ARTIFICIAL INTELLIGENCE

1	Course Title:	ARTIFICIAL INTELLIGENCE
2	Course Code:	BMB3015
3	Type of Course:	Optional
4	Level of Course:	First Cycle
5	Year of Study:	3
6	Semester:	5
7	ECTS Credits Allocated:	5.00
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. Ögr. Üyesi CEYDA NUR ÖZTÜRK
15	Course Lecturers:	
16	Contact information of the Course Coordinator:	ceydanur@uludag.edu.tr
17	Website:	
18	Objective of the Course:	To introduce the methods and tools that are used for making computer systems equipped with the abilities of problem solving, inference, learning, communication, perception, and action in various environments
19	Contribution of the Course to Professional Development:	Engineering Science: 70%, Engineering Design: 30%
20	Learning Outcomes:	

	1	Being able to design artificial intelligence systems that are appropriate for working in different contexts
	2	Being able to solve a problem state-space of which is defined using different search methods
	3	Being able to program inferential problems using artificial intelligence languages
	4	Being able to select and implement appropriate learning methods for the problems
	5	Being informed about the basic concepts and issues of communication, perception, and action
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21	Course Content:	
	Course Content:	
Week	Theoretical	Practice
1	Introduction, intelligent agents	
2	Problem solving by searching, uninformed search algorithms	
3	Informed search algorithms	

4	Local search algorithms	
5	Adversarial search	
6	Logical inference, first-order logic	
7	Prolog programming	
8	Knowledge representation and semantic networks	
9	Learning from observations, decision trees	
10	Uncertainty, statistical inference, Bayesian learning	
11	Artificial neural networks, backpropagation algorithm	
12	Communication, formal grammars, syntactic and semantic analyses	
13	Perception, image formation and image processing	
14	Action, robot localization, mapping and planning	

22	Textbooks, References and/or Other Materials:	1. Russell, S., and Norvig, P., 2016. Artificial Intelligence: A Modern Approach, 3rd Edition, Pearson Education, ISBN-10: 0136042597 ISBN-13: 978-1292153964. 2. Zhang, A., Lipton, Z. C., Li, M., and Smola, A. J., 2022. Dive into deep learning. arXiv preprint DOI: https://doi.org/10.48550/arXiv.2106.11342. 3. Ekman, M., 2021. Learning Deep Learning: Theory and Practice of Neural Networks, Computer Vision, NLP, and Transformers Using TensorFlow, Addison-Wesley Professional, ISBN-10: 0137470355 ISBN-13: 978-0137470358.
23	Assesment	

TERM LEARNING ACTIVITIES	**NUMBER**	**WEIGHT**
Midterm Exam	1	10.00
Quiz	0	0.00
Home work-project	3	30.00
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		Programming and study assignments, written exams

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	3.00	42.00
Homeworks	3	14.00	42.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	11.00	11.00
Others	0	0.00	0.00
Final Exams	1	13.00	13.00
Total Work Load			161.00
Total work load/ 30 hr			5.00
ECTS Credit of the Course			5.00

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	5	4	4	3	2	3	2	1	2	2	0	2	0	0	0	0
ÖK2	5	5	5	5	3	4	3	1	3	3	0	0	0	0	0	0
ÖK3	5	4	5	5	3	4	3	1	3	3	0	0	0	0	0	0
ÖK4	5	5	5	5	3	4	3	1	3	3	0	0	0	0	0	0
ÖK5	4	4	3	3	1	2	2	1	2	2	0	1	0	0	0	0

LO: Learning Objectives PQ: Program Qualifications

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