ARTIFICIAL INTELLIGENCE

1	Course Title:	ARTIFICIAL INTELLIGENCE	
2	Course Code:	END6122	
3	Type of Course:	Optional	
4	Level of Course:	Third Cycle	
5	Year of Study:	1	
6	Semester:	2	
7	ECTS Credits Allocated:	7.50	
8	Theoretical (hour/week):	3.00	
9	Practice (hour/week):	0.00	
10	Laboratory (hour/week):	0	
11	Prerequisites:	None	
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Prof. Dr. NURSEL ÖZTÜRK	
15	Course Lecturers:		
16	Contact information of the Course Coordinator:	nursel@uludag.edu.tr +90 224 2942083 Bursa Uludağ Üniversitesi Endüstri Mühendisliği Bölümü	
17	Website:		
18	Objective of the Course:	The objective of this course is to provide students the knowledge of Artificial Intelligence and related topics with applications.	
19	Contribution of the Course to Professional Development:	The contribution of the course to the professional development is to introduce the knowledge and applications about artificial intelligence, and to provide ability to apply the learned artificial intelligence techniques.	
20	Learning Outcomes:		
		1	Will be able to understand knowledge of the artificial intelligence and related topics
		2	Will be able to design an intelligent system with using expert system, fuzzy logic, neural network, etc.
		3	Will be able to present an artificial intelligence project
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21	Course Content:		

Course Content:

Week	Theoretical	Practice
1	Fundamental principles of artificial intelligence, Expert system, General structure of expert system	

2	Knowledge representation techniques, Search techniques, Inference, Forward chaining, Backward chaining	
3	Design of expert systems, Probability and expert systems, Application examples	
4	Fuzzy sets, Properties of fuzzy sets, Fuzzy set operations	
5	Fuzzy relations, Membership functions, Fuzzification	
6	Fuzzy inference techniques, Defuzzification techniques	
7	Natural language, Fuzzy systems	
8	Fuzzy systems, Application examples	
9	Artificial neural networks	
10	Artificial neural networks	
11	Artificial neural networks, Application examples	
12	Deep learning	
13	Deep learning	
14	Deep learning, Application examples	

22	Textbooks, References and/or Other Materials:	N. Allahverdi, Uzman Sistemler, Bir Yapay Zeka Uygulaması, Atlas Yay. J. C. Giarratano, G.D. Riley, Expert Systems Principles and Programming, Thomson Course Technology. S. N. Sivanandam, S. Sumathi, S. N. Deepa, Introduction to Fuzzy Logic using MATLAB, Springer, 2007. T.J. Ross, Fuzzy Logic with Engineering Applications, Wiley, 2010. A. Yılmaz, Yapay Zeka, Kodlab, 2020. P. Kim, MATLAB Deep Learning: With Machine Learning, Neural Networks and Artificial Intelligence, Apress, 2017. Y. Özkan, Uygulamalı Derin Öğrenme: Yapay Zeka, Makine Öğrenmesi, Yapay Sinir Ağları, Papatya Yay. 2021. S. Shanmuganathan, S. Samarasinghe, Artificial Neural Network Modelling, Springer, 2016.
23	Assesment	

TERM LEARNING ACTIVITIES	**NUMBER**	**WEIGHT**
Midterm Exam	0	0.00
Quiz	0	0.00
Home work-project	4	40.00
Final Exam	1	60.00
Total	5	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	Homework, Project, Final Exam

24 ECTS / WORK LOAD TABLE

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	14	10.00	140.00
Homeworks	3	5.00	15.00
Projects	1	25.00	25.00
Field Studies	0	0.00	0.00
Midterm exams	0	0.00	0.00
Others	0	0.00	0.00
Final Exams	1	3.00	3.00
Total Work Load			225.00
Total work load/ 30 hr			7.50
ECTS Credit of the Course			7.50

25 CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS

	PQ1	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9	PQ10	PQ11	PQ12	PQ13	PQ14	PQ15	PQ16
ÖK1	0	0	5	0	0	0	0	0	5	0	0	5	0	0	0	0
ÖK2	0	0	5	4	5	0	0	0	5	0	0	5	0	0	0	0
ÖK3	0	0	0	0	0	5	5	5	0	0	4	5	0	0	0	0

LO: Learning Objectives PQ: Program Qualifications

Contribution Level:	1 very low	2 low	3 Medium	4 High	5 Very High