Numerical Analysis in Geomechanics using *UDEC* and *3DEC*

Date:	Three-day course, April 20 – 22, 2020 Optional fourth day available, April 23, 2020
Location:	Itasca Consulting Group, Minneapolis, Minnesota, USA
Instructors:	Dr. Jim Hazzard, David DeGagne
Registration Fee:	US$2,800.00 (includes three-day course, lunch provided)
	Register by February 28 and save $300!
Additional Options:	US$500.00 additional session on a special topic (options below) OR: US$750.00 additional half-day, one-on-one session

50% Academic Discount is available but does not apply to the fourth day options.

An introduction to *UDEC* and *3DEC* for application to geotechnical analysis, this three-day course provides an overview of the capabilities and features in *UDEC* and *3DEC* and covers software fundamentals with discussions on the theoretical background, basic concepts, and modeling principles for geotechnical analysis, mining, and petroleum engineering.

Topics include model building, application of initial and boundary conditions, constitutive (material) models, solving, monitoring, and visualizing results. Advanced topics such as ground support, groundwater flow, and the built-in scripting language (*FISH*) also will be introduced.

There is an optional fourth day which offers a choice of the following special topics:

- Discrete Fracture Networks;
- Advanced *FISH*;
- *Rhino* and *Griddle*;

OR

- four hours of one-on-one time with an Itasca consultant (subject to availability).

This is “hands-on” training, and exercises with *UDEC* or *3DEC* are provided throughout the course. For the problem-solving sessions, the class will be split between *UDEC* and *3DEC* users. A laptop computer is required.

COURSE OUTLINE

<table>
<tr><th>Day 1</th><th>Day 2</th><th>Day 3</th><th>Day 4</th></tr>
<tr><td>Set-up and Introduction to UDEC</td><td>Joint Properties</td><td>Fluid</td><td rowspan="5">Half-day special topics:
Discrete Fracture Networks
Advanced FISH
Rhino & Griddle
One-on-one with consultant</td></tr>
<tr><td>Introduction to 3DEC</td><td rowspan="2">Factor of Safety Analysis</td><td rowspan="2">Dynamics</td></tr>
<tr><td>Numerical Modeling Fundamentals</td></tr>
<tr><td>Rock Properties and Initial Conditions</td><td>Introduction to FISH Scripting</td><td>Advanced Modeling Tools</td></tr>
<tr><td rowspan="2">Boundary Conditions and Modeling Tutorials</td><td rowspan="2">Ground Support</td><td>Advanced Modeling Tutorial</td></tr>
<tr><td>Software Developments</td></tr>
<tr><td colspan="4">Lunch is provided each day.

An Itasca Social will be held Monday afternoon at the Minneapolis office—an opportunity to visit the office and meet software developers and consultants.</td></tr>
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