AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Deep Learning								
Course Code	EEE574		Couse Level	Second Cycle (Master's Degree)					
ECTS Credit	8	Workload	201 *(Hours)*	Theory	2	Practice	2	Laboratory	0
Objectives of the Course	To teach students techniques based on Deep Learning and other learning methods and practical applications; Demonstrate the importance of deep learning in computer engineering, computer science and artificial intelligence.								
Course Content	Artificial Neural Network Artificial Intelligence Machine Learning Single and Multi Layer Perceptrons								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Demonstration, Discussion, Case Study, Project Based Study, Individual Study, Problem Solving								
Name of Lecturer(s)	Assoc. Prof. Coşkun DENİZ								

Assessment Methods and Criteria		
Method	Quantity	Percentage (%)
Assignment	3	30
Term Assignment	1	70

Recommended or Required Reading	
1	Prof. Dr. Ercan Öztemel, 2003, “Yapay Sinir Ağları”, Papatya Yayıncılık, 238s. (Ders Kitabı).
2	Prof. Dr. Çetin Elmas, 2007, "Yapay Zeka Uygulamaları", Seçkin Yayıncılık, 425 s.
3	Haykin, Simon, 1998, “Neural Networks: A Comprehensive Fo-undation (2nd Edition)”, Prentice-Hall, 842p.

Week	Weekly Detailed Course Contents	
1	Theoretical & Practice	Acquaintance, Motivation and Importance of the course, Introduction to Artificial Neural Networks (ANN): Definition and Importance of ANN. ANN Tools and Software. Application Areas and Job Opportunities.
2	Theoretical & Practice	Artificial Intelligence (AI): What is Artificial Intelligence? Importance, Objectives, Subjects, Application Areas, Research Areas, AI Languages.
3	Theoretical & Practice	Fundamentals of ANN: Artificial Neuron and components. Types of Activation Functions. Biological Neuron. Biological Nervous System. Comparison of human brain and ANN.
4	Theoretical & Practice	Machine Learning.Supervised and Unsupervised Learning. Estimation, Classification and Clustering using ANN.
5	Theoretical & Practice	Single Layer Perceptrons: Examples of Perceptron ve ADALINE.
6	Theoretical & Practice	XOR Problem and need for Multi Layer Models.
7	Theoretical & Practice	Multi Layer Perceptrons (MLP).
8	Intermediate Exam	MidTerm Exam
9	Intermediate Exam	MidTerm Exam
10	Theoretical & Practice	Feed Forward Networks.
11	Theoretical & Practice	Back propagation Networks.
12	Theoretical & Practice	RBF (Radial Basis Function) Neural Networks.
13	Theoretical & Practice	LVQ (Learning Vector Quantization) Neural Networks.
14	Theoretical & Practice	SOM (Self-Orginizing Maps) Neural Networks.
15	Theoretical & Practice	Project presentation
16	Final Exam	Final Exam

Workload Calculation				
Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	16	6	4	160
Assignment	3	2	5	21

Project	1	10	10	20
			Total Workload (Hours)	201
			[Total Workload (Hours) / 25*] = **ECTS**	8
**25 hour workload is accepted as 1 ECTS*				

Learning Outcomes	
1	To gain the ability to apply the basic concepts, techniques, mathematics and software infrastructure of artificial neural networks.
2	To recognize and use the ANN tools that are widely used today. To obtain the basic information necessary to create ANN libraries in new programming languages (such as Java, C #, python). To be able to develop projects in real life such as Estimation, Classification and Recognition.
3	To be able to develop intelligent software; to understand how machines can learn; To be able to make effective ANN designs.
4	Being able to follow the research topics developing in the field of Image Processing; To be able to make presentations by preparing short seminars on this subject.
5	To gain experience in reading and writing articles.

Programme Outcomes *(Electrical and Electronics Engineering Master)*	
1	Developing and intensifying knowledge that requires expertise in the area of Electrical-Electronics Engineering, and gaining the skills necessary to analyze and solve problems using this knowledge
2	Grasping the inter-disciplinary interaction related to Electrical-Electronics Engineering, interpreting and forming new types of knowledge by combining the knowledge from Electrical-Electronics Engineering and the knowledge from various other disciplines
3	Developing new approaches to solve the complex problems arising in Electrical-Electronics Engineering, coming up with solutions while taking responsibility and carrying out a specific study independently
4	Assessing the knowledge and skill gained in the area of Electrical-Electronics Engineering with a critical view
5	Transferring the current developments and one’s own work in Electrical-Electronics Engineering, to other groups in written, oral and visual forms
6	The ability to control the collecting, interpreting, practicing and announcing processes of the Electrical-Electronics Engineering related to data taking into consideration scientific, cultural and ethical values and the ability to teach these values to others
7	Developing application plans concerning the subjects related to Electrical-Electronics Engineering and the ability to evaluate the end results of these plans within the frame of quality processes

Contribution of Learning Outcomes to Programme Outcomes *1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High*

	L1	L2	L3	L4	L5
P1	3	4	3	3	4
P2	3	4	3	3	4
P3	3	4	5	3	4
P4	3	3	5	3	4
P5	4	5	5	4	4
P6	3	4	4	3	4
P7	4	3	3	4	4