



Faculty of Earth Sciences



Geophysics Department



The Geological Society
Accredited degree courses

GEOELECTRIC EXPLORATION

Course Name	Course ID	Prerequisites
<i>GEOELECTRIC EXPLORATION</i>	<i>EGP 331</i>	<i>PHYS 202 / EGP 211 / MATH 202</i>

Course Description

Electrical properties of rocks and minerals, field instrumentation of data acquisition, arrays, A.C. and D.C. resistivity measurement systems. Self-potential induced polarization, and telluric. Data presentation and their quantitative and qualitative analyses. Field examples of exploration for groundwater and mineral resources. Selected field studies and field trips.

Course Objectives

1. Study the relation between the different structural and lithological constituents of the earth crust and their electrical properties.
2. Increasing the students' knowledge of different aspects of the use of the different types of electrical techniques in subsurface exploration.
3. Training the students in acquisition, analysis and interpretation of the electrical techniques.

General References for the Course: (Books/Journals...etc.)

Students in this course can read from:

1. *An Introduction to Applied and Environmental Geophysics*, by Reynolds, J.M., 1997. John Wiley & Sons, NY, USA.
2. *Applied Geophysics, 2nd Edition*, by Telford, W.M., Geldart, L.P., Sheriff, R.E., 1996. Cambridge University Press.
3. *Exploration Geophysics of the Shallow Subsurface*, by Burger, H.R., 1992.

Prentice-Hall PTR, Englewood Cliffs, NJ.

4. *Geotechnical and Environmental Geophysics, Vol's. I & II: Environmental & Groundwater*, by Ward, S.H., 1990. SEG, OK, USA.
5. *Principles of applied geophysics, 5th Edition*, by Parasnis, D.S., 1997. Chapman & Hall, London.

List of URLs for this Course

- www.google.com
- www.igme.gr/e30.htm

Course Outcome

After studying this course the student must be able to know the principles of electric methods and he is supposed to know the following:

1. Student knows the electrical properties of rocks and minerals.
2. Student knows the behavior of the electric current distribution.
3. Student can different types of electric methods.
4. Student can present and interpret on different electrical methods.
5. Student can use some applications of electrical method in exploration.