Faculty of Earth Sciences

Geophysics Department

The Geological Society
Accredited degree courses

SEISMIC EXPLORATION

Course Name	Course ID	Prerequisites
SEISMIC EXPLORATION	***EGP 321***	***EGP 211/PHYS 202/ MATH 202***

Course Description

Properties of elasticity, seismic waves and their propagation, derivation of wave equation, reflection and refraction methods, field acquisition techniques, reflection and refraction digital data processing, sonic logging, shear wave techniques and their applications. Field trip.

Course Objectives

1. Illustrate the role of seismic velocities in elastic parameters of rocks.
2. Define the different types of seismic waves and simulates their mode of propagation.
3. Differences between refraction and reflection seismic methods.
4. Emphasis on seismic refraction method (theory and data analysis)
5. Define the differences between surface and in-hole seismic surveys.

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

Students in this course can read from:

1. *Applied Geophysics,* by Telford, W.M., Geldart, L.P., Sheriff, R.E., 1990. Cambridge University Press.
2. *Basic Exploration Geophysics,* by Robinson, E.S. and Coruh, C., 1998. John Wiley & Sons, NY, USA.
3. *Exploration Geophysics of the Shallow Subsurface,* by Burger, H.R., 1992. Prentice-Hall PTR, Englewood Cliffs, NJ.

4. *Introduction to Geophysical Prospecting, 4th Edition,* by Dobrin, M.B. and C.H Savit, 1988. McGraw Hill.
5. *Refraction Seismic,* by Palmer, D., 1986. SEG-Series, Tulsa, OK., USA

List of URLs for this Course

- www.geology.wisc.edu/
- www.geo.ucalgary.ca/

Course Outcome

The student will be able to know seismic wave propagation, types of seismic waves and types of seismic equipments. He is suppose to learn the following:

1. Student can be able to know the types of seismic field layouts
2. Student can do the analysis of seismic refraction data.
3. Student knows the techniques for interpretation of seismic refraction data.
4. Student can distinguish the role of seismic refraction in seismic reflection.
5. Student can apply the seismic methods in shallow investigation.