SWARNANDHRA COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous)

Narsapur, West Godavari District, A.P. 534280

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

TEACHING PLAN

Course Code	Course Title	Semester	Branch	Contact Periods /Week	Academic Year	Date of commencement of Semester
20CS6E04	AI Tools, Techniques and Applications	B.Tech / VI	CSE	5	2024-2025	18-11-2024

COURSE OUTCOMES

1	CO1: Observe build intelligent agents for search and games(K2)
2	CO2: Construct AI problems through Python/Prolog/etc(K3)
3	CO3: Illustrate learning optimization and inference algorithms for model learning(K4)
4	CO4: Develop programs for an agent to learn and act in a structured environment. (K3)
5	CO5: Apply to enhance the MDP concepts(K3)

Unit	Out Comes / Bloom's Level	Topics No.	Topics/Activity	Text Book / Reference	Contact Hour	Delivery Method
			UNIT-I: Introduction			
I	CO1: Observe build intelligent agents for search and games(K2)	1.1	Concept of AI	T1	1	Chalk & talk
		1.2	history	T1	1	PPT
		1.3	current status	T1	1	PPT
		1.4	Scope of AI	T1	1	PPT
		1.5	Agents	T1	1	PPT
		1.5.1	Environments	T1,R1	1	PPT
		1.6	Problem Formulations	T1,R1	1	Flipped Learning
		1.7	Review of tree and graph structures	T1,R1	1	Chalk & talk
		1.7.1	Examples of tree and graph	T1,R1	1	PPT
		1.8	State space representation	T1,R1	1	PPT
		1.9	Search graph and Search tree.	T1,R1	1	PPT
		1.9.1	Examples	T1,R1	1	PPT
				Total	**13**	
			UNIT-II: Search Algorithms			
II	CO2: Construct AI problems through Python/Prolo	2.1	Random search	T1,R1	1	PPT
		2.2	Search with closed and open list	T1,R1	1	PPT
		2.3	Depth first search	T1,R1	1	Experimental Learning
		2.4	Breadth first search	T1,R1	1	PPT

	g/etc(K3)	2.5	Heuristic search	T1,R1	1	Chalk & talk
		2.5.1	Examples of heuristic search	T1,R1	1	PPT
		2.6	Best first search	T1,R1	1	PPT
		2.7	A* algorithm	T1,R1	1	PPT
		2.8	Game Search	T1,R1	1	PPT
		2.8.1	Minimax Algorithm	T1,R1	1	PPT
		2.8.1	Alpha beta pruning	T1,R1	1	PPT
Total						**13**
UNIT-III: Probabilistic Reasoning						
III	CO3: Illustrate learning optimization and inference algorithms for model learning(K4)	3.1	Probability	T1,R1	1	Chalk & talk
		3.2	Conditional probability	T1,R1	1	PPT
		3.3	Bayes Rule	T1,R1	1	Chalk & talk
		3.4	Bayesian Networks	T1,R1	1	PPT
		3.4.1	Example Bayesian network	T1,R1	1	PPT
		3.5	construction and inference	T1,R1	1	PPT
		3.5.1	Example on construction and inference	T1,R1	1	PPT
		3.6	temporal model	T1,R1	1	PPT
		3.6.1	Types of temporal model	T1,R1	1	PPT
		3.7	hidden Markov model	T1,R1	1	PPT
		3.7.1	Example hidden markov decision model	T1,R1	1	Quiz
	Content beyond Syllabus		Dynamic Bayesian Networks		1	Flipped Learning
Total						**12**
UNIT-IV: Markov Decision process						
IV	CO4: Develop programs for an agent to learn and act in a structured environment. (K3)	4.1	MDP formulation	T1,R1	1	PPT
		4.2	utility theory	T1,R1	1	PPT
		4.3	Utility functions	T1,R1	1	PPT
		4.3.1	utility functions examples	T1,R1	1	PPT
		4.4	value iteration	T1,R1	1	PPT
		4.4.1	Examples	T1,R1	1	Collaborative Learning
		4.5	policyiteration	T1,R1	1	PPT
		4.6	partially observable MDPs	T1,R1	1	Chalk & talk
		4.6.1	MDP concept examples	T1,R1	1	PPT
Total						**11**
UNIT-V: Reinforcement Learning						
V	CO5: Apply to enhance the MDP concepts(K3)	5.1	Passive reinforcement learning	T1,R1	1	Chalk & talk
		5.2	direct utility estimation	T1,R1	1	PPT
		5.2.1	examples	T1,R1	1	PPT
		5.3	adaptive dynamic	T1,R1	1	PPT

			programming			
		5.4	temporal difference learning	T1,R1	1	PPT
		5.5	Passive reinforcement learning	T1,R1	1	PPT
		5.5	active reinforcement learning	T1,R1	1	Active Learning
		5.6	Q learning	T1,R1	1	PPT
		5.6.1	Q learning examples	T1,R1	1	PPT
				Total	**11**	
				CUMULATIVE PROPOSED PERIODS	**60**	

Text Books:	
S.No.	**AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION**
1	Stuart Russell, Peter Norvig, "Artificial Intelligence – A Modern Approach", 3rd Edition, Pearson Education / Prentice Hall of India, 2010.
2	Elaine Rich and Kevin Knight, "Artificial Intelligence", 3rd Edition, Tata McGraw Hill. 2017.
Reference Books:	
S.No.	**AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION**
1	Nils J. Nilsson, "Artificial Intelligence: A new Synthesis", Harcourt Asia Pvt. Ltd., 2000.
2	Trivedi, M.C., "A Classical Approach to Artifical Intelligence", 2nd edition, Khanna Book Publishing, 2018
3	Prateek Joshi, "Artificial Intelligence with Python", Packt Publishing, 2017.
Web Details	
1	https://www.pdfdrive.net/artificial-intelligence-a-modern-approach-3rd-edition-e32618455.html
2	https://www.coursera.org/learn/introduction-to-ai

		Name	Signature with Date
i.	Faculty I	Mr.P.SRINU VASARAO	
ii.	Faculty II	Dr.T.Murali mohan	
iii.	Faculty III	Mr.N.Tulasi Raju	
iv.	Faculty IV	Mrs.K.Sirisha	
v.	Course Coordinator	Mr.P.Srinu Vasarao	
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vii.	Programme Coordinator	Dr.P.Srinivasulu	

HOD **Principal**