

Department: Mining Engineering

Division: Mining Exploration and Mineral Processing

Level and Major: BSc, Mining Exploration and Mineral Processing

Course Title: Remote Sensing and GIS

Number of Credits: 2

Prerequisite: Cartography And Filed Study

Lecturer: Dr. Hossein Hassani

Course Goals and Objectives

Fundamental of Remote Sensing and using Software in Processing Satellite Data and GIS.

Course Topics

- Aerial Photos, Characteristic and different type of Aerial photos
- Stereoscopy, Identification of Topographic Features and Different methods of Altitude measurement
- Recognition of various main type of rocks and materials, Main Type of Structural Geology, Active Process, Complication Resulting from Human Activity
- Preparing Fundamental Geological Maps using Aerial Photos Stereoscopy
- Satellite Images, Satellite imaging
- Familiar with Remote Sensing Software and References, Preprocessing
- Corrections of Satellite Data
- Georeferencing of Satellite Data, Application of Satellite Data in Mining Engineering and Environment
- Familiar with Geographical Information System (GIS), Application of GIS in Exploration Problems
- Information of Place References (Raster and Vector models), Fundamental of Spatial Concepts (Euclidean Spatial, Collection, Network Topology, Metric and Fractal), GIS Software, Table Data Processing, Map Data Processing and Model Data Processing, Interpretation of Data, Modeling for Decision making, Output Data
- Preparing a map using Aerial Photos and Satellite Images, Preparing a Map and Report using GIS Software in the Lab, The Practical work will be done in Groups 2 or 3

Reading Resources

- Gupta, R. P., (2003), Remote Sensing Geology, Second Edition, Springer, 656 pages
- Cambell, Y. B., (2002), Introduction to Remote Sensing, the Gilford Press

- Floyed F., Sabins, JR., 1987, Remote Sensing Principal and Interpretation, Second Edition, Freeman and Company
- Bonaham-Carter, G. F., 2006, Geographic Information System, Modeling with GIS, Pergamon, Vol., 13, 398p