FLAC3D **Introductory Training**

Course Schedule

Monday

Introduction to *FLAC3D*
- Overview of potential applications and capabilities

FLAC3D Operation
- User interface overview
- Solution procedure
- Commands and *FISH*
- General modeling workflow outline
- Simple tutorial

FLAC3D Theoretical Background
- Explicit Finite-Difference solution
- Practical Exercise: Modelling a strip footing – determine bearing capacity

The *FLAC3D* User Interface
- Projects
- Plotting

Grid Generation
- Primitive shapes
- Import / export grids
- Extruder
- Building Blocks

Model Pane
- Practical Exercises: complex shapes

## Tuesday

Basic Material Models
- Assigning models and properties
- Boundary Conditions / Initial Conditions
- Solving for force equilibrium
- Interfaces

Introduction to *FISH*
- *FISH* variables, arithmetic, syntax and data types
- Writing *FISH* functions
- Simple exercises
- Advanced topics

Advanced Material Models
- Characteristics of soil and rock
- Constitutive models in *FLAC3D* to represent continuum and discontinuum behaviour
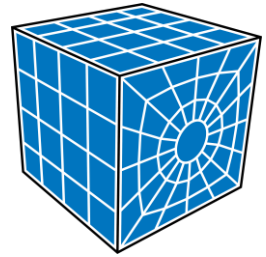
- Selecting appropriate material models and properties
- CPP UDMs (User Defined Models)
- Changing material properties during cycling

Introduction to Effective Stress and Groundwater Analysis
- Effective stress analysis
- Governing equations for transient fluid flow and coupled analysis
- Recommended approaches for fluid flow – mechanical calculations

Wednesday

Factor of Safety calculation
- Strength reduction technique in *FLAC3D*
- Example application

Soil/Rock Structure Interaction
- Why use structural elements?
- Types of structural elements in *FLAC3D*:
    - beams, cables, piles
    - shells, geogrids, liners
- How SELs communicate with the main grid, links and attach conditions
- Stress recovery

Demonstration Examples:
- Anchored cable bolts
- Excavation with sheetpile support
- Connecting different structural element types

Advanced grid generation tools
- Advanced Building Blocks

Advanced Examples
- Slope analysis
- Reinforced surface excavation
- Sequential tunnel excavation