

Department: Mining Engineering

Division: Mining Exploitation

Level and Major: Ph.D., Mining Exploitation

Course Title: Open Pit Optimization Techniques

Number of Credits: 3

Lecturer: Dr. Morteza Gholi Osanloo

Course Goals and Objectives

To get familiar with methods of optimization in open-pit mines.

Course Topics

- Mine optimization overview
- Optimal mine design
- Modular optimization: a) Cutoff grade-optimal cog policy, b) Production rate- incorporation of cog optimization, c) Sequence of extraction, d) Link between production rate and cog, e) Mine schedule optimization
- Optimization criteria
- Choosing optimization technique: a) Ultimate pit determination: Moving/Floating/Dynamic Cone technique, Lerchs-Grossmann theory, Zhao-Kim algorithm, Network Flow analysis, Korobovs algorithm, Branch and Bound approach, b) Production scheduling: Gershon's algorithm, Parametric approach, Wang and Sevims heuristic, Artificial intelligence techniques
- Parameters that impact the Net Present Value: Controllable and Not-Controllable

Reading Resources

- Up-to-date articles