Course Code:	EE-7705
Course Title:	Artificial Intelligence
Lecturer(s):	Dr. Kashif Ishaque, kashif.ishaque@pafkiet.edu.pk
Prerequisite:	Some basic Knowledge of undergraduate engineering education
Course Synopsis:	This course offers insights to the students into understanding two techniques of artificial intelligence (AI), namely, fuzzy logic and neural networks. Both techniques have been successfully applied by many industries into consumer products and industrial systems. Fuzzy logic offers flexibility in developing rule-based systems using natural language type of rules. Neural networks on the other hand, have strong generalization and discriminant properties and offer a simple way of developing system models and function approximation. They are highly applicable for many pattern recognition applications. This course offers basic understanding of these two AI techniques and their applications in the real world. The course also includes hands-on experiments and programming of fuzzy logic and neural networks concepts.
Course Aims:	This course is intended to provide a basic understanding of the concepts of AI, which include fuzzy logic and neural networks techniques, and some of their applications.
Course Objectives:	The course has been organized to have the following objectives: 1. To understand the broad concept of artificial intelligence and its applications. 2. To understand the basic principles of fuzzy logic and neural networks. 3. To study several neural network algorithms. 4. To study how fuzzy logic and neural networks are applied in some real world applications.
Course Contents:	1. Introduction To Artificial Intelligence 2. Introduction to Fuzzy Logic 3. Fuzzy Sets and Fuzzy Systems 4. Fuzzy Logic Control Systems (FLCS) and Applications 5. Simulations using Fuzzy Logic 6. Introduction to Artificial Neural Networks (ANN) 7. Simple Artificial Neural Networks 8. Gradient Descent Learning Algorithm 9. The Back-Error-Propagation Algorithm 10. Radial Basis Function ANN 11. ANN Applications and Case Studies

Teaching Approaches:	Lectures, Case studies and Simulations.
Grading System:	Research Assignment on Fuzzy Logic (25%) Test on Neural Networks (25%) Final Exam (50%)
Website:	https://groups.google.com/forum/#!forum/aai7705
References:	Timothy J. Ross, "Fuzzy Logic with Engineering Applications", third edition, 2010. B. Krose and P. Smagt " An Introduction to Neural Networks", 8th edition, 1996. Simon Haykin, "Neural Networks A Comprehensive Foundation" second edition,1999.