

Course Description Form

1. Course Name:	
Hydrology	
2. Course Code:	
Hydrology II	
3. Semester / Year:	
2023–2024 (Semester System)	
4. Description Preparation Date:	
1/10/2023	
5. Available Attendance Forms:	
Theory	
6. Number of Credit Hours (Total) / Number of Units (Total)	
45 hours (2 theoretical + 1 applied)/4 units	
7. Course administrator's name (mention all, if more than one name)	
Name: Ghaida Najim Hanish Email: ghaida.najim@uowa.edu.iq	
8. Course Objectives	
<p>Course Objectives: Understand the behavior of fluids when at rest or flowing through a system (statics and the student's ability to recognize general principles of water science (hydrology) describing the state of formation, distribution and transfer of water in its three forms (liquid, solid and gaseous) in all parts of the biosphere within the hydrological cycle. The curriculum also includes modern methods of clarifying and describing each element of the hydrological cycle and performing calculations. It is necessary to estimate and explain the environmental factors affecting each element of the cycle. The curriculum also included comprehensive explanation of the most important practical methods for measuring the hydrological properties of surface water, along with</p>	<p>A. Cognitive goals: the student has to be able to</p> <ol style="list-style-type: none"> 1. Identify the foundations of water science (hydrology). 2. Identify the formation, distribution and transport of water in all environments within the hydrological cycle. 3. Identify the theoretical and practical foundations of hydrological measurements for each element of the hydrological cycle. 4. Knowledge of the environmental conditions affecting the elements of the hydrological cycle. 5. Identify the water budget for surface and groundwater. <p>B. Acquired skills from the course</p>

<p>explanation of the special computational methods for estimating them.</p>	<p>1. Acquiring the skill of performing mathematical calculations to estimate the hydrological conditions for each element of the hydrological cycle.</p> <p>2. Acquiring the skill of planning and designing locations of measuring stations for hydrological elements, such as the possibility of knowing optimal number of stations to measure the amount of rain in a specific area and distributing them in an accurate scientific manner within the required area.</p>
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9. Teaching and Learning Strategies

Strategy	<ol style="list-style-type: none"> 1. The student acquires important information about hydrology. 2. The student's knowledge of the relationship of the topics of this subject with other subjects. 3. The student's knowledge of the applied aspects of the subject topics. 4. The student acquires knowledge of using different sources for subject topics.
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
16-19	12	<ol style="list-style-type: none"> 1. Characteristics of the Hydrograph 2. Stream Flow Recession 3. Hydrograph Separation 4. Hydrograph Synthesis 4. The Unit Hydrograph 5. Derivation of Unit Hydrograph 6. The Conversion of U-H Duration 7. Synthetic UH 	HYDROGRAPHS	<ol style="list-style-type: none"> 1. Lectures and illustrations: Data Show. 2. Multimedia using the e-learning system. 3. Delivering a lecture, answering students' questions, and discussing with students aspects that are not clear to them. 	<ol style="list-style-type: none"> 1. Daily oral questions 2. Discussion and dialogue with students. 3. Attendance. 4. Bi-monthly oral exams. 5. Monthly written tests. 6. A final annual exam.
20-21	6	<ol style="list-style-type: none"> 1. Routing in Reservoir 2. Routing in River Channel 	FLOOD ROUTING		
22-24	9	<ol style="list-style-type: none"> 1. Movement of Groundwater 2. Discharge of Groundwater 3. The Wells 4. Equilibrium Hydraulics of Wells (steady flow) 	GROUNDWATER (Subsurface Water)		

		5. No equilibrium Hydraulics of Wells (unsteady flow)			
25-27	9	1. Chow Method Solution 2. Recovery Test 3. Unsteady Radial Flow in an Unconfined Aquifer 4. Unsteady Radial Flow Leaky Aquifer	GROUNDWATER (Subsurface Water)		
28-30	9	1. Well Flow Near Aquifer Boundaries 2. Well Flow Near a Stream 3. Well Flow Near an Impermeable Boundary 4. Well Losses	GROUNDWATER (Subsurface Water)		

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	<ul style="list-style-type: none"> • Bedient P B Huber, W C and Vieux, B E 2008 Hydrology and Floodplain Analysis. • Gupta, R.S., 2016 Hydrology and hydraulic systems. • K. Subramanya, 2009 Engineering Hydrology.
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	