DATA ANALYTICS

1	Course Title:	DATA ANALYTICS	
2	Course Code:	END5505	
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. TÜLİN İNKAYA	
15	Course Lecturers:		
16	Contact information of the Course Coordinator:	Prof. Dr. Tülin İnkaya E-posta: tinkaya@uludag.edu.tr Tel: +90 224 294 2605 Adres: Bursa Uludağ Üniversitesi, Endüstri Mühendisliği Bölümü, Görükle Bursa16059 Nilüfer / BURSA	
17	Website:	ukey.uludag.edu.tr	
18	Objective of the Course:	With the developing technology, large amount of data is stored in the production and service systems. Data science aims to contribute to the decision-making processes by analyzing these data and extracting meaningful and useful information. This course aims to introduce basic data science concepts, to provide the skills for application of the algorithms in this field to various databases, and to interpret the results.	
19	Contribution of the Course to Professional Development:	This course contributes to the professional development of the students by introducing basic concepts and information about data science, spanning the data science applications in business and science, and providing the ability to apply the knowledge they have learned.	
20	Learning Outcomes:		
		1	Ability to comprehend basic data science concepts and data science methods.
		2	Ability to apply data mining algorithms to various data sets.
		3	Ability to evaluate and interpret the results obtained.
		4	Ability to follow current problems and research topics related to data mining.
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21	Course Content:		
	Course Content:		

Week	Theoretical	Practice
1	Basic concepts about data science and data analytics	
2	Data types, similarity and dissimilarity measures, and data visualization; applications in Weka	
3	Data pre-processing and attribute selection	
4	Classification - Decision trees and evaluation of classification result	
5	Classification - Naive Bayes and k-nearest neighbor	
6	Classification - Support vector machine and logistic regression	
7	Classification - Neural networks and ensemble approaches; applications in Weka	
8	Association rule mining	
9	Clustering - k-means and its variations, hierarchical clustering	
10	Clustering - Density based clustering, probability based approaches	
11	Validation and evaluation of clustering result, applications in Weka	
12	Outlier analysis	
13	Data mining applications - Text mining, recommendation systems, spatio-temporal data mining	
14	Project presentations	

22	Textbooks, References and/or Other Materials:	G. Shmueli, N. R. Patel, P. C. Bruce, Data Mining for Business Intelligence: Concepts, Techniques and Applications in Microsoft Office Excel with XLMiner, 2nd Edition, John Wiley and Sons, 2010. P.-N. Tan, M. Steinbach, V. Kumar, Introduction to Data Mining, Pearson Addison Wesley, 2006.
23	Assesment	

TERM LEARNING ACTIVITIES	**NUMBER**	**WEIGHT**
Midterm Exam	0	0.00
Quiz	0	0.00
Home work-project	1	60.00
Final Exam	1	40.00
Total	2	100.00
Contribution of Term (Year) Learning Activities to Success Grade		60.00
Contribution of Final Exam to Success Grade		40.00
Total		100.00
Measurement and Evaluation Techniques Used in the Course		A three-stage project and a 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	8.00	112.00
Homeworks	0	0.00	0.00
Projects	1	60.00	60.00
Field Studies	0	0.00	0.00
Midterm exams	0	0.00	0.00
Others	0	0.00	0.00
Final Exams	1	11.00	11.00
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	0	5	0	0	0	5	0	0	5	0	0	0	0	0
ÖK2	0	0	0	5	0	0	0	5	0	0	5	0	0	0	0	0
ÖK3	0	0	0	5	0	0	0	5	0	0	5	0	0	0	0	0
ÖK4	0	0	0	5	0	0	0	5	0	0	5	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**