COURSE IDENTIFICATION FORM

Course Code and Name: IM5017 HYDRAULICS OF POROUS MATERIALS				**Department of :** CIVIL ENGINEERING / MASTER PROGRAMME			
Semester	**Theoretic Hour**	**Practice Hour**	**Total Hour**	**Credits**	**ECTS**	**Education Language**	**Type: Compulsory Elective**
Atumn/Spring	3	0	3	3	5	Turkish	Optional
Prerequisite (s)							
Instructor				**Mail :** Web :			
Course Assistant				**Mail :** Web :			
Groups / Classes							

Course Aim	Concept of Potential and Hydraulic Head ; Forces Acting on Fluid in Porous Media; Statics and Dynamics of Fluids in Porous Media; Basic Flow Equations in Porous Media; Basic Flow Equations in Unsaturated Media; Effect of Medium and Fluid Properties on Groundwater Flow; Numerical Modeling Techniques and Applications are aimed to be able to do.
Course Goals	Concept of Potential and Hydraulic Head ; Forces Acting on Fluid in Porous Media; Statics and Dynamics of Fluids in Porous Media; Basic Flow Equations in Porous Media; Basic Flow Equations in Unsaturated Media; Effect of Medium and Fluid Properties on Groundwater Flow; Analytical Solution Techniques and Applications.

Course Learning Outs and Proficiencie*s*	1. Hydraulics of porous materials
	   1.1 Identification of porous media
	   1.2 Concept of Potential and Hydraulic Head
	   1.3 Saturated and unsaturated basic flow equations
	   1.4 Darcy and Richard's grasp the equation
	2. Hydraulics of unsaturated porous media
	   2.1 Water content in pores and absorption models
	   2.2 Water content in pores and permeability models
	3. Modeling the hydraulics of porous materials
	   3.1 Ability to define and model.

Course Basic and Auxiliary Contexts	• **Dynamics of Fluids Of Porous Media** , Volume 1. Front Cover . J. **Bear** . American Elsevier Publishing Company , **1972** . • Darcy's law . Rakesh Vadlamudi . University of Central Oklahoma, 1997 • Numerical modeling of hydrodynamics of water resources , Pilar Garcia Navarro, Enrique Playán . Taylor & Francis, 2007. • Hand book of Porous Media, Vafai K, Taylor & Francis, 2005.

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Methods of Give a Lecture	Lectures, research, experimental studies, Q&A, Demonstration, Demonstration, Problem Solving

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

Semester Course Plan	
Week	**Subjects**
1	Porous Media and Continuum Approach
2	Physics of Porous Media
3	Concept of Potential and Hydraulic Head
4	Forces Acting on Fluids in Porous Media
5	Statics of Fluids in Saturated Porous Media
6	Dynamics of Fluids in Saturated Porous Media
7	Fundamental Flow Equations in Saturated Porous Media
8	Fundamental Flow Equations in Unsaturated Media
9	Effect of Medium and Fluid Properties on Groundwater Flow
10	Water content in pores and absorption patterns
11	Water content in pores and permeability models
12	Modeling the hydraulics of porous materials
13	Describing Dual Model Hydraulics in Porous Media
14	Dual model hydraulics in porous media Modeling

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