DATA STRUCTURES AND ALGORITHMS

1	Course Title:	DATA STRUCTURES AND ALGORITHMS	
2	Course Code:	BLPS130	
3	Type of Course:	Optional	
4	Level of Course:	Short Cycle	
5	Year of Study:	1	
6	Semester:	2	
7	ECTS Credits Allocated:	3.00	
8	Theoretical (hour/week):	2.00	
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:	Öğr. Gör. AYŞE BAŞTUĞ KOÇ	
15	Course Lecturers:		
16	Contact information of the Course Coordinator:	aysebastugkoc@uludag.edu.tr, +902242942677, Bursa Uludağ Üniversitesi Gemlik Asım Kocabıyık MYO Bilgisayar Programcılığı-Gemlik/Bursa	
17	Website:		
18	Objective of the Course:	It is the analysis of algorithms needed in creating mathematical models and any subject containing data, storing information in computer memory and presenting basic data structures designed to access this information.	
19	Contribution of the Course to Professional Development:	It makes students aware of the structures used for storing and processing data during programming. On the importance of quantitative methods used in software design is settled.	
20	Learning Outcomes:		
		1	Learns algorithm development and analysis methods.
		2	Knows how algorithms measure their performance.
		3	Learns sorting and search methods.
		4	Gains knowledge of data and basic data types.
		5	Learns the basic data structures designed to store and access information in computer memory.
		6	Can solve problems with stack, queue, list, linked list, tree, graph data structures.
		7	It performs all the subjects using a programming language.
		8	
		9	
		10	
21	Course Content:		

Course Content:

Week	Theoretical	Practice
1	Algorithm Development and Algorithm Analysis	
2	Basic Data Types, Memory Management and Recursive Algorithms	

3	Search Algorithms	
4	Sorting Algorithms	
5	Lists	
6	One-Way and Two-Way Linked Lists	
7	Stacks	
8	An Overview and Midterm	
9	Queues	
10	Graph Definition and Representation, Graph Navigating Algorithms	
11	Graph Shortest Path Finding Algorithms: Dijktra, Bellman & Ford	
12	Trees	
13	Binary Tree, Heap Tree, AVL Trees	
14	General Tree Applications, Huffman Coding, Lempelziv Coding	

22	Textbooks, References and/or Other Materials:	“Data Structures, Past, Present, and Future,” Mark Allen Weiss, Proceedings of the 46th ACM Technical Symposium on Computer Science Education, 2015. Dr.Rıfat ÇÖLKESEN, "Veri yapıları ve algoritmalar", Papatya yayıncılık, 2002. Lecture Notes.

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	2.00	28.00
Practicals/Labs	0	0.00	0.00
Self study and preperation	14	2.00	28.00
Homeworks	14	2.00	28.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	3.00	3.00
Others	0	0.00	0.00
Final Exams	1	3.00	3.00
Total Work Load			90.00
Total work load/ 30 hr	students' learning in the	course.	3.00
ECTS Credit of the Course			3.00

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

ÖK5	4	4	2	5	5	4	3	1	1	1	1	0	0	0	0	0
ÖK6	4	4	2	5	5	4	3	1	1	1	1	0	0	0	0	0
ÖK7	4	5	3	4	5	4	3	1	1	1	1	0	0	0	0	0

LO: Learning Objectives PQ: Program Qualifications

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