

Date:	Examination No.:	Version: 1/2/2024	Start: 1/2/2024
<b>Module Name - Code</b>	Groundwater Engineering– WRE 6139		
<b>Module Language:</b>	English		
<b>Responsible:</b>	Lecturer: Dr. Abdulwahd Ali Kassem		
<b>Lecture (s):</b>	Lecturer: Dr. Abdulwahd Ali Kassem		
<b>College:</b>	College of Engineering – Salahaddin University		
<b>Duration:</b>	15 week – 1 semester		
<b>Course outcomes:</b>	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.		
<b>Course Content:</b>	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, Multiple wells system, groundwater investigations, and artificial recharge of groundwater.		
<b>Literature:</b>	1- " Groundwater Hydrology ", by D. K. Todd. 2- "Apply Hydrology", by Ven T. Chow. 3- " Hydrology", by H. M. Raghunath.		
<b>Type of Teaching:</b>	3 hrs in lectures		
<b>Pre-requisites:</b>	Engineering Hydrology		
<b>Frequency:</b>	Yearly in spring semester		
<b>Requirements for credit points:</b>	For the award of credit points, it is necessary to pass the module exam. The module exam contains: Daily Requirements (Presentations, Quizzes, Daily Activities and etc..) Student's attendance is required in all classes.		
<b>Credit point:</b>	5 credits		
<b>Grade Distribution:</b>	The Grade is generated from the examination result(s) with the following 40% daily exam and activity (Midterm exam 20%, 3 quizzes each one 5%, and one presentation 5%). 60% final theoretical Exam.		
<b>Work load:</b>	The workload is 180 hr. It is the result of 90 hr attendance and 90 hr self-studies.		