EES-705 Soft Computing

Credit	L	T	P
4	**3**	**1**	**-**

UNIT-I
Hard Computing: Features of Hard Computing, Soft Computing: features of soft computing, Hybrid Computing, Fuzzy Set Theory: fuzzy versus crisp sets, basic fuzzy set operations, linguistic variables, membership functions, fuzzy Cartesian product, fuzzy relations, fuzzy rules.

UNIT-II
Approximate reasoning, fuzzy modelling, fuzzification, inferencing and defuzzification, fuzzymodeling and control schemes for nonlinear systems, applications in power system.

UNIT-III
Biological neural networks, models of an artificial neuron, neural network architectures, characteristics of neural networks, McCulloch-Pitts neuron, learning methods, Hebbian learningrules, Hebb nets.

UNIT-V
Architecture of backpropagation networks, perceptron model, single layer and multi-layer perceptron models, backpropagation learning, tuning parameters of backpropagation networks,neuro-fuzzy models, adaptive neuro-fuzzy inference system (ANFIS), applications.

UNIT-V
Basic concepts, creation of offsprings, working principle, encoding, fitness function, reproduction, Genetic Modelling; inheritance operators, cross over, inversion and deletion, mutation operator, bit-wise operator, generational cycle, convergence of genetic algorithm, multi-level optimization, real life problems

TEXT/REFFERENCE BOOKS

1. Soft Computing and Intelligent System Design: Theory, Tools and Applications,
1. Fakhreddine O. Karray and Clarence De Silva, Pearson Education Ltd., India.
2. Soft Computing: Techniques and its Applications in Electrical engineering, D. K.
3. Chaturvedi, Springer-Verlag, Germany.
4. Soft Computing and its Applications, R. A. Aliev and R. R. Aliev, World Scientific
5. Publishing Co. Pte. Ltd., Singapore.
4. Neuro-Fuzzy and Soft Computing: A Computational Approach to Learning and Machine
6. Intelligence, J.-S. R. Jang, C.-T. Sun, and E. Mizutani, Pearson Education Ltd., India.
5. Neural Networks, Fuzzy Logic, and Genetic Algorithms: Synthesis and Applications, S.
7. Rajasekaran and G. A. VijayalakshmiPai, Prentice Hall of India, New Delhi.