



AYDIN ADNAN MENDERES UNIVERSITY
GRADUATE SCHOOL OF HEALTH SCIENCES
BIostatISTICS
BIostatISTICS (MEDICAL)
BIostatISTICS (MEDICAL) MASTER
COURSE INFORMATION FORM

Course Title	Artificial Neural Networks Methods								
Course Code	BİS525	Course Level			Second Cycle (Master's Degree)				
ECTS Credit	8	Workload	200 (Hours)	Theory	3	Practice	0	Laboratory	0
Objectives of the Course	Students will make familiar with the basics of artificial neural networks methods and with their applicability to various problems including time series, regression, clustering, classification and dimension reduction.								
Course Content	Theory and application of regression, classification, time series and data reduction.								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Demonstration, Project Based Study, Individual Study								
Name of Lecturer(s)	Prof. İmran KURT ÖMÜRLÜ								

Assessment Methods and Criteria		
Method	Quantity	Percentage (%)
Midterm Examination	1	40
Final Examination	1	60

Recommended or Required Reading	
1	Zurada, J. M. (1992). Introduction to artificial neural systems (Vol. 8). St. Paul: West publishing company.
2	Haykin, S. S., Haykin, S. S., Haykin, S. S., Elektroingenieur, K., & Haykin, S. S. (2009). Neural networks and learning machines (Vol. 3). Upper Saddle River: Pearson education.
3	Hagan, M. T., Demuth, H. B., Beale, M. H., & De Jesús, O. (1996). Neural network design (Vol. 20). Boston: Pws Pub..
4	Öztemel, E. (2003). Yapay sinir ağları. PapatyaYayıncılık, İstanbul.

Week	Weekly Detailed Course Contents	
1	Theoretical	Real and artificial nerve cells
2	Theoretical	History of artificial neural networks
3	Theoretical	Purposes of use of artificial neural networks
4	Theoretical	Structure and basic elements of artificial neural networks
5	Theoretical	Examination of activation functions
6	Theoretical	Perceptrons
7	Theoretical	Multi-layer perceptrons
8	Intermediate Exam	Midterm exam
9	Theoretical	Forward and feedback networks
10	Theoretical	Artificial neural networks according to learning algorithms
11	Theoretical	Training of artificial neural networks and performance measures
12	Theoretical	Adaptive resonance theory (Art) networks
13	Theoretical	Recycled networks (Elman Network) and other artificial neural network models
14	Theoretical	Prediction, classification and clustering with ANN.
15	Theoretical	Literature review and discussion
16	Final Exam	Final exam

Workload Calculation				
Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	0	3	42
Assignment	1	10	0	10
Seminar	1	15	2	17
Reading	5	4	1	25
Individual Work	10	0	2	20
Quiz	14	2	1	42
Midterm Examination	1	20	2	22



Final Examination	1	20	2	22
			Total Workload (Hours)	200
			[Total Workload (Hours) / 25*] = ECTS	8
*25 hour workload is accepted as 1 ECTS				

Learning Outcomes

1	To be able to define basic neural network models
2	To be able to use commonly used ANN models and learning algorithms for a specific application
3	To learn the principles of generalization ability with supervised and unsupervised learning
4	To be able to learn the advantages and limitations of ANN
5	To be able to make applications about classification and regression problems by using artificial neural networks

Programme Outcomes (Biostatistics (Medical) Master)

1	To be able to understand the interdisciplinary interaction related with biostatistics.
2	to be able to use Theoretical and practical knowledge at the level of expertise.
3	To be able to interpret the information by integrating information from different disciplines and create new information
4	To be able to analyze the problems encountered by using research methods
5	to be able to conduct a study as an independent specialist
6	To be able to formulate solutions for complex unpredictable problems encountered by developing new approaches and taking responsibility.
7	To be able to resolve problems in environments that require leadership.
8	To be able to evaluate and direct knowledge and skills with a critical approach at the level of expertise.
9	To be able to give statistical advice at the beginning stages of preparing health related projects
10	To be able to get the knowledge and the ability of using statistical packages

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

	L1	L4
P1	3	3
P2	5	4
P3	4	4
P4	4	5
P5	5	5
P6	4	5
P7	3	5
P8	4	4
P9	5	5
P10	4	4

