CONTROL OF GASEOUS POLLUTANTS

1	Course Title:	CONTROL OF GASEOUS POLLUTANTS	
2	Course Code:	CEV6258	
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. YÜCEL TAŞDEMİR	
15	Course Lecturers:	-	
16	Contact information of the Course Coordinator:	Bursa Uludağ Üniversitesi, Mühendislik Fakültesi, Çevre Mühendisliği Bölümü 16059 Nilüfer/Bursa Tel: 0(224) 294 21 05 e-posta: tasdemir@uludag.edu.tr	
17	Website:		
18	Objective of the Course:	The main aim of the course is to use basic processes in the design of treatment units for the removal of gaseous pollutants in flue gas. In this context, it is aimed to know the basic properties of gas phase pollutants; to apply the physical and chemical basic processes in the design of flue gas treatment units; to gain the ability to form alternatives for standard and special treatment processes.	
19	Contribution of the Course to Professional Development:	Learn the basic properties of gas and vapor pollutants, and the basic gas laws. The basic processes in the treatment of gas phase pollutants in flue gas are learned. Learns the design of units used in the removal of gas phase pollutants.	
20	Learning Outcomes:		
		1	to learn the basic properties of the pollutants in the gas and vapor phases,
		2	to learn the basic processes applied in the removal of gaseous pollutants in flue gas,
		3	to learn the design of the units used in the treatment of gaseous phase pollutants.
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21	Course Content:	
	Course Content:	
Week	Theoretical	Practice
1	General information about the content, purpose and scope of the course. Properties of gases and vapors.	
2	Properties of gases and vapors. Main gas laws. Basics of gas transfer.	
3	Adsorption. Definition, adsorbents, theory, adsorption forces, isotherms and applications.	
4	Adsorption. Equipment description, Predictive and design equations, Operation, performance and maintenance.	
5	Absorption. Definition, theory, solubility, Henry's constant, used approaches.	
6	Absorption. Equipment description, Mass balance and liquid requirements, Operation, performance and maintenance.	
7	Condensation. Definition, theory, process description and applications.	
8	Condensation. Equipment description, Predictive and design equations, Operation, performance and maintenance.	
9	Incineration. Definition, theory and	
11	performance and maintenance Control of volatile organic compounds	
12	Control of sulfur oxides (SOx).	
14	Special topics.	
22	Materials:	1. Books and documents including the course content. 2. Handbook of Air Pollution Control Engineering and Control (J. Benitez). 5. Air Pollution Control Engineering (N. De Nevers). 6. Air Pollution Control: A Design Approach (D. Cooper, F.C. Alley).

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	3.00	42.00
Practicals/Labs	0	0.00	0.00
Self study and preparation	10	2.00	20.00
Homeworks	6	6.00	36.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	20.00	20.00
Others	4	8.00	32.00
Final Exams	1	25.00	25.00
Total Work Load			175.00
Total work load/ 30 hr			5.83
ECTS Credit of the Course			6.00

23	Assesment	
TERM LEARNING ACTIVITIES	**NUMBER**	**WEIGHT**
Midterm Exam	1	20.00
Quiz	4	5.00
Home work-project	6	15.00
Final Exam	1	60.00
Total	12	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	By giving quizzes and homework, the students were able to research and reinforce the subjects. The level of what the students learned in the course was determined with the midterm and final exams.

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	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0
ÖK2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK3	0	0	0	0	0	5	0	0	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**			