Course Description Form of Hydrology and Water Resources

1. Course Name:
Hydrology and Water Resources
2. Course Code:
HYWR405
3. Semester / Year:
First semester/ 2024-2025
4. Description Preparation Date:
15/1/2025
5. Available Attendance Forms:
Full time (theoretical lecture and practical lecture) weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
5 hours (2 hours theoretical and 3 hours practical per week) for 14 weeks, number of units 3.5 units
7. Course Administrator's Name (Mention All, If More Than One Name)
Name: Dr.Ahmed Bahjat Khalaf Email : raaedibrahim@uodiyala.edu.iq Dr. Nasreen Jawad Rashid
8. Course Objectives

Course Objectives: Graduating students who are able to:	1 Identify the concept of hydrology, water resources and their applications. 2 Identify the movement of water from precipitation and methods of measuring it. 3 The student will identify evaporation, surface runoff, groundwater, floods and their causes 4 Know the water balance and its importance.
9. Teaching and Learning Strategies	

Strategy	In-person lectures for 14 weeks, including two monthly exams, daily exams, and scientific reports

10. Course Structure

Theoretical part

Week	Hours	Required learning outcomes	Unit or Subject	Learning Method	Evaluation Method
1	**2**	**Introduction to Hydrology, Hydrological Cycle**	**Hydrology and Water Resources**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
2	**2**	**Rainfall, Surface Runoff, Base Flow, Evaporation**	Hydrology and Water Resources	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
3	**2**	Rainfall Loss, Capture Loss, Ground Storage Loss	Hydrology and Water Resources	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
4	**2**	Deep Percolation Loss. Importance of Loss in Runoff Calculations	Hydrology and Water Resources	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
5	**2**	Evaporation and Water Loss from Aquifers	Hydrology and Water Resources	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
6	**2**	Semester 1st exam			
7	**2**	Permanent watercourses, intermittent watercourses, seasonal watercourses	Hydrology and Water Resources	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
8	**2**	Suspended and dissolved loads in watercourses	Hydrology and Water Resources	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
9	**2**	Groundwater	Hydrology and Water Resources	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
10	**2**	Groundwater aquifers, their types and characteristics	Hydrology and Water Resources	**Lecture Dialogue & discussion**	Daily, monthly and final exams

				Brainstorming	and daily reports
11	**2**	Hydrograph	Hydrology and Water Resources	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
12	**2**	Semester 2nd exam			
13	**2**	Floods, causes, risks	Hydrology and Water Resources	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
14	**2**	Water resources and the importance of water balance	Hydrology and Water Resources	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
Practical part					
Week	**Hours**	**Required learning outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation Method**
1	**3**	**Methods of measuring rainfall**	**Hydrology and Water Resources**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
2	**3**	**Methods of displaying rainfall data**	**Hydrology and Water Resources**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
3	**3**	**Measuring and estimating losses from water reservoirs**	**Hydrology and Water Resources**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
4	**3**	**Means that can be used to reduce evaporation losses from water surfaces**	**Hydrology and Water Resources**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
5	**3**	**Measuring water levels and discharges in waterways (rivers)**	**Hydrology and Water Resources**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
6	**3**	Semester 1st exam			
7	**3**	**Methods of measuring the flow and the evidence used in measuring the flow**	**Hydrology and Water Resources**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports

8	**3**	**Mathematical applications in groundwater movement**	**Hydrology and Water Resources**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
9	**3**	**Mathematical applications in groundwater movement**	**Hydrology and Water Resources**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
10	**3**	**Applications in flow curves**	**Hydrology and Water Resources**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
11	**3**	Applications of standard hydrograph curves	**Hydrology and Water Resources**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
12	**3**	Semester 2nd exam			
13	**3**	Methods of base flow separation in hydrograph	**Hydrology and Water Resources**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
14	**3**	Methods of base flow separation in hydrograph	**Hydrology and Water Resources**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports

11. Course Evaluation

Examination Monthly & daily exams with discussion questions inside the lecture.
The degree of participation in the questions related to the subject.

12. Learning and Teaching Sources

Required Textbooks (Curricular Books, If Any)	الهيدرولوجيا الهندسية. ١٩٩٢. محمد سليمان حسن واخرون. جامعة الموصل.
Main References (Sources)	علم المياه.٢٠٠٨. سحر امين كاتوت .دار دجلة
Recommended Books and References (Scientific Journals, Reports...)	Iraqi academic journal
Electronic References, Websites	www.noor-book.com. www.youtube.com.