

Ministry of Higher Education and Scientific Research

Republic of Iraq

University: University Of Basrah

College: **Science**

Department : **Geology**



Year : 2021-2022

Semester : First

SYLLABUS: < **ADVANCED WATER RESOURCES** >

**INSTRUCTOR: WASAN SABEEH HAMDAN**

**Phone: PHONE NO.**

**Hours: 3**

**Office: College of science, Geology Dept**

**Home Page:**

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#### COURSE OVERVIEW

Develop the student's ability to recognize the importance of water resources, their presence, and distribution, environmental and economic importance. As well as recognize the sustainability methods and water balance methods to manage the drainage basins and the factors affecting on it. Also studying applied methods that serve them in the field of scientific research in the field of water resources

#### GOALS AND OBJECTIVES

To develop the ability of the students to identify the water balancing factors

To Identify the drainage basins and their impact on water resources

Identify the sustainability topics and management for surface and ground water resources.

To understand the physical, chemical and environmental properties of surface water

Learn the modern methods used in the interpretation of hydrological phenomena and hazards in an applied and practical manner.

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### TEXTBOOK AND READINGS

- 1 - Hydrology (Principles. Analysis. Design). H. m. Raghunath, second add. New Delhi. Bangalore. 2006.
- 2 - Engineering Hydrology by Ir. W. Spaans. 1996. IHE/Savenije/de Laat/Spaans
- 3 - Hydrology and flood plain analysis. PHILIP B. BEDIENT, WAYNEC.HUBER. BAXTER E. VIEUX. International Edition contributions by MURALIDHAR MALLIDU, fifth edition
- 4 - Applied hydrogeology, C. W. Fetter. 2001, fourth edition. USA.

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### COURSE ASSESSMENTS

The course grade ( **100** points ) will be based on the following elements:

	Points
Exams	<b>20</b>
Participation	<b>10</b>
Final exam for the semester	<b>70</b>
Assignments	<b>100</b>

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### COURSE DESCRIPTION AND ASSIGNMENT SCHEDULE

This **NO.** -credit hour course is 15 weeks long. You should invest NO. Hours every week in this course.

WK	DATE	TOPIC	READING	ASSIGNMENT
1	1 <sup>st</sup> week	Introuduction, Hydrology and hydrogeology		
2	2 <sup>nd</sup> week	hydrologic cycle elements and water balance equation,		
3	3 <sup>rd</sup> week	Precipitation proses& and calculate the missing data		
4	4 <sup>th</sup> week	Abstraction Losses, infiltration, percolation		
5	5 <sup>th</sup> week	Infiltration methods determinations practical part		
6	6 <sup>th</sup> week	first semester exam		Assignment 1
7	7 <sup>th</sup> week	Water losses		
8	8 <sup>th</sup> week	Runoff & catchment area properties		
9	9 <sup>th</sup> week	Hydrograph		
10	10 <sup>th</sup> week	Properties of aquifer and Darcy's law		
11	11 <sup>th</sup> week	- Principles of ground water		

12	12 <sup>th</sup> week	second semester exam		Assignment 2
13	13 <sup>th</sup> week	Equations of groundwater flow		
14	14 <sup>th</sup> week	Soil moisture and ground water recharge		
15	<i>Mid Exam</i>			

Is it possible to develop the curriculum <within the teaching authority 20%> to include vocabulary that serves sustainability	
1- Yes, it is possible (point an appropriate aspect)	1- Sustainable development 2- Water purification 3- Water recycling for agriculture-4- Environmental development- 5- pollution measurement - 6- Mechanisms for developing infrastructure in Iraq-7-The basics of sustainable cities- 8- Study aspects of developing green areas-9- Study climatic phenomena in the country-10- Mechanisms for obtaining good health and well-being.
2- Suggest aspect that serves sustainability	<b>Sustainable water resource managements</b>