

MACHINE LEARNING

1	Course Title:	MACHINE LEARNING	
2	Course Code:	ELN5702	
3	Type of Course:	Optional	
4	Level of Course:	Second Cycle	
5	Year of Study:	1	
6	Semester:	2	
7	ECTS Credits Allocated:	6.00	
8	Theoretical (hour/week):	3.00	
9	Practice (hour/week):	0.00	
10	Laboratory (hour/week):	0	
11	Prerequisites:		
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Dr. Öğr. Üyesi GIYASETTİN ÖZCAN	
15	Course Lecturers:		
16	Contact information of the Course Coordinator:	Bilgisayar Müh. Bölüm Binası, 1. kat, oda 107 Tel.:+90 (224) 294 2792 email: gozcan at uludag.edu.tr	
17	Website:		
18	Objective of the Course:	Feature extraction with statistical techniques from available data. Based on these assessments, to be able to design learning rules. After learning step, to be able to present accurate prediction result.	
19	Contribution of the Course to Professional Development:		
20	Learning Outcomes:		
		1	Learns to exploit Probability/Statistics rules to attain accurate prediction
		2	Learns SVM Theorem
		3	Learns Bayes Theorem
		4	Learns Ensemble methods
		5	Learns data reduction methods
		6	Learns Expectation maximization
		7	Learns Hidden Markov Models
		8	Learns artificial neural networks and deep learning
		9	Learns to make implementations with R and python
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21	Course Content:		
		Course Content:	
Week	Theoretical	Practice	
1	Introduction		
2	Bayes Theorem		
3	Bayes networks		
4	SVM, overfitting		
5	Ensemble methods		

6	Expectation Maximization, parametric/non parametric methods	
7	Data reduction	
8	Regression	
9	Hidden Markov Models	
10	Baum Welsch Algorithm	
11	Artificial neural networks	
12	Deep learning	
13	Python programming and its deep learning interfaces	
14	Application development	

22	Textbooks, References and/or Other Materials:	1. K. P. Murphy, Machine Learning: A Probabilistic Perspective, MIT Press, 2012. 2. C. M. Bishop, Pattern Recognition and Machine Learning, Springer, 2006.
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23	Assesment	
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TERM LEARNING ACTIVITIES	NUMBER	WEIGHT
Midterm Exam	1	25.00
Quiz	0	0.00
Home work-project	2	15.00
Final Exam	1	60.00
Total	4	100.00
Contribution of Term (Year) Learning Activities to Success Grade		40.00
Contribution of Final Exam to Success Grade		60.00
Total		100.00
Measurement and Evaluation Techniques Used in the Course		

24	ECTS / WORK LOAD TABLE
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Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	3.00	42.00
Practicals/Labs	0	0.00	0.00
Self study and preperation	0	0.00	0.00
Homeworks	2	19.00	38.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	50.00	50.00
Others	0	0.00	0.00
Final Exams	1	50.00	50.00
Total Work Load			180.00
Total work load/ 30 hr			6.00
ECTS Credit of the Course			6.00

25	CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS
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	PQ1	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9	PQ10	PQ11	PQ12	PQ13	PQ14	PQ15	PQ16
LO: Learning Objectives PQ: Program Qualifications																
Contribution Level:	1 very low		2 low			3 Medium			4 High			5 Very High				