

Department: Mining Engineering

Division: Mining Exploration

Level and Major: Ph.D., Mining Exploration

Course Title: Plate Tectonics and Mineralization

Number of Credits: 3

Lecturer: Dr. Hossein Hassani

Course Goals and Objectives

Training and research on plate tectonics and mineralization.

Course Topics

- Introduction in plate tectonics
- Velocity Internal structure of the Earth: including Earthquake Mechanism, Focal mechanism solution of the earthquake, Velocity structure of the earth
- Continental drift including Continental reconstruction, Geological evidence, Paleomagnetism, Apparent polar wandering curves
- Seafloor spreading including Magnetism Anomaly, Geomagnetism reversal, Different hypothesis, Stratigraphic magnetism, Transform faults
- The framework of Plate tectonics including Plate and plate margin, Relative plate motion, Triple junctions, and Hot spots
- Ocean ridge and transform faults, Structure of axial zone, Broad structure of the lithosphere below the ridge, Heat flow and hydrothermal circulation, Origin of transform faults, Continental strike-slip faults
- Subduction zones, Morphology Gravity Anomaly, Island arc, accretionary prism, volcanic and Platonism activities, Back arc basin
- Mountain range, Collisional mountain range, models of continental collision, The mechanism of continental collision, continental arc collision, continental drift
- Mountain belt, continental collision models
- Magmatism and global tectonic processes, Magmatism at constructive plate margins, Magmatism at destructive plate margin
- Plate tectonics and mineralization, Mineralization in subduction zones, mineralization in the mid-ocean ridge, mineralization in rift zones
- Mineralization in collision zones, mineralization in the continental rift, mineralization in hot spots

Reading Resources

- Up-to-date articles