



## ECTS COURSE INFORMATION FORM

<b>Faculty</b>	<b>Faculty of Engineering</b>		
<b>Program</b>	<b>B.Sc. in Civil Engineering</b>	<b>Required</b>	
	<b>B.Sc. in Computer Engineering</b>	<b>Elective</b>	
	<b>B.Sc. in Electrical-Electronics Engineering</b>	<b>Elective</b>	
	<b>B.Sc. in Industrial Engineering</b>	<b>Elective</b>	
	<b>B.Sc. in Mechanical Engineering</b>	<b>Elective</b>	

<b>Course Code</b>	CE 407			
<b>Course Title in English</b>	Water Resources			
<b>Course Title in Turkish</b>	Su Kaynakları			
<b>Language of Instruction</b>	English			
<b>Type of Course</b>	Flipped Classroom/Lecture/Project			
<b>Level of Course</b>	Only Undergraduate Students			
<b>Course Category (by % of Content)</b>	Basic Science	Basic Engineering	Engineering Design	General Education
	-	60	40	-
<b>Semester Offered</b>				
<b>Contact Hours per Week</b>	Lecture:3 hours	Recitation:	Lab:	Other:
<b>Estimated Student Workload</b>	131 hours			
<b>Number of Credits</b>	5 ECTS			
<b>Grading Mode</b>	Standard Letter Grade			
<b>Pre-requisites</b>	None			
<b>Expected Prior Knowledge</b>	Prior knowledge of fundamental concepts of fluid mechanics and hydraulics is suggested.			
<b>Co-requisites</b>	None			
<b>Registration Restrictions</b>	Only Undergraduate Students			
<b>Overall Educational Objective</b>	To understand water resources development and the required methodologies, and to gain skills for applying mathematics, science and engineering knowledge on the solution of water resources problems.			
<b>Course Description</b>	This course covers the water resources concepts in civil engineering applications. The following major topics are covered in detail: Water resources management, Hydrology, Dams and reservoirs, Spillways and dissipation structures, Groundwater hydrology, Diversion weirs, Hydroelectric power plants, Water supply and distribution, and waste water and storm water collection and removal.			
<b>Course Description in Turkish</b>	Bu ders su kaynakları kavramları inşaat mühendisliği uygulamalarına yönelik işlenmektedir. Su kaynakları, şu konu başlıkları altında kapsamlı bir şekilde incelenmektedir: Su kaynakları yönetimi, Hidroloji, Barajlar ve baraj gölleri, Dolu savaklar ve enerji kırıcılar, Yeraltı suyu hidrolojisi, Bağlamalar, Hidroelektrik santralleri, Su temini ve dağıtımı, ve Atık su ve yağmur suyu toplama ve tasfiyesi.			
<b>Course Learning Outcomes and Competencies</b>	Upon successful completion of the course, the learner is expected to: <ol style="list-style-type: none"><li>1. solve problems related to precipitation;</li><li>2. solve problems related to groundwater;</li><li>3. solve problems related to unit hydrograph;</li><li>4. apply probability and statistics to address uncertainty to flow data;</li><li>5. identify and solve water resources problems;</li><li>6. design basic water structures based on water resources principles;</li><li>7. prepare a research essay on related subjects of water resources;</li><li>8. develop self-learning skills.</li></ol>			

