

Course Catalog

GEOVIA
Asia-Pacific
April-June 2017



3DEXPERIENCE®

About Our Training Courses

Our training courses are designed for all levels of mining professionals, from Geologists and Engineers through to Technical and Project Managers. Whether you're an experienced user or just starting out in your career, Dassault Systèmes GEOVIA training enables you to develop in-demand skills to save you time and money.

Whether you're an experienced user or just starting out in your career, our training courses will enable you to get the most out of your GEOVIA products.

Classroom Training

We conduct Classroom Training at the Dassault Systèmes offices in the following locations in Asia Pacific. For other locations please select the Course Catalog that corresponds with your region.

- Perth, Australia:
Dassault Systèmes Australia Pty Ltd, Level 8, 190 St Georges Terrace, Perth Western Australia 6000
- Brisbane, Australia:
Dassault Systèmes Australia Pty Ltd, Level 21, 288 Edward Street, Brisbane, Queensland Australia 4000
- Jakarta, Indonesia:
PT Dassault Systèmes Indonesia, Wisma 46 Kota BNI Level 11, Jalan Jend. Sudirman Kav. 1, Tanah Abang, 10220 Jakarta Pusat, Indonesia
- Kolkata, India:
Dassault Systèmes India Private Limited, EN-12, Third Floor, Malcom Tower, Sector-V, Salt Lake City, 700091 Kolkata, India
- Manila, Philippines:
Contact [Paramina Earth Technologies](#), our Value Solutions Partner, at paramina_solutions@paramina.com.
- China:
Contact our Value Solutions Partners [Sinomine](#) at China@sinomine.com.cn or [ZWCAD](#) at yufan@zwcad.com.

"I recently attended a Whittle Strategic Mine Planning course in Perth and am glad I did... It's the best strategic mine planning course I've attended so far. GEOVIA Whittle is easy to learn, easy to use and easy to teach to students in my unit (Hard Rock Mine Design & Feasibility). With the help of technical discussions during training, learning the software became very easy and logical."
- Mehmet Cigla, Senior Lecturer at Western Australian School of Mines, Curtin University

If you're an [AusIMM](#) member, you're further entitled to 10% off our Classroom Training and are able to receive Professional Development hours at the same time.

"I attended a recent Surpac Geostatistics course and found it well-structured with great content. Over the course of three days, I learned techniques and shortcuts that I have already put to good use on the job such as statistical analysis of data and variogram modelling. The usage of real-world data was particularly useful as it helped to give me a practical understanding of how the advanced geostatistical modelling techniques could be used in day to day grade control processes. I would recommend this course to other geologists interested in geostatistics, grade control reconciliation and resource modelling."
- Thomas Ridqes, Senior Mine Geologist at Reais Resources

3DS Learning Solutions | Course Catalog

The Training Calendar on Page 4 will outline the dates, course name, location and cost of our training courses. Page 4 onwards will contain the course outlines in further detail. For more information on Classroom Training please contact GEOVIA.AP.training@3ds.com.

Customized Training

We also offer onsite training for our customers, tailored to your specific needs and conducted by our experienced trainers.

In addition, we also provide project assistance and geology, engineering, planning and operational support services through our Centers of Excellence. For more information on what we provide, [view our flyer](#).

For more information please contact GEOVIA.AP.training@3ds.com.

Classroom Training Calendar

Australia

Product	Course	Location	Date	Cost per Delegate
Minex	TCL Macros	Brisbane, Australia	3 April 17	AU\$1,500
Surpac	Surpac for Surveyors	Brisbane, Australia	3-5 April 17	AU\$3,000
Minex	Resource Reporting	Brisbane, Australia	7 April 17	AU\$1,500
Surpac	Geology Advanced Analysis & Geostatistics	Perth, Australia	3-5 April 17	AU\$3,000
MineSched	Underground Scheduling	Perth, Australia	4-7 April 17	AU\$4,375
Minex	Foundation	Brisbane, Australia	10-12 April 17	AU\$2,500
Minex	Minex for Geologists	Brisbane, Australia	10-12 April 17	AU\$3,000
Surpac	Surpac for Surveyors	Perth, Australia	10-12 April 17	AU\$3,000
Surpac	Geotechnical Engineering	Perth, Australia	11-12 April 17	AU\$2,500
Minex	Minex for Engineers	Brisbane, Australia	18-20 April 17	AU\$3,000
Surpac	Foundation	Brisbane, Australia	19-20 April 17	AU\$2,500
Surpac	Foundation	Perth, Australia	18-19 April 17	AU\$2,500
Surpac	Drill & Blast	Perth, Australia	21 April 17	AU\$1,500
Minex	SQL for Geologists	Brisbane, Australia	26 April 17	AU\$1,500
Minex	Open Pit Scheduling	Brisbane, Australia	26-28 April 17	AU\$3,000
Surpac	Underground Development & Stope Design	Perth, Australia	26-28 April 17	AU\$3,500
Surpac	Surface Engineering	Perth, Australia	27-28 April 17	AU\$2,500
Surpac	Surpac for Surveyors	Brisbane, Australia	2-4 May 17	AU\$3,000
Minex	Pit Optimization	Brisbane, Australia	2-4 May 17	AU\$3,000
Minex	SQL for Engineers	Brisbane, Australia	5 May 17	AU\$1,500
Surpac	Geology Foundation	Perth, Australia	2-3 May 17	AU\$2,500
Surpac	Geology Intermediate	Perth, Australia	4-5 May 17	AU\$2,500
Minex	Faulting	Brisbane, Australia	8 May 17	AU\$1,500
Minex	Dump Scheduling	Brisbane, Australia	10-11 May 17	AU\$2,500
Minex	Coal Washability	Brisbane, Australia	12 May 17	AU\$1,500
Surpac	Surpac for Underground Surveyors	Perth, Australia	8-10 May 17	AU\$3,000

3DS Learning Solutions | Course Catalog

Product	Course	Location	Date	Cost per Delegate
Surpac	Geology Foundation	Brisbane, Australia	17-18 May 17	AU\$2,500
Minex	Open Pit Short Term Planning	Brisbane, Australia	18-19 May 17	AU\$2,500
Surpac	Foundation	Perth, Australia	15-16 May 17	AU\$2,500
Surpac	Drill and Blast	Perth, Australia	17 May 17	AU\$1,500
Surpac	Drill and Blast	Brisbane, Australia	22 May 17	AU\$1,500
Minex	Minex Coal Quality Modelling	Brisbane, Australia	23-24 May 17	AU\$2,500
Minex	Earth Works	Brisbane, Australia	23 May 17	AU\$1,500
Surpac	Surpac Surface Engineering	Brisbane, Australia	25-26 May 17	AU\$2,500
Whittle	Data Preparation for Whittle in Surpac	Perth, Australia	22 May 17	AU\$1,500
Whittle	Whittle Strategic Mine Planning	Perth, Australia	23-25 May 17	AU\$3,900
Whittle	Bridging Course from Whittle to Surpac	Perth, Australia	26 May 17	AU\$1,500
Minex	SQL for Geologists	Brisbane, Australia	6 June 17	AU\$1,500
Minex	Open Pit Scheduling	Brisbane, Australia	7-9 June 17	AU\$3,000
Minex	Drill & Blast	Brisbane, Australia	10 June 17	AU\$1,500
Surpac	Underground Development & Stope Design	Perth, Australia	6-8 June 17	AU\$3,500
Surpac	Surface Engineering	Perth, Australia	8-9 June 17	AU\$2,500
Minex	TCL Macros	Brisbane, Australia	12 June 17	AU\$1,500
Surpac	Surpac for Surveyors	Brisbane, Australia	13-14 June 17	AU\$3,000
Minex	Resource Reporting	Brisbane, Australia	16 June 17	AU\$1,500
Surpac	Surpac Geology Advanced Analysis & Geostatistics	Perth, Australia	12-14 June 17	AU\$3,000
MineSched	Underground Scheduling	Perth, Australia	13-14 June 17	AU\$4,375
Minex	Foundation	Brisbane, Australia	19-21 June 17	AU\$2,500
Minex	Minex for Geologists	Brisbane, Australia	21-23 June 17	AU\$3,000
Surpac	Surpac for Surveyors	Perth, Australia	20-22 June 17	AU\$3,000
Surpac	Geotechnical Engineering	Perth, Australia	22-23 June 17	AU\$2,500
Minex	Minex for Engineers	Brisbane, Australia	26-28 June 17	AU\$3,000
Surpac	Foundation	Brisbane, Australia	29-30 June 17	AU\$2,500
Surpac	Geology Intermediate	Brisbane, Australia	29-30 June 17	AU\$2,500
Surpac	Foundation	Perth, Australia	27-28 April 17	AU\$2,500

Indonesia

Product	Course	Location	Date	Cost per Delegate
Minex	Minex for Geologists	Jakarta, Indonesia	3-7 April 17	IDR 20,000,000
Whittle	Strategic Mine Planning	Jakarta, Indonesia	4-6 April 17	IDR 12,000,000
Minex	NAF/PAF Modeling	Jakarta, Indonesia	10-13 Apr 17	IDR 16,000,000
Minex	Pit Optimizer	Jakarta, Indonesia	25-27 Apr 17	IDR 12,000,000
Minex	Open Pit & Dump Scheduling	Jakarta, Indonesia	2-4 May 17	IDR 12,000,000
MineSched	Surface Scheduling	Jakarta, Indonesia	8-10 May 17	IDR 12,000,000
Minex	Minex for Engineers	Jakarta, Indonesia	15-19 May 17	IDR 20,000,000
Surpac	Surpac for Surveyors	Jakarta, Indonesia	15-19 May 17	IDR 20,000,000
Surpac	Strategic Mine Planning	Jakarta, Indonesia	22-24 May 17	IDR 12,000,000
Surpac	Surpac for Surveyors	Jakarta, Indonesia	29-31 May 17	IDR 18,000,000
Minex	Minex Pit Optimizer	Jakarta, Indonesia	5-7 June 17	IDR 12,000,000
Surpac	Surpac for Engineers	Jakarta, Indonesia	5-9 June 17	IDR 20,000,000
Whittle	Strategic Mine Planning	Jakarta, Indonesia	12-14 June 17	IDR 12,000,000
Minex	Minex for Geologists	Jakarta, Indonesia	12-16 June 17	IDR 20,000,000
Minex	Advanced Borehole Database & SQL	Jakarta, Indonesia	19-21 June 17	IDR 12,000,000
MineSched	Surface Scheduling	Jakarta, Indonesia	19-21 June 17	IDR 12,000,000

India

Product	Course	Location	Date	Cost per Delegate
Surpac	Foundation	Kolkata, India	10-14 Apr 17	INR 25,000
Minex	Foundation	Kolkata, India	24-28 Apr 17	INR 25,000
MineSched	Surface Scheduling	Kolkata, India	8-12 May 17	INR 25,000
Minex	Foundation	Kolkata, India	15-19 May 17	INR 25,000
Surpac	Foundation	Kolkata, India	22-26 May 17	INR 25,000
Minex	Advanced	Kolkata, India	29 May-2 Jun 17	INR 25,000
Surpac	Foundation	Kolkata, India	5-9 Jun 17	INR 25,000
Surpac	Advanced	Kolkata, India	12-16 Jun 17	INR 25,000
Minex	Foundation	Kolkata, India	19-23 Jun 17	INR 25,000
Whittle	Strategic Mine Planning	Kolkata, India	27-29 Jun 17	INR 25,000

