PHYSICAL TREATMENT APPLICATIONS

1	Course Title:	PHYSICAL TREATMENT APPLICATIONS	
2	Course Code:	CEV3048	
3	Type of Course:	Optional	
4	Level of Course:	First Cycle	
5	Year of Study:	3	
6	Semester:	6	
7	ECTS Credits Allocated:	3.00	
8	Theoretical (hour/week):	2.00	
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:	Doç. Dr. MELİKE YALILI KILIÇ	
15	Course Lecturers:		
16	Contact information of the Course Coordinator:	myalili@uludag.edu.tr 02242942117 Uludağ Üniversitesi, Mühendislik Fakültesi, Çevre Mühendisliği Bölümü, 16059, Nilüfer, Bursa	
17	Website:		
18	Objective of the Course:	The objective of the course is to equip the student with the essential theoretical and practical knowledge to understand and design the physical treatment units, which remove the contaminants in water and wastewater.	
19	Contribution of the Course to Professional Development:		
20	Learning Outcomes:		
		1	knows the unit operations and processes in environmental engineering, the differences and their application fields.
		2	knows the legal framework of water and wastewater treatment.
		3	Learns the technical speciation of grids and screens, and how to design.
		4	Knows the sedimentation operations and designs grid removal tank, primary and secondary sedimentation tanks or settling basins, knows and designs the sludge settling units.
		5	Learns the concepts of flowrate, tank volume, velocity, hydraulic retention time, hydraulic load and their interrelations, and design settling units by using these interrelations
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21	Course Content:		
	Course Content:		

Week	Theoretical	Practice
1	Legal framework of water and wastewater treatment	
2	The objectives of wastewater treatment units, using flow charts, physical and chemical treatment units.	
3	Concepts of biological treatment, advanced treatment, contaminant removal	
4	Basic operations and processes in environmental engineering	
5	Water and wastewater flowrates (Fundamental components of wastewater flow, wastewater sources and flowrates, flowrate determination, population predictions, flowrate calculation and flowrate measurement)	
6	Grids and Screens (Classification, importance, design of screen channel, headloss in screens, flowrate equalization, design of equalization tank)	
7	Grid Removal (Design problems)	
8	Sedimentation Theory (Design problems)	
9	First Type Sedimentation (Design problems)	
10	Repeating courses and midterm exam	
11	Second type sedimentation (Design problems)	
12	Second type sedimentation (Design problems)	
13	Hindered-Zone settling (Design problems)	
14	General summary	

22	Textbooks, References and/or Other Materials:	Kestioğlu, K., Şen, M., Su ve Atıksu Arıtımında Fiziksel Temel işlemler Kestioğlu, K., Atıksuların Arıtımında Biyokimyasal Prosesler, Uludağ Üniversitesi Güçlendirme Yayını, 2000. Kestioğlu, K., Endüstriyel Atıksu Arıtma Tesisi Boyutlandırma Kriterleri, Uludağ Üniversitesi Güçlendirme Vakfı Yayını, No:174, 2001. Şengül, F., Küçükgül, E.Y. Çevre Mühendisliğinde Fiziksel-Kimyasal Temel İşlemler ve Süreçler, Dokuz Eylül Yayınları, 1990 Tchobanoglous, G., Burton, F.L., Stensel, H.D., Wastewater Engineering -Treatment and Reuse, Metcalf & Eddy, Fourth Edition, 2004.
23	Assesment	

TERM LEARNING ACTIVITIES	**NUMBER**	**WEIGHT**
Midterm Exam	1	30.00
Quiz	1	10.00
Home work-project	0	0.00
Final Exam	1	60.00
Total	3	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	

24 ECTS / WORK LOAD TABLE

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	2.00	28.00
Practicals/Labs	0	0.00	0.00
Self study and preperation	13	1.00	13.00
Homeworks	1	19.00	19.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	16.00	16.00
Others	0	0.00	0.00
Final Exams	1	16.00	16.00
Total Work Load			108.00
Total work load/ 30 hr			3.07
ECTS Credit of the Course			3.00

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	3	5	4	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK2	0	0	4	0	5	0	0	0	0	0	0	0	0	0	0	0
ÖK3	0	5	0	0	4	0	0	0	0	0	0	0	0	0	0	0
ÖK4	0	5	0	0	4	0	0	0	0	0	0	0	0	0	0	0
ÖK5	4	5	5	0	0	0	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