

EMISSION CONTROL AND MONITORING

1	Course Title:	EMISSION CONTROL AND MONITORING	
2	Course Code:	OTO6118	
3	Type of Course:	Optional	
4	Level of Course:	Third Cycle	
5	Year of Study:	2	
6	Semester:	4	
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:		
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Prof. Dr. M.İHSAN KARAMANGİL	
15	Course Lecturers:		
16	Contact information of the Course Coordinator:	E-posta : ihsan@uludag.edu.tr T: +90 224 2941978 Uludağ Üniversitesi Mühendislik Mimarlık Fakültesi Otomotiv Mühendisliği Bölümü Görükle Kampusu Bursa 16059	
17	Website:		
18	Objective of the Course:	Objective of the course is to investigate the emission control techniques in engines in detail.	
19	Contribution of the Course to Professional Development:	Students participating in this course will have knowledge about emission control techniques. Can solve problems related to emission generation.	
20	Learning Outcomes:		
		1	Skill of comprehending emission control techniques in diesel and gasoline engines
		2	Skill of solving engineering problems related to emission formation, oxidation and other reactions
		3	Skill of using information technologies effectively
		4	Skill of gaining awareness of lifelong learning necessity
		5	Skill of communicating oral and written communication in Turkish
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21	Course Content:		
		Course Content:	
Week	Theoretical	Practice	
1	Definition of pollutants, some pollutants		
2	Environment pollution caused by the vehicles		

3	Comparison of industrial and vehicle emissions, statistical data			
4	Pollutant types and concentration according to vehicle types			
5	Pollutant sources in engine, their variation according to engine operating parameters			
6	Effect of fuel type on emissions			
7	Precautions developed against vehicle emissions (prior to combustion, combustion duration, after combustion)			
8	Precautions taken in gasoline engines (three way catalytic converters) (Part 1)			
9	Midterm exam			
10	Precautions taken in gasoline engines (three way catalytic converters) (Part 2)			
11	Precautions taken in diesel engines (oxidation converters, diesel particle filters, EGR) (Part 1)			
12	Precautions taken in diesel engines (oxidation converters, diesel particle filters, EGR) (Part 2)			
13	De-NOx storage, SCR and other systems			
14	Emission standards according to different country			
22	Textbooks, References and/or Other	1. Gary L. Borman, Kenneth W. Ragland “Combustion		
Activites		Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	Robert Bosch GmbH Bosch yay, 2005.	3.00	42.00
Practicals/Labs	0		0.00	0.00
Self study and preperation	Ankara, 1992.		30.00	30.00
Homeworks	2		35.00	70.00
Projects	Yayinevi, İstanbul, 1998, ISBN: 975-511-178-0		30.00	30.00
Field Studies	0		0.00	0.00
Midterm exams	York, 1973, ISBN: 0-352-25460-0		25.00	25.00
Others	0		0.00	0.00
Final Exams	1		8.00	8.00
23	Assesment			
Total Work Load				175.00
Total work load/ 30 hr	R			5.83
ECTS Credit of the Course				6.00
Quiz	0		0.00	
Home work-project	2		15.00	
Final Exam	1		60.00	
Total	4		100.00	
Contribution of Term (Year) Learning Activities to Success Grade			40.00	
Contribution of Final Exam to Success Grade			60.00	
Total			100.00	
Measurement and Evaluation Techniques Used in the Course		: Evaluation will be made according to themidterm, homework, and final exam to be held during the semester.		
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	1	2	2	3	0	0	0	0	0	0	0	0	0	0	0	0
ÖK2	1	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK3	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
ÖK4	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
ÖK5	0	0	0	0	0	0	0	1	0	0	0	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			