Training Course Outlines

Australia

Product	Course	Duration	Page Number
Surpac	Surpac Foundation	2 Days	10-11
Surpac	Surpac Surface Engineering	2 Days	12-13
Surpac	Surpac Underground Engineering	2 Days	14-15
Surpac	Drill & Blast	1 Day	16-17
Surpac	Surpac for Surveyors	3 Days	18-19
Surpac	Surpac for Underground Surveyors	3 Days	22-21
Surpac	Surpac Geology Advanced Analysis & Geostatistics	3 Days	26-27
Surpac	Surpac Geology Foundation	2 Days	28-29
Surpac	Surpac Geology Intermediate	2 Days	30-31
Surpac	Surpac Geostatistical Modelling	2 Days	32-33
Surpac	Surpac Geotechnical Engineering	2 Days	34-35
Surpac	Surpac Underground Development & Stope Design	3 Days	36-37
MineSched	MineSched Surface Scheduling	4 Days	38-39
MineSched	MineSched Underground Scheduling	4 Days	40-41
Whittle	Strategic Mine Planning	3 Days	42-43
Whittle	Bridging Course from Whittle to Surpac	1 Day	44-45
Whittle	Data Preparation for Whittle in Surpac	1 Day	46-47
	1 Day		43-44

India

Product	Course	Duration	Page Number
Surpac	Surpac Foundation	5 Days	48-49
Surpac	Surpac Advanced	5 Days	50-51
Minex	Minex Foundation	5 Days	52-53
Minex	Minex Advanced	5 Days	54-55

Indonesia

Product	Course	Duration	Page Number
Surpac	Surpac for Surveyors	3 Days	56-57
Surpac	Surpac for Geologists	5 Days	58-59
Surpac	Surpac for Engineers	5 Days	60-61
Surpac	Surpac Macro Intermediate	3 Days	64-65
Surpac	Surpac Resource Estimation	5 Days	66-67
MineSched	MineSched Surface Scheduling	3 Days	68-69
Minex	Minex for Geologists	5 Days	70-71
Minex	Minex for Engineers	5 Days	72-73
Minex	Pit Optimizer	3 Days	74-75
Minex	Open Pit & Dump Scheduling	3 Days	76-77
Minex	Advanced Borehole Database & SQL	3 Days	78-79
Minex	Minex AMD (NAF/PAF) Modeling	4 Days	80-81
Whittle	Strategic Mine Planning	3 Days	82-83

Australia

Surpac Foundation	
Course Code	N/A
Available	Classroom and on-demand
Duration	2 days
Course Material	Printed Manual (English)
Level	Fundamental
Audience	New users from any Exploration or Mining discipline
Description	<p>Whether you are just starting out with Surpac, or have not used it in a while and want to refresh your knowledge, this introductory training course will give you the skills you need to perform common functions in the software and use it productively.</p> <p>It covers concepts and procedures that will allow the user to perform basic functions in the software, and will serve as a basis for more advanced training.</p>
Objectives	<p>Upon completion of this course, you will be able to accomplish the following:</p> <ul style="list-style-type: none"> • Install and license Surpac • Customize Surpac's user interface • Use basic components of the software for setting up and viewing data • Understand data types, concepts and file structure • Create new data for points, lines and surfaces • Understand the concepts of surfaces and generate them • Generate simple volume calculations between surfaces • Display and create basic solids • Create simple plots
Prerequisites	<p>Before taking this course, you require the following:</p> <ul style="list-style-type: none"> • Knowledge of Windows® 2000, XP, Vista® or Windows 7 Operating System <p>The Surpac menu structure and graphical user interface (GUI) are similar to most Windows-based packages and therefore a basic knowledge of the Windows operating system and environment is necessary.</p>

Course Structure Flow

Overview

- Software installation and licensing
- Surpac concepts (and data types)
- The Surpac interface (graphics)
- Forms and help

Organizing your data

- Recommended project folder configuration
- Managing data in layers
- Saving your project settings into profiles
- Setting up customized icons and shortcuts

Working with data

- String, segment and point information
- String concepts and file structure
- Object properties
- Using the selection and orbiting tool
- Displaying and editing your data
- Styles for strings

Create menu

- Creating new points and gradients
- Basic digitizing techniques
- Creating a grid
- Breaklines and file preparation
- Normalizing the data
- Creating DTMs
- Intersection
- Contouring
- Extracting sections under a surface
- Draping
- Reporting volumes
- Cut and fill
- Cutting planes
- Viewing data on planes

File tools menu

- String summary/change string directions
- String maths
- Applying a boundary string
- Classifying strings
- Polygon intersections

Surfaces

- DTM concepts
- Breaklines and file preparation
- Normalizing the data
- Validating

DTM modelling

- Creating and sectioning DTMs
- Generating volumes
- Contouring
- DTM trimming
- Color DTM functions
- Draping (strings and imaged)

Solids

- Basic solid creation and viewing

Plotting

- Basic autoplot
- Plot sheet setup

Advanced Tools

- Recording a macro

Presentation Tools

- Image draping
- Animation / fly through
- Embedding in web pages

Surpac Surface Engineering	
Course Code	N/A
Available	Classroom and on-demand
Duration	2 days
Course Material	Printed Manual (English)
Level	Intermediate
Audience	Mining and planning engineers who have successfully completed a Surpac Foundation training course.
Description	The Surpac Surface Engineering two-day course covers advanced topics to provide the user with knowledge of all the tools available in conducting pit design.
Objectives	<p>Upon completion of this course, you will be able to accomplish the following:</p> <ul style="list-style-type: none">• Style set-up• Using GEOVIA Whittle shells for design the pits• Block modelling basics and reporting• Pit design fundamentals• Plotting
Prerequisites	<p>Before taking this course, you require the following:</p> <ul style="list-style-type: none">• Knowledge of Windows® 2000, XP, Vista® or Windows 7 Operating System• Completion of Surpac Foundation or an introductory Surpac course or basic experience and competency in the use of Surpac is also required. <p>The Surpac menu structure and graphical user interface (GUI) are similar to most Windows-based packages and therefore a basic knowledge of the Windows operating system and environment is necessary.</p>

Course Structure Flow

Overview

- Software installation
- User interface customization

Block modelling

- Block model concepts
- Block model tools
- Block model reporting

Open pit design overview

- Concepts
- Basic design tools

Open pit design

- Setting up ramps
- All cut ramps
- Multi bench design
- Slope design options
- Designing a switchback
- Creating a DTM
- DTM tools
- Volume reports

Waste dump design

- Designing a waste dump
- Plotting Autoplot Entities
- Plotting sheet set up

Surpac Underground Engineering

Course Code N/A

Available Classroom and on-demand

Duration 2 days

Course Material Printed Manual (English)

Level Advanced

Audience Mining and planning engineers who have successfully completed a Surpac Foundation training course.

Description The Surpac Underground Engineering two-day course covers advanced topics to provide the user with knowledge of all the tools available in conducting underground mine design and ring design.

Objectives At the completion of the course, you will have been exposed to the following topics and concepts:

- Solids modelling basics – focusing on mine design and production solids with stope intersections/outer sections
- Block modelling viewing and reporting
- Underground mine design
- Autoplot and file-based plotting – focusing on design plans from previous activities
- GEOVIA MineSched overview (time permitting)

Prerequisites Before taking this course, you require the following:

- Knowledge of: Microsoft® Windows®; file management; ASCII files and Microsoft Excel®.
- Completion of Surpac Foundation or an introductory Surpac course or basic experience and competency in the use of Surpac is also required.

The Surpac menu structure and graphical user interface (GUI) are similar to most Windows-based packages and therefore a basic knowledge of the Windows operating system and environment is necessary.

Course Structure Flow

Overview

- Overview of product and company
- New functionality in Surpac
- Preparing data

Solids modelling

- Solid creation and validation
- Intersections and outersections

Block modelling

- Viewing and reporting

Underground mine design

- Creating a center line
- Creating a road outline
- Creating a solid

Underground drill (ring) design and charging

- Creating a centre line
- Slicing objects
- Set up
- Moving the mast
- Creating and reporting holes

Plotting (autoplot and file based)

- Concentrating on design plans from previous activities

MineSched overview if time permits

Surpac Drill & Blast	
Course Code	N/A
Available	Classroom and on-demand
Duration	1 Day
Course Material	Printed Manual (English)
Level	Intermediate, Advanced
Audience	Open pit engineers and experienced users of Surpac with an interest to follow a blast design from start to finish.
Description	The Surpac Drill and Blast one-day course is not intended to be exhaustive in scope; however it will demonstrate the workflow required to achieve a result.
Objectives	<p>At the completion of the course, you will have been exposed to the following topics and concepts:</p> <ul style="list-style-type: none"> • Set up blast and design defaults • Design blast hole collar patterns • Prime and load blast holes • Design the tie-in pattern for firing • Upload the blast design to the blast database • Create a true blast outline using a blast deconstruction cone • Create a blast solid • Produce a blast report
Prerequisites	<p>Before taking this course, you require the following:</p> <ul style="list-style-type: none"> • Knowledge of: Microsoft® Windows®; file management; ASCII files and Microsoft Excel®. • Completion of Surpac Foundation or an introductory Surpac course or basic experience and competency in the use of Surpac is also required. <p>The Surpac menu structure and graphical user interface (GUI) are similar to most Windows-based packages and therefore a basic knowledge of the Windows operating system and environment is necessary.</p>

Course Structure Flow

Getting started

- Setting the work directory
- Opening a blast profile

Modifying blast design defaults

- Drilling and charging defaults
- Rock classifications
- Firing classifications
- Rock mass classification (RMC) polygons

Designing a blast pattern

- Design a blast pattern from polygons
- Clip to top bench
- Save to string and blast database
- Use more than one burden and spacing

Load and tie in

- Charge holes
- Diagonal, v-pattern and customised firing patterns
- Create a blast boundary
- Create a blast solid

Blast report

- Generate a blast summary report

Pre-split

- Create pre-split holes

Blast database

- Tables and fields
- Creating a new database
- Upgrading a database

Surpac for Surveyors	
Course Code	N/A
Available	Classroom and on-demand
Duration	3 Days
Course Material	Printed Manual (English)
Level	Fundamental
Audience	Surveyors who are either new to Surpac or would like to refresh their skills.
Description	This course covers concepts and procedures that will allow the user to perform basic functions in the software, and will serve as a basis for good survey processes in Surpac.
Objectives	<p>At the completion of the course, you will have been exposed to the following topics and concepts:</p> <ul style="list-style-type: none"> • Install and license Surpac • Customize Surpac's user interface • Use basic components of the software for setting up and viewing data • Understand the data types and concepts • Learn how to create and display a survey database • Create new data for points, lines and surfaces • Create and validate DTMs and solids • Generate simple volume calculations between surfaces and within solids • Create simple plots • Use mesh tools for simplifying and analysis
Prerequisites	<p>Before taking this course, you require the following:</p> <ul style="list-style-type: none"> • Knowledge of: Microsoft® Windows®; file management; ASCII files and Microsoft Excel®. <p>The Surpac menu structure and graphical user interface (GUI) are similar to most Windows-based packages and therefore a basic knowledge of the Windows operating system and environment is necessary.</p>

Course Structure Flow

Overview

- Software installation and licensing
- Surpac concepts (and data types)
- The Surpac interface
- Forms and help

Organizing your data

- Recommended project folder configuration
- Managing data in layers
- Saving your project settings into profiles

Working with dataString, segment and point information

- String concepts and file structure
- Object properties
- Using the selection and orbiting tool
- Displaying your data
- Editing data

Styles

- Creating your own styles for strings and points
- DTMs and 3DMs

Create menu

- Creating new points and gradients
- Basic digitizing techniques
- Creating a grid

Maths functions

- Applying expressions to data

Surfaces

- DTM concepts
- Breaklines and file preparation
- Normalizing the data
- Creating DTM's
- Intersection
- Contouring
- Extracting sections under a surface
- Draping
- Reporting volumes
- Cut and fill
- Simplifying surfaces and analysis

