



Syllabus

Term: 2025/26/2 **Subject name:** Introduction to Geophysics lecture **Subject code:** ENAFOTNA1-1101

Unit (Unit code) Institute of Geography and Earth Sciences (FOLDRAJZ)

Lecturer responsible for the course: Dr. SZŰCS István

Requirement: Exam

Classes per week : 2/0/0

Classes per term:

Purpose of education:

The objective of the course is to study and acquire the basics of investigation and interpretation of measurable physical phenomena in connection of Earth's core and crust existed and/or generated in mutual relation of natural geological structures and/or human constructions.

With the basics of Geophysics students are able:

- to identify, specify and plan the most relevant geophysical methods in connection of the necessary investigations of geological structures and inhomogenities.
- to analyze, evaluate and interpret the basic results of geophysical processing.

Contents:

- Destination and main objectives of Geophysics. Connections with co-sciences
- Fundaments of Seismology. Genesis- and propagation of elastic waves in different media.
- Main features interactivity of natural hazards (Volcanism; Slides; Earthquakes).
- Gravitational and magnetic field of the Earth. Instruments and methods of investigations.
- Geoelectric methods (DC and AC). Main fields, instruments and practice of investigations.
- Seismics („the queen of geophysics”). Resolutions and limitations of different methods.



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Contents:

- Practical aspects and fields of geophysical data processing and interpretation.
- Seismic (velocity and absorption) tomography. The basis of seismo-acoustics.
- Radiometry (Theory and practice. Instruments and methods of investigations).
- The information content, of geophysical methods. (Uncertainties, economical aspects).
- The role of geophysical information in extension of geological data and modelling. (Case Studies)

System of examining and valuation:

Examination. Test results: 50-60 %: passed (2); 60 - 70 %: fair (3); 70 -80 %: class (4); 80 – 100 %: A (5).

Bibliography:

OPPT slides

Pethő G., Vass P: Introduction to Geophysics, Miskolci Egyetem
(2011) http://www.tankonyvtar.hu/hu/tartalom/tamop425/0033_SCORM_MFGFT6001T/sco_11_08.htm

Jan Valenta Introduction to Geophysics – Lecture Notes,
2015 http://www.geology.cz/projekt681900/english/learning-resources/Geophysics_lecture_notes

Bibliography: