SWARNANDHRA COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous)

Narsapur, West Godavari District, A.P. 534280

DEPARTMENT OF MECHANICAL ENGINEERING

LESSON PLAN

Course Code	Course Title	Semester	Branch	Contact Periods /Week	Academic Year	Date of commencement of Semester
20ME6T01	Introduction To Artificial Intelligence and Machine Learning	VI	ME	5	2024-25	18-11-2024

COURSE OUTCOMES: Students are able to

1	Gain a solid understanding of the fundamentals, principles related to Artificial Intelligence and machine learning [K2]
2	Apply feature extraction and selection techniques. [K3]
3	Analyze and solve complex problems by applying probabilistic reasoning. [K3]
4	Interpret and develop a machine learning model using various steps. [K3]
5	Apply machine learning algorithms for classification and regression problems. [K3]

UNIT	Out Comes / Bloom's Level	Topics No.	Topics/Activity	Text Book / Reference	Contact Hour	Delivery Method
I	CO1: Gain a solid understanding of the fundamentals, principles related to Artificial Intelligence and machine learning. [K2]	**UNIT INTRODUCTION ARTIFICIAL INTELLIGENCE**				Chalk & Talk,PPT Quiz
		1.1	Introduction to Artificial Intelligence	T2,R1	1	
		1.2	Concept of AI	T2,R1	1	
		1.3	History, current status	T2, R3	1	
		1.4	scope, agents	T2,R1	1	
		1.5	Environments	T2,R1	2	
		1.6	Problem Formulations	T1, T2,	1	
		1.7	Review of tree and graphstructures	T2, R1	2	
		1.8	State space representation	T2, R1	1	
		1.9	Search graph and Search tree	T1, R1	1	
Content beyond Syllabus		1.10	Generative AI		1	
				Total	**12**	
II	CO 2: Apply feature extraction and selection techniques[K3]	**UNIT II SEARCH ALGORITHMS**				Chalk & Talk,PPT, Group Discussion, Videos,
		2.1	Random search	T2, R3	1	
		2.2	Search with closed and open list	T2, R3	1	
		2.3	Depth first search	T2, R3	2	
		2.4	Breadth first search	T2, R3	2	
		2.5	Heuristic search	T3,R3	1	
		2.6	Best first search	T3,R3	2	
		2.7	A* algorithm	T3,R3	1	
		2.8	Game Search	T3,R3	2	
				Total	**12**	

III	CO3: Analyze and solve complex problems by applying probabilistic reasoning. [K3]	UNIT III PROBABILISTIC REASONING				Chalk & Talk,PPT, Active Learning, Quiz
		3.1	Probability	T1, R3	1	
		3.2	Conditional Probability	T1, R3	2	
		3.3	Bayes Rule	T1, R3	1	
		3.4	Bayesian Networks representation	T1, R3	2	
		3.5	construction and inference	T1, R3	2	
		3.6	Temporal model	T1, R3	2	
		3.7	Hidden Markov model	T1, R3	2	
				Total	12	
IV	CO4: Interpret and develop a machine learning model using various steps. [K3]	UNIT IV INTRODUCTION TO MACHINE LEARNING				Chalk & Talk,PPT, Flipped Class, Seminars, Quiz
		4.1	Machine learning	T1,R2	1	
		4.2	Statistics vs. Machine Learning techniques,	T1,R2	2	
		4.3	Supervised learning	T1,R2	2	
		4.4	Unsupervised learning	T1,R2	2	
		4.5	Semi-supervised learning	T1,R2	1	
		4.6	Reinforcement learning	T1,R2	2	
		4.7	Basics: Probability Theory	T1,R2	1	
		4.8	Linear Algebra	T1,R2	1	
				Total	12	
V	CO5: Apply machine learning algorithms for classification and regression problems. [K3]	UNIT V DECISION THEORY				Chalk & Talk,PPT, Flipped Class, Quiz
		5.1	Statistical Decision Theory	T1, R2	1	
		5.2	Regression	T1, R2	1	
		5.3	Classification	T1, R2	2	
		5.4	Linear regression	T1, R2	1	
		5.5	Multivariate regression	T1, R2	1	
		5.6	Logistic regression	T1, R2	1	
		5.7	Classification predictive modeling	T1, R2	2	
		5.8	Binary classification	T1, R2	1	
		5.9	multi-class classification	T1, R3	1	
CBS			Fuzzy Logic		1	
				Total	12	
			CUMULATIVE PROPOSED PERIODS		60	

Text Books:	
S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
1	Stuart Russell and Peter Norvig, "Artificial Intelligence: A Modern Approach", 3rdEdition, Prentice Hall. 2010.
2	Elaine Rich and Kevin Knight, "Artificial Intelligence", 3rdEdition, Tata McGraw Hill. 2017.
3	AndriyBurkov, "The Hundred-Page Machine Learning Book", 1stEdition, Notion Press, 2019.
4	Andreas Muller, "Introduction to Machine Learning with Python: A Guide for Data Scientists", 1st Edition, O"Reilly, 2016.
Reference Books:	
S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
1	Trivedi, M.C., "A Classical Approach to Artificial Intelligence", 2nd edition, Khanna Book Publishing, 2018.
2	Saroj Kaushik, "Artificial Intelligence", 1st edition, Cengage Learning India, 2011
3	Zhi-Hua Zhou, "Ensemble Methods: Foundations and Algorithms", CRC Press, 2nd edition, 2012.
Web Details	
1	www.ibm.com/in-en/topics/artificial-intelligence
2	www.javatpoint.com/artificial-intelligence-ai
3	www.geeksforgeeks.org/artificial-intelligence
4	https://nptel.ac.in/courses/106105077
5	www.simplilearn.com/tutorials/machine-learning-tutorial/what-is-machine-learning

		Name	Signature with Date
i.	Faculty	Dr. Francis Luther King M	
ii.	Faculty II (for common Course)	Mr.N.Bulli Raju	
iii.	Course Coordinator	Mr.N.Bulli Raju	
iv.	Module Coordinator	Dr. Francis Luther King M	
v.	Programme Coordinator	Dr. Francis Luther King M	

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Principal

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