

**Soft Computing : Course Content , Lecture hours – 42 , notes, slides : 398**

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## **Course Content**

### **Soft Computing**

*Soft Computing topics : Introduction to soft computing, Fundamentals of neural network, Back propagation network, Associative memory, Adaptive resonance theory, Fuzzy set theory, Fuzzy systems, Genetic algorithms & modeling, and Hybrid systems.*

# Course Content

## Soft Computing

	Content	Hrs
01	<b>Introduction to Soft Computing :</b> Introduction, Fuzzy Computing, Neural Computing, Genetic Algorithms, Associative Memory, Adaptive Resonance Theory, Applications.	1-6
02	<b>Fundamentals of Neural Network :</b> Introduction, Model of Artificial Neuron, Architectures, Learning Methods, Taxonomy of NN Systems, Single-Layer NN System, Applications.	7-14
03	<b>Back Propagation Network :</b> Background, Back-Propagation Learning, Back-Propagation Algorithm.	15-20
04	<b>Associative Memory :</b> Description, Auto-associative Memory, Bi-directional Hetero-associative Memory.	21-24
05	<b>Adaptive Resonance Theory :</b> Recap - supervised, unsupervised, backprop algorithms; Competitive Learning; Stability-Plasticity Dilemma (SPD), ART Networks, Iterative Clustering, Unsupervised ART Clustering.	25-28
06	<b>Fuzzy Set Theory :</b> Introduction, Fuzzy set : Membership, Operations, Properties; Fuzzy Relations.	29-34
07	<b>Fuzzy Systems :</b> Introduction, Fuzzy Logic, Fuzzification, Fuzzy Inference, Fuzzy Rule Based System, Defuzzification	35-36
08	<b>Fundamentals of Genetic Algorithms :</b> Introduction, Encoding, Operators of Genetic Algorithm, Basic Genetic Algorithm.	37-40
09	<b>Hybrid Systems :</b> Integration of Neural Networks, Fuzzy Logic and Genetic Algorithms, GA Based Back Propagation Networks, Fuzzy Back Propagation Networks, Fuzzy Associative Memories, Simplified Fuzzy ARTMAP.	41-42