Department: Mining Engineering **Division:** Mining Exploration and Mineral Processing

Level and Major: BSc, Mining Exploration and Mineral Processing

Course Title: Geophysical Exploration 1 **Number of Credits:** 2

Prerequisite: Structural Geology+Physics2 **Lecturer:** Dr. Hamidreza Ramazi

Course Goals and Objectives

Learning and understanding exploration geophysical methods (gravity, magnetic and seismic methods), and application of them

Course Topics

- Syllabus and references
- Fundamentals of Exploration seismic methods
- Refraction method- I and II layers models
- Refraction method- n layers model, non-horizontal models
- Refraction method- non-smooth contacts models
- Velocity gradient, engineering seismic and seismic tomography
- Reflection method- 2 layers model
- Reflection method- n layers models
- Gravity method- physical foundations and instruments
- Gravity method- field surveying and data processing
- Gravity method- data processing, and interpretation
- Gravity method- data processing, forward modeling and case studies
- Magnetic method- physical foundations and instruments
- Magnetic method- field surveying and data processing
- Magnetic method- Geomagnetic maps and interpretation
- Magnetic method- Case studies

Reading Resources

- Field Geophysics
- Ramazi Hamidreza "Engineering Seismic Methods" Published by Amirkabir University of Technology, Tehran, Iran, 2016