HEURISTIC ALGORITHMS

1	Course Title:	HEURISTIC ALGORITHMS	
2	Course Code:	END5123	
3	Type of Course:	Optional	
4	Level of Course:	Second Cycle	
5	Year of Study:	1	
6	Semester:	1	
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 Uludağ Üniversitesi, Endüstri Mühendisliği Bölümü	
17	Website:		
18	Objective of the Course:	The objective of this course is to provide students the knowledge of Heuristic Algorithms with engineering applications.	
19	Contribution of the Course to Professional Development:		
20	Learning Outcomes:		
		1	Will be able to have knowledge and understanding of heuristic algorithms
		2	Will be able to solve the engineering problems using the heuristic algorithms.
		3	Will be able to present a heuristic algorithm project
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21	Course Content:		

Course Content:

Week	Theoretical	Practice
1	Introduction to heuristic algorithms	
2	Simulated Annealing algorithm	
3	Simulated Annealing algorithm, application examples	
4	Tabu Search algorithm	
5	Tabu Search algorithm, application examples	

6	Genetic Algorithms, presentation of homework 1	
7	Genetic Algorithms	
8	Ant Colony Algorithms	
9	Ant Colony Algorithms	
10	Application examples, presentation of homework 2, Midterm Exam	
11	Differential Evolution Algorithm	
12	Artificial Immune System	
13	Application examples, Presentation of homework 3	
14	Oral presentation of projects	

22	Textbooks, References and/or Other Materials:	N. Öztürk, “Sezgisel Algoritmalar Course Notes”. D.E. Goldberg, “Genetic Algorithms in Search, Optimization and Machine Learning”. Articles
23	Assesment	

TERM LEARNING ACTIVITIES	**NUMBER**	**WEIGHT**
Midterm Exam	1	20.00
Quiz	0	0.00
Home work-project	4	50.00
Contribution of Term (Year) Learning Activities to Success Grade		70.00
Contribution of Final Exam to Success Grade		30.00
Total		100.00
Measurement and Evaluation Techniques Used in the Course		

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	4	3.00	12.00
Projects	1	25.00	25.00
Field Studies	0	0.00	0.00
Midterm exams	1	2.50	2.50
Others	0	0.00	0.00
Final Exams	1	3.50	3.50
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	5	0	0	0	0	0	5	0	0	0	0	0	0	0	0
ÖK2	0	5	0	0	0	0	0	5	0	0	0	0	0	0	0	0
ÖK3	0	0	5	0	5	4	0	5	0	0	4	4	0	0	0	0

LO: Learning Objectives PQ: Program Qualifications

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