TRIBOLOGY

1	Course Title:	TRIBOLOGY
2	Course Code:	MAK5213
3	Type of Course:	Optional
4	Level of Course:	Second Cycle
5	Year of Study:	1
6	Semester:	1
7	ECTS Credits Allocated:	6.00
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. ALİ BAYRAM
15	Course Lecturers:	
16	Contact information of the Course Coordinator:	bayram@uludag.edu.tr (224) 294 19 56 Uludağ Üni. Müh. Mim. Fak. Makine Müh. Bölümü
17	Website:	
18	Objective of the Course:	Introducing of tribological systems in engineering applications and being informed about protection from wear (reducing to minimum).
19	Contribution of the Course to Professional Development:	
20	Learning Outcomes:	

	1	To be able to understand importance of friction and wear in engineering.
	2	To be able to define structure of tribological system in applications.
	3	To be able to define surface roughness and measure.
	4	To be able to define friction and wear mechanisms in tribological systems in application.
	5	To be able to establish a tribological system model for friction and wear experiments.
	6	To be able to do measurements for friction and wear..
	7	To be able to apply protective methods from wear in application.
	8	To be able to do suitable design as depending on structure of tribological system in application.
	9	
	10	

21	Course Content:	
	Course Content:	
Week	Theoretical	Practice
1	Introduction to course and course content. Definition of tribology and its importance in engineering.	

2	Tribological system structure and defining of tribo-system parameters.	
3	Real structure of surface region and importance of surface roughness in tribology.	
4	Measurement methods of surface roughness and defining of surface roughness values.	
5	Friction and wear mechanisms and classification of them.	
6	Defining and establishing of tribological model systems and, friction and wear experiments.	
7	Friction and wear measurement methods.	
8	Repeating courses and midterm exam	
9	Protection methods from wear (reducing to minimum).	
10	Systems running in dry and semi-liquid friction region.	
11	Lubricants and lubrication technique.	
12	Tribological application examples.	
13	Tribological system design for application.	
14	Tribological system design for application.	

22	Textbooks, References and/or Other Materials:	1. A.H. Demirci; “Engineering Materials, Important Industrial Materials and Heat Treatments” Alfa/Aktüel Yayınları, Gstanbul, 2004 2. A.H. Demirci; Tribology Course Notes, U.Ü. 1995 KOMBOLOV. 1982. Friction and Wear Calculation Methods. Pergamen, New York. Press.

23 Assesment					
TERM LEARNING ACTIVITIES	**NUMBER**	**WEIGHT**			
Midterm Exams	1	40			
Home works					
Final Exams	1	100			
Total	3	100.00			

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	5.00	70.00
Homeworks	1	25.00	25.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm Exams	1	20.00	20.00
Others	1	38.00	38.00
Final project	1	30.00	30.00
Total Work Load			225.00
Total work load/ 30 hr			7.50
ECTS Credit of the Course			6.00

Success Grade	
Contribution of Final Exam to Success Grade	50.00
Total	100.00
Measurement and Evaluation Techniques Used in the Course	

24	**ECTS / WORK LOAD TABLE**

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	2	1	1	1	1	1	2	1	1	1	1	0	0	0	0	0

ÖK2	3	2	2	1	1	1	2	1	1	1	1	0	0	0	0	0
ÖK3	4	2	2	4	1	1	2	1	2	4	1	0	0	0	0	0
ÖK4	4	1	2	1	1	1	2	1	2	1	1	0	0	0	0	0
ÖK5	4	4	4	3	2	1	2	1	4	4	1	0	0	0	0	0
ÖK6	4	1	2	4	1	1	2	1	3	4	1	0	0	0	0	0
ÖK7	4	3	3	1	1	1	2	1	4	2	1	0	0	0	0	0
ÖK8	5	4	5	1	3	1	2	1	4	3	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**