Course Code	Course Name	Teaching Scheme			Credits Assigned			
		Theory	Practical	Tutorial	Theory	Practical	Tutorial	Total
EXC7052	Artificial Intelligence	04	--	--	04	--	--	04

Course Code	Course Name	Examination Scheme							
		Theory Marks				Term Work	Practical	Oral	Total
		Internal assessment			End Sem. Exam				
		Test 1	Test 2	Ave. Of Test 1 and Test 2					
EXC7052	Artificial Intelligence	20	20	20	80	-	-	-	100

Course Prerequisite:

- Knowledge of linear algebra, multivariate calculus, and probability theory
- Knowledge of a programming language (MATLAB /C/C ++ recommended)

Course Objective:

1. To study basics of biological Neural Network.
2. To understand the different types of Artificial Neural Networks
3. To know the applications of ANN
4. To study fuzzy logic and fuzzy systems

Course Outcome: At the end of completing the course of Artificial Neural Networks, a student will be able to:

1. Choose between different types of neural networks
2. Design a neural network for a particular application
3. Understand the applications of neural networks
4. Appreciate the need for fuzzy logic and control

Module No.	Unit No.	Topics	Hrs.
1.		**Fundamental Concepts of Neural Networks**	8
	1.1	Difference between fuzzy and crisp sets and applications of fuzzy logic and	
	1.2	Biological neurons, McCulloch and Pitts models *of* neuron, Important Terms of ANNs, McCulloch-Pitts Neuron, Hebb Network, Supervised learning,	
	1.3	Applications and scope of Neural Network	
2		**Supervised Learning Networks**	12
	2.1	Perception Networks: Adaline, Madaline	
	2.2	Back Propagation Network	
	2.3	Function Network	
3		**Unsupervised learning network**	12
	3.1	Max Net, Mexican Hat, Kohonen Self-organizing Feature	
	3.2	Maps, Learning Vector Quantization, Adaptive Resonance Theory	
4		**Associative networks**	10
	4.1	Pattern Association, Auto-associative Memory Network, Hetero-associative Memory Network, Bidirectional Associative Memory, Discrete Hopfield Networks	
	4.2	**Special networks:** Simulated annealing neural networks, Boltzmann machine, Brain-in-a-Box	
5		**Fuzzy logic**	10
	5.1	Fuzzy sets, Properties, Operations on fuzzy sets, Fuzzy relation Operations on fuzzy relations,	
	5.2	The extension principle, Fuzzy mean Membership functions, Fuzzification and defuzzification methods	
	5.3	Fuzzy controllers, Adaptive neuro-fuzzy information systems (ANFIS)	
		Total	**52**

Recommended Books:

1. Simon Haykin, "Neural Network a - Comprehensive Foundation", Pearson Education
2. Dr.S.N.Sivanandam,Mrs S.N. Deepa Introduction to Soft computing tool Wiley Publication
3. Satish Kumar Neural Networks:A classroom Approach Tata McGraw-Hill
4. Thimothv J. Ross, "Fuzz V Logic with Engineering Applications", McGraw -Hill
5. Rajsekaran S, Vijaylakshmi Pai, Neural Networks, Fuzzy Logic, andGenetic Algorithms, PHI
6. Hagan, Demuth, Beale, 'Neural Network Design', Thomson Learning
7. Christopher M Bishop Neural Networks For Pattern Recognition ,Oxford Publication
8. William W Hsieh Machine Learning Methods in the Environmental Sciences Neural Network and Kernels Cambridge Publication
9. Dr.S.N.Sivanandam, Dr.S.Sumathi Introduction to Neural Network Using Matlab Tata McGraw-Hill

Internal Assessment (IA):

Two tests must be conducted which should cover at least 80% of syllabus. The average marks of both the test will be considered as final IA marks

End Semester Examination:

1. Question paper will comprise of 6 questions, each of 20 marks.
2. Total 4 questions need to be solved.
3. Question No.1 will be compulsory and based on entire syllabus wherein sub questions of 2 to 5 marks will be asked.
4. Remaining questions will be selected from all the modules