Solids modelling

- Use the different methods to create a solid
- Validate solids
- Edit solids

Sections and planes

- Utilizing planes with viewports
- Cutting planes
- Viewing data on planes

File tools menu

- String summary and directions
- Applying a boundary
- 2D transformation

Survey database

- Create a database
- Importing text files
- Displaying database

Plotting

- Autoplot
- Plot sheet setup
- Entities
- Creating maps

Advanced tools

- Recording a macro
- Block models for volume checks

Surpac for Underground Surveyors	
Course Code	N/A
Available	Classroom and on-demand
Duration	3 Days
Course Material	Printed Manual (English)
Level	Fundamental
Audience	Underground surveyors who are either new to Surpac or would like to refresh their skills.
Description	This course covers concepts and procedures that will allow the user to perform basic functions in the software, and will serve as a basis for good survey processes in Surpac.
Objectives	<p>At the completion of the course, you will have been exposed to the following topics and concepts:</p> <ul style="list-style-type: none"> • Install and license Surpac • Creating menus and profiles for efficient tasking • Customizing styles and plotting • Understand the data geometry and insert, add, and change concept • Learn how to create and display a survey control • Adding new data for points, lines and surfaces • Underground usage of DTMs and solids • Generate volume reports between surfaces and inside solids • Create plots for underground • Use of the block model as a survey tool
Prerequisites	<p>Before taking this course, you require the following:</p> <ul style="list-style-type: none"> • Knowledge of: Microsoft® Windows®; file management; ASCII files and Microsoft Excel®. <p>The Surpac menu structure and graphical user interface (GUI) are similar to most Windows-based packages and therefore a basic knowledge of the Windows operating system and environment is necessary.</p>

Course Structure Flow

Overview

- Software installation and licensing
- Surpac concepts (and data types)
- The Surpac interface
- Forms and help
- Recommended project folder configuration
- Managing data in layers
- Saving your project settings into profiles
- String, segment and point information
- String concepts and file structure
- Object properties
- Using the selection and orbiting tool
- Displaying and editing your data
- Creating your own styles for strings and points
- DTMs and 3DMs

Create menu

- Creating new points and gradients
- Basic digitizing techniques
- Creating a grid

Maths functions

- Applying expressions to data

SurfacesDTM concepts

- Breaklines and file preparation
- Normalizing the data
- Creating DTMs
- Intersection
- Contouring
- Extracting sections under a surface
- Draping
- Reporting volumes
- Cut and fill

Solids modelling

- Use the different methods to create a solid
- Triangulate shape tool
- Validate solids
- Edit solids
- Simplifying solids and analysis

Sections and planes

- Using planes with viewports
- Cutting planes
- Viewing data on planes

File tools menu

- String summary and directions
- Applying a boundary
- 2D transformation

Survey database

- Create a database
- Importing stations from text files
- Displaying database
- Using styles with the database

Plotting Autoplot

- Plot sheet setup
- Creating a MEMO plot
- Recording a plotting macro
- Editing a macro to process a level

Advanced tools

- Creating a block model
- Attributes and Constraints
- Viewing the block model to validate surveys
- Attributing surveys
- Reconciling surveys using analytical and blocks methods.
- Volume reporting and the use of the volume adjustment factor

Surpac Geology Advanced Analysis & Geostatistics	
Course Code	N/A
Available	Classroom and on-demand
Duration	3 Days
Course Material	Printed Manual (English)
Level	Intermediate, Advanced
Audience	This is a practical course for geologists and mining engineers involved in resource estimation, grade control or conditional simulation systems. Although introducing the basic concepts of geostatistics, it covers some very advanced topics. It focuses on variography, kriging and conditional simulation.
Description	This course offers insight into some of the most advanced geostatistical techniques, providing practical tips for implementing resource estimation and grade control. This is a practical course that demonstrates most modern geostatistical tools recognized in the mining industry with some worked examples. The simulation activities will be carried out using the GSLIB module, which is widely available in many commercial software packages.
Objectives	<p>At the completion of the course, you will have been exposed to the following topics and concepts:</p> <ul style="list-style-type: none"> • Domain analysis • Consider and implement de-clustering • Variograms: how to calculate and read them • Chronostatistics • Understand and implement cross-validation • How variograms impact kriging and simulation • Kriging properties • Estimation inputs in kriging • Dealing with areas under extreme grade • Kriging neighborhood analysis • Swath plots • Co-kriging • Conditional simulation and quantifying risk
Prerequisites	<p>Before taking this course, you require the following:</p> <ul style="list-style-type: none"> • Knowledge of: Microsoft® Windows®; file management; ASCII files and Microsoft Excel®. <p>The Surpac menu structure and graphical user interface (GUI) are similar to most Windows-based packages and therefore a basic knowledge of the Windows operating system and environment is necessary.</p>

Course Structure Flow

- Geological data analysis
 - Distribution of data
 - Sample analysis
 - De-clustering
 - Data transformation
- Classical statistics
 - Central tendency
 - Non parametric statistics
 - Three parameter lognormal distribution
- Spatial statistics and variography
 - Calculating variograms
 - Variogram interpretation
 - Modeling anisotropy
 - Chronostatistics
- Cross-validation
 - Cross-validation analysis
 - Variogram validation
- Kriging
 - Kriging matrix
 - Kriging variance
 - Search strategies
 - Dealing with area under extreme values
- Kriging neighborhood analysis
 - Block optimization
 - Search optimization
- Block model validation
 - Statistical validation
 - Swath plots
- GSLIB
 - Co-kriging
 - Universal kriging
- Conditional simulation
 - From kriging to simulation
 - Sequential Gaussian simulation
 - Search concepts
 - Post processing
 - E-type estimation
 - Reporting and quantifying risk

Surpac Geology Foundation	
Course Code	N/A
Available	Classroom and on-demand
Duration	2 Days
Course Material	Printed Manual (English)
Level	Fundamental
Audience	New users from any exploration or mining discipline.
Description	<p>Whether you are just starting out with Surpac, or have not used it in a while and want to refresh your knowledge, this introductory training course will give you the skills you need to perform common functions in the software and use it productively. It covers concepts and procedures that will allow the user to perform basic functions in the software, and will serve as a basis for more advanced training.</p>
Objectives	<p>At the completion of the course, you will have been exposed to the following topics and concepts:</p> <ul style="list-style-type: none"> • Install and license Surpac • Customize Surpac's user interface • Use basic components of the software for setting up and viewing data • Understand data types, concepts and file structure • Create new data for points, lines and surfaces • Understand the concepts of surfaces and generate them • Generate simple volume calculations between surfaces • Display and create basic solids • Create simple plots
Prerequisites	<p>Before taking this course, you require the following:</p> <ul style="list-style-type: none"> • Knowledge of: Microsoft® Windows®; file management; ASCII files and Microsoft Excel®. <p>The Surpac menu structure and graphical user interface (GUI) are similar to most Windows-based packages and therefore a basic knowledge of the Windows operating system and environment is necessary.</p>

Course Structure Flow

Overview

- Software installation and licensing
- Surpac concepts (and data types)
- The Surpac interface (graphics)
- Forms and help

Organizing your data

- Recommended project folder configuration
- Managing data in layers
- Saving your project settings into profiles
- Setting up customized icons and shortcuts

Working with data

- String, segment and point information
- String concepts and file structure
- Object properties
- Using the selection and orbiting tool
- Displaying and editing your data
- Styles for strings
- Importing files functions

Create menu

- Creating new points and gradients
- Basic digitizing techniques
- Breaklines and file preparation
- Normalizing the data
- Viewing data on planes

File tools menu

- String summary/change string directions
- String maths
- Classifying strings

SurfacesDTM concepts

- Breaklines and file preparation
- Validating

DTM modeling

- Creating and sectioning DTMs
- Generating volumes
- Contouring
- DTM trimming
- Color DTM functions
- Reporting volumes between DTMs

Geological database

- Database concept
- Importing data
- Mapping the database

Database validation

- Database audit
- Database reporting

QA/QC tools

- Extracting data
- Precision plots
- R-chart plots

Displaying drillholes

- Creating styles for drillholes
- Different methods of displaying drillholes
- Drillhole manipulation
- Drillhole sectioning

Plotting

- Basic autoplot
- Plot sheet setup

Surpac Geology Intermediate	
Course Code	N/A
Available	Classroom and on-demand
Duration	2 Days
Course Material	Printed Manual (English)
Level	Intermediate
Audience	Geologists who have successfully completed a Surpac Foundation training course.
Description	The Surpac Geology Intermediate two-day course is for geologists who want to improve their skills and concepts within the geology and block modelling modules. The course will provide users with a good understanding of using Surpac.
Objectives	<p>At the completion of the course, you will have been exposed to the following topics and concepts:</p> <ul style="list-style-type: none"> • Understand the geology data types and concepts • Domaining and drillhole flagging • Create different types of drillhole and bench composites • Basic statistics and geostatistics • Perform grade control calculations from blast polygons • Basic solid modelling and manipulation • Sectional interpretation • Basic resource estimation • Basic block model validation and reporting • File plotting for printing geological maps
Prerequisites	<p>Before taking this course, you require the following:</p> <ul style="list-style-type: none"> • Knowledge of: Microsoft® Windows®; file management; ASCII files and Microsoft Excel®. <p>The Surpac menu structure and graphical user interface (GUI) are similar to most Windows-based packages and therefore a basic knowledge of the Windows operating system and environment is necessary.</p>

Course Structure Flow

- Geological interpretation
 - Domaining definition
- Solid modelling
 - Creating different solids using various functions
 - Bifurcation
 - Volume calculations
 - Solid tools and manipulation
- Flagging intervals
 - Coding and flagging concepts
 - Drillhole/surface intersection flagging
- Compositing
 - Concepts
 - Downhole compositing
 - Advanced grade compositing
 - Graphical compositing
- Data analysis
 - Statistical analysis
 - Dealing with skewed populations
 - Verifying domains
- Block model set-up
 - Block modelling concepts
 - Creating a block model
 - Creating attributes
 - Creating/applying constraints
- Filling blocks in a block model
 - Assigning values
 - Inverse distance calculations
 - Ordinary kriging estimation
- Geological mapping
 - Digitizing geological polygons
 - Classifying DTM
 - DTM display by geology
- Importing external data
 - Import/export tools
- File plotting
 - Overview
 - Plot entities
 - Create plot map
 - Look-up file properties

Surpac Geostatistical Modeling	
Course Code	N/A
Available	Classroom and on-demand
Duration	2 Days
Course Material	Printed Manual (English)
Level	Intermediate, Advanced
Audience	This is a course not just targeted at specialist geostatisticians. It is intended rather for those who wish to use geostatistics to enhance their practical applications or research. Knowledge of statistical and a geostatistical methods is required.
Description	This course offers insight into some of the more advanced geostatistical techniques, providing practical hints and pitfall avoidance during application. It involves theoretical and practical aspects in validating the resource estimation process with emphasis on the modern geostatistical tools recognized in the mining industry. The course is practical, with some worked examples.
Objectives	<p>At the completion of the course, you will have been exposed to the following topics and concepts:</p> <ul style="list-style-type: none"> • Domain analysis • Consider and implement de-clustering • Interpretation of semi-variograms • Understand and implement cross-validation • Choice of appropriate kriging techniques, confidence and standard errors • Understand and implement MIK and categorical kriging • Trend analysis • Interpolator and kriging search neighbor analysis • Block model validation • Understand ore grading algorithm • Present BM outcomes as accumulations • GSLIB in Surpac
Prerequisites	<p>Before taking this course, you require the following:</p> <ul style="list-style-type: none"> • Knowledge of: Microsoft® Windows®; file management; ASCII files and Microsoft Excel®. • Completion of the Surpac Geology Foundation and Surpac Geology Intermediate courses, or equivalent experience and competency in the use of Surpac <p>The Surpac menu structure and graphical user interface (GUI) are similar to most Windows-based packages and therefore a basic knowledge of the Windows operating system and environment is necessary.</p>

