

Department: Mining Engineering

Division: Mining Exploitation

Level and Major: MSc, Mining Exploitation

Course Title: Ore Body Modeling

Number of Credits: 3

Lecturer: Dr. Majid Ataee Pour

Course Goals and Objectives

To get familiar with 2D and 3D modeling of mineral resources

Course Topics

- Modeling Concept and importance, Various types of ore-body models
- Systems and Models, Definition of mineral resources as systems, Resource Variables as Spatial functions
- Database management, Digitizing and digitizers, Data verification
- Data compositing, approaches, and process
- Basics of 2D gridding and 3D block modeling
- Modeling steps, data point and grid orientation, grid size and density, grid node addressing
- Overview of estimation algorithms including Nearest Neighbor, Inverse Distance, Triangulation and Kriging
- Analysis of estimation parameters, data filtering, search distance, transformed distance, search rules, duplicate data, sectors, anisotropy
- The model calculation, model visualization in matrices, 2D contour maps, and 3D surfaces
- Ore-body modeling software tools

Reading Resources

- Ataee-pour, M (1391), Principles of 2D ore-body modeling, Amirkabir University of Technology Publication