



Faculty of Earth Sciences



Geophysics Department



The Geological Society
Accredited degree courses

MAGNETIC AND GRAVITY EXPLORATION

Course Name	Course ID	Prerequisite
<i>MAGNETIC AND GRAVITY EXPLORATION</i>	<i>EGP 341</i>	<i>EGP 211 / PHYS 202 / MATH 202</i>

Course Description

Magnetization effects, elements of magnetic field, geomagnetic field, diurnal variations of magnetic field, induced and remnant magnetization, magnetic anomalies of deep buried bodies, instruments for geomagnetic measurements and their calibration. Various magnetic surveys, data reduction, normal and diurnal corrections. Gravitational field, field intensity measurements, instruments and survey methods, variation in gravitational acceleration, data correction, separation of gravity anomalies, quantitative and qualitative interpretation of gravity survey. Field examples and field trips.

Course Objectives

From this course the student will be able to know how to deal with the potential theory, potential field data analysis and interpretation.

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

Students in this course can read from:

1. *Fundamentals of Geophysics*, by Lowrie, W., 1997. Cambridge University Press.
2. *Interpretation theory in applied geophysics*, by Grant, F.S. and West, G.F., 1965. McGraw-Hill.
3. *Introduction to Geophysical Prospecting, 4th Edition*, by Dobrin, M.B. and C.H. Savit, 1988. McGraw Hill.
4. *Geophysics /Leading Edge*.

List of URLs for this Course

- <http://www.mines.edu/academic/courses/geophysics/>

Course Outcome

1. Student can share different process of interpretation of gravity and magnetic methods and potential theory.
2. Student can learn the following: general meaning of potential theory, volume potential derivatives of gravity fields, instruments density determination, and interpretation techniques. Principles of magnetism, types of magnetism, residual magnetism, instrumentation and interpretation.