Philadelphia University
Course Outline (First Semester 2015/2016)

Course Syllabus	
Course Title	Neural Networks and Fuzzy Logic
Course Number	630514
Course Level	5th year
Class Time	10:10-11:00 (S-T-T)
Instructor	Dr. Qadri Hamarsheh
email	qhamarsheh@philadelphia.edu.jo
website	www.philadelphia.edu.jo/academics/qhamarsheh
Prerequisites	Intelligent Systems Design (630423)
Office Hours	Hours: 11:00– 12:00 (M-W), Office 6725
Text Book	Neural Network Design (2nd Edition), Martin T. Hagan and others, 2014

Course Description:

Basic introduction to neural networks & fuzzy logic, development and implementation. It includes; Neural versus conventional computing. Learning processes. The MLP NN, backpropagation learning algorithm. Recurrent networks. Self-organization Feature maps. Applications. Introduction to Fuzzy theory. Fuzzy Logic. Neuro-Fuzzy system in engineering.

Course Objectives

The main objective of this course is to provide the student with the basic understanding of neural networks and fuzzy logic fundamentals, Program the related algorithms and Design the required and related systems.

Time Schedule:

Duration: 16 weeks **Lectures:** 3 hours /week

Course Schedule

Week	Topic	Notes
1	Neuron Model and Neural Network Architectures : basic Concepts of NN's (MLP), Components of artificial neural networks: Matlab Implementation	
2		
3	Perceptron Learning Rule, Classification of linearly separable data with a perceptron, Backpropagation, Multi-layer feedforward networks: Matlab Implementation,	
4		
5	Recurrent Networks, Self-organizing Feature Map NN : Algorithm and Applications Hopefield NN's: Algorithms and Applications, Matlab Implementation	Quiz 1 First exam
6		
7		
8	Radial Basis neural Network	
9		
10	Applications using matlab:	
11		
12	Introduction to Fuzzy theory. Fuzzy Logic. Neuro-Fuzzy system in engineering	Quiz 2 Second exam
13		
14	Introduction to Neurofuzzy System.	
15	A Matlab_based simulation study to neurofuzzy system.	
16	**FINAL EXAM**	

Mode of Assessment

1-	**First Exam**	**20%**
2-	**Second Exam**	**20%**
3-	**Quizzes\Homework\ and or Projects**	**20%**
4-	**Final Exam**	**40%**

References

1- A Brief Introduction to Neural Networks, David Kriesel, 2005
2- Introduction to Fuzzy Logic using MATLAB, S. N. Sivanandam, and others, 2007, Springer
3- Neural Networks:A Comprehensive Study By:Simon Hyken. Macmillan Colledge Publishing, Inc.1996
4- Fuzzy Control and Fuzzy System. By: Witold Pedrycz.Research Studies Press Ltd.2nd d edition 1996
5- Foundations of Neural Networks, Fuzzy Systems, and Knowledge Engineering, Nikola K. Kasabov, 1998, MIT Press.