



3DEC™ 7.0

3DEC training course

ITASCA CONSULTANTS S.A.S.

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Dates	November, 14-18, 2022 Duration: 20 Hours Timetable: 01:30 pm – 05:30 pm
Location	Online – Microsoft Teams Platform
Instructors	Mrs Rima Ghazal, Mr. Huy Tran, Mr. Etienne Lavoine Itasca Consultants, S.A.S
Registration fees	1650 € (excl. Taxes)
Audience	Engineers with an experience in numerical modelling
Degree	Master
Teaching methods	<p>Our instructors have a knowledge that is enriched through the consulting studies they carry out for our customers. We valorize this knowledge by stimulating exchanges between professionals and promoting the sharing of learning within the group.</p> <p>The topics covered during the training are approached in an evolutionary way, from simple to more complex. All our training courses are based on:</p> <ul style="list-style-type: none">• Theoretical inputs: the instructors rely on a theoretical approach in the field of soil and rock mechanics• Concrete cases: examples of applications to illustrate and apply the theory seen beforehand.• Sharing practice and experience which enhances and enriches the group
Training material	<ul style="list-style-type: none">• Theoretical inputs• Videos• Practical cases and scenarii• Free exchanges with the group
Educational objectives	<ul style="list-style-type: none">• To understand the modelling workflow and know how to use the appropriate commands.• To be able to choose the best model building and meshing solutions to represent the problem to be solved.• To enhance the modelling experience using specific 3DEC scripts that allow to access and manipulate the model variables.• To identify the different structural elements and understand their role in ground support.• To be able to choose the best solution for performing hydro-mechanical coupling in 3DEC.
Assesment method	The training will end with an individual test (in the form of multiple-choice questions) which will validate the knowledge acquired

Program

	Topic	Details
Day 1	Introduction Theory and background Getting started with <i>3DEC</i>	<ul style="list-style-type: none"> • Itasca software • Introduction to numerical modeling • The Distinct Element Method • <i>3DEC</i> main features: Model panes, file management, plots, getting help.
Day 2	Principal modelling steps Safety factor calculations	<ul style="list-style-type: none"> • Model building (brief introduction) • Constitutive models for blocks • Constitutive models for joints • Initial and boundary conditions • Solving and monitoring • Post-processing • Procedure for strength reduction technique
Day 3	Building a model Using DFN Basic Fish Language	<ul style="list-style-type: none"> • Various methods for building a model: <ul style="list-style-type: none"> ➤ Classical: block cutting or assembling ➤ By filling or cutting with geometries ➤ By importing blocks or meshing from an exterior software (Griddle) ➤ Using DFN for cutting blocks • Meshing in <i>3DEC</i> (classical and new commands) • Introduction to Fish programming language • Operators and intrinsic functions
Day 4	Fish Language Ground Support	<ul style="list-style-type: none"> • Fish linkage to <i>3DEC</i> • Advanced: splitting and multi-threading • Structural element types: cables, beams, liners, piles, hybrid bolts • Interactions zones-structures
Day 5	Fluid in <i>3DEC</i>	<ul style="list-style-type: none"> • Joint fluid flow <ul style="list-style-type: none"> ➤ Theory ➤ Boundary and initial conditions ➤ Fluid flow calculation modes ➤ Model optimisation • Introduction to matrix fluid flow