Course Structure Flow

- Geological data analysis
 - Distribution of data
 - Sample analysis
 - De-clustering
 - Data transformation
- Spatial statistics and semi-variograms interpretation
 - Calculating variograms in Surpac
 - Variogram interpretation
 - Modelling anisotropy
- Cross-validation
 - Cross-validation analysis
 - Augment matrix
 - Variogram validation
- Non-linear estimation
 - Indicator transformation
 - MIK in Surpac
 - Categorical indicator kriging
 - IK probabilities
- Block model validation
 - Trend analysis
 - Swath plots
 - Interpolator
 - GSLIB in Surpac
 - Grading algorithm in Surpac
 - Calculating accumulations
- From kriging to simulation
 - NS transformation
 - E-type estimation

Surpac Geotechnical Engineering	
Course Code	N/A
Available	Classroom and on-demand
Duration	2 Days
Course Material	Printed Manual (English)
Level	Intermediate, Advanced
Audience	Geotechnical engineers and all other mining professionals who are involved in this area of work.
Description	This course covers concepts and procedures that will allow the user to perform the required functions in the system, and will serve as a basis for more advanced training.
Objectives	<p>At the completion of the course, you will have been exposed to the following topics and concepts:</p> <ul style="list-style-type: none"> • Use display tools to color the pit slope angle by range • Create section from DTM • Model and validate solids • Drape image over DTM • Create plotting with raster data • Understand simple design tools • Understand the concept of Mining Rock Mass model (MRM model) • Composite within a domain • Validate domain using basic statistics tools • Insert data into block model • Validate a MRM model • Use MRM model in your daily tasks
Prerequisites	<p>Before taking this course, you require the following:</p> <ul style="list-style-type: none"> • Knowledge of: Microsoft® Windows®; file management; ASCII files and Microsoft Excel®. • Completion of the Surpac Geology Foundation and Surpac Geology Intermediate courses, or equivalent experience and competency in the use of Surpac <p>The Surpac menu structure and graphical user interface (GUI) are similar to most Windows-based packages and therefore a basic knowledge of the Windows operating system and environment is necessary.</p>

Course Structure Flow

- DTM surfaces applications
 - Pit slope inspection
 - Create section from DTM
 - Color DTM by domain
- 3D mapping
 - Section of 3DM
 - Drape image over DTM
 - Solid concepts and creation
 - Solid validation and solid repair tools
- Plotting
 - Plot as raster from autoplot
- Simple design tools
 - Horizontal drainage holes
 - Simple dam design tools
 - Simple pit design tools
- Geotechnical database
 - Translation table
 - Calculated filed
- Mining Rock Mass model (MRM model)
 - Concept
 - Data collection / Data validation
 - Model construction
 - Block model concept and creation
 - Block model attributes
 - Block model constraints
 - Fill block model
 - Block model validation/ Block model display
 - Color block model by attribute
 - Block model section
 - Applications in open pit and underground mines

Surpac Underground Development and Stope Design	
Course Code	N/A
Available	Classroom and on-demand
Duration	3 Days
Course Material	Printed Manual (English)
Level	Intermediate, Advanced
Audience	Underground engineers and all other mining professionals who are involved in this area of work.
Description	This course covers advanced topics to provide the user with knowledge of all the tools available in conducting underground mine development design, stope design, stope reconciliation, and basics of the ring design tool.
Objectives	<p>At the completion of the course, you will have been exposed to the following topics and concepts:</p> <ul style="list-style-type: none"> • Underground mine design of ramps, shafts, access drives and related development • Block model viewing and reporting • Stope design and planning • Underground ring design and charging • Plotting (autoplot and file based) • Planning adjustments • Creation, repair, and validation of solids • Designing in sections and 3D • Increased CAD design proficiency with macros and string maths • GEOVIA MineSched scheduling overview (time permitting)
Prerequisites	<p>Before taking this course, you require the following:</p> <ul style="list-style-type: none"> • Knowledge of: Microsoft® Windows®; file management; ASCII files and Microsoft Excel®. • Completion of the Surpac Foundation course, or equivalent experience and competency in the use of Surpac <p>The Surpac menu structure and graphical user interface (GUI) are similar to most Windows-based packages and therefore a basic knowledge of the Windows operating system and environment is necessary.</p>

Course Structure Flow

Overview

- Mining methods overview
- New functionality in Surpac
- Preparing data, import & export, and organizing data

Underground development design

- Shafts, ramps, access drives, and related development center-line design
- Creating drive outlines of mine design
- Using drive profiles to create solids of mine designs
- Edit development designs

Stope design

- Creating stope shapes from ore outline solid and/or block model
- Intersections and outersections of development solids and stope solids
- Reporting volumes, tons, and grades of stopes

Updating design

- Solid repair, editing, and validation
- Updating and editing mine plans with new information

Underground ring design

- Slicing objects
- Ring designs, charging, and reporting

Plotting Autoplot

- File based plotting

Macros and string maths

- Macros and string maths to increase CAD efficiency
- Macros to increase stope solid creation efficiency

Block model

- Block model viewing
- Reporting on block model and stope resources

MineSched scheduling overview and using development and stope designs to schedule development and production

MineSched Surface Scheduling	
Course Code	N/A
Available	Classroom and on-demand
Duration	4 Days
Course Material	Printed Manual (English)
Level	Fundamental, Intermediate
Audience	Open pit schedulers who are new to MineSched or looking to further develop their skills.
Description	This course is designed to give users a basic understanding of how to set up a surface schedule, perform some reporting and define material flow. It is designed to provide theory through lecture-style classes, augmented by hands-on exercises.
Objectives	<p>At the completion of the course, you will have been exposed to the following topics and concepts:</p> <ul style="list-style-type: none"> • Set up data file structure • Manipulate and interrogate the block model • Set basic MineSched starting parameters • Check input validation • Prepare a MineSched model • Apply constraints • Run a MineSched schedule • Report MineSched schedule information • Manipulate material movement • Assign material targets and ratios
Prerequisites	<p>Before taking this course, you require the following:</p> <ul style="list-style-type: none"> • Knowledge of: Microsoft® Windows®; file management; ASCII files and Microsoft Excel®. • Completion of the Surpac Foundation or basic experience and competency in the use of Surpac • Exposure to block models <p>The MineSched menu structure and graphical user interface (GUI) are similar to most Windows-based packages and therefore a basic knowledge of the Windows operating system and environment is necessary.</p>

Course Structure Flow

Overview

- Requirements and installation
- Data storage and structure
- MineSched installation
- Forms and help

Data review

- Pit design
- Block model

Working with data

- Manipulating the block model
- Constraining the block model
- Polygons for graphical results

Data review

- Block model reporting

Setting up geology

- Block model parameters
- Block model validation

MineSched interface

- Getting help
- Locations
- Location management
- Resources
- Precedences
- Parameters
- Calendars
- Activities
- Targets

MineSched schedule

- Time periods
- Schedule graphs and reports
- Manipulating the schedule

Publish results

- Graphical results
- Animations
- Custom reports

MineSched Underground Scheduling	
Course Code	N/A
Available	Classroom and on-demand
Duration	4 Days
Course Material	Printed Manual (English)
Level	Fundamental, Intermediate
Audience	Underground schedulers who are new to MineSched or looking to further develop their skills.
Description	The MineSched Underground Scheduling four-day course is designed to provide theory through lecture-style classes, augmented by hands-on exercises.
Objectives	<p>At the completion of the course, you will have been exposed to the following topics and concepts:</p> <ul style="list-style-type: none"> • Prepare and store data • Configure design centerline string • Prepare and save various scenarios • Assign resources and set schedule durations • Create production schedules over varying durations, mining rates, mining methods, material ratios etc. • Schedule calendar and events • Customize reports and templates
Prerequisites	<p>Before taking this course, you require the following:</p> <ul style="list-style-type: none"> • Knowledge of: Microsoft® Windows®; file management; ASCII files and Microsoft Excel®. • Completion of the Surpac Foundation or basic experience and competency in the use of Surpac • Exposure to block models <p>The MineSched menu structure and graphical user interface (GUI) are similar to most Windows-based packages and therefore a basic knowledge of the Windows operating system and environment is necessary.</p>

Course Structure Flow

Overview

- Requirements and installation
- Profile
- Help menu and support website
- Data storage and structure
- Interface (brief overview)

Data review

- Design strings (centrelines)
- DTMs
- Block model

Working with data

- Understanding Surpac block model
- Manipulating the block model
- Constraining & coloring the block model
- Reporting from the block model

Setting up geology

- Block model parameters
- Block model validation

Setup schedule

- Development
- Activities
- Locations
- Material movement
- Evaluate reserves
- Precedences
- Development rates, production capacities and activity rates
- Production parameters
- Calendars
- Targets

Create schedule

- Time periods
- Schedule graphs and reports
- Manipulating the schedule

Publish results

- Graphical results
- Animations
- Custom reports

Whittle Strategic Mine Planning	
Course Code	N/A
Available	Classroom and on-demand
Duration	3 Days
Course Material	Printed Manual (English)
Level	Fundamental, Intermediate
Audience	Mining Engineers, Geologists and other mining professionals who are either new to Whittle or would like to further consolidate their current Whittle knowledge and learn more about strategic mine planning. No previous pit optimization experience is required.
Description	This course is designed to develop an understanding of the principles of strategic mine planning and practical application.
Objectives	<p>At the completion of the course, you will have been exposed to the following topics and concepts:</p> <ul style="list-style-type: none"> • Import a model file and complete an optimization using cost and price information • Analyze the results of a series of optimizations using economic analysis techniques, including Net Present Value (NPV) • Use different techniques to apply costs • Produce a long term mine schedule using different techniques available in Whittle • Knowledge of the concepts behind strategic mine planning • Knowledge of the theory of pit optimization
Prerequisites	<p>Before taking this course, you require the following:</p> <ul style="list-style-type: none"> • Knowledge of: Microsoft® Windows®; file management; ASCII files and Microsoft Excel®. • Basic knowledge of Surpac, GEMS or another mine planning package. Attendees should also have basic exploration and mining knowledge. <p>The Whittle menu structure and graphical user interface (GUI) are similar to most Windows-based packages and therefore a basic knowledge of the Windows operating system and environment is necessary.</p>

Course Structure Flow

- Strategic mine planning
 - Theory session
 - Strategic planning
 - Economic evaluation
 - Decision making discussion
 - Market analysis
 - Mine planning studies
 - JORC code
- Optimization theory
 - Theory session
 - Optimization algorithms
 - Slopes
 - Block value
 - Whittle concepts
 - Block model dimensions
 - Costs
 - Revenue factors
 - Ore selection discussion
 - Welcome to your block model
- Block model preparation
 - Preparing a model prior to Whittle import
 - Mod file requirements
 - Validation of mod file
- Introduction to Whittle
 - Practical session
 - Creating the new project
 - Importing the mod file
- Validation
 - Practical session
 - Grade tonnage graph
 - Reblock node
- Slopes
 - Practical session
 - Slope set node
- Optimisation
 - Practical session
 - Pit shells node
 - Operational scenario node
- Choosing a pit shell in Whittle
 - Practical session
 - Spider diagram
 - Pit by pit graph
 - Schedule graph and bench schedules
 - Milawa schedules
- Reporting
 - Practical session
 - Generating reports in Whittle
- Block size and SMU
 - Practical session
 - Block size discussion
 - Different block size investigation

