

SHORT-TERM OPEN PIT MINE PLANNING

Location
Edmonton, Alberta, Canada

Dates
June 25-27, 2018 - 3 days, 8:30AM-4:30PM

Early Registration Deadline - 10% discount

Friday, May 18th, 2018

Registration Deadline

Monday, June 11th, 2018

Course Fee

\$2400 CDN (excluding taxes)

Instructor

Hooman Askari is a professor of mining engineering in the School of Mining and Petroleum Engineering at the University of Alberta, Canada. He teaches and conducts research into mine planning & design and simulation of mining systems. Hooman is a registered professional mining engineer with 22 years of operational, consulting, research, and teaching experience in the area of open pit mine planning and design. He has a strong track record of success in leading the Mining Optimization Laboratory (MOL) research team sponsored by industry partners into development, testing, and delivering mine planning optimization prototype software and mine simulation models to major mining companies. He consults as the Principal Engineer on long-term to short-term open pit production scheduling optimization and simulation of mining-systems through OptiTek Mining Consulting Ltd.

Registration

Send the completed registration form to: registration@optitek.ca

For more information contact Hooman Askari at: hooman@optitek.ca

Phone: +1 (780) 893-9365

Who Should Attend

Medium / short-term open pit planning is a three-day course designed for the mine planners, mining engineers, geologists, and technical managers who are responsible for activities that require them to generate or oversee monthly and weekly mine production schedules. The course is designed to provide theory through lectures, complemented by a hands-on real-world mine planning project using GEOVIA MineSched.

Cancellation Policy

Notification of cancellation received in writing by Monday, June 11th, 2018 will incur a 20% cancellation fee. No refund will be made after this time.

Course Delivery

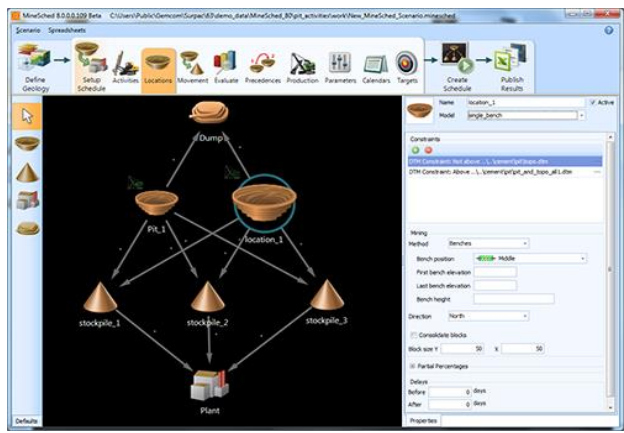
- Lectures on theoretical concepts
Documented step by step computer labs instructions
Incremental exercises and project work
Presentation of real mining case studies

Mining Optimization Laboratory (MOL)

MOL research focuses on using operations research and advanced analytical methods to arrive optimal or near-optimal solutions to complex mine planning and operational decision-making problems.



http://www.ualberta.ca/MOL/



Participants are Required to Bring a Laptop
Software will be Provided for the Course

Title: \_\_\_\_\_

First Name: \_\_\_\_\_

Last Name: \_\_\_\_\_

Company Name: \_\_\_\_\_

Job Title: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

City: \_\_\_\_\_

Prov/ State: \_\_\_\_\_

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Card # \_\_\_\_\_

Expiry \_\_\_\_/\_\_\_\_

(Fee + 5% GST) CDN \$ \_\_\_\_\_

Name on Card: \_\_\_\_\_

Signature: \_\_\_\_\_

## COURSE DESCRIPTION

### Software: Gemcom Whittle & Gems

Medium / short-term open pit planning is a three-day course designed for the mine planners, mining engineers, geologists, and technical managers who are responsible for activities that require them to generate or oversee monthly and weekly mine production schedules. The course is designed to provide theory through lectures, complemented by a hands-on real-world mine planning project using GEOVIA MineSched. The project covers all the required steps from a long-term yearly schedule generated within a designed pit to a monthly production schedule taking into account mining and processing capacities, truck-shovel hours, drilling and blasting, blending, and stockpiles management constraints. Mining constraints can be applied to ensure that practical schedules are generated. Learn how to model and manage stockpiles and processes, block modeled waste dumps followed by automated filling strategies and waste scheduling. Also, reporting and 3D visualization of a spatial database of the materials within the waste-dump, which is critical for both long-term waste dump management and reclamation. The course covers the following topics:

- Medium/ short-term planning concepts
- Data preparation
- Parameters: rates, delays, priorities
- Quantity and quality targets
- Defining mining locations
- Defining process streams
- Period polygons: tonnage/grades
- Reporting: Excel, Access, MS Project
- Animations & presentation tools

### Outcomes of the course include:

- Schedule from block, polygonal and grid models with any number of elements, material types, and qualities.
- Graphically sequence mining blocks while reporting tonnage and grade.
- Control all aspects of the schedule or use target-based scheduling algorithms.
- Incorporate mining directions, bench lags/leads, face geometry, location limits, and other mining constraints to ensure practical schedules.
- Schedule ancillary activities such as drilling, blasting, and back filling.
- Include material movement to stockpiles, processes, and spatially modeled waste dumps.
- Blend material from mines, stockpiles, processing plants, and waste dumps, producing schedules with complete reports and graphical results.
- Visualize Mine Schedules with 2D and 3D Graphics.

- Display tonnage and grade attributes.
- View colored period and production data.
- Generate intermediate mining surfaces.
- Animate mining sequence as a movie or frame-by-frame.
- Validate and communicate the sequence of activities.
- Generate reports with production tonnage and grade data.
- Produce polygon and bench reports.
- Obtain a detailed understanding of the schedule.
- Communicate the results to management.
- Create reverse vertical lag or constant face distance.
- Design cut polygons on specific layers
- Apply geometry rules to create new polygons.
- Attach attributes to the mine cut polygons.
- Sequence the mine polygons.

### Day 1

#### 1) Data storage and familiarization

- a) Setup data management hierarchy
- b) Data review

#### 2) Data editing and management

- a) Block model reporting
- b) Determine the tonnes and grades within each rock type
- c) Polygons for graphical results

#### 3) Block model material classes

- a) Assign material classes for the schedule in the block model

#### 4) Scenario management

- a) Creating and opening scenarios

#### 5) Navigating the scenarios

- a) Data grids & Charts
- b) Dashboard & Spreadsheet views

#### 6) Scenario parameters – geological model data

- a) Defining geological models
- b) Add the model for scheduling
- c) Assign material classes for the schedule
- d) Validate model & check the model for errors

#### 7) Scenario parameters – location definition

- a) Setup Schedule step
- b) Define mining locations
- c) Define the two or more mining locations for scheduling
- d) Evaluate the defined mining locations

### Day 2

#### 1) Mining constraints

- a) Mining rates
- b) Resource availability
- c) Physical constraints

#### 2) Create schedule

- a) Define a timeline for the schedule
- b) Create the schedule
- c) Add reports and charts to the dashboard

#### 3) Publishing results

- a) Create graphical results & animations
- b) Standard and custom reports
- c) Gantt charts
- d) Block model Schedule
- e) Analyzing the schedule
- f) Adding calendars to resources

#### 4) Sequencing the stages

- a) Sequencing the stages using precedences
- b) Sequencing the stages using priorities

#### 5) Targets

- a) Quality and Quantity targets
- b) Add a quality target to the schedule
- c) Add flexibility to the schedule
- d) Explore the options for meeting the targets
- e) Minimize the rehandling
- f) Material ratio and strip ratio targets
- g) Investigate the effects of material classes on capacities
- h) Create a schedule that has a constant ore production
- i) Create a schedule that pre-strips waste
- j) Location priority

#### 6) Fill locations

- a) Add the model that will be used for filling
- b) Change the waste stockpile to use the two waste dumps

### Day 3

#### 1) Make the schedule more practical

- a) Mining direction
- b) Investigate the different mining directions
- c) Investigate vertical-lag, horizontal-lag, maximum-lag,
- d) Swell factor.
- e) Max benches, drop, number of active benches per period
- f) Production rate modifiers

#### 2) Haulage and Tonne Km calculations

- a) Adding Haulage to the schedule
- b) Create haulage route strings
- c) Reporting TKM

#### 3) Short-term polygons

- a) Creating short-term polygons from the long-term schedule
- b) Bench plans
- c) End of period surfaces
- d) Polygon mining vs. Bench Polygon mining
- e) Polygon constraints
- f) Polygon mining to a seam boundary
- g) Polygon mining a single bench
- h) Different polygons on separate benches

#### 4) Polygon sequencing

- a) Adding a polygon sequence
- b) Graphically sequencing polygons

#### 5) Ancillary activities

- a) Drilling and blasting activity
- b) Graphically animating the activities
- c) Production activities (optional)