

Course Title-Course Code: CEV-524 BIOLOGICAL WASTEWATER TREATMENT						Name of the Programme: ENVIRONMENTAL SCIENCES					
Term	Teaching Methods							Credits			
	Lecture	Recite	Lab.	Project Res.		Term Paper	Other	Total	Credit	ECTS Credit	
1-2	42					100	46	188	3	7,5	
Language	Turkish										
Compulsory / Elective	Elective										
Prerequisites	Basic environmental engineering knowledge										
Course Contents	Characterization of wastewater and biomass, the biology and microbiology in biological treatment plants, conversions in biological treatment plants (biological growth, hydrolysis, decay, storage), aerobic heterotrophic conversion of organic matter, nitrification, denitrification, biological phosphorus removal, anaerobic process, Hydrolysis/fermentation and anaerobic wastewater treatment, activated sludge treatment plants, biofilters, stabilization ponds and aerated lagoons, treatment plants for nitrification and denitrification, treatment plants for biological phosphorus removal from wastewaters.										
Course Objectives	The objectives of this course are to introduce advanced technologies in wastewater treatment and biological wastewater treatment technology, to learn the principles of biological nutrient removal technology, to gain the experiences in project design and operation of the relevant treatment systems and to achieve multi-disciplinary information flow for different methods in biological wastewater treatment.										
Learning Outcomes and Competences	Providing information basis to constitute the project design and operation experiences of advanced wastewater treatment technologies by introducing biological wastewater treatment technology.										
Textbook and/or References	<ul style="list-style-type: none"> - Horan, N.J., "Biological Wastewater Treatment Systems" Theory and Operation, John Wiley&Sons, 1990, England. - Henze, M., Harremoes, P, Jansen, C., Arvin, E., "Wastewater Treatment; Biological and Chemical Process", Third Edition, Springer, 2000. - Tchobanoglous, G., Burton, F.L., Stensel, H.D., "Wastewater Engineering: Treatment and Reuse", Fourth Edition, McGraw Hill, 2003. 										
Assessment Criteria								If any, mark as (X)	Percent (%)		
	Midterm exams							X	30		
	Quizzes										
	Homework										
	Projects										
	Term paper							X	20		
	Laboratory work										
	Other							X	10		
	Final exam							X	40		

Instructors		Asis. Prof. Dr. Beril (Salman) Akın	bsakin@gazi.edu.tr
Week	Subjects		
1	Wastewater, volumes and composition		
2	Characterization of wastewater and biomass		
3	The biology and microbiology in biological treatment plants		
4	Conversions in biological treatment plants; biological growth, hydrolysis, decay, storage		
5	Aerobic heterotrophic conversion of organic matter		
6	Nitrification, denitrification, biological phosphorus removal		
7	Anaerobic process		
8	Examination I		
9	Hyrolysis/fermentation and anaerobic wastewater treatment		
10	Activated sludge treatment plants		
11	Biofilters, stabilization ponds and aerated lagoons		
12	Treatment plants for nitrification and denitrification		
13	Treatment plants for biological phosphorus removal from wastewaters		
14	Examination II		