Bridging Course from Whittle to Surpac	
Course Code	N/A
Available	Classroom and on-demand
Duration	1 Day
Course Material	Printed Manual (English)
Level	Intermediate
Audience	Mining engineers, geologists or other mining professionals who need to process Whittle output results in preparation for pit designs, production scheduling, and reserve reporting. This course is for users of Whittle and/or Surpac.
Description	This course will show you how to use Surpac between strategic and tactical (production) schedules. Whether you have attended the Whittle Strategic Mine Planning course or if it is relevant to your role, this course will help you understand what Whittle can do and how to use its outputs effectively in Surpac.
Objectives	<p>At the completion of the course, you will have been exposed to the following topics and concepts:</p> <ul style="list-style-type: none"> • Understand how Whittle defines pit shells, schedules, and economic ore. • Various Whittle output data types and their purposes and export options. • How to import Whittle results into a Surpac block model (for pit designs, production scheduling, and ore definition). • How to flag economic ore in the model. • How to import pit designs into Whittle.
Prerequisites	<p>Before taking this course, you require the following:</p> <ul style="list-style-type: none"> • Knowledge of: Microsoft® Windows®; file management; ASCII files and Microsoft Excel®. • Surpac software experience and ability to manipulate block models in Surpac. • Understanding of open pit mine planning concepts. <p>The Whittle/Surpac menu structure and graphical user interface (GUI) are similar to most Windows-based packages and therefore a basic knowledge of the Windows operating system and environment is necessary.</p>

Course Structure Flow

Whittle overview

- Overview of Whittle principles (pit shells, economic ore, mining sequence and schedule definition)
- Whittle output data formats and purposes (MOD, RES, MSQ, PIL, DXF, CSV, block value)
- Whittle export options

Manipulation of Whittle outputs in Surpac

- Import DXF files (pit shells, end of period surfaces)
- Import pit shell results (RES file) as a new model or into an existing Surpac model
- Import mining sequence (MSQ file) as a new model or into an existing Surpac model
- How to use RES and MSQ files for relevant purposes (pit designs, production scheduling)
- How to flag economic ore in the model
- How to flag the model with pit design stages and export as Pit List files (PIL) for Whittle
- How to import pit designs into Whittle (as PIL files or surfaces), including validation steps
- Block model constraints, visualization and reporting

Data Preparation for Whittle in Surpac	
Course Code	N/A
Available	Classroom and on-demand
Duration	1 Day
Course Material	Printed Manual (English)
Level	Intermediate
Audience	Mining engineers, geologists or other mining professionals who are users of Whittle and/or Surpac.
Description	The Data Preparation for Whittle in Surpac one day course is designed to develop strong understanding of how to prepare a block model and ensure that it is valid for pit optimization and mine planning purposes, using Surpac software.
Objectives	<p>At the completion of the course, you will have been exposed to the following topics and concepts:</p> <ul style="list-style-type: none"> • How to convert a resource block model into a pit optimization model. • How to minimize potential data problems in Whittle by thorough block model validation process. • Different ways of handling the input data (costs, slopes, etc.) and identifying the most suitable approach for a specific situation. • How to export a block model from Surpac into Whittle.
Prerequisites	<p>Before taking this course, you require the following:</p> <ul style="list-style-type: none"> • Knowledge of: Microsoft® Windows®; file management; ASCII files, Microsoft Excel®. • Surpac software experience and ability to manipulate block models in Surpac. • Attendees should also have an understanding of open pit mine planning concepts. <p>The Surpac menu structure and graphical user interface (GUI) are similar to most Windows-based packages and therefore a basic knowledge of the Windows operating system and environment is necessary.</p>

Course Structure Flow

Overview

- Pit optimization principles
- Whittle block model format (mod file)
- Whittle mandatory and optional input data requirements

Block model preparation in Surpac

- Block model validation steps
- Rock code attribute
- Grade attribute
- Density attribute
- Topography and air definition
- Slope handling
- Cost attributes
- Validation reports

Export to Whittle (creating the mod file and par file in Surpac) Exploring export options available

- Creating the mod file and par file in Surpac
- Validation of export process

India

Surpac Foundation	
Course Code	N/A
Available	Classroom and on-demand
Duration	5 Days
Course Material	Soft Copy Manual (English)
Level	Fundamental
Audience	New and existing users of Surpac
Description	<p>This introductory training course will give you the skills you need to perform common functions in the software and use it productively. It covers concepts and procedures that will allow the user to perform basic functions in the software, and will serve as a basis for more advanced training.</p>
Objectives	<p>At the completion of the course, you will have been exposed to the following topics and concepts:</p> <ul style="list-style-type: none"> • Install and license Surpac • Customize Surpac user interface • Use basic components of the software for setting up and viewing data • Understand data types, concepts and file structure • Create new data for points, lines and surfaces • Understand the concepts of surfaces and generate them • Generate simple volume calculations between surfaces • Display and create basic solids • Create simple plots
Prerequisites	<p>Before taking this course, you require the following:</p> <ul style="list-style-type: none"> • Knowledge of: Microsoft® Windows®; file management; ASCII files and Microsoft Excel®. <p>The Surpac menu structure and graphical user interface (GUI) are similar to most Windows-based packages and therefore a basic knowledge of the Windows operating system and environment is necessary.</p>

Course Structure Flow

Introduction

- Introduction to Surpac and its functionality
- Components of the Surpac Window
- Working Directory in Surpac
- Concept of String, point and segments
- Opening and importing String files in Surpac
- Creating and editing string files in Surpac
- String file structure
- Displaying String file data
- Styles in Surpac
- Editing and customising styles
- Range concept in Surpac
- Revision

DTM Surfaces

- Concept of DTM(the 2D surface)
- Displaying DTM in Surpac
- Triangles in DTM and creating DTM
- Application of DTMs - sections (centre line and section axis line)
- Contouring (by DTMs and by Strings) and Clipping
- Editing the string file to get the desired DTM for volume calculation and other DTM application
- Volume Calculation methods in Surpac: Cut & Fill, Net Volume and End Area (Section Based)

Geological Database

- Concepts and structure of geological database
- Creating geological database
- Importing data into geological database (from CSV files)
- Displaying drill holes from database with collar, assay and geology data
- Audit database & reporting from geological database
- Section Preparation from drill hole data
- Statistical report and linear regression report from geology database
- Compositing concepts
- Downhole compositing in Surpac
- Statistical report of compositing
- Geostatistics and domain based compositing within lithology

Solid Modeling

- Overview and Concepts of object and trisolation
- Creating a solid from geological sections
- Validating solids and rectifying errors
- Application of solid modelling (sections, volume calculations, intersections)

Block Modelling

- Concepts of block modelling, constraints and attributes
- Partial percentage and assign value function in block model
- Displaying block models and color coding
- Estimation of grades
- Creating report from block models; creating slice plans

Pit Design

- Pit design concepts
- Basic input parameters for pit design
- Creating a pit design with different tools

Plotting

- Plotting functions (vector and raster images)
- Autoplot

Advanced Tools

- Recording macros

Surpac Advanced	
Course Code	N/A
Available	Classroom and on-demand
Duration	5 Days
Course Material	Soft Copy Manual (English)
Level	Intermediate, Advanced
Audience	Existing users of Surpac
Description	This advanced training course will give you the skills you need to perform critical functions in Surpac and use it productively. It covers concepts and procedures that will allow the user to perform advanced functions in the software.
Objectives	<p>At the completion of the course, you will have been exposed to the following topics and concepts:</p> <ul style="list-style-type: none"> • Validation of Geological Model • Geostatistics • Advanced Solid Modeling • Different Estimation methods • File based plotting
Prerequisites	<p>Before taking this course, you require the following:</p> <ul style="list-style-type: none"> • Knowledge of: Microsoft® Windows®; file management; ASCII files and Microsoft Excel®. • Basic knowledge of Surpac or completion of Surpac Foundation course <p>The Surpac menu structure and graphical user interface (GUI) are similar to most Windows-based packages and therefore a basic knowledge of the Windows operating system and environment is necessary.</p>

Course Structure Flow

String and DTM files

- Maths & expressions
- Classification of strings
- 2D & 3D transformations
- Lat/Long transformations
- Image Draping
- Contouring by triangulation method
- Drill hole DTM intersection

Geological Database

- Create user defined tables and fields
- Expressions in fields
- Extract sections for plotting and plot the same
- Different types of compositing

Solid Modelling

- Control string
- String morphing
- Intersection of solids and DTMs
- Section and slices of solids
- Outersect, intersect & union solids

Geostatistics

- Domains
- Histogram analysis
- Trend analysis
- Removing outliers
- Concept of Variogram
- Variogram Mapping
- Variogram Modelling
- Determining estimation parameters
- Variogram validation

Estimation

- IDW
- Kriging
- Interpolator

Engineering

- Multi Bench Design
- Slope method: descriptions, slope strings
- All cut ramps & berm crossing characteristics
- Road Design
- Drill & Blast Design

Plotting

- Customization of Sheet size
- Customization of Grids
- Customization of Drawing area
- Customization of Border
- Customization of Title block
- Entity: customized lines
- Entity: cliff symbols
- Processing of Map

Minex Foundation	
Course Code	N/A
Available	Classroom and on-demand
Duration	5 Days
Course Material	Soft Copy Manual (English)
Level	Fundamental
Audience	New & existing users of Minex
Description	This introductory training course will give you the skills you need to perform common functions in Minex and use it productively. It covers concepts and procedures to allow the user to perform basic functions in the software and will serve as a basis for advanced training.
Objectives	<p>At the completion of the course, you will have been exposed to the following topics and concepts:</p> <ul style="list-style-type: none"> • Customize the Minex graphical interface & icons • Use the basic components of the system for setting up and viewing data. • Understand data types, concepts and file structure • Create new data for points, lines and surfaces • Display & interrogate string & borehole data in 3D • Understand the concepts of grids & generate them • Generate simple volume calculations between surfaces • Display and create basic solids • Create simple plots in plan & section
Prerequisites	<p>Before taking this course, you require the following:</p> <ul style="list-style-type: none"> • Knowledge of: Microsoft® Windows®; file management; ASCII files and Microsoft Excel®. <p>The Surpac menu structure and graphical user interface (GUI) are similar to most Windows-based packages and therefore a basic knowledge of the Windows operating system and environment is necessary.</p>

Course Structure Flow

Overview

- What is Minex?
- Mine Planning Process
- Installation and Minex interface

Organizing your data

- Recommended project folder configuration
- Using the project manager
- Setting a local origin
- Minex data & file types

Working with triangles and grids

- What are triangles & grids?
- Creating & displaying surfaces as solids
- Manipulating grids & triangles
- Editing grids & triangles using arithmetic

Creating string data in 3D Importing & exporting geometry data

Creating strings & points

Displaying & querying geometry data

Minex borehole database

- Introduction and Overview of borehole database data types/variables
- Working with data Loading collar data
- Validating collar data

Borehole database

- Displaying boreholes in 3D
- Loading sample data into the borehole database

Preparing gridded surfaces

- Preparing topo & weathering surfaces
- Creating a seam/layer sequence
- Validating grids against source data

Interpolation

- Correlating & modelling borehole seams
- Ply splitting

Faults

- Using seam floor grids to interpret faults
- Defining fault strings and displacements
- Generating the fault block model
- Unfaulting boreholes

Interpolating missing seams

Building the geological model

- Multi seam/multi variable gridding
- Building the uncut & cut model

Creating a coal quality model

- Statistics of quality attributes
- Compute coal quality grids
- Calculating distance grids

Creating plans in 2D

- What is map mount?
- Creating a map mount
- Plotting grid & triangles using line and shade contours

Creating Sections in 2D

- What is a section mount?
- Creating a section mount
- Displaying triangles, grids and seams on a section

Reserves Estimation

- In situ reserve reporting and detailed reserve reporting

Pit design

- Define the bench list
- Generate benches
- Generate pit shell
- Calculate in situ resources
- Generate strips & blocks

