

COURSE SYLLABUS

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

Geol 304: Geophysics I

1. Course Learning Outcomes

This course introduces seismic, gravity and magnetic geophysical methods with a special emphasis on environmental and engineering problems. During the semester, students taking this course will submit and present a term paper on the application of seismic, gravity and magnetic methods to environmental and engineering problems. At the end of the semester, the students should know the basics of earthquake seismology and the main elements of the earth interior, and should be able to outline and explain the principles of gravity, magnetic and seismic 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: The Solid Earth: An Introduction to Global Geophysics 1990, by Fowler, C.M.R., Cambridge University Press; Introduction to geophysical prospecting, (4th ed.) 1988, by Dobrin, M.B. and Savit, C.H., McGraw - Hill Book Company; 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	Earthquake Seismology and The Interior of the Earth	Lecturing	presentations
2	Earthquake Seismology and The Interior of the Earth	Lecturing	
3	Introduction to Geophysical Prospecting	Lecturing	
4	Gravity methods	Lecturing	
5	Gravity methods	Lecturing	
6	Geomagnetic methods	Lecturing	
7	Geomagnetic methods	Lecturing	
8	Midterm test		
9	Applied seismology: introduction and principles	Lecturing	
10	Applied seismology: introduction and principles	Lecturing	
11	Seismic refraction surveying	Lecturing	
12			
13	Seismic reflection surveying	Lecturing	
14	Seismic reflection surveying	Lecturing	
15	Seismic reflection surveying	Lecturing	