



MARMARA UNIVERSITY - Faculty of Engineering
Environmental Engineering
SYLLABUS
FALL 2015-2016

Course Code	Course Name	Course Type	Weekly Course Hours			Credits	ECTS	Weekly Time & Classroom Schedule	
			T	A	L				
ENVE-442	Advanced topics on air pollution - atmospheric organic aerosol	Compulsory	3			3	5	Mondays 9:30-12:30, MB142	
Prerequisite		Prerequisite to							
Course Lecturer	Yr. Doc. Dr. Rosa Flores			Office Hours	Mondays 12:30-14:30pm and by appointment				
E-mail	rflores@marmara.edu.tr			Office / Room No	MD 119				
Phone	216-348-0292-x 519			Phone					
Teaching Assistant(s)				Office / Room No					
E-mail				Office / Room No					
Course Objectives	Environmental engineering students will learn fundamentals and current challenges for quantification of organic aerosol impacts on climate change.								
Learning outcomes	<ul style="list-style-type: none"> Learn fundamentals of organic aerosols such as sources, composition, and measurement and modeling methods. Recognize the importance of organic aerosols in climate change Gain quantitative skills (problem solving) in assessing aerosol processes relevant to climate change Identify current challenges for quantification of organic aerosol impacts Gain familiarity with current literature on aerosols and climate Improve skills in oral presentation and general communication in English 								
Textbooks and/or References	1) Carbonaceous aerosols, 1st Edition, by Andras Gelencser, ©2004 Springer Publishing, ISBN 1-4020-2886-5. 2) Atmospheric Chemistry in a Changing World, by Guy Brasseur, Ronald Prinn, and Alexander A. P. Pszenny © 2003 Springer, ISBN 978-3-642-62396-7. 3)								
Teaching Methods									
WEEK	Date	TOPICS					Reference No - Section		
Week 1		Introduction and background					Handout		
Week 2		Introduction to organic chemistry					Handout		
Week 3		Types of particles and their composition					3		
Week 4		Sources of particles in the atmosphere					3		
Week 5		Properties of aerosols relevant to climate change (interaction with sunlight)					5.1.1/5.2.1/5.2.2		
Week 6		Properties of aerosols relevant to climate change (interaction with water)					5.1.1/5.2.1/5.2.2		
Week 7		Effects of aerosols on climate change					5.1.3/5.2.4		
Week 8		Fundamentals of partitioning in the environment					Handout		
Week 9		Midterm 1							
Week 10		Fundamentals of secondary aerosol formation					3.3.3		
Week 11		General chemical mechanisms and measurements in smog chambers					3.3.2.1, 3.3.2.2, 4.3		
Week 12		Observation and characterization methods					2		
Week 13		Observation and characterization methods					2		
Week 14		Modeling methods					3.3.5		
Week 15		Midterm 2							
Week 16		Project presentations							
Evaluation Tools	Evaluation Tool	Quantity	Date	Weight in Total (%)	Weight in Semester Evaluation (%)				
	Final Exam	1		40					
	Final Make-up Exam (if exists)	1		40					
	Semester Evaluation			60	100				
	Midterm(s)	2		20					
	Quiz(ze)s	4		0					
	Project(s)	1		20					
	Homework(s)	4		20					
	Laboratory	0							
	Other								
Program and Learning Outcome Relations	No	Program Outcomes					Relation (1: weak relation ; 3: strong relation)		
						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 are required.						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..						x	
	4	Ability to select and use modern techniques and tools required for development of environmental engineering applications the ability to use information technology effectively.							x
	5	Design experimental setup to investigate the environmental engineering problems, conduct experiments, collect data, analyze and interpret results.					x		
	6	Ability to work effectively with disciplinary and multi disciplinary teams, self-study skills.							x
	7	Ability to communicate effectively in oral and written, knowledge about at least one foreign language.							x
	8	Awareness of need for lifelong learning information access, monitoring and continuous self-renewal ability in science and technology developments.							x
	9	Professional and ethical responsibility.							x
	10	Having knowledge about project management, risk management, change management . Recognition of the entrepreneurship, innovation and sustainable development in business life.					x		
11	Having knowledge about environmental engineering applications on the universal and social dimension 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 Tools	Quantity	Student Workload Hours	Evaluation Tools	Quantity	Student Workload Hours				

Theoretical Hours	16	48	Applied Hours	0	0
Midterm	2	20	Final	1	10
Quiz	4	12	Project	0	0
Laboratory	0	0	Homework	4	20
Atelier	0	0	Seminar	0	
Field Study	0	0	Presentation	0	0
Other (project)	1	15	Self Study		
			TOTAL		125
Recommended ECTS Credit (Total Hours/25):				5	
1:weak, 2:moderate, 3:strong					