

Geoelectric and Electromagnetic Exploration-GPH 231

Course title and code: Geoelectric and Electromagnetic Exploration-GPH 231

Level/year at which this course is offered: Level 6-3rd year

Pre-requisites for this course (if any): GPH 201

The main purpose of the course:

- To familiarize students with basic knowledge of electrical and electromagnetic geophysical methods.
- Student becomes responsible for their own field works in exploration geophysics.

List of Topics

Part I: Electrical method

1. Electrical properties of rocks, mechanism of electrical conduction in materials and conductivity mechanism
2. Fundamental of the current flow in the earth
3. Potential distribution in a homogeneous medium
4. Apparent and true resistivity
5. Potential and current distribution across boundary
6. Field procedures and electrode configurations
7. Electrical sounding and profiling techniques
8. Qualitative and quantitative interpretation
9. Electrochemical methods:
 - Self-potential
 - Induced polarization

Part II: Electromagnetic methods

1. Classification of electromagnetic systems and its principles
2. Magnetotelluric method

- 3. Vertical loop electromagnetic**
- 4. Slingram and Turam systems**
- 5. Very low Frequency (VLF) EM**
- 6. Airborne method**
- 7. Ground penetrating radar**