



SWARNANDHRA

COLLEGE OF ENGINEERING & TECHNOLOGY

(AUTONOMOUS)

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DEPARTMENT OF INFORMATION TECHNOLOGY

TEACHING PLAN

Course Code	Course Title	Sem	Branch	Contact Periods /Week	Academic Year	Date of commencement of Semester
23AD6T01	Deep Learning	VI	DS-B	6	2025-2026	12-12-2025
COURSE OUTCOMES						
1	Explain and implement perceptron models, threshold logic, and analyze linear separability. K3					
2	Train multilayer perceptron's using gradient descent and analyze deep learning challenges. K3					
3	Apply modern optimizers and regularization methods like dropout and batch normalization. K3					
4	Implement RNNs, LSTMs, CNNs, and RBMs for tasks in sequence and image processing. K3					
5	Apply models like GPT and Transformers in vision, NLP, speech, and image recognition. K3					
UNIT	CO	Topics No.	Topics/Activity	Text Book / Reference	Contact Hour	Delivery method
UNIT – I :INTRODUCTION						
I	Explain and implement perceptron models, threshold logic, and analyze linear separability.	1.1	Basics- Biological Neuron	T1	1	Chalk and talk PPT Smart Board
		1.2	Idea of computational units	T1	1	
		1.3	McCulloch–Pitts unit and Thresholding logic	T1	2	
		1.4	Linear Perceptron	T1	1	
		1.5	Perceptron Learning Algorithm	T1	1	
		1.6	Linear separability	T1	1	
		1.7	Convergence theorem for Perceptron Learning Algorithm.	T1	2	
		CBS	Over fitting in Deep Neural networks	T2	1	
Total					10	
UNIT – II: Better Training of Neural Networks						
II	Train multilayer perceptron's using gradient descent and analyze deep learning challenges.	2.1	Feed forward Networks-Multilayer Perceptron	T1, T2	1	Chalk and talk PPT Smart Board
		2.2	Gradient Descent	T1	1	
		2.3	Back propagation	T1	2	
		2.4	Regularization	T1	1	
		2.4.1	Empirical Risk Minimization	T1	1	
		2.4.2	auto encoders.	T1	1	
		2.7.1	Greedy layer wise Unsupervised training	T1,R1	2	
		CBS	Momentum based optimization	T2	1	
Total					10	

UNIT-III

Better Training of Neural Networks

Better Training of Neural Networks						
III	Apply modern optimizers and regularization methods like dropout and batch normalization.	3.1	Better Training of Neural Networks-Newer optimization methods for neural networks	T1	1	Chalk and talk PPT Smart Board
		3.2	Adagrad	T1	1	
		3.3	adadelta	T1	1	
		3.3	rmsprop	T2	1	
		3.4	adam, NAG	T2	1	
		3.5	second order methods for training	T1	1	
		3.6	Saddle point problem in neural networks	T1	2	
		3.6.1	Regularization methods	T1	1	
		3.6.2	dropout, drop connect	T1	1	
		3.7.	batch normalization	T2	1	
		CBS	Resnet Architecture	T2	1	
Total				12		

UNIT – IV : Recurrent Neural Networks

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IV	Implement RNNs, LSTMs, CNNs, and RBMs for tasks in sequence and image processing.	4.1	Recurrent Neural Networks- Back propagation through time	T1	1	Chalk and talk PPT Smart Board PPT
		4.1.1	Long Short-Term Memory	T1	1	
		4.2	Gated Recurrent Units	T1	1	
		4.3	Bidirectional LSTMs	T1	1	
		4.3.1	Bidirectional RNNs.	T1	1	
		4.4	Convolutional Neural Networks:	T1,R1	1	
		4.4.1	LeNet, AlexNet.	T1	2	
		4.5	Generative models:	T1,R1	1	
		4.6	Restrictive Boltzmann Machines (RBMs)	T1,R1	1	
		4.7	Introduction to MCMC and Gibbs Sampling	T1	1	
		4.8	gradient computations in RBMs	T1	1	
		4.9	Deep Boltzmann Machines.	T1	1	
		CBS	Self-attention and Transformers	T1	1	
Total					14	

UNIT –V : Recent Trends

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V	like GPT and Transformers in vision, NLP, speech, and image	5.1	Recent Trends-Variational Auto encoders	T1,T2	2	Chalk and talk PPT Smart Board
		5.2	GPT Applications: Vision	T1,T2	2	
		5.3	NLP	T1	1	
		5.4	Speech recognition.	T1	1	
		5.5	Image recognition.	T1,T2	2	
		TOTAL				08
CUMULATIVE PROPOSED PERIODS					54	

Text Books:

S. No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
1	Jon Krohn, Addison-Wesley, Deep Learning Illustrated: A Visual, Interactive Guide to Artificial Intelligence, 2020.
2	Eli Stevens, Luca Antiga, Thomas Viehmann Deep Learning with PyTorch (2nd Edition), Manning Publications, 2023.

Reference Books:

S. No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
1	Charu C. Aggarwal, Neural Networks and Deep Learning: A Textbook, Springer, 2018
2	François Chollet, Deep Learning with Python (2nd Edition), Manning Publications, 2021
3	Ian Goodfellow, Yoshua Bengio, Deep Learning (Adaptive Computation and Machine Learning Series) Bengio, MIT Press, 2016

Web Details

1	https://www.deeplearning.ai
2	https://paperswithcode.com
3	https://www.tensorflow.org/tutorials
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	Mr. K.Raja	K. Raja
ii. Module Coordinator	Mr. K.Raja	K. Raja
iii. Programme Coordinator	Dr.RVVS Prasad	Dr. RVVS Prasad


Principal