

PRECIS

This volume contains documentation on a series of example problems that have been solved using *UDEC*. These example applications demonstrate the various classes of problems to which *UDEC* may be applied.*

[Table 1](#) presents a summary of the example applications. The table also identifies the specific *UDEC* feature that is examined in each problem.

In addition, verification problems and example applications for specific features are provided in **Constitutive Models**, in **Special Features** and in **Theory and Background**: continuously yielding joint model in [Section 2](#) in **Constitutive Models**, structural elements in [Section 1](#) in **Special Features**, fluid flow analysis in [Section 2](#) in **Special Features**, thermal analysis in [Section 3](#) in **Special Features**, dynamic analysis in [Section 4](#) in **Special Features**, and energy calculations in [Section 3](#) in **Theory and Background**.

The problems in this volume represent a brief sampling of potential applications for *UDEC*. We plan to update this volume on a regular basis and will send new examples as they are prepared. We also invite users to submit their own examples for inclusion, or inform us of any type of problem they would like to see in this volume.

* All problems in this volume were run on a Intel Core i7 computer running Windows 10.

Table 1 Summary of example applications

DESCRIPTION	PAGE	INPUT FILE	BLOCK MODEL								JOINT MODEL		Boundary Elements	STRUCTURAL ELEMENTS				ANALYSES				
	Section 3		double-yield	Drucker-Prager	elastic, isotropic	Mohr-Coulomb	null	strain-softening	ubiquitous joint	Coulomb slip	continuously yielding	reinfor cement		cables	beams	supports	static	dynamic	thermal	fluid flow	cell logic	
1 Seismic-Induced Groundfall	1.1	SEISMIC.DAT			X					X							X					
2 Open Stoping Using Vertical Retreat	2.1	STOPE.DAT				X				X							X					
3 Tunnel Support Loading	3.1	TUNNEL.DAT				X								X			X					
4 Gravity Dam: Fluid Flow and Dynamic Loading	4.1	DAM.DAT				X				X							X		X			
5 Cement Grouting Simulation	5.1	GROUT.DAT			X					X							X			X		
6 Thermomechanical Analysis of a Waste Emplacement Drift	6.1	DRIFT.DAT			X					X							X		X			
7 Inflow into a Tunnel	7.1	INFLOW.DAT			X					X							X			X		
8 Flow through a Jointed Rock Slope	8.1	SLOPEFLO.DAT			X					X							X			X		
9 Flow from a Borehole in a Biaxial Stress Field	9.1	BH.DAT			X					X							X			X		
10 Influence of the Placement of Backfill in a Deep Longwall Excavation	10.1	LONGWALL.DAT	X				X	X		X							X					
11 Shotcrete and Cable Support	11.1	SUPPORT.DAT SUP_CAB.FIS			X					X				X	X		X					
12 Blocks Bouncing down Slope	12.1	BOUNCE.DAT								X										X		
13 Step-Path Failure of Rock Slopes	13.1	STEPPATH.DAT				X				X							X			X		
14 Hydraulic Fracturing Simulation	14.1	HF_CASE1.DAT HF_CASE2.DAT			X X					X X		X					X X			X X		