

MARMARA UNIVERSITY - Faculty of Engineering

SYLLABUS

Environmental Engineering
2020-2021 Spring Semester

Course Code	Course Name	Course Type	Weekly Course Hours			Credits	ECTS	Weekly Time & Classroom Schedule
			T	A	L			
ENVE 2004	Engineering Hydraulics	Compulsory	3	2	0	4	6	Lecture Hours: Monday 14:00-16:00 Friday 14:00-15:00, Problem Session Hours: Thursday 15:00-17:00
Prerequisite	ENVE 2061	Prerequisite to				ENVE 3011, ENVE 3022 ENVE 4111, ENVE 4222		
Course Lecturer	Assoc.Prof. Neslihan SEMERCI			Office Hours		to be announced		
E-mail	neslihan.semerci@marmara.edu.tr			Schedule				
Phone	2167773605			Office / Room No		M1 304 & M1 205		
Teaching Assistant(s)	Dr. Çiğdem Kalkan			Phone		2167773611		
E-mail	cioldemkalkan@marmara.edu.tr			Office / Room No		MB-A6		
Course Objectives	The following topics are covered: Continuity, energy, and momentum principles applied to flow of water in closed and open channels. Head losses in pipes, minor losses, pipe network analysis, pumps, flow measurement, open channel flow.							
Learning outcomes	By the end of the course the student should be able to 1.Solve pipe flow problems manually 2.Recognize and analyze flow-measurement devices 3.Solve open channel flow problems 4.Apply MS EXCEL for the iterative solution of complex flow problems 5.Select pumps for typical pumping tasks							
Textbooks and/or References	1) Hwang, Houghtalen, and Akan. Fundamentals of Hydraulic Engineering System 4th Ed. (2010). 2) Fluid Mechanics with Engineering applications, 9th ed.1997 3) Treatment plant Hydraulics, Benefield							
Teaching methods	White board, Digital projector							
WEEK	Date	TOPICS						Reference No - Section
Week 1	22/02/2022 24/02/2021 23/02/2022 (PS)	Review of pipe flow: Darcy-Weisbach, Manning, Hazen-Williams equations, Moody diagram						1-Chapter 3
Week 2	01/03/2022 03/03/2022 02/03/2022 (PS)	Problems involving pipes in series						1-Chapter 3,4
Lab/Week 3	7.3.2022	Experiment 1. Frictional Headloss in Rough and Smooth Pipes						
Week 3	08/03/2022 10/03/2022 09/03/2022 (PS)	Pipes in parallel, branching pipes						1-Chapter 4
Lab/Week 4	14.3.2022	Experiment 2. Pressure Drop in Valves						
Week 4	15/3/2022 17/3/2022 16/03/2022 (PS)	Pipe network analysis: the Hardy-Cross method						1-Chapter 4
Week 5	22/03/2022 24/03/2022 23/03/2022 (PS)	Water hammer, surge tanks, unsteady flow						2-Chapter 12, 8
Lab/Week 6	28.3.2022	Experiment 3. Pressure Drop in Couplings						
Week 6	29/03/2022 31/03/2022 30/03/2022 (PS)	Pumps, energy equation with pumps, pump curves						1-Chapter 5
Week 7	05/04/2022 07/04/2022 06/04/2022 (PS)	Pumps in parallel, pumps in series						1-Chapter 5
	09-17/04/2022	OFFICIAL MIDTERM EXAM WEEK						
Week 8	19/04/2022 21/04/2022 20/04/2022 (PS)	Similarity laws for pumps, cavitation in pipelines and in pumps, NPSH (net positive suction head)						
Week 9	26/04/2022 28/04/2022 27/04/2022 (PS)	Open channel flow: Uniform flow, best hydraulic sections, energy principles, Froude number						1-Chapter 6
Lab/Week 9	25.4.2022	Experiment 4. Measurement of the Water Head and Velocity Along The channel						
Week 10	5.5.2022	Hydraulic jump, gradually varied flow equation, classification of gradually varied flows						1-Chapter 6
Lab/Week 10	2.5.2022	Experiment 5. Calculation Of Normal Depth (Yn) For Uniform Open Channel Flow						
Week 11	10/05/2022 12/05/2022 11/05/2022 (PS)	Computation of water surface profiles						1-Chapter 6
Week 11	Will be announced	MIDTERM II						
Week 12	17/05/2022 18/05/2022 (PS)	Computation of water surface profiles-Standard Step method						1-Chapter 6
Lab/Week 12	16.5.2022	Experiment 6. Hydraulic Jump						
Week 13	24/05/2022 26/05/2022 25/05/2022 (PS)	Flow measurement in closed conduits						1-Chapter 9
Lab/Week 13	23.5.2022	Experiment 7. Flow Measurements with Weirs						
Week 14	31/05/2022 02/06/2022 01/06/2022 (PS)	Flow measurement in open channels						1-Chapter 8,9 2-
Week 15	07/06/2022 09/06/2022 08/06/2022 (PS)	Flow measurement in open channels						1-Chapter 8,9 2-
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)	2		36	60,0			
	Project(s)& Experimental Design	4		10	16,7			
Laboratory	7		14	23,3				
Other								