

Date:	Examination No.:	Version: 1/9/2023	Start: 1/9/2023
Module Name - Code	Groundwater Engineering-1146		
Module Language:	English		
Responsible:	Dr. Abdulwahd Ali Kassem		
Lecturer (s):	Dr. Abdulwahd Ali Kassem		
College:	College of Engineering – Salahaddin University		
Duration:	15 weeks – 1 semester		
Course outcomes:	The student is introduced to groundwater hydrology including distribution of groundwater, confined and unconfined aquifers, artesian wells, 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 hours in lectures		
Pre-requisites:	Engineering Hydrology		
Frequency:	Yearly in the fall 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, 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		
Workload:	The workload is 240 hr. It is the result of 120 hours of attendance and 120 hours of self-studies.		