



Dipartimento di Scienze e Tecnologie

ANNO ACCADEMICO 2017/2018

**CORSO di STUDIO in SCIENZE E TECNOLOGIE GEOLOGICHE
INSEGNAMENTO in APPLIED GEOPHYSICS (MOD A)**

DOCENTE Prof.ssa RAFFAELLA DE MATTEIS

Overview of geophysical methods, planning a geophysical survey, survey constraints, target identification, noise, data analysis.

Introduction to digital signal processing.

Electrical resistivity method: rock resistivity, current flow in an homogeneous earth, electrode configurations and geometric factors, instrumentation, media with contrasting resistivities, vertical electrical sounding, resistivity curve, master curves, interpretation methods, equivalence, pseudo-section.

Seismic refraction surveying, raypath and travel time curves for direct and refracted waves, two-layer, three-layer and multilayer structures, dipping layer case, irregular interfaces, seismic energy sources, detection of seismic waves. Data interpretation.
Seismic instrumentation.

Seismic reflection surveying, raypath and travel time curve for reflected waves, dipping layer case, multilayer structures, survey layouts, reflection data processing, normal moveout, zero offset section, common midpoint section, velocity analyses, migration.

Inverse theory in geophysics, formulating inverse problems, the linear inverse problem, examples of inverse problems, solution of the linear inverse problem, the least square solution.

Seismic tomography.

Bibliografia consigliata:

- E. Carrara, A. Rapolla, N. Roberti. I metodi geoelettrico e sismico per le indagini superficiali del sottosuolo. Biblioteca Scientifica, Liguori Editore
- R.J. Lillie, Whole Earth Geophysics, Prentice Hall
- W.M. Telford, L.P. Geldart, R.E Sheriff. Applied Geophysics. Cambridge University Press, 1990.
- A. Norinelli, Elementi di Geofisica Applicata, Ed. Patron
- A. Zollo e A. Emolo. Terremoti e onde. Metodi e pratica della sismologia moderna. Liguori Editore, 2011



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