COURSE SYLLABUS

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

Geol 305: Geophysics II

1. Course Learning Outcomes

This course introduces introduces electrical, electromagnetic, radiometric and geothermal methods in addition to geophysical well logging in broad view. During the semester, students taking this course will submit and present a term paper on the application of electrical and electromagnetic methods to environmental and engineering problems. At the end of the semester, the students taking this course should know the basic principles of electrical and electromagnetic methods and their systems and applications. Also, they will know tha basic principles of radiometric, geothermal and geophysical well logging methods.

2. Resources Available to Students

The textbook is: An Introduction to Applied and Environmental Geophysics 1997, by Reynolds, J.M., John Wiley & Sons.

Other resources: Geophysical methods in Geology, 2nd ed., by Sharma, P.V., Elsevier; Introduction to Applied Geophysics by Stanislav Mares, D. Reidel Pub. Comp; and Published scientific papers in geophysical journals (mostly for term papers).

3. Grading Criteria

Midterm ------- 30%
Term paper ----30%
Final Exam ----40%

4. Schedule

Week	Topic	Activities	Assignments
1	Radiometric methods	Lecturing	
2	Geothermal methods	Lecturing	
3	Geophysical well logging	Lecturing	
4	Electrical resistivity methods	Lecturing	
5	Electrical resistivity methods	Lecturing	
6	Spontaneous (self) potential methods	Lecturing	
7	Induced polarization method	Lecturing	
8	**Midterm test**		
9	Electromagnetic methods: introduction and principles	Lecturing	
10	Electromagnetic methods: introduction and principles	Lecturing	
11	Electromagnetic methods: systems and applications	Lecturing	
12	Electromagnetic methods: systems and applications	Lecturing	
13			presentations
14	Ground penetrating radar	Lecturing	
15	Ground penetrating radar	Lecturing	