

COURSE SYLLABUS FORM

**American University of Beirut
Faculty of Arts and Sciences
Department Geology**

Geol 318: Hydrogeology

1. Course Learning Outcomes

This course provides an understanding of the fundamentals of hydrogeology. The course introduces the student to groundwater occurrence, movement, development and management. Methods of pumping test analysis are also introduced. The student will also gain knowledge of groundwater chemistry, quality and contamination.

2. Resources Available to Students

Required Text: Fetter, C.W. 2001. Applied Hydrogeology, 4th ed. Prentice Hall, New Jersey.

3. Grading Criteria

Term Paper = 15%
First Exam = 20%
Second Exam = 20%
Final Exam = 45%

4. Schedule

Week	Topic	Assignments
1	Introduction Definitions The Hydrologic Cycle Hydrologic Budgets	
2	Groundwater Movement Darcy's Law Hydraulic Conductivity and Permeability Transmissive and Storage Properties of Aquifers Groundwater Maps and Flow Nets Water-Table Fluctuations Groundwater-Surface Water Relations	Homework 1
3	Groundwater in Various Geologic Environments Effects of Lithology Effects of Structure on Groundwater Movement and Storage	

Week	Topic	Assignments
4	Groundwater Recharge and Discharge Natural Groundwater Recharge and Discharge Recharge and Discharge Areas Effects of Geology and Topography on Recharge and Discharge	
5	Groundwater Development and Management Hydrologic Budgets and Groundwater Budgets Safe yield Artificial Recharge Groundwater Mining Land Subsidence Seawater Intrusion	Homework II
6	Midterm I	
7	Pumping Tests Theim Method Theis Method	Homework III
8	Cooper-Jacob Method Theis Recovery Method	Homework III
9	Groundwater Quality Units of Measurements	
10	Important Properties of Water Chemical Constituents in Atmospheric Precipitation Suitability of Groundwater for Drinking Groundwater Dissolved Constituents Water Quality Standards	Homework IV
11	Graphical Representation of Water Quality Data	
12	Midterm II	
13	Groundwater Contamination Sources of Contamination	
14	Paper presentation	

5. Course Policy (if any)