

GAU, Faculty of Engineering

Course Unit Title	Hydrology	
Course Unit Code	CVEN 410	
Type of Course Unit	Compulsory for civil engineering students only	
Level of Course Unit	4 th year B.Sc.	
National Credits	2	
Number of ECTS Credits Allocated	3 ECTS	
Theoretical (hour/week)	2	
Practice (hour/week)	-	
Laboratory (hour/week)	-	
Year of Study	4	
Semester when the course unit is delivered	2	
Mode of Delivery	Face to face, lectures with slides, videos and other media	
Language of Instruction	English	
Prerequisites and co-requisites	-	
Recommended Optional Programme Components	Basic background in mathematics, physics	
Objectives of the Course:		
<ul style="list-style-type: none"> ➤ to introduce the student to the principles and processes governing the movement of water through the hydrologic cycle, including atmospheric moisture flow, surface runoff, infiltration, and groundwater flow. ➤ to introduce the student to the hydrologic statistics and frequency analysis techniques applied to problems of engineering hydrologic design. ➤ to introduce the student to a number of hydrograph analysis techniques. 		
Learning Outcomes		
When this course has been completed the student should be able to		Assessment.
1	understand the basic concepts, components and processes in the hydrologic cycle	1,2
2	describe the hydrologic cycle and delineate a drainage basin on a topographic map	1,2
3	calculate the time of concentration for a drainage basin and estimate storm frequency for a given rainfall intensity	1,2
4	describe the construction of a hydrograph using a unit hydrograph, add two hydrographs using the principle of superposition and describe the procedure for routing a flood wave	1,2
5	be able to apply various runoff computation techniques	1,2
Assesment Methods: 1. Written Exam, 2. Assignment 3. Project/Report, 4.Presentation, 5 Lab. Work		
Course's Contribution to Program		
		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	4
2	Ability to design and conduct experiments as well as to analyze and interpret data	3
3	Ability to work in multidisciplinary teams while exhibiting professional responsibility and ethical conduct	3
4	Ability to apply systems thinking in problem solving and system design	2
5	Knowledge of contemporary issues while continuing to engage in lifelong learning	3
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	4
7	Ability to express their ideas and findings, in written and oral form	3
8	Ability to design and integrate systems, components or processes to meet desired needs within realistic constraints	3
9	Ability to approach engineering problems and effects of their possible solutions within a well structured, ethically responsible and professional manner	4
10	Ability to manage time and resources effectively and efficiently while carrying out civil engineering projects	4
11	Ability to combine knowledge from different branches of civil engineering for problem solving and system design	4
CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate 4: High, 5:Very High)		

Course Contents			
Week			Exams
1	Chapter 1	Introduction to Hydrologic Cycle	
2	Chapter 2	Hydrometeorologic Factors	
3	Chapter 3	Precipitation	Quiz 1
4	Chapter 3	Precipitation “continued”	
5	Chapter 4	Streamflow	Quiz 2
6	Chapter 4	Streamflow “continued”	
7	Chapter 5	Evaporation and Transpiration	
8			Midterm
9	Chapter 5	Evaporation and Transpiration “continued”	
10	Chapter 6	Surface Water Hydrology	
11	Chapter 7	Subsurface Water Hydrology, Infiltration	Quiz 3
12	Chapter 7	Subsurface Water Hydrology, Infiltration “continued”	
13	Chapter 8	Hydrographs	
14	Chapter 8	Hydrographs “continued”	
15			Final
Recommended Sources			
Textbook: “Introduction to Hydrology”, by Warren Viessman, Jr. and Gary L. Lewis, Pearson Educational International, 5 th edition, 2012.			
Supplementary Material: “Engineering Hydrology”, by Nurünnisa Usul, METU Press, 2001.			
Supplementary Material: Introduction to Hydraulics and Hydrology with Applications for Stormwater Management, by John E. Gribbin, DELMAR Cengage Learning, 4 th edition, 2007.			
Assessment			
Attendance & Homework	10%		
Laboratory	-		
Midterm Exam	30%		
Quizzes	20%		
Final Exam	40%		
Total	100%		
ECTS Allocated Based on the Student Workload			
Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including the Exam week)	14	2	28
Labs and Tutorials	-	-	-
Assignments	4	2	8
Project/Presentation/Report Writing	-	-	-
E-learning Activities	-	-	-
Quizzes	3	4	12
Midterm Examination	1	10	10
Final Examination	1	14	14
Self Study	14	2	28
Total Workload			100
Total Workload/30 (h)			3.33
ECTS Credit of the Course			3