



Faculty of Earth Sciences



Geophysics Department



The Geological Society
Accredited degree courses

SEISMOLOGY

Course Name	Course ID	Prerequisites
<i>SEISMOLOGY</i>	<i>EGP 413</i>	<i>EGP411 / EGP412/ MATH204</i>

Course Description

Introduction to seismology, earthquake monitoring stations and their equipment. Earthquakes, their kinds and source parameters. Seismic waves and travel-time curves. Seismology and the interior structure of the earth. Seismic activity and its risk. Intensity and ground acceleration maps. Earthquake engineering. Geologic and engineering precautions for the mitigation of earthquake risks. General trends of early warning studies about the groundwater shaking and their expectation. Plate tectonic theory.

Course Objectives

1. Tracing the seismic waves from earthquake focus to seismic station inside the earth interior.
2. Earthquake stations and equipments.
3. Defining artificial and natural earthquakes (magnitudes, origin, and properties).
4. Discussing earthquake source parameters and epicenter location methods.
5. Earthquake hazards and mitigations procedures.
6. Ancient and modern methods used in earthquake forecasting.

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

Students in this course can read from:

1. *Earthquakes, 4th Edition*, by Bolt, B.A., 1999. W.H. Freeman & Company, NY, USA.
2. *Introduction to Seismology*, by Shearer. P.M., 1999. Cambridge University Press.
3. *Modern Global Seismology*, by Lay, T. and Wallace, T.C., 1995. Academic Press, San Diego.

List of URLs for this Course

- <http://www.sciencecourseware.org/eec/Earthquake/Assessment/>
- www.martindalecenter.com/
- www.seismo.berkeley.edu

Course Outcome

The student will be in a position to know the principles of seismology, recording of earthquake events, and define their parameters. He is supposed to know the following:

1. Student can know the earthquake characteristics and types.
2. Student knows the paths of seismic waves inside the earth interior.
3. Student can be able to know the magnitude intensity and movement of earthquakes.
4. Student knows to how to locate earthquakes.
5. Student knows the earthquakes mitigation procedures/soil-structure interaction.