



**MARMARA UNIVERSITY - Faculty of Engineering**

**SYLLABUS**

**Environmental Engineering**

**2016-2017 Fall Semester**

Course Code	Course Name	Course Type	Weekly Course Hr			Credits	ECTS	Weekly Time & Classroom Schedule
			T	A	L			
ENVE 303	Environmental Engineering Microbiology	Compulsory	2		2	3	5	Mon 13:30-15:20 MB555 Wed 11:30-13:20 MA100 (Lab) Thu 09:30-11:20 MA100 (Lab)
Prerequisite	Prerequisite to							
Course Lecturer	Prof. Barış ÇALLI					Office Hours Schedule		Mon 15:30-17:20
E-mail	<a href="mailto:baris.calli@marmara.edu.tr">baris.calli@marmara.edu.tr</a>					Office / Room		MB641
Phone	216 348 02 92 / 1289					Office / Room		MB641
Teaching Assistant(s)	Alper Bayrakdar					Phone		216 348 02 92 / 1617
E-mail	<a href="mailto:alper.bayrakdar@marmara.edu.tr">alper.bayrakdar@marmara.edu.tr</a>					Office / Room		MD
Course Objectives	The purpose of this course is to introduce the fundamental principles and current trends in the field of environmental microbiology.							
Learning outcomes	1. Demonstrate knowledge of cell structure and metabolism 2. Differentiate between the major groups of microorganisms 3. Explain the role of microorganisms in the cycling of nutrients 4. Evaluate the effect of pathogenic microorganisms in waterborne diseases 5. Explain the role of microorganisms in wastewater treatment							
Textbooks and/or References	1. Madigan MT, Martinko JM, Stahl DA, Clark DP. Brock Biology of Microorganisms. 13th ed. Benjamin Cummings, ISBN-13: 978-0-321-64963-8, 2010 2. Mara D, Hora NJ. The Handbook of Water and Wastewater Microbiology. Academic Press, ISBN: 012-470-1000, 2003 3. Vaccari DA, Strom PF, Alleman JE. Environmental Biology for Engineers and Scientists. John Wiley & Sons, Inc., ISBN-10 0-471-72239-1, 2006							
Teaching methods	White board, Digital projector							
WEEK	Date	TOPICS						Reference No - Section
Week 1	19.09.2016	Microorganisms and Microbiology						Ref. No1 - Chapter1
Week 2	26.09.2016	A Brief Journey to the Microbial World						Ref. No1 - Chapter2
Week 3	3.10.2016	Cell Structure and Function in Bacteria and Archaea - QUIZ 1						Ref. No1 - Chapter3
Week 4	10.10.2016	Nutrition, Culture, and Metabolism of Microorganisms						Ref. No1 - Chapter4
Week 5	17.10.2016	Microbial Growth						Ref. No1 - Chapter5
Week 6	24.10.2016	Phototrophy, Chemolithotrophy, and Major Biosyntheses - QUIZ 2						Ref. No1 - Chapter13
Week 7	31.10.2016	Catabolism of Organic Compounds						Ref. No1 - Chapter14
Week 8	14.11.2016	Bacteria and Archaea						Ref. No1 - Chapter17-19
Week 9	21.11.2016	Methods in Microbial Ecology - QUIZ 3						Ref. No1 - Chapter 22
Week 10	28.11.2016	Major Microbial Habitats and Diversity						Ref. No1 - Chapter23
Week 11	5.12.2016	Nutrient Cycles, Biodegradation, and Bioremediation						Ref. No1 - Chapter24
Week 12	12.12.2016	Microbial Growth Control - QUIZ 4						Ref. No1 - Chapter26
Week 13	19.12.2016	Water and Wastewater Treatment and Waterborne Microbial Diseases						Ref. No1 - Chapter35
Week 14	26.12.2016	Summary						
Evaluation Tools	Evaluation Tool	Quantity	Date	Weight in Total (%)	Weight in Semester Evaluation (%)			
	Final Exam	1		40				
	Final Make-up Exam (if exists)							
	Semester Evaluation			60	100			
	Midterm(s)	1		24	40,0			
	Quiz(zes)	4		12	20,0			
	Project(s)							
	Homework(s)							
Laboratory Reports	9		9	15,0				
Other (Laboratory Exam)	1		15	25,0				
Program and Learning Outcome Relations	No	Program Outcomes	Relations					
			1	2	3			
	1	Having knowledge about mathematics, science and environmental engineering as the owner of the accumulation of sufficient information about the theoretical and applied knowledge in these areas. Ability to apply the model to solve theoretical and applied engineering problems.		X				
	2	Ability to identify, formulate and solve complex problems. For this purpose, selecting and applying appropriate methods, analysis and modeling skills.		X				
	3	Ability to design complex system, process, device or product under realistic constraints and conditions, to meet certain requirements. For this purpose to apply the methods of modern design.						
	4	Ability to select and use modern techniques and tools required for development of environmental engineering applications, the ability to use information technology effectively.						
	5	Design experimental setup to investigate the environmental engineering problems, conduct experiments, collect data, analyze and interpret results.						
	6	Ability to work effectively with disciplinary and multi-disciplinary teams, self-study skills.						
	7	Ability to communicate effectively in oral and written, knowledge about at least one foreign language.						
	8	Awareness of the need for lifelong learning, information access, monitoring and continuous self-renewal ability in science and technology developments.						
	9	Professional and ethical responsibility.						
10	Having knowledge about project management, risk management, change management. Recognition of the entrepreneurship, innovation and sustainable development in business life.							
11	Having knowledge about environmental engineering applications on the universal and social dimensions of health, environmental and safety impacts, contemporary issues, engineering solutions, and awareness of the legal consequences.		X					
*** Lifelong Learning Programme (LLP) ***						Language of Instruction: English		
Evaluation Tool	Quantity	Student Workload Hours		Evaluation Tool	Quantity	Student Workload Hours		
Theoretical Hours	14	28		Applied Hours				
Midterm	1	10		Final	1	21		
Quiz	4	10		Project				
Laboratory	14	28		Homework				
Atelier				Seminar				
Field Study				Presentation				
Other				Self Study	14	28		
<b>TOTAL :</b>					48	125,00		
<b>Recommended ECTS Credit (Total Hours / 25) :</b>						5		
1: weak, 2: moderate, 3: strong								