NEURAL NETWORKS AND FUZZY LOGIC CONTROL  
(ELECTIVE-II)

Course Code: 13EC2116  
L P C  
4 0 3

Pre requisites: Set Theory

Course Objective:  
1. To cater the knowledge of Neural Networks and Fuzzy Logic Control and use these for controlling real time systems.

Course Outcomes:  
1. To Expose the students to the concepts of feed forward neural networks  
2. To provide adequate knowledge about feedback networks.  
3. To teach about the concept of fuzziness involved in various systems. To provide adequate knowledge about fuzzy set theory.  
4. To provide comprehensive knowledge of fuzzy logic control and adaptive fuzzy logic and to design the fuzzy control using genetic algorithm.  
5. To provide adequate knowledge of application of fuzzy logic control to real time systems.

UNIT-I  
ARCHITECTURES:  

UNIT-II  
NEURAL NETWORKS FOR CONTROL:  
Feedback networks-Discrete time hop field networks-Schemes of neuro-control, identification and control of dynamical systems-case studies (Inverted Pendulum, Articulation Control).

UNIT-III  
FUZZY SYSTEMS:  
Classical sets-Fuzzy sets-Fuzzy relations-Fuzzification – Defuzzification- Fuzzy rules.
UNIT-IV  
FUZZY LOGIC CONTROL:  
Membership function – Knowledge base-Decision –making logic –  
Optimizations of membership function using neural networks-Adaptive  
fuzzy systems-Introduction to generate to genetic algorithm.

UNIT-V  
APPLICATION OF FLC:  
Fuzzy logic control-Inverted pendulum-Image processing-Home  
Heating system-Blood pressure during anesthesia-Introduction to neuro  
fuzzy controller.

TEXT BOOKS:

1. Kosko, B, “Neural Networks and Fuzzy Systems: A Dynamical  
Approach to Machine Intelligence”, PrenticeHall, NewDelhi,  
2004.

2. Timothy J Ross, “Fuzzy Logic with Engineering Applications”,  
John Willey and Sons, West Sussex, England, 2005.

REFERENCE BOOKS:

1. Jack M. Zurada, “Introduction to Artificial Neural Systems”,  

2. Klir G.J. &Folger T.A., “Fuzzy sets, Uncertainty and  


4. Driankov,Hellendoornb, “Introduction to fuzzy control”, Narosa  

5. LauranceFausett, Englewood cliffs, N.J., “Fundamentals of  
Neural Networks”, PearsonEducation, New Delhi, 2008.