

Department: Mining Engineering

Division: Mining Exploration and Mineral Processing

Level and Major: BSc, Mining Exploration and Mineral Processing

Course Title: Surface Mining Methods

Number of Credits: 2

Prerequisite: Drilling Engineering+ Principles of Mining Methods

Lecturer: Dr. Morteza Gholi Osanloo

Course Goals and Objectives

Introduction to surface mining methods and factors influencing surface mining method selection

Course Topics

- Introduction to surface mining methods including: mechanical methods, open pit mining, and its application and mechanism, quarry mining, and its application and mechanism, strip mining methods including area mining, contour mining, modified area mining, and auger mining.
- Introduction to aqueous mining methods including: placer mining method, and solution mining methods
- Familiarity with design elements such as break even cutoff grade, stripping ratio and types of tailing ratio including overall or average stripping ratio, break even stripping ratio, allowable stripping ratio, periodic stripping ratio.
- Tailings ratio methods: ascending, descending, constant and phasing, knowing how to open open-pit mines, reservoir blocking, grade block model (geology), economic block model, pushback mining method, planning, and Introduction to all kinds of planning in surface mines
- Operations in surface mines, drilling, blasting, loading, transport and reconstruction, slope and its role in design, types of failure in surface mines, safety factor calculation, slope stabilization
- Perform the project using software

Reading Resources

- Kennedy, B.A. (1990); Surface mining; SME publication Co.; USA; 1194P
- Hustrulid, W., Kuchta, M., and Martin R., (2013), Open Pit Mine Planning and Design, 3rd Edition, Published by CRC/Balkemal, Pages 1004