Relationship of the Course with the Student Outcomes	Level	Learning Outcome(s)	Assessed by
<b>Student Outcomes</b>	N=None S=Supportive H=High		Exam, Project, HW, Experiment, Presentation, etc.
(1) an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	H	1, 2, 3, 4, 5	Quiz (FC Exercises), Midterms
(2) an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	S	6	Design HW
(3) an ability to communicate effectively with a range of audiences			
(4) an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts	S	7	Essay
(5) an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives			
(6) an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions			
(7) an ability to acquire and apply new knowledge as needed, using appropriate learning strategies	S	8	Essay
<b>Prepared by and Date</b>	Prof. Dr. Emine Beyhan Yeğen, September 2019		
<b>Semester</b>	Fall 2019-2020		
<b>Name of Instructor</b>	Prof. Dr. Emine Beyhan Yeğen		
<b>Course Contents</b>	Week	Topic	
	1.	Water Resources Management	
	2.	Hydrology	
	3.	Hydrology	
	4.	Flood Routing	
	5.	Dams and Reservoirs	
	6.	Dams and Reservoirs	
	7.	Spillways and Energy Dissipation Structures	
	8.	Groundwater Hydrology	
	9.	Groundwater Hydrology	
	10.	Diversion Weirs	
	11.	Hydroelectric Power Plants	
	12.	Water Supply and Distribution	
	13.	Water Supply and Distribution	
	14.	Waste Water and Storm Water Collection and Removal	
	15.	Final Exam/Project/Presentation Period	
	16.	Final Exam/Project/Presentation Period	
<b>Required/Recommended Readings</b>	<p>Required Textbooks:<sup>SEP</sup>  Yanmaz, A.M., 2013, Applied Water Resources Engineering, 4th Edition, METU Press.  Usul, N., 2013, Engineering Hydrology, 3rd Edition, METU Press</p> <p>Recommended Textbooks:  Robertson, J.A., Cassidy, J.J., and Chaudhry, M.H., Hydraulic Engineering, John Wiley&amp; Sons.  Mays, Larry W,2010, Water Resources Engineering, John Wiley&amp; Sons.</p>		

	USBR, 1987, Design of Small Dams, Water resources Publications															
<b>Teaching Methods</b>	Lectures/contact hours using "flipped classroom" as an active learning technique															
<b>Homework and Projects</b>	Term Project and/or Homework and/or Essay Homework															
<b>Laboratory Work</b>	-															
<b>Computer Use</b>	MS Office or Equivalent Programs are required, students are encouraged to use computer programs while preparing their term project.															
<b>Other Activities</b>	-															
<b>Assessment Methods</b>	<table border="1"> <thead> <tr> <th>Types of assessment</th> <th>Number</th> <th>Ratio (%)</th> </tr> </thead> <tbody> <tr> <td>Midterm Exam</td> <td>2</td> <td>60</td> </tr> <tr> <td>Quiz (FC activity)</td> <td>10-12</td> <td>20</td> </tr> <tr> <td>Design HW/ Essay</td> <td>2</td> <td>20</td> </tr> <tr> <td>Total</td> <td></td> <td>100</td> </tr> </tbody> </table>	Types of assessment	Number	Ratio (%)	Midterm Exam	2	60	Quiz (FC activity)	10-12	20	Design HW/ Essay	2	20	Total		100
Types of assessment	Number	Ratio (%)														
Midterm Exam	2	60														
Quiz (FC activity)	10-12	20														
Design HW/ Essay	2	20														
Total		100														
<b>Course Administration</b>	<p><b>Instructor's office and phone number:</b>  <b>office hours:</b>  <b>e-mail address: yegene@mef.edu.tr</b></p> <p><b>Rules for attendance:</b> Minimum of 70% attendance required. Classroom Practice contributes to 20% of the final grade.  <b>Missing a midterm:</b> Provided that proper documents of excuse are presented, each missed midterm by the student will be given the grade of the final exam. No make-up will be given.  <b>Missing the final project:</b> Faculty regulations.  <b>A reminder of proper classroom behavior, code of student conduct:</b> YÖK Regulations  <b>Statement on plagiarism:</b> YÖK Regulations  <a href="http://3fcampus.mef.edu.tr/uploads/cms/webadmin.mef.edu.tr/4833_2.pdf">http://3fcampus.mef.edu.tr/uploads/cms/webadmin.mef.edu.tr/4833_2.pdf</a></p>															

ECTS Student Workload Estimation	Activity	No/Weeks	Hours		Calculation	Explanation
		No/Weeks per Semester (A)	Preparing for the Activity (B)	Spent in the Activity Itself (C)	Completing the Activity Requirements (D)	
	Lecture	14		3		A*(B+C+D)
	Quizzes	10	2			A*(B+C+D)
	Homework					A*(B+C+D)
	Midterm(s)	2	15	2		A*(B+C+D)
	Design Project	1	20			A*(B+C+D)
	Essay	1	15			
	Final Exam					0
	Total Workload					131
	Total Workload/25					5.24
ECTS					5	