SWARNANDHRA
COLLEGE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)

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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	T2	1	
					Total	10	

UNIT – II: Training Neural Network:						
II	Discuss the Neural Network training, various random models.	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	
		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	DouweOsinga, ,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	NithinBuduma,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