

THE USE OF ACTIVATED SLUDGE MICROBIOLOGY ON PROCESS CONTROL

1	Course Title:	THE USE OF ACTIVATED SLUDGE MICROBIOLOGY ON PROCESS CONTROL
2	Course Code:	CEV4090
3	Type of Course:	Optional
4	Level of Course:	First Cycle
5	Year of Study:	4
6	Semester:	8
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:	Dr. Öğr. Üyesi SEVİL Ç. ELEREN
15	Course Lecturers:	
16	Contact information of the Course Coordinator:	sceleren@uludag.edu.tr 224 2942115 Uludağ Üniversitesi, Müh.-Mim. Fakültesi, Çevre Mühendisliği Bölümü.
17	Website:	
18	Objective of the Course:	Teaching problems caused by various microorganisms which have significant importance on the operation of activated sludge systems and problem solutions
19	Contribution of the Course to Professional Development:	
20	Learning Outcomes:	
	1	After the completion of the course, the student will be able to know identification and physiological characteristics of activated sludge microorganisms
	2	After the completion of the course, the student will be able to assess causes and solutions of problems which are caused by various microorganisms in activated sludge
	3	After the completion of the course, the student will be able to know settleability characteristics that determine solid separation problems
	4	After the completion of the course, the student will be able to use of microfauna as indicator of activated sludge systems
	5	After the completion of the course, the student will be able to have the knowledge to efficiently re-operate plants with solution methods
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21	Course Content:	

	Course Content:				
Week	Theoretical		Practice		
1	Description of activated sludge. Activated sludge microbiology.				
2	Solid separation problems in activated sludge.				
3	Identification and description of filamentous microorganisms. Measuring and enumeration methods of filamentous microorganisms in activated sludge.				
4	Diagnosis of causes of solids separation problems from microscopic examination of activated sludge.				
5	Settleability tests that determine solid separation problems. Evaluation of settling and foaming properties of activated sludge				
6	Various microorganisms. Control of filamentous bulking. Quiz 1				
7	Principles of kinetic selection of floc-forming microorganisms. Metabolic selection in activated sludge.				
8	Control of filamentous foaming.				
9	Non-filamentous microbiological problems in activated sludge.				
10	Midterm exam				
Activites			Number	Duration (hour)	Total Work Load (hour)
13	Theoretical Relationship between sludge biotic index and		14	2.00	28.00
Practicals/Labs			0	0.00	0.00
14	Student Presentation. Self study and preperation		14	1.00	14.00
Homeworks			1	10.00	10.00
Projects	Materials: Wastewater Microbiology Academic Press, London, UK, 0 12 470400 0		0.00	0.00	0.00
Field Studies			0	0.00	0.00
Midterm exams			Sludge Plants by Microscopic Investigation, Latimer Trend&Co Ltd, Plymouth, UK 1 900222 20 0	1.00	1.00
Others			2	5.00	10.00
Final Exams			Foaming Control, Technomic Publishing Co Inc, Lancaster, Pennsylvania, USA 1 56676 121 2	20.00	20.00
Total Work Load					93.00
Total work load/ 30 hr			on the Causes and Control of Activated Sludge Bulking and Foaming, Lewis Publishers Inc, CRC Press		
ECTS Credit of the Course					3.00
			5- Richard M. (1989). Activated Sludge Microbiology. The Water Pollution Control Federation, Alexandria, Virginia, 0-943-244-27-7.		
23	Assesment				
TERM LEARNING ACTIVITIES		NUMBE R	WEIGHT		
Midterm Exam		1	15.00		
Quiz		2	10.00		
Home work-project		1	15.00		
Final Exam		1	60.00		
Total		5	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

25	CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS															
	PQ1	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9	PQ10	PQ11	PQ12	PQ13	PQ14	PQ15	PQ16
LO: Learning Objectives PQ: Program Qualifications																
Contribution Level:	1 very low		2 low		3 Medium		4 High		5 Very High							