



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 ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

TEACHING PLAN

Course Code	Course Title	Sem	Branch	Contact Periods /Week	Academic Year	Date of commencement of Semester	
20AM6T01	Deep Learning	VI	AIML	6	2024-25	18/11/2024	
COURSE OUTCOMES							
1	Demonstrate the basic concepts fundamental learning techniques and layers						
2	Discuss the Neural Network training, various random models.						
3	Explain different types of deep learning network models						
4	Classify the Probabilistic Neural Networks						
5	Implement tools on Deep Learning techniques						
UNIT	CO	Topics No.	Topics/Activity		Text Book / Reference	Contact Hour	Delivery method
UNIT – I :INTRODUCTION							
I	Understand the concepts and types of models in machine learning	1.1	Fundamentals of Deep Learning		T1	1	Chalk and talk PPT Smart Board
		1.2	Artificial Intelligence		T1	1	
		1.3	Machine Learning ,		T1	1	
		1.4	Deep Learning		T1	1	
		1.5	Brief history of machine Learning,		T1	1	
		1.6	Why Deep learning.		T1	1	
		1.7	Feed forward neural network-Artificial Neural Network		T1	1	
		1.8	activation function		T1	1	
		1.9	multi-layer neural network		T1	1	
				Content beyond Syllabus		Over fitting in Deep Neural networks	
Total						10	

UNIT – II: Training Neural Network:

II	Network training, various	2.1	Risk minimization	T1, T2	1	Chalk and talk PPT Smart Board
		2.2	Loss function	T1	1	
		2.3	Back propagation	T1	1	
		2.4	Regularization	T1	1	
		2.4.1	Dataset augmentation	T1	1	
		2.4.2	Multi task learning	T1	1	
		2.5	Model selection and optimization.	T2	1	
		2.6	Deep Neural Networks: Difficulty of training deep neural networks	T1	1	
Discuss the Neural random models.	2.7	Greedy layer wise training		T1,R1	1	
	2.7.1	Greedy layer wise Unsupervised training		T1,R1	1	
	Content beyond Syllabus		Momentum based optimization	T2	1	

Total 12

UNIT-III

Convolution neurallnetworks (CNNs)

III	Explain different types of deep learning network models	3.1	Introduction to CNNs	T1	1	Chalk and talk PPT Smart Board	
		3.2	convolution, pooling	T1	1		
		3.3	Deep CNNs	T1	1		
		3.3	Different deep CNN architectures		T2		1
		3.4	LeNet,	T2	1		
		3.5	AlexNet	T1	1		
		3.6	VGG Training a CNNs		T1		1
		3.6.1	VGG16		T1		1
		3.6.2	VGG19		T1		1
		3.7.	weights initialization, batch normalization, hyperparameter optimization,		T2		1
		3.8	Understanding and visualizing CNN		T2		1
		Content beyond Syllabus		Resnet Architecture	T2		1

Total 12

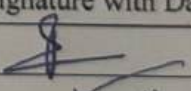
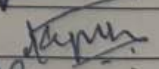


UNIT – IV : Introduction to Recurrent Neural Networks

Classify the Probabilistic Neural Networks	4.1	Introduction to RNNs	T1	1	Chalk and talk PPT Smart Board PPT
	4.1.1	Bidirectional RNNs	T1	1	
	4.2	Unfolded RNNs	T1	1	
	4.3	Seq2Seq RNNs	T1	1	
	4.3.1	Challenges with Vanishing gradients	T1	1	
	4.4	Long Short Term Memory Networks	T1,R1	1	
	4.4.1	Solving seq2seq tasks with Recurrent Neural Networks	T1	3	
	4.5	RNN applications	T1,R1	1	
	4.6	Gated Recurrent Unit Networks	T1,R1	1	
	Content beyond Syllabus	Self-attention and Transformers	T1	1	
Total				12	

UNIT –V : Applications

Implement tools on Deep Learning techniques	5.1	Object recognition,	T1,T2	2	Chalk and talk PPT Smart Board
	5.2	sparse coding,	T1,T2	3	
	5.3	computer vision	T1,T2	3	
	5.4	Natural language processing.	T1,T2	3	
	5.5	Video Analytics	T1,T2	3	
	TOTAL			14	
CUMULATIVE PROPOSED PERIODS				60	

Text Books:	
S. No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
1	François Chollet, Deep Learning with Python, Second Edition, MIT Press, 2021
2	Adam Gibson and Josh Patterson, Deep Learning: A Practitioner's Approach, Manning Publications, 2021
Reference Books:	
S. No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
1	Douwe Osinga, Shroff Publishers "Deep learning Cook Book, Practical recipes to get started Quickly", O'Reilly, 2019
2	Josh Patterson and Adam Gibson "Deep learning: A practitioner's approach, First Edition, 2017, O'Reilly Media
3	Nithin Buduma, Joepapa, "Fundamentals of Deep learning", second edition, O'Reilly, 2022
Web Details	
1	https://www.kaggle.com/datasets .
2	nptel.ac.in/courses
3	https://archive.ics.uci.edu/ml/
4	https://scikit-learn.org
5	https://pandas.pydata.org/
Video Links	
1	https://nptel.ac.in/courses/106105152
2	https://www.edureka.co/blog/introduction-to-machine-learning/
3	https://www.cse.iitb.ac.in/~sunita/cs725/
4	https://github.com/ml-tooling/best-of-ml-python

	Name	Signature with Date
i. Faculty I	Mrs.G.Jhansi	
ii. Course Coordinator	Mr.K.Jai Prakash	
iii. Module Coordinator	Dr.G.Sudhakar	
iv. Programme Coordinator	Dr.B.Rama Krishna	


Principal