

Date:	Examination No.:	Version: 1/2/2023	Start: 1/2/2023
Module Name - Code	Groundwater Engineering– WRE 6139		
Module Language:	English		
Responsible:	Dr. Abdulwahd Ali Kassem		
Lecture (s):	Dr. Abdulwahd Ali Kassem		
College:	College of Engineering – Salahaddin University		
Duration:	15 week – 1 semester		
Course outcomes:	Student is introduced to groundwater hydrology including distribution of groundwater, confined and unconfined aquifer, artesian well , hydraulic conductivity, Darcy law, stratification, Groundwater flow direction, general flow equations, stream flow and groundwater level , well, well construction, well hydraulics, Dupit’s assumptions, Thiem's equation, Theis method, Cooper-Jacob method , specific capacity, groundwater investigations, and artificial recharge of groundwater.		
Course Content:	Introduction, confined and unconfined aquifer, artesian well , hydraulic conductivity, Darcy law, Groundwater flow direction, general flow equations, well construction and well hydraulics, Dupit’s assumptions, Thiem's equation, Theis method, Cooper-Jacob method, groundwater investigations, and artificial recharge of groundwater.		
Literature:	1- " Groundwater Hydrology ", by D. K. Todd. 2- "Apply Hydrology", by Ven T. Chow. 3- " Hydrology", by H. M. Raghunath.		
Type of Teaching:	4 hrs in lectures		
Pre-requisites:	Engineering Hydrology		
Frequency:	Yearly in spring semester		
Requirements for credit points:	For the award of credit points, it is necessary to pass the module exam. The module exam contains: Daily Requirements (Assessments, Quizzes, Daily Activities and etc..) Student's attendance is required in all classes.		
Credit point:	5 credits		
Grade Distribution:	The Grade is generated from the examination result(s) with the following 40% daily exam and activity (2 exams each one 10%, 2 quizzes each one 5%, and one presentation 10%) 60% final theoretical Exam		
Work load:	The workload is 240 hr. It is the result of 120 hr attendance and 120 hr self-studies.		