GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Semester: 3

Computer Engineering

Subject Name **Fuzzy Logic and Neural Networks**

Sr.No	Course content
1.	**Introduction:** Crisp Sets, Fuzzy Set and Logic, Fuzzy Relations, Uncertainty and Information, Fuzzy Rule and Fuzzy Inference, Defuzzification, Fuzzy Analysis , Basic Concepts of Neurons, Single -Layer Perceptrons, Multi-Layer Perceptrons
2.	**Neural Network:** Single-Layer Perceptions as Classifiers, Single -Layer Feedback Networks, Multi - Layer Feed forward Networks, Associative Memories, Self -Organizing Networks, Swarm Intelligence, Supervised and Un - supervised Learning
3.	**Fuzzy System and Neural Network:** Applications of Fuzzy Logic: Expert System and Fuzzy Control, Pattern Recognition, Fuzzy Neural Networks, Radial Basis Function Neural Networks, The Power and computational Complexity of Neural Networks, Epistemological Considerations of Neural Computing, Application of Neural Networks: Speech Recognition, Classification, Clustering, Image Segmentation and Face Recognition.
4.	Contemporary RESEARCH Topics

Reference Books:

1. Zurada, J.," Introduction to Artificial Neural Systems", West Publishing Company, 1992.
2. Haykin, S. Neural Networks," A Comprehensive Foundation", 2/E, Macmillan College Publishing Company New York, 1999.
3. M. T. Hagan, H. B. Demuth, M. Beale," Neural Network Design", PWS Publishing Co., Boston, 1996.
4. H. J. Zimmermann, "Fuzzy Set Theory and its Application s", 2/E, Kluwer Academic, 1991.
5. Bart Kosko," Neural Networks and Fuzzy Systems: a dynamical systems approach to machine intelligence", Prentice Hall, 1992.