COURSE IDENTIFICATION FORM

Course Code and Name: IM5061 UNSTEADY FLOWS				**Department of : CIVIL ENGINEERING / CIVIL ENGINEERING DEPARTMENT / HYDRAULICS MASTER PROGRAM WITH THESIS**			
Semester	**Theoretic Hour**	**Practice Hour**	**Total Hour**	**Credits**	**ECTS**	**Education Language**	**Type: Compulsory Elective**
Fall	3	0	3	3	5	Turkish	Optional
Prerequisite (s)							
Instructor		Assist. Prof. Meral KORKMAZ			**Mail :** meralkorkmaz@munzur.edu.tr **Web :**		
Course Assistant					**Mail :** **Web :**		
Groups / Classes							
Course Aim		• Steady and unsteady flows • Dimensional analysis and design under additional forces					
Course Goals		• To provide students with knowledge about the mathematical modeling of engineering problems. • To teach various modeling types and rules specific to different engineering problems.					
Course Learning Outs and Proficiencies		• Students will learn to model engineering problems mathematically. • They will understand different modeling types and rules for specific engineering issues.					
Course Basic and Auxiliary Contexts		• Ünsal, İ., 1978, Hydraulics of Unsteady Flows, ITU					
Methods of Give a Lecture		Theoretical lessons, discussions, and presentations.					

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Assessment Criteria		If Available, to Sign (x)	General Average Percentage (%) Rate
	1. Quiz	**X**	**50**
	2. Quiz		
	3. Quiz		
	4. Quiz		
	5. Quiz		
	Oral Examination		
	Practice Examination (Laboratory, Project etc.)		
	Final Exam	**X**	**50**

Semester Course Plan

Week	Subjects
1	Oscillatory Motion in Ideal and Real Fluids
2	Integration of Equations with Finite Difference Methods
3	Surge Tanks. Regulation Equation. Time-dependent Flows in Pressurized Pipes: Water Hammer
4	Equation Solutions: Method of Characteristics. Allievi Equations; Boundary Characteristics in Steady and Unsteady States
5	Pipes with Variable Characteristics
6	Unsteady Flows Occurring on Free Surfaces: Linear and Non-linear Theories
7	Presentation and Discussion
8	Midterm Exam
9	Non-periodic Flows in Channels: De Saint Venant Equations and Solution Methods
10	The Effect of Slope and Friction. Wave Breaking: The Shock Concept
11	Sudden Unsteady Flows in Channels: Positive and Negative Waves
12	Deformation of Flood Waves Along a River or in a Lake. Hydrological and Hydraulic Methods
13	Presentation and Discussion
14	Presentation and Discussion

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