

Code: 0423211		Course Name: Hydraulics								
Year	Semester	Group(s)	Language	Theory	App	Lab.	Credit	ECTS		
2023-2024	Fall	2, 3	English	2	1	1	3	5		
Course Type		Basic Sciences <input type="checkbox"/>	Engineering <input checked="" type="checkbox"/>	Technical Elective <input type="checkbox"/>		Non-Technical Elective <input type="checkbox"/>				
Prerequisite		0422212 Fluid Mechanics								
Coordinator *		Prof. Dr. Yalçın Yüksel								
Instructor(s)		Prof. Dr. Esin Çevik, Assoc. Prof. Dr. Mehmet Öztürk								
Course Goals		The purpose of hydraulics, one of the practicing branches, is to introduce basic principles of hydraulics, to teach students the solutions of hydraulic structures problems and to discuss the design problems of structures.								
Course Topics		Pipe Flow / General Characteristics of Open Channel Flow / Uniform and Non-Uniform Flow in Open Channels / Physical Modeling / Introduction to Transient Flow / Introduction to Computational Hydraulics								
Knowledge and Skills		<ul style="list-style-type: none"> Basic knowledge for the design of many hydraulic structures' problems for example dams, harbors, channels, breakwaters, etc. How to reach and use knowledge 								
References		<ol style="list-style-type: none"> "Hydraulics Lecture Notes" by Y. Yuksel and E. Cevik, 2022 "Fundamentals of Fluid Mechanics" by Munson, Young, Okiishi, John Wiley&Sons "Fluid Mechanics" by F. M. White, 8th ed., McGraw-Hill. "Open-Channel Hydraulics" by R. H. French, Mc. Graw Hill "Open-Channel Hydraulics" by Ven Te Chow, Mc Graw Hill "Akışkanlar Mekaniği ve Hidrolik" by Y. Yüksel, Beta Yayınevi, 6.Baskı, 2020 "Hidrolik Laboratuvar DeneYleri" 5. Bası, YTÜ Yayınları,2013 								
Assignments and Projects										
Laboratory Experiment topics		<ol style="list-style-type: none"> Minor head losses in pipe flow Hydraulic jump and channel transitions 								
Computer codes										
Other Activities		1) Video and slide shows								
Contribution of the Course Towards Providing Professional Education		Basic knowledge for the design of many hydraulic structure's problems for example dams, harbors, channels, breakwaters, etc.								
Course Outcomes (Number needed)		<ol style="list-style-type: none"> Students will be able to solve hydraulic problems and learn the design of hydraulic structures. Students will be able to do hydraulic engineering practices. Students will be able to experiment. Students will learn the basics of design courses related to hydraulic engineering and gain the skills to understand these issues. Students will gain the ability to solve basic equations of Hydraulic Engineering Students will gain the ability to solve complex problems. 								
Course Outcomes / Learning Outcomes Matrix		PÇ	1.3	2.1	2.2	3.1	3.2	5.2	5.3	5.4
DÖÇ										
1						X	X			
2								X	X	X
3						X	X			
4				X	X					
5		X	X							

SUCCESS EVALUATION					
Theoretical Courses			Project Courses and Graduation project		
	Number	Weight (%)		Number	Weight (%)
Midterms (M1 and M2)	2	(20 and 25)=45	Midterm(s)		
Quizzes	1	5	Controls		
Assignments			Mid-submission(s)		
Laboratory	2	(2x5=) 10	Oral Exam		
Other			Other		
Final Exam	1	40	Final Exam		
Make Up Exam	1	40	Make Up Exam		
COURSE SCHEDULE					
1. Week (2 Oct. 23)	Review of Fluid Mechanics / Application Areas of Hydraulics/ Introduction to Pipe Flow				
2. Week (9 Oct.23)	Pipe Flow; Laminar Velocity Distribution, Turbulent Velocity Distribution				
3. Week (16 Oct.23)	Friction Head Loss / Minor Head Losses				QUIZ1
4. Week (23 Oct.23)	Various Pipe Problems				
5. Week (30 Oct.23)	Pipe Network				LAB 1
6. Week (6 Nov. 23)	Open Channel Hydraulics / Basic Concepts				
7. Week (13 Nov.23)	Steady Open Channel Hydraulics, Velocity and Pressure Gradient				
8. Week (20 Nov.23)	MIDTERM1				
9. Week (27 Nov.23)	Energy Losses and Hydraulic Calculations in Channels / Non-uniform Open Channel Flow				
10. Week (4 Dec. 23)	Critical Flow				
11. Week (11 Dec. 23)	Rapidly Varied Flow / Hydraulic Jump				
12. Week (18 Dec. 23)	Channel Transitions / Gradually Varied Flow				LAB 2
13. Week (25 Dec. 23)	Computation of Gradually Varied Flow				MIDTERM2
14. Week (1 Jan. 24)	Hydraulic Models, Introduction to Computational Hydraulics				

FORM 2: COURSE COMMUNICATIONS

Course Code : 0423211		Course Name: 0423211				
Groups	Classes and hours of courses	Instructor	Room number of instructors	Office hours	E-mail	Web address
3	Monday 12:00-13:50 Thursday 12:00-13:50	Prof. Dr. Esin Çevik	H Block -08	Monday - 10 ⁰⁰ -11 ⁵⁰	cevik@yildiz.edu.tr	www.inm.yildiz.edu.tr
2	Monday 12:00-13:50 Thursday 12:00-13:50	Assoc. Prof. Dr. Mehmet Öztürk	H Block - 01	Monday - 10 ⁰⁰ -11 ⁵⁰	meozturk@yildiz.edu.tr	www.inm.yildiz.edu.tr

Date: 27/09/2023