

## Tools Used



### Slide2

2D Limit Equilibrium Analysis



### RS2

2D Geotechnical Finite Element Analysis



### RSPile

3D Pile Analysis

## Location

### Sheraton Grand Los Angeles

711 S Hope St., Los Angeles, CA

## What's Included

- Breakfast, lunch, snacks, & refreshments
- Temporary Rocscience software licenses (see note below)
- Course material package
- Onsite WiFi

## Fees

**Registration Fee:** \$1,200 USD

**Early Bird Fee:** \$1,100 USD  
(ends January 31, 2020)

Rocscience Maintenance Plan subscribers receive a 10% discount on registration fees.

**Register:** [jeff.lam@rocscience.com](mailto:jeff.lam@rocscience.com)

## Note

All attendees will be provided with temporary, one month Rocscience software licenses for the programs listed above. Attendees must bring a laptop with the licenses installed.

# 2D Numerical Modeling for Slope Stability, Seepage, and Excavation Analysis

Join us in April for a two-day workshop on 2D Numerical Modeling for Slope Stability, Seepage, and Excavation Analysis led by Dr. Alireza Azami, Geomechanics Specialist at Rocscience. This workshop will provide a background on numerical modeling for geotechnical applications using robust and powerful Rocscience Tools.

## SCHEDULE

7:30AM                      Breakfast  
8:00AM–5:00PM        Course, with morning and afternoon breaks

## DAY 1

### Module I: Overview of Limit-Equilibrium Methods for Slope Stability Analysis

- Failure modes of soil and rock slopes
- Limit-equilibrium methods

### Module II: Slope Stability Analysis for 2D Problems (Slide2)

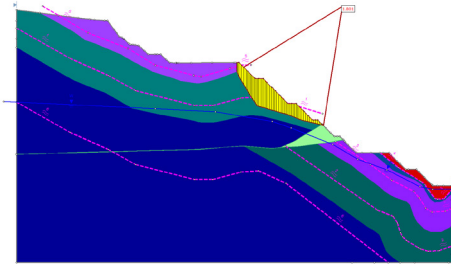
- Model building (Tips and Pitfalls)
- Material behavior models (anisotropic vs. isotropic material models)
- Interpretation of results

### Module III: Selection of Analysis Methods (Slide2)

- Selection of method for locating minimum factor of safety
- Failure Surface optimization techniques

### Module IV: Modelling Supports for Slope Stability Analysis (Slide2, RSPile)

- Selecting supports
- Introducing RSPile
- Landslide stabilization using piles



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## DAY 2

### Module V: Introduction to the Finite Element Method for Geotechnical Problems (RS2)

- Model development (construction of geometry, meshing, loads and boundary conditions, analysis options)
- Material models and constitutive relationship
  - Classical material models (Mohr-Coulomb, Generalized Hoek-Brown)
  - Strain softening and cap models
  - Anisotropic material (explicit and implicit) models
- Interpretation of results

### Module VI: Groundwater and Consolidation Analysis (RS2)

- Saturated-unsaturated transient groundwater analysis
- Permeability functions
- Boundary conditions
- Seepage analysis of staged excavations
- Consolidation analysis

### Module VII: Support Analysis Tools (RS2)

- Support development
- Sequence design
- support elements (forepoles, liners, bolts, structural elements)
- Interpretation of results

### Module VIII: Slope Stability Analysis Using the Shear Strength Reduction Method (RS2)

- Application of FEM to slope stability analysis
- Shear Strength Reduction approach
- Case studies



Course Instructor

**Alireza Azami, Ph.D.**

Geomechanics Specialist

Dr. Alireza Azami holds his Ph.D. from McMaster University in Civil Engineering (Geomechanics). Dr. Azami joined Rocscience in 2010 and focuses primarily on the mechanical behaviour of geomaterials and groundwater flow. He is a key developer on Slide2, Slide3, RS2, and RS3, and has published many papers on the topic of Shear Strength Reduction (SSR) in Finite Element Analysis.