



## AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Porous Zone Hydraulics							
Course Code		ZTY613		Couse Level		Third Cycle (Doctorate Degree)			
ECTS Credit	6	Workload	150 ( <i>Hours</i> )	Theory	2	Practice	2	Laboratory	0
Objectives of the Course		Teaching the flow of water in porous media							
Course Content		Teaching the flow of water in porous media							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Discussion, Individual Study, Problem Solving					
Name of Lecturer(s)									

### Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	40
Final Examination	1	60

### Recommended or Required Reading

1	Flow and Transport in Fractured Porous Media Peter Dietrich, Rainer Helmig, Martin Sauter, and Heinz Hötzl
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Week	Weekly Detailed Course Contents	
1	Theoretical	Specification of porous media and liquids
2	Theoretical	Statics of fluids in porous media, physical and mathematical theory of the flow
3	Theoretical	Steady and unsteady laminar flow of liquids
4	Theoretical	Solution of the initial and boundary value problems
6	Theoretical	Pressurized flow and Dupuit assumptions
7	Theoretical	Groundwater flow
8	Intermediate Exam	MIDTERM EXAM
9	Theoretical	Groundwater storage and data
10	Theoretical	Discovery of groundwater
11	Theoretical	Well hydraulics and pumping tests
12	Theoretical	Analysis of flow network
13	Theoretical	Groundwater level and changes, salty water intrusion
14	Theoretical	Plant-water relations in porous media
15	Theoretical	FINAL EXAM

### Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	3	2	70
Lecture - Practice	14	2	2	56
Midterm Examination	1	8	2	10
Final Examination	1	12	2	14
Total Workload (Hours)				150
[Total Workload (Hours) / 25*] = ECTS				6

\*25 hour workload is accepted as 1 ECTS

### Learning Outcomes

1	Relations between the groundwater and geology
2	The flow of water in porous media
3	The physical and hydraulic properties of aquifers
4	Steady and unsteady flow in aquifers and regional groundwater flow



5	underground investigation techniques and engineering works related to groundwater resources
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**Programme Outcomes** (*Agricultural Structures and Irrigation Doctorate*)

1	Ability to analyze, synthesize and evaluate different forms of scientific knowledge in the field of studies
2	Approach to information systematically, and gain skills related to their field the research methods
3	Innovative science to develop a scientific method or a method that is known to practice in their field
4	Ability to organize and manage the project and advanced scientific research
5	Advanced technologies, find solutions to engineering problems taking advantage of the software and model approaches
6	Creative, unbiased and critical thinking
7	A topic in the field of written, verbally and visually as the ability to express
8	Ability to publish in refereed journals National and international the results of studies

**Contribution of Learning Outcomes to Programme Outcomes** 1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High

	L1	L2	L3	L4	L5
P1	5	5	5	5	5
P2	5	5	5	5	5
P3	5	4	5	5	5
P4	4	2	4	4	4
P5	4	4	4	4	4
P6	4	5	3	3	4
P7	3	2	3	3	3
P8	3	3	3	3	3

