COURSE DESCRIPTION FORM	
Course Code and Title	CE448 OPEN CHANNEL HYDRAULICS
Semester	8
Catalog description	Classification of open channel flow. Continuity, energy, momentum conservation equations. Minimum energy principle. Flow regimes. Hydraulic jump. Gradually varied flow. Water profiles and computation methods. Channel cross-section transitions. Control structures. Introduction to non-stationary currents.
Required reading	Açık kanal akımlarının hidroliği ve hidrolik yapılar, Prof.Dr.Tülay Özbek, Teknik Yayınevi,2009
Recommended reading	Boru ve açık kanal hidroliği, Doç.Dr.M. Emin Karahan, Teknik Kitaplar Yayınevi,1986.
ECTS	4
Prerequisites and co-requisites	No prerequisite.
Compulsory/Elective	Technical elective course
Language of instruction	English
Aim of course	Gain knowledge in classification of open channel flow. Ability to apply energy and momentum equations in open channel related problems. Skills to apply minimum energy principles, gradually varied flow computation and flow profile computations.
Learning outcomes of the course unit	Acquiring necessary knowledge about open channel hydrology and engineering applications
Mode of delivery	The mode of delivery of this course is face to face.
Course content	1. Introduction to open channel flow and classification of open channel flow 2. Stationary flow, cross-sectional transition 3. Continuity, energy, momentum conservation equations 4. Problem solving for continuity, energy, momentum conservation equations 5. Minimum energy principle and flow regimes 6. Subcritical and Supercritical flows 7. Hydraulic jump 8. 1. Midterm 9. Transition and head loss 10. Gradually varied flow 11. Computation of flow profiles 12. Software application I 13. Software application II 14. 2. Midterm + Software application III 15. Presentation
Planned learning activities and teaching methods	3 lecture hours per week (3+0) Reading activity Report and presentation preparation Midterm exam and required works Final exam and required works

Assessment methods and criteria		Quantity	Percentage (%)
	Mid-terms	2	35
	Assignment	3	5
	Exercises	-	-
	Projects	1	20
	Practice	-	-
	Quiz	-	-

				60	
Contribution of In-term Studies to Overall Grade %				60	
Contribution of Final Examination to Overall Grade (%)				40	
Attendance		-		-	

Workload	Efficiency	Total Week Count	Weekly Duration (in hour)	Total Workload in Semester
	Theoretical Study Hours of Course Per Week	14	3	42
	Practicing Hours of Course Per Week	14	0	0
	Reading	14	1	14
	Searching in Internet and Library	14	0	0
	Designing and Applying Materials	14	0	0
	Preparing Reports	14	1	14
	Preparing Presentation	14	1	14
	Presentation	14	0	0
	Mid-Term and Studying for Mid-Term	1	5	5
	Final and Studying for Final	1	10	10
	Other	0	0	0
	Total Workload:			99
	Total Workload / 25:			3.96
	ECTS:			4

Course's contribution to program	No	Program Learning Outcomes	1	2	3	4	5
	1	Adequate knowledge in mathematics, science and engineering subjects pertaining to the relevant discipline; ability to use theoretical and applied knowledge in these areas in complex engineering problems.				X	
	2	Ability to identify, formulate, and solve complex civil engineering problems; ability to select and apply proper analysis and modeling methods for this purpose.				X	
	3	Ability to design a complex system, process, device or product under realistic constraints and conditions, in such a way as to meet the desired result; ability to apply modern design methods for this purpose.		X			
	4	Ability to devise, select, and use modern techniques and tools needed for analyzing and solving complex problems encountered in civil engineering practice; ability to employ information technologies and to use at least one computer programming language effectively.					X
	5	Ability to design and conduct experiments, gather data, analyze and interpret results for investigating complex civil engineering problems or discipline specific research questions.				X	
	6	Ability to work efficiently in intra-disciplinary and multi-disciplinary teams.			X		
	7	Ability to work individually.				X	
	8	Ability to communicate effectively in Turkish, both orally and in writing;			X		

		1	2	3	4	5
	ability to write effective reports and comprehend written reports.					
9	Knowledge of English of B1 level according to <u>Common European Framework of Reference.</u>			X		
10	Prepare design and production reports, make effective presentations, and give and receive clear and intelligible instructions.	X				
11	Recognition of the need for lifelong learning; ability to access information, to follow developments in science and technology, and to continue to educate him/herself.				X	
12	Consciousness to behave according to ethical principles and professional and ethical responsibility.			X		
13	Knowledge on standards used in civil engineering practice.				X	
14	Knowledge about business life practices such as project management, risk management, and change management.					X
15	Awareness in entrepreneurship, innovation; knowledge about sustainable development.					X
16	Knowledge about the global and social effects of engineering practices on health, environment, and safety, and contemporary issues of the century reflected into the field of engineering.					X
17	Awareness of the legal consequences of engineering solutions.					X

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