

Subject Code	Subject Name	Credits
26CS601	SOFT COMPUTING	04

Course Objectives

1. To get to know various software computing paradigms
2. To have a better understanding of fuzzy logic and its related concepts
3. To learn the inner working of neural networks in the field of computation
4. To learn and understand genetic algorithms as a whole.

Learning Outcomes

After the completion of the course, the graduate will be able to

1. To learn the various soft computing paradigms

Unit 1 - Introduction to Soft computing paradigms (12 Hrs.)

Introduction - Soft computing paradigms - Neural network - Fuzzy logic - Derivation free optimization methods of genetic algorithms - Soft computing characteristics.

Unit 2 - Fuzzy Logic (12 Hrs.)

Sets - properties - Arithmetic's - Members function - Fuzzy relations - Relation equations - Fuzzy measures - Types of uncertainty - Members of uncertainties - Measures of fuzziness - Probabilities Vs Possibility - Measures of fuzzy events.

Unit 3 - Neural Computing (12 Hrs.)

Neuron modeling - learning in simple neuron - Perception learning curve - Proof - Limitations of perception

Unit 4 - Neural Networks (12 Hrs.)

Multi-level perception - Algorithm - Visualizing network behavior - Self organizing network -Kohonen algorithm - Hopfield network - Adaptive resonance theory - Pattern classification.

Unit 5 - Genetic Algorithms (12 Hrs.)

Introduction - Biological terminology - Search space and fitness landscapes - Elements of genetic algorithms - Genetic algorithms in problem solving.

References:

1. S.N.Sivanandam and S.N.Deepa, "Principles of Soft Computing", Wiley India Pvt Ltd, 2011.
2. S.Rajasekaran and G.A.Vijayalakshmi Pai, "Neural Networks, Fuzzy Logic and Genetic Algorithm: Synthesis and Applications", Prentice-Hall of India Pvt. Ltd., 2006.
3. Theory of Fuzzy subsets, Kauffmann a, Academic Press.