO	
iii.	Module Coordinator	Dr. G SUDHAKAR	
iv.	Program Coordinator	Dr. B RAMA KRISHNA	


Principal