Minex Advanced	
Course Code	N/A
Available	Classroom and on-demand
Duration	5 Days
Course Material	Soft Copy Manual (English)
Level	Fundamental
Audience	Existing users of Minex
Description	This advanced training course will give you the skills you need to perform critical functions in Minex and use it productively. It covers concepts and procedures that will allow the user to perform advanced functions in the software.
Objectives	<p>At the completion of the course, you will have been exposed to the following topics and concepts:</p> <ul style="list-style-type: none"> • Validation of Geological Model • Pit Optimization • Process of Pit designing & Reserve Validation • Short Term & Long Term Production Scheduling
Prerequisites	<p>Before taking this course, you require the following:</p> <ul style="list-style-type: none"> • Knowledge of: Microsoft® Windows®; file management; ASCII files and Microsoft Excel®. • Basic understanding of Minex or completion of Minex Foundation course <p>The Minex menu structure and graphical user interface (GUI) are similar to most Windows-based packages and therefore a basic knowledge of the Windows operating system and environment is necessary.</p>

Course Structure Flow

- Pit Optimization Theory
- Geological model validation
 - Methods for checking the geology model for validity before optimizing
 - Rationalize geological model into a mining model
 - Create merged model
- Identify optimization parameters
 - Identifying mining and physical constraints
 - Establish revenue and sale price on a quality variable (e.g. calorific value)
 - Setup fixed cost model for mining/processing
 - Setup variable cost model for mining/processing
- Pit optimization
 - Optimizer menu introduction and run pit optimizer
- Reporting results
 - Create report template
 - Report pit optimiser result
- Pit design overview
 - Rationalize the geological model
 - Examine outcrop / subcrop of seams
 - Calculate the merged model
 - Create cross sections through merged seams
 - Identify design constraints
- Create bench grids
 - Geotechnical parameters (wall angles and berms)
 - Identify bench surfaces, bottom seam, bench height
 - Create bench grids
- Pit design
 - Define the bench list
 - Generate benches, pit shell, strips & blocks
 - Calculate insitu resources
- Validating
 - Block editing
 - Validating blocks
 - Displaying pit geometry data
- Building reserves
 - Create a reserves database
 - Defining codes and layers
 - Add quality variables
 - Generate in-situ reserves
 - Update quality variables with modelled data
- Scheduling Overview
 - Concepts and objectives of scheduling
 - Types of scheduling and Preparing for scheduling
 - Creating and editing the calendar file
 - Displaying mining blocks in 3D
 - Defining equipment and production rates
- Target scheduling
 - Nominating targets and time periods
 - Creating the sequence file and schedule path
 - Running a target schedule
 - Schedule playback
- Reporting and schedule results output
 - Details schedule report
 - Residual reserves report
 - Creating face positions surfaces
- Detailed scheduling
 - Review of the equipment file and properties
 - Detailed interactive scheduling
 - Target monitor setup
 - Using a date control file
 - Create auto equipment for mining thin seams
- Reporting and schedule results output
 - Equipment productivity report
 - Schedule calendar report
 - Exporting face positions
- Managing the schedule database
 - Branching schedules
 - Merging & Deleting schedules

Indonesia

Surpac for Surveyors

Course Code	N/A
Available	Classroom and on-demand
Duration	3 Days
Course Material	Printed Manual
Level	Fundamental
Audience	New or Existing Surpac Users (Surveyors)
Description	This training course covers concepts and procedures that will allow the user to perform basic functions in the system, and will serve as a basis for good survey processes in Surpac.
Objectives	<p>At the completion of the course, you will have been exposed to the following topics and concepts:</p> <ul style="list-style-type: none"> • Install and license Surpac • Customise Surpac • Use the basic components of the system for setting up and viewing data • Understand the data types and concepts • Learn how to create and display a survey database • Create new data for points, lines and surfaces • Create and validate DTMs and solids • Generate simple volume calculations between surfaces and within solids • Create simple plots
Prerequisites	<p>Before taking this course, you require the following:</p> <ul style="list-style-type: none"> • Knowledge of: Microsoft® Windows®; file management; ASCII files and Microsoft Excel®. <p>The Surpac menu structure and graphical user interface (GUI) are similar to most Windows-based packages and therefore a basic knowledge of the Windows operating system and environment is necessary.</p>

Course Structure Flow

Overview

- Software installation and licensing
- Surpac concepts (and data types)
- The Surpac interface
- Forms and help

Organizing your data

- Recommended project folder configuration
- Managing data in layers
- Saving your project settings into profiles

Working with data

- String, segment and point information
- String concepts and file structure
- Object properties
- Using the selection and orbiting tool
- Displaying your data
- Editing data

Styles

- Creating your own styles for strings and points
- DTMs and 3DMs

Create menu

- Creating new points and gradients
- Basic digitizing techniques
- Creating a grid

Maths functions

- Applying expressions to data

Surfaces

- DTM concepts
- Breaklines and file preparation
- Normalizing the data
- Creating DTMs
- Intersection
- Contouring
- Extracting sections under a surface
- Draping
- Reporting volumes
- Cut and fill

Solids modelling

- Use the different methods to create a solid
- Validate solids
- Edit solids

Sections and planes

- Interactive method
- Cutting planes
- Viewing data on planes

File tools menu

- String summary and directions
- Applying a boundary
- 2D transformation

Survey database

- Create a database
- Importing text files
- Displaying database

Plotting

- Autoplot
- Plot sheet setup

Advanced tools

- Recording a macro

Surpac for Geologists	
Course Code	N/A
Available	Classroom and on-demand
Duration	5 Days
Course Material	Printed Manual
Level	Fundamental
Audience	New or Existing Surpac Users (Geologists)
Description	<p>This training course is designed for geologists who are either new to Surpac's geology module or would like to refresh their skills on concepts in geology. The course will provide users with a good understanding of using Surpac.</p>
Objectives	<p>At the completion of the course, you will have been exposed to the following topics and concepts:</p> <ul style="list-style-type: none"> • Install and license Surpac • Customize the interface and icons • Use the basic components of the system for setting up and viewing data • Understand the data types, concepts and file structure • Understand the geology data types and concepts • Display drillhole data and block models • Perform various functions within Surpac's drillhole database module • Create different types of drillhole and bench composites • Create new data for points, lines and surfaces • Understand the concepts of surfaces and generate them • Generate simple volume calculations between surfaces • Display and create basic solids • Create simple plots • Perform grade control calculations from blast polygons • Create sections for drillholes
Prerequisites	<p>Before taking this course, you require the following:</p> <ul style="list-style-type: none"> • Knowledge of Windows® 2000, XP, Vista® or Windows 7 Operating System • Knowledge of file management • Knowledge of ASCII format files and Microsoft® Excel® <p>The Surpac menu structure and graphical user interface (GUI) are similar to most Windows-based packages and therefore a basic knowledge of the Windows operating system and environment is necessary.</p>

Course Structure Flow

Overview

- Software installation and licensing
- Surpac concepts (and data types)
- The Surpac interface, forms and help

Organizing your data

- Recommended project folder configuration
- Managing data in layers
- Saving your project settings into profiles
- Setting customized icons and shortcuts

Working with data

- String, segment and point information
- String concepts and file structure
- Object properties
- Using the selection and orbiting tool
- Displaying & Editing your data

Create menu

- Creating new points and gradients
- Basic digitizing techniques
- Creating a grid
- Breaklines and file preparation
- Normalizing the data
- Creating DTMs
- Intersection, contouring
- Extracting sections under a surface
- Draping
- Reporting volumes
- Cut and fill, cutting planes, viewing data on planes

File tools menu

- String summary and directions
- String maths, applying a boundary string
- Classifying strings
- Polygon intersections

Surfaces

- DTM concepts
- Breaklines and file preparation
- Normalizing the data
- Validating

DTM Modeling

- Creating and sectioning DTMs
- Generating volumes
- Contouring
- DTM trimming, color DTM functions
- Draping (strings and imaged)

Plotting (Autoplot, Plot sheet setup)

Geology Database

- Database concept
- Importing data & mapping the database
- Connect to an existing Access database
- Create a new database & updating databases
- Database administration & auditing

Displaying and manipulation of drillholes

- Drillhole display in graphics
- Creation of styles for drillholes (display properties)
- Drillhole interrogation and investigation
- Displaying data in section (extract, display and color drill sections)

Plotting sections

Sectional interpretation (digitizing ore on selection)

Compositing data (downhole, by grade, by geology, by graphical selection)

Database reporting (flagging data within geological zones)

Basic statistics

- Produce histograms and probability plots
- Determine single / mixed population
- Calculate and apply a cut grade

Block model setup & concepts

Creating a block model (Attributes)

Constraints, displaying, sectioning, plotting, creating

Creating / applying constraints graphically

- Display / colouring a model by any single attribute type

Estimations

- Search ellipsoid parameterization and viewer
- Inverse distance
- Partial percentages using constraints

Reporting (By elevations, By geometric groupings)

Daughter block models

- Constrained block models
- Creating a sub model from a parent model

Surpac for Engineers	
Course Code	N/A
Available	Classroom and on-demand
Duration	5 Days
Course Material	Printed Manual
Level	Fundamental
Audience	New or Existing Surpac Users (Engineers)
Description	<p>This training course is designed for engineers who are either new to Surpac's engineering module or would like to refresh their skills on concepts in engineering. The course will provide users with a good understanding of using Surpac.</p>
Objectives	<p>At the completion of the course, you will have been exposed to the following topics and concepts:</p> <ul style="list-style-type: none"> • Install and license Surpac • Customize the interface and icons • Use the basic components of the system for setting up and viewing data • Understand the data types, concepts and file structure • Create new data for points, lines and surfaces • Understand the concepts of surfaces and generate them • Generate simple volume calculations between surfaces • Displaying block models • Block model reporting • Section for block model • Pit design fundamentals • Plotting • Display and create basic solids
Prerequisites	<p>Before taking this course, you require the following:</p> <ul style="list-style-type: none"> • Knowledge of Windows® 2000, XP, Vista® or Windows 7 Operating System • Knowledge of file management • Knowledge of ASCII format files and Microsoft® Excel® <p>The Surpac menu structure and graphical user interface (GUI) are similar to most Windows-based packages and therefore a basic knowledge of the Windows operating system and environment is necessary.</p>

Course Structure Flow

- Overview
 - Software installation and licensing
 - Surpac concepts (and data types)
 - The Surpac interface, forms and help
- Organizing your data
 - Recommended project folder configuration
 - Managing data in layers
 - Saving your project settings into profiles
 - Setting customized icons and shortcuts
- Working with data
 - String, segment and point information
 - String concepts and file structure
 - Object properties
 - Using the selection and orbiting tool
 - Displaying & Editing your data
- Create menu
 - Creating new points and gradients
 - Basic digitizing techniques
 - Creating a grid
 - Breaklines and file preparation
 - Normalizing the data
 - Creating DTMs
 - Intersection, contouring
 - Extracting sections under a surface
 - Draping
 - Reporting volumes
 - Cut and fill, cutting planes, viewing data on planes
- File tools menu
 - String summary and directions
 - String maths, applying a boundary string
 - Classifying strings
 - Polygon intersections
- Surfaces
 - DTM concepts
 - Breaklines and file preparation
 - Normalizing the data
 - Validating
- DTM Modeling
 - Creating and sectioning DTMs
 - Generating volumes
 - Contouring
 - DTM trimming, color DTM functions
 - Draping (strings and imaged)
- Plotting (Autoplot, Plot sheet setup)
- Block model setup
 - Block modelling concepts
 - Creating a block model (Attributes, creating attributes)
- Constraints, displaying, sectioning, plotting, creating
 - Creating / applying constraints graphically
 - Display / coloring a model by any single attribute type
- Estimations
 - Search ellipsoid parameterization and viewer
 - Inverse distance
 - Partial percentages using constraints
- Reporting
 - By elevations
 - By geometric groupings
- Daughter block models
 - Constrained block models
 - Creating a sub model from a parent model
- Open pit design overview
 - Concepts
 - Basic design tools
- Working with drillholes
 - Defining colour profiles and drillhole display profiles
 - Opening drillhole data into the graphical area
 - Creating sections and plan views
 - Viewing data on sections and plan views
- Open pit design
 - Setting up ramps
 - Slope design
 - Designing a switchback
 - Designing to a DTM
- Waste dump design
 - Designing a waste dump
 - Autoplot
 - Entities
 - Plotting sheet set up

