NEURAL NETWORKS
(ELECTIVE-II)

Course Code: 13IT2115 **L P C**
4 0 3

Course Outcomes:

At the end of the course, a student will be able to

CO 1: Identify Neural Network Models and their characteristics.
CO 2: Discuss Neural Network pattern recognition tasks.
CO 3: Describe feed-forward and feedback Neural Networks.
CO 4: Analyze feed-forward and feedback Neural Networks.
CO 5: Discuss the applications of Artificial Neural Networks.

UNIT- I

Basics of artificial neural networks: Characteristics of neural networks, Historical development of neural network, artificial neural networks: terminology, models of neurons, topology, basic learning laws.

Activation and synaptic dynamics: Activation Dynamics models, Synaptic Dynamics models, learning methods, stability and convergence, recall in neural networks.

UNIT -II

Functional units of ANN for pattern recognition tasks: Pattern Recognition Problems, basic functional units, Pattern Recognition tasks by the functional units

UNIT -III

Feed forward neural networks: Analysis of pattern association networks, Analysis of pattern classification networks, Analysis of pattern mapping networks.

Feedback neural networks: Analysis of linear auto associative FF Networks, Analysis of pattern storage networks, Stochastic Networks and Simulated Annealing, Boltzmann Machine.

UNIT -IV

Competitive learning neural networks: Components of competitive learning networks, analysis of feedback layer for different output functions, analysis of pattern clustering networks, analysis of feature mapping networks

UNIT- V

Architectures for complex pattern recognition tasks: Associative memory, pattern mapping, stability-plasticity dilemma: ART, Temporal patterns, Pattern Variability: Neocognition

Applications of ANN: Direct Applications, Application Area.

Text books:

1. B. Yegnanarayana, *Artificial Neural Networks*, 1st Edition, Prentice Hall, 2009

References:

1. Satish Kumar, *Neural Networks – A Classroom Approach*, 2nd Edition, Tata McGraw-Hill, 2004.
2. C.M.Bishop, *Pattern Recognition and Machine Learning*, 1st Edition, Springer, 2006.

Web reference :

www.nd.com/nnreference.html