



DEPARTMENT OF MECHANICAL ENGINEERING
LESSON PLAN

Course Code	Course Title	Semester	Branch	Contact Periods /Week	Academic Year	Date of commencement of the semester	
23ME6T02	ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING	VI	ME	5	2025-26	10-12-2025	
COURSE OUTCOMES: Students are able to							
1	Summarize the basic concepts of artificial intelligence. [K2]						
2	Learn about the principles of supervised learning methods [K2]						
3	Illustrate unsupervised learning method and Bayesian algorithms. [K3]						
4	Formulate neural networks and genetic algorithms. [K2]						
5	Apply the machine learning analytics and apply deep learning techniques. [K3]						
6	Describe Machine Learning Algorithm Analytics[K3]						
UNIT	Out Comes / Bloom's Level	Topic s No.	Topics/Activity	Text Book / Reference	Contact Hour	Delivery Method	
I	CO1: Summarize the basic concepts of artificial intelligence. [K2]	UNIT I Introduction Artificial Intelligence					Chalk, Talk, Active Learning, NPTEL
		1.1	Definition of Artificial Intelligence	T1,R1	1		
		1.2	Evolution, Need, and applications in the real world	T1,R1	1		
		1.3	Intelligent Agents, Agents and Environments	T1,R1	1		
		1.4	Good Behaviour - concept of rationality	T1,R1	1		
		1.5	the nature of environments, structure of agents.	T1,R1	1		
		1.6	Knowledge-Representation and Reasoning: Logical Agents	T1,R1	1		
		1.7	Knowledge-based agents, the Wumpus world, logic	T1,R1	2		
		1.8	Patterns in Propositional Logic	T1,R1	1		
		1.9	Inference in First-Order Logic-Propositional	T1,R1	2		
		1.10	vs first order inference, unification.	T1,R1	1		
Total					12		
II		UNIT II Introduction to Machine Learning (ML)					
		2.1	Definition, Evolution, Need	T2,T3	1		
		2.2	applications of ML in industry and real world	T2, T3	1		



SWARNANDHRA
COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC-AUTONOMOUS)
Permanent Affiliation to JNTUK, Kakinada
Narsapur, West Godavari District, Andhra Pradesh

	CO 2: Learn about the principles of supervised learning methods [K2]	2.3	regression and classification problems	T2,T3	1	Chalk, Talk, PPT, Active Learning
		2.4	performance metrics	T2, T3	1	
		2.5	differences between supervised and unsupervised learning paradigms	T2, R2	1	
		2.6	bias, variance, overfitting and underfitting.	T2, T4	1	
		2.7	Supervised Learning: Linear regression	T2,T3	1	
		2.8	logistic regression	T2, T3	1	
		2.9	Distance-based methods, Nearest-Neighbours,	T2, R2	1	
		2.10	Decision Trees	T2, T3	1	
		2.11	Support Vector Machines,	T2,T3	1	
		2.12	Nonlinearity and Kernel Methods.		1	
Total					12	
III	CO3: Illustrate unsupervised learning method and Bayesian algorithms. [K3]	UNIT III Unsupervised Learning				Chalk, Talk, PPT, Active Learning,
		3.1	Unsupervised Learning: Clustering, K-means,	T2,T3	1	
		3.2	Dimensionality Reduction	T2, T3	1	
		3.3	PCA and Kernel.	T2,T3	1	
		3.4	Bayesian and Computational Learning	T2, T4	1	
		3.5	Bayes theorem	T2,T3	1	
		3.6	concept learning	T2, T3	1	
		3.7	maximum likelihood of normal	T2, R2	1	
		3.8	binomial, exponential	T2, T3	1	
		3.9	and Poisson distributions	T2,T3	1	
		3.10	minimum description length principle	T2, T3	1	
		3.11	Naïve Bayes Classifier	T2,T4	1	
		3.12	Instance-based Learning- K-Nearest Neighbour learning.	T2, T3	1	
Total					12	
IV	CO4: Formulate neural networks and genetic algorithms. [K2]	UNIT IV Neural Networks and Genetic Algorithms				Chalk, Talk, PPT, Active Learning, Seminar, Quiz
		4.1	Neural network representation	T2, T3	1	
		4.2	problems, perceptron	T2,R2	1	
		4.3	multilayer networks and backpropagation	T2, T4	2	



SWARNANDHRA

COLLEGE OF ENGINEERING & TECHNOLOGY

(UGC-AUTONOMOUS)

Permanent Affiliation to JNTUK, Kakinada

Narsapur, West Godavari District, Andhra Pradesh

		4.4	steepest descent method	T2,T3	1	
		4.5	Convolutional neural networks and their applications	T2, T3	1	
		4.6	Recurrent Neural Networks and their applications	T2,T3	1	
		4.7	Local vs Global optima	T2, T3	1	
		4.8	Genetic algorithms	T2,T3	1	
		4.9	binary coded	T2, T4	1	
		4.10	GA, operators	T2,T3	1	
		4.11	convergence criteria.	T2, T3	1	
Total					12	
V	CO5: Apply the machine learning analytics and apply deep learning techniques. [K3] CO6:Describe Machine Learning Algorithm Analytics[K3]	UNIT V Deep Learning				Chalk, Talk, PPT, Active Learning
		5.1	Deep generative models	T2,T3	1	
		5.2	Deep Boltzmann Machines	T2, T3	1	
		5.3	Deep auto-encoders	T2,T3	1	
		5.4	Applications of Deep Networks.	T2, T4	1	
		5.5	Machine Learning Algorithm Analytics	T2,T3	1	
		5.6	Evaluating Machine Learning algorithms,	T2, R2	2	
		5.7	Model, Selection	T2,T3	1	
		5.8	Ensemble Methods	T2, T3	1	
		5.9	Boosting, Bagging	T2,T4	1	
		5.10	and Random Forests.	T2, T3	1	
Content beyond Syllabus	+		Convolutional Neural Network	website	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,3rd ed, Pearson Education, 2010.					
2	Ethem Alpaydin, Introduction to Machine Learning (Adaptive Computation and Machine Learning),4th ed, The MIT Press, 2004.					
3	Tom M. Mitchell, Machine Learning,1st ed,McGraw-Hill, 2013.					



SWARNANDHRA

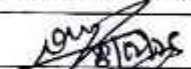
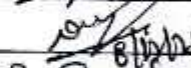
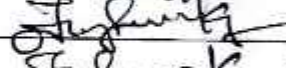
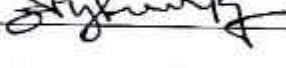
COLLEGE OF ENGINEERING & TECHNOLOGY

(UGC-AUTONOMOUS)

Permanent Affiliation to JNTUK, Kakinada

Narsapur, West Godavari District, Andhra Pradesh

4	Andriy Burkov, "The Hundred-Page Machine Learning Book", 1 st Edition, Notion Press, 2019.
Reference Books:	
S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
1	Elaine Rich and Kevin Knight, "Artificial Intelligence", 3 rd Edition, Tata McGraw Hill, 2017,
2	Dan W. Patterson, Introduction to Artificial Intelligence and Expert Systems, 1 st edition PHI Learning, 2015.
Web Details	
1	An Introduction to Artificial Intelligence - Course
2	Artificial Intelligence: Concepts and Techniques - Course
3	nptel.ac.in/courses/106106139
4	nptel.ac.in/courses/106105152
5	nptel.ac.in/courses/108103192

	Name	Signature with Date
i. Faculty	Mr.N.BulliRaju	
ii. Course Coordinator	Mr.N.Bulli Raju	
iii. Module Coordinator	Dr. Francis Luther King M	
iv. Programme Coordinator	Dr. Francis Luther King M	


Principal