



Faculty of Computer Studies (FoCS)

Course Name: Artificial Neural Network and Deep Learning

Course Code: T3566

(UG/PG): PG

Number of Credits: 3

Level: 4

Learning Objectives: The major focus of this course is to introduce deep learning algorithms and their implementation to solve real-world problems.

Pre-learning:

Programming
Mathematics with linear algebra, statistics

Pedagogy:

Lectures
Class work discussion

Course Outline:

Sr. No.	Topic	Hours
1	Introduction to Neural Networks Biological Neural Network Overview Artificial Neural Network Overview Shallow Neural Network Overview Learning Taxonomy Supervised and Unsupervised Learning Perceptron Learning rule Delta Learning rule Backpropagation Learning Algorithm	10
2	Introduction to Deep Learning Topology of Artificial Neural Network Gradient descent learning Momentum Based GD Principal Component Analysis and its interpretations, Singular Value Decomposition	5
3	Deep Learning Algorithms	10

	Convolution Neural Network Feedforward Neural Network Recurrent Neural Network Multilayer Perceptron Recursive Neural Network	
4	Classification with Multilayer Perceptron MNIST Handwritten Digit Classification Retinal Vessel Detection	6
5	Tools – For example Keras, TensorFlow, Theano, PyTorch	7
6	Case Study	7
	Total	45

Books Recommended:

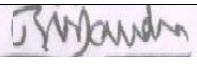
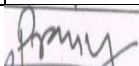
1. Neural Network and Deep Learning By Ronald Davis
2. Deep Learning and Neural Network By Pat Nakamoto
3. Introduction to Artificial Neural Systems By Jack M Zurada
4. Fundamentals of Neural Networks“, By Laurance Fausett, „Pearson Education, 2004.
5. Neural Networks A CLASS ROOM APPROACH By Satish Kumar, Tata McGraw –Hill Publishing.
6. Deep Learning, An MIT Press book, Ian Goodfellow and Yoshua Bengio and Aaron Courville

Suggested Evaluation Methods:

On line Test
Viva
Assignments

Parallel/Similar courses the existing curriculum:

S.No.	Name of the course	Institute where it was offered
1	Neural computing (Specialization in Artificial Intelligence)	RadBoud University, Netherlands Indian Institute of Technology, Kharagpur
2	Artificial Intelligence	Institute of Artificial Intelligence, University of Georgia
3	Deep learning	Indian Institute of Technology, Kharagpur
4	Deep learning	http://sggs.ac.in/newit/b-tech-syllabus-structure-from-2017-18 (SGGSIET, Department of IT, Nanded)

Name of Member	Dr. B. V. Dhandra	Dr. Pravin Metkewar			
Designation	Professor	Professor			
Org /Inst	SICSR	SICSR			
Signature					

Name of the Expert:

Signature:

Date:

