

Course Title-Course Code: CE 624 GROUNDWATER ENGINEERING							Name of the Programme:CIVIL ENGINEERING		
Semester	Teaching Methods						Credits		
	Lecture	Recite	Lab.	Field Study	H W	Other	Total	Credit	ECTS Credit
1-2	42	0	0	0	42	104	188	3	7.5
Language	Turkish								
Compulsory / Elective	Elective								
Prerequisites	-								
Course Contents	Basic concepts, hydrologic cycle and origin of groundwater, groundwater distribution, groundwater flow, types of aquifers, well hydraulics, analytical and graphical solutions for groundwater problems, well development and construction, groundwater level variations, groundwater recharge, saltwater intrusion in coastal aquifers, water problems in tunnels, mine drainage, hydrogeological investigations, groundwater dams, groundwater quality, groundwater contamination.								
Course Objectives	This course gives the importance of groundwater in hydrological cycle, gives theoretical and practical information about groundwater exploration and design engineering								
Learning Outcomes and Competences	After this course students can make groundwater engineering, exploration, development, pumping projects with the help of theoretical and practical information of this course								
Textbook and /or References	<p>Bear, J., 1988, Dynamics of Fluids in Porous Media, American Elsevier Publishing Co.,USA.</p> <p>Erguvanlı, K., Yüzer, E., 1973, Yer altı Suları Jeolojisi, İTÜ, İstanbul.</p> <p>Edward, E., 1966, Groundwater and Wells, Minnesota, USA.</p> <p>Freeze, R.A., Cherry J.A., 1979, Groundwater, Prentice Hall, New York, USA.</p> <p>Gang, S.K., 1981, Irrigation Engineering and Hydraulic Structures, Khanna Publ. Delhi.</p> <p>Gürer,İ., 1988, Groundwater Engineering Lecture Notes, , Ankara.</p> <p>Gürer,İ., 1991, Groundwater Engineering Lecture Notes, METU, Ankara.</p> <p>Huisman, L., 1972, Groundwater Recovery, McMillan Press, London.</p> <p>Huisman, L., 1972, Groundwater Recovery Problems and Their Solutions, McMillan Press, London.</p> <p>Milanoviç, P., 1981, Karst Hydrogeology, Water Resources Publ., Virginia.</p> <p>Todd, D.K., 1960, Groundwater Hdrology.</p> <p>Walton, W.C., 1970, Groundwater Resource Evaluation, Mc Graw Hill, New York.</p>								
Assessment Criteria								<i>If any,mark as (X)</i>	Percent (%)
	<i>Midterm Exams</i>							X	30
	Quizzes								-
	Homeworks								-
	Projects								-
	Term Paper							X	10
	Laboratory Work								-
	Other								-
	Final Exam							X	60

Instructors	Prof. Dr. İbrahim GÜRER
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