MODERN SURFACE TREATMENT

1	Course Title:	MODERN SURFACE TREATMENT	
2	Course Code:	YIT6001	
3	Type of Course:	Optional	
4	Level of Course:	Third 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. Hakan AYDIN	
15	Course Lecturers:		
16	Contact information of the Course Coordinator:	e-mail: hakanay@uludag.edu.tr Tel: + 90 (224) 294 06 52 Adres: Uludağ Üniversitesi, Mühendislik-Mimarlık Fakültesi, Makine Mühendisliği Bölümü, 16059, Görükle-Bursa, Türkiye.	
17	Website:		
18	Objective of the Course:	To gain advanced knowledge and skills about surface treatments to improve wear and corrosion properties without decreasing ductility	
19	Contribution of the Course to Professional Development:	Have detailed information about the surface treatment of materials	
20	Learning Outcomes:		
		1	To be able to comprehend the methods of surface cleaning and prepairing
		2	To be able to carry out surface hardening treatment by cementation
		3	To be able to carry out surface hardening treatment by nitriding
		4	To be able to carry out boronizing, galvanizing, chromium and nickel plating
		5	To be able to comprehend vapour deposition processes
		6	To be able to comprehend ion implantation
		7	To be able to comprehend plasma and termal spraying
		8	
		9	
		10	
21	Course Content:		

Course Content:

Week	Theoretical	Practice
1	Surface cleaning and prepairing	
2	Cementation	
3	Nitriding	

4	Plasma nitriding	
5	Boronizing and chromium plating	
6	Nickel plating and galvanizing	
7	Chemical vapour deposition	
8	Chemical vapour deposition	
9	Chemical vapour deposition	
10	Physical vapour deposition	
11	Physical vapour deposition	
12	Ion implantation	
13	Plasma spraying	
14	Thermal spraying	

22	Textbooks, References and/or Other Materials:	1. ASM Handbook Volume 5, 2. Metallurgical and Ceramic Protective Coatings, (Kurt H. Stern, Chapman&Hall,1996)
23	Assesment	

TERM LEARNING ACTIVITIES	**NUMBER**	**WEIGHT**
Midterm Exam	1	40.00
Quiz	0	0.00
Home work-project	1	60.00
Final Exam	0	0.00
Total	2	100.00
Contribution of Term (Year) Learning Activities to Success Grade		100.00
Contribution of Final Exam to Success Grade		0.00
Total		100.00
Measurement and Evaluation Techniques Used in the Course		Relative evaluation

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	15	5.00	75.00
Homeworks	1	2.00	2.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	2.00	2.00
Others	10	6.00	60.00
Final Exams	0	0.00	0.00
Total Work Load			183.00
Total work load/ 30 hr			6.03
ECTS Credit of the Course			6.00

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	1	1	1	0	1	1	1	1	3	1	1	1	1	1	1
ÖK2	5	4	4	2	1	1	1	1	1	2	1	1	1	1	1	1
ÖK3	5	4	4	2	1	1	1	1	1	2	1	1	1	1	1	1
ÖK4	5	4	4	2	1	1	1	1	1	2	1	1	1	1	1	1
ÖK5	5	4	4	3	2	1	1	1	2	1	3	1	1	1	1	1
ÖK6	3	5	3	1	1	1	1	2	1	3	1	1	1	1	1	1
ÖK7	3	5	3	1	1	1	1	2	1	3	1	1	1	1	1	1
LO: Learning Objectives PQ: Program Qualifications																
Contribution Level:	**1 very low**		**2 low**			**3 Medium**				**4 High**			**5 Very High**			