Surpac Macro Intermediate	
Course Code	N/A
Available	Classroom and on-demand
Duration	3 Days
Course Material	Printed Manual
Level	Intermediate, Advanced
Audience	Surpac Users
Description	The Surpac Intermediate Macros three-day course is designed to allow participants to improve their skills in scripting by developing their own macro, understanding complex flow control and compiling TCLs to customize and automate daily tasks performed within Surpac
Objectives	<p>At the completion of the course, you will have been exposed to the following topics and concepts:</p> <ul style="list-style-type: none"> • Understanding in GUI objects and action events • Understanding complex flow control • Use various TCL commands to achieve goal • Modify and debug existing site macros • Compiling macros for further purposes
Prerequisites	<p>Before taking this course, you require the following:</p> <ul style="list-style-type: none"> • Knowledge of Windows® 2000, XP, Vista® or Windows 7 Operating System • Reasonable understanding of and exposure to Surpac • Previous use of a text editor like Notepad® or CONText® • Completion of Surpac Foundation <p>The Surpac menu structure and graphical user interface (GUI) are similar to most Windows-based packages and therefore a basic knowledge of the Windows operating system and environment is necessary.</p>

Course Structure Flow

- Recording in a tcl scripts
 - Basic macro structure
 - Macro records & playback
 - The different types of Surpac functions
 - Using the _action Switch
 - Using the Standard Actions
- Graphical user interface design objects
 - Basic Guido Widgets
 - Specialized Guido Browsers
 - Advanced Guido Widgets
 - Guido Containers
 - Guido Menus and Toolbars
 - Guido Utility Functions
 - Guido Switches
 - Guido Events and Callbacks
 - Types of Action Events
- Developing Macro
 - Mine Grid Conversion Script
 - Geology Database Sectional Plots
- Working with Surpac ranges
 - Using the Various SCL Range Functions
 - Create a Basic Macro Range Processing Template
- Manipulating Surpac range with scl
 - Using the SCL Range Commands (i.e. SCLRangeExpand, SCLRangeGetCount, SCLRangeGet, Putting the Range Commands Together)
 - Implementation of a Basic Range Processing Template
- Complex flow control in TCL
 - Boolean Expressions
 - Making Decisions in Scripts Using the if Command
 - Repeating Many Commands Using the While Loop
 - Repeating Many Commands Using the for Loop
- Creating a plot spooler application
 - Create a Plot Spooler Application to Send Multiple Plot Files to a Printer Queue
- File I/O – reading and writing text files
 - Commands to Read and write Text Files
 - Macro to Create a CSV File
 - Macro to Read a Message Log
- The TCL compiler
 - Compiling the TCL Files
 - Compiling any files format

Surpac Resource Estimation	
Course Code	N/A
Available	Classroom and on-demand
Duration	5 Days
Course Material	Printed Manual
Level	Intermediate, Advanced
Audience	Surpac Users (Geologists)
Description	<p>The Surpac Resource Modelling is a five-day course is designed for Geologists who would like to expand their skills in resource modeling. This course is intended for experienced Geologists, intermediate to advanced user of Surpac.</p>
Objectives	<p>At the completion of the course, you will have been exposed to the following topics and concepts:</p> <ul style="list-style-type: none"> • Refresh on Surpac interface, string manipulation • Refresh on Surpac geological database, mapping and importing geological data • Displaying drill holes and section • Creating solid wireframe • Understand block modelling concepts and creation, creating attributes and constraints • Reporting estimated block model • Knowledge on recording TCL macro recording and manipulation • Understand the importance of data integrity • Understand sample population analysis • Understand domaining and geological interpretation • Understand the role of descriptive statistics • Knowledge of statistics analysis and confidences • Knowledge of variogram analysis and maps • Knowledge of inverse distance estimation technique for block models • Knowledge of kriging estimation technique for block models • Knowledge of resource classification methods and reporting
Prerequisites	<p>Before taking this course, you require the following:</p> <ul style="list-style-type: none"> • Knowledge of Windows® 2000, XP, Vista® or Windows 7 Operating System • Knowledge of file management • Knowledge of ASCII format files and Microsoft® Excel® • Completion of Surpac for Geologists or equivalent experience and competency in the use of Surpac <p>The Surpac menu structure and graphical user interface (GUI) are similar to most Windows-based packages and therefore a basic knowledge of the Windows operating system and environment is necessary.</p>

Course Structure Flow

- Surpac Basic Refresh
 - Start-up folder
 - GUI
 - Basic file types
 - Layers
 - Basic functions
- Geological Database
 - Database structure
 - Displaying data
 - Creating composites
- Solid Modelling
 - Creating simple solid
 - Validating a solid
- Block Modeling
 - Creating a block model
 - Adding attributes
 - Creating constraints
 - Reporting tonnes and grades
- Macros
 - Recording
 - Editing
 - Playback
- Geological data integrity & domaining
 - Introduction to resource modeling
 - Database integrity and data quality
 - Population analysis, coding and compositing data
 - Geological interpretation and modeling
 - Overview of statistics and variography
- Population analysis, determining & variography
 - Comparing populations, determining, applying and statistics analysis
 - Geostatistical concepts, variography modeling and analysis
- Variogram modelling, block models & estimation
 - Variography modeling
 - Building the block model and estimation
- Estimation continued, model validation; classification and reporting
 - Estimation, optimizing parameters
 - Model validations and determining, and resource classifications
 - Reporting and refresher

MineSched Surface Scheduling	
Course Code	N/A
Available	Classroom and on-demand
Duration	3 Days
Course Material	Printed Manual
Level	Fundamental
Audience	Surface Mine Planners who are new to MineSched
Description	The course provides an understanding of the way that MineSched works and the concepts which drive the software. During the course students will learn how to setup basic tactical schedules for surface mining operations as well as how to modify and refine them.
Objectives	<p>At the completion of the course, you will have been exposed to the following topics and concepts:</p> <ul style="list-style-type: none"> • Comprehend the fundamental concepts of MineSched • Define a suitable file management structure for MineSched schedules • Prepare, check and validate input data • Setup and run a basic surface mine schedule • Define and manipulate material movement streams • Set quality targets and material ratios • Use the animation and reporting tools to validate schedules • Output schedule results • Use the help resources
Prerequisites	<p>Before taking this course, you require the following:</p> <ul style="list-style-type: none"> • Exposure to surface mining methods and planning practices • Good knowledge of block modeling and surface mine design functionality in GEOVIA Surpac™, GEMS™ or any other mine planning package • Knowledge of Windows® Operating Systems • Knowledge of file management, ASCII format files and Microsoft® Excel

Course Structure Flow

Overview

- Fundamental concepts
- MineSched interface
- Getting help

Prepare and validate data

- Block model and design data check, import and validation
- Recommended data structure

Setup a basic surface mine schedule

- Define material classes and qualities / grades
- Define user parameter and calculations
- Create scheduling locations
- Setup a material movement network
- Apply precedence rules
- Create and allocate resources
- Set resource calendars
- Define schedule length and granularity

Publish results

- Use graphs, reports and animations to validate a schedule
- Create custom reports

Working with point data

- Creating a point area workspace
- Importing points
- Define the point display profile
- Opening points in the graphical area

Refine a surface mine schedule

- Apply parameters to control production sequences
- Set quality/grade targets
- Define material movement ratios and priorities

Create short-term surface mine schedules

- Bridging long-term with short-term schedules
- Define and sequence polygon-based mining locations
- Define ancillary activities and resources

Open session

- Open discussion and Q&A session

Minex for Geologists	
Course Code	N/A
Available	Classroom and on-demand
Duration	5 Days
Course Material	Printed Manual
Level	Fundamental
Audience	Minex Users (Geologists)
Description	<p>The GEOVIA Minex for Geologists five-day course is designed to provide users with a good understanding of geology concepts using Minex; and is essential for geologists to perform every day and more advanced tasks with the use of the software</p>
Objectives	<p>At the completion of the course, you will have been exposed to the following topics and concepts:</p> <ul style="list-style-type: none"> • Understand the data types, concepts and file structure of Minex • Create new user data for points, lines and surfaces • Understand seam modelling concepts • Set up a new borehole database • Load sample data into borehole database (lithology, geophysical, and quality) • Display boreholes database in profile, plan, and section • Load seam layer intervals • Correlate and Interpret seam data • Understand Bore Seam Modeling concepts • Understand seam modelling concepts • Set up a new borehole database • Load sample data into borehole database (lithology, geophysical, and quality) • Display boreholes database in profile, plan, and section • Load seam layer intervals • Correlate and Interpret seam data • Understand Bore Seam Modeling concepts
Prerequisites	<p>Before taking this course, you require the following:</p> <ul style="list-style-type: none"> • Knowledge of Windows® 2000, XP, Vista® or Windows 7 Operating System • Knowledge of file management • Basic understanding of text editors and Microsoft® Excel® • Knowledge of file management • Knowledge of ASCII format files and Microsoft® Excel® • Basic understanding of mining practices

Course Structure Flow

- Starting with Minex
 - Familiarization with the Minex interface
 - Using the Minex explorer
- Organizing your data
 - Recommended project folder configuration
 - Using the project manager
 - Minex data and file types
- Displaying string data in 3D
 - Overview of the geometry file
 - Types of data stored in the geometry file
 - The concept of a string and using string data to create triangles and grids
 - Plotting geometry data
 - Querying and modifying string properties
 - Importing and exporting geometry data
 - Creating strings and points
 - Displaying and querying geometry data
 - Manipulating data with string functions
 - Area functions
- Seams Interpretation and Correlation
 - Creating a plan map
 - Plotting boreholes in plan mount
 - Creating a cross section
 - Plotting boreholes in cross section
 - Plotting Topography and Weathering using grid cross section
 - Controlling data using the mount control panel
 - How to Add/Edit/Rename/Delete seampicks
- Creating Seam Model Seam modeling concept in Minex
 - Reporting collar against topographic surfaces
 - Update collar within topographic surfaces
 - Concept of splitting/merging method
 - Concept of father and son method
 - Concept of interpolation
 - Exporting seam intervals
 - Compute seam floor and thickness grids
 - Concept of Washout on grids
- Seam model validation
 - Plotting seams in cross section
- Creating Quality Model
 - Selecting seam / sample compositing parameters
 - Statistics of quality attributes
 - Compute coal quality grids
- Resources Calculation
 - Insitu Resources Reporting
 - Creating Polygon Resources
 - Detailed Resources Reporting
- Fault 3D Overview
 - Concept of 3D and 2D fault
 - Interpreting faults using gridded surfaces
 - Preparing Fault data on Minex format
 - Creating fault line and identify throw, dip, and azimuth
- Creating Fault 3D Model
 - Unfaulting boreholes
 - Bore seam modeling
 - Refaulting boreholes

Minex for Engineers	
Course Code	N/A
Available	Classroom and on-demand
Duration	5 Days
Course Material	Printed Manual
Level	Fundamental
Audience	Minex Users (Engineers)
Description	<p>The GEOVIA Minex for Engineers five-day course is designed to provide users with a good understanding of engineering concepts using Minex; and is essential for engineers to perform every day and more advanced tasks with the use of the software.</p>
Objectives	<p>At the completion of the course, you will have been exposed to the following topics and concepts:</p> <ul style="list-style-type: none"> • Use the basic components of the system for setting up and viewing data • Understand the data types, concepts and file structure of Minex • Create new user data for points, lines and surfaces • Understand the concepts of triangle and grids and generate them • Generate simple volume calculations between surfaces • Create simple plots in plan and section • Rationalize the geological model into a mining model • Build a merged model and calculate strip ratio • Create bench grids and a bench list • Design a pit and compute pit surfaces • Incorporate Ramp design into pit • Utilize the slope mask option for slope variation • Generate the reserves database • Update reserves for modelled quality information • Validate database volumes using the detailed resource reporting option • Manipulate the reserves database using SQL's • Convert insitu reserves into run of mine reserves • Display reserves blocks in 3D • Plot detail pit block in 2D plan • Create dump design and spoil dump surface • Create dump profile surfaces and design rehabilitated surfaces • Set out blast patterns and generate drillers reports
Prerequisites	<p>Before taking this course, you require the following:</p> <ul style="list-style-type: none"> • Knowledge of Windows® 2000, XP, Vista® or Windows 7 Operating System • Basic understanding of text editors and Microsoft® Excel® • Knowledge of file management • Knowledge of ASCII format files and Microsoft® Excel® • Basic understanding of mining practices

Course Structure Flow

- Starting with Minex
 - Familiarization with the Minex interface
 - Using the Minex explorer
- Organizing your data
 - Recommended project folder configuration
 - Using the project manager
 - Minex data and file types
- Working with triangles and grids
 - Creating and displaying surfaces as solids
 - Manipulating grids and triangles
 - Editing grids and triangles using arithmetic
 - Grid and triangle volumetric
 - Reporting grid and triangle statistics
- Displaying string data in 3D
 - Overview of the geometry file
 - Types of data stored in the geometry file
 - Plotting geometry data
 - Querying and modifying string properties
- Creating string data in 3D
 - Creating strings and points
 - Manipulating data with string functions, area functions and geometry tools
- Creating plans in 2D
 - Creating a map mount
 - Plotting grid and triangles using line and shade contours
 - Controlling data using the mount control panel
- Creating sections in 2D
 - Creating a section mount
 - Displaying triangles, grids and seams on a section
 - Creating and retrieving plot archives
- Overview
 - Rationalize the geological model
 - Examine outcrop / subcrop of seams
 - Calculate the merged model
 - Create cross sections through merged seams
 - Identify design constraints
 - Geotechnical parameters (wall angles and berms)
- Create bench grids
 - Identify bench surfaces, bottom seam, bench height
 - Create bench grids
 - Define the bench list
- Pit design
 - Generate benches
 - Generate pit shell
 - Generate strips and blocks
 - Incorporate ramp into design
 - Using mask polygon to vary the slope angle
 - Create pit design with bench elevation
 - Block validation and editing
 - Displaying pit geometry data
- Building reserves
 - Create a reserves database
 - Defining codes and layers
 - Add quality variables
 - Generate Insitu reserves
 - Update quality variables from quality model
 - Report reserves
- Reserves validation
 - Methods for validating reserves
 - Examine layers in the reserves database
- ROM reserve manipulation
 - Waste and merge layers
 - Apply losses and dilutions
 - Edit the database using SQL
 - Display reserve blocks in 3D
- Reporting and validating
 - Report using other methods
 - Use face position surface as dump base
- Creating dump surfaces using earthworks
 - Create waste dump surfaces
 - Create final dump profiles
- Drill and blast
 - Setup blast pattern
 - Generate drillers reports
 - Create blast plan

Minex Pit Optimizer	
Course Code	N/A
Available	Classroom and on-demand
Duration	3 Days
Course Material	Printed Manual
Level	Fundamental
Audience	Minex Users (Engineers)
Description	<p>The GEOVIA Minex Pit Optimizer three-day course is designed to provide users with a good understanding of pit optimization concepts and how to manage and report the outputs. Attendees will also develop their skills in refining the cost and revenue models to best suit individual mine operations. This course is recommended for engineers evaluating new or existing mining operations.</p>
Objectives	<p>At the completion of the course, you will have been exposed to the following topics and concepts:</p> <ul style="list-style-type: none"> • Use the basic components of the system for setting up and viewing data • Understand the data types, concepts and file structure of Minex • Create new user data for points, lines and surfaces • Understand the concepts of triangle and grids and generate them • Generate simple volume calculations between surfaces • Create simple plots in plan and section • Understand the concept of pit optimization • Rationalize the geological model into a mining model • Set up a fixed of variable cost model for mining / processing costs by area / depth • Establish revenue and sale price on a quality variable (e.g. calorific value) • Control optimum pit slopes by seam or zone • Control haulage cost by area and depth • Introduction to SQL for creating cost and price model • Display and present optimizer results • Report waste and coal quantities for the optimum pit shells • Understand the benefits of margin ranking versus pit optimization
Prerequisites	<p>Before taking this course, you require the following:</p> <ul style="list-style-type: none"> • Knowledge of Windows® 2000, XP, Vista® or Windows 7 Operating System • Basic understanding of text editors and Microsoft® Excel® • Knowledge of file management • Knowledge of ASCII format files and Microsoft® Excel® • Basic understanding of mining practices <p>The Minex menu structure and graphical user interface (GUI) are similar to most Windows-based packages and therefore a basic knowledge of the Windows operating system and environment is necessary.</p>

Course Structure Flow

- Starting with Minex
 - Familiarization with the Minex interface
 - Using the Minex explorer
- Organizing your data
 - Recommended project folder configuration
 - Using the project manager
 - Minex data and file types
- Working with triangles and grids
 - Minex data and file types
 - What are triangles and grids?
 - Creating and displaying surfaces as solids
 - Manipulating grids and triangles
 - Editing grids and triangles using arithmetic
 - Grid and triangle volumetrics
 - Creating and plotting contours
- Creating string data in 3D
 - Reporting grid and triangle statistics
 - Creating strings and points
 - Manipulating data with string functions
- Creating sections in 2D
 - Creating a section mount
 - Methods for creating a section plan
 - Displaying triangles, grids and seams on a section
 - Creating and retrieving plot archives
- Overview
 - Pit optimization theory
- Geological model validation
 - Methods for checking the geology model for validity before optimizing
- Create the merged model
 - Rationalize the geological model into a mining model
 - Create merged model
- Identify optimization parameters
 - Identifying mining and physical constraints
 - Establish revenue and sale price on a quality variable (e.g. calorific value)
 - Setup fixed cost model for mining / processing
 - Setup variable cost model for mining / processing
- Pit optimization
 - Optimizer menu introduction
 - Run pit optimizer
- Reporting results
 - Create report template
 - Report pit optimizer result
- Introduction to SQL
 - Set mining costs for layer thickness, depth, location
 - Set sale value for multi-product mines (e.g. domestic, export)
- Advanced pit optimization
 - Using the MNX file
 - Control optimum pit slopes by zone
 - Control haulage cost by area and depth
 - Creating price and cost model using SQL Macro
- Analyzing results
 - Using simple methods to choose your ultimate pit
 - Display and present optimizer results
 - Report waste and coal quantities for the optimum pit shells
- Validating results
 - Analyzing log file
 - Check strip ratio vs basic costs
 - Base limiting grids

Minex Open Pit & Dump Scheduling

Course Code N/A

Available Classroom and on-demand

Duration 2 Days

Course Material Printed Manual

Level Intermediate, Advanced

Audience Minex Users (Engineers)

Description
The GEOVIA Minex™ Pit and Dump course is a three day course designed for existing users of Minex who are already familiar with pit design and reserving process in Minex. The course provides users with a good understanding of engineering scheduling concepts and suits long term or short term planners.

Objectives

At the completion of the course, you will have been exposed to the following topics and concepts:

- Understand the concepts and objectives of scheduling
- Set up an equipment file and calendar
- Create a detailed equipment schedule
- Create end of period face surfaces
- Run target schedules
- Report and display schedules
- Material classification in pit and dump reserve
- Create dump schedule database and configure scenario
- Interactively schedule a dump
- Replay an open pit schedule and complete a dump schedule
- Replay an existing dump schedule
- Define equipment properties for dump scheduling, including rimpull and retard data
- Create haul roads and assign speed limits and availability to haul roads
- Calculate and report truck cycle times
- Generate a detailed report showing the volumes and tonnage of waste that was moved from pit to dump over a period of time

Prerequisites

Before taking this course, you require the following:

- Knowledge of Windows® 2000, XP, Vista® or Windows 7 Operating System
- Knowledge of file management
- Basic understanding of text editors and Microsoft® Excel®
- Basic understanding of mining practices
- Completion of Minex Foundation or an introductory Minex course; or basic experience and competency in the use of Minex
- Completion of Minex Pit Design and Reserves course or Minex for Engineers

The Minex menu structure and graphical user interface (GUI) are similar to most Windows-based packages and therefore a basic knowledge of the Windows operating system and environment is necessary.

Course Structure Flow

- Detailed scheduling
 - Creating movement files and sequence file with sequence generator
 - Short term scheduling set up
- Overview Dump Scheduling
 - Understanding dump scheduling workflow
 - Overview dump design process
 - Create reserve database and generate reserve for dumps
- Material Classing
 - Assign waste material classification in Pit Reserve
 - Set the class material for Dump
- Dump Schedule Scenario
 - Create a dump schedule database and dump equipment database
 - Create and configure dump scenario
 - Assign infinite dump for overflow material
 - Define routes between pits and dumps
 - Create dump sequence
 - Ranking the dump priority
- Open Pit Dump Schedule
 - Interactive dump schedule
 - Replay an open pit schedule and complete a dump schedule
- Generation of Haul Roads
 - Concept of haul roads, haul road segments, and haul routes
 - Create haul roads segment strings
 - Define haul road speed limits
 - Create haul roads and haul routes
 - Generate ramp distance
- Cycle time calculation
 - Configure loaders parameter
 - Configure trucks parameter
 - Calculate truck cycle times
- Reporting and schedule result output
 - Detailed dump schedule report
 - Generate truck cycle time report and haulage selection report
 - Exporting dump face positions
 - Create pit and dump schedule playback

Minex Advanced Borehole Database & SQL	
Course Code	N/A
Available	Classroom and on-demand
Duration	3 Days
Course Material	Printed Manual
Level	Advanced
Audience	Existing Minex Users (Geologists)
Description	The GEOVIA Minex Advanced Borehole Database three-day course is designed for Geologists who want to become familiar with borehole database tools, seam interpretation and correlation technique, and includes introduction to borehole database manipulation using Structure Query Language (SQL).
Objectives	<p>At the completion of the course, you will have been exposed to the following topics and concepts:</p> <ul style="list-style-type: none"> • Setup borehole database • Import; validate; and borehole data • Borehole data manipulation • Correlate and interpret seam intervals • Update borehole database using basic SQL • Perform borehole data manipulation using borehole SQL and seampick.SQL
Prerequisites	<p>Before taking this course, you require the following:</p> <ul style="list-style-type: none"> • Knowledge of Windows® 2000, XP, Vista® or Windows 7 Operating System • Knowledge of file management • Basic understanding of text editors and Microsoft® Excel® • Basic understanding of mining practices • Completion of Minex for Geologists or equivalent experience and competency in the use of Minex <p>The Minex menu structure and graphical user interface (GUI) are similar to most Windows-based packages and therefore a basic knowledge of the Windows operating system and environment is necessary.</p>

Course Structure Flow

Borehole database overview

- Introduction to Minex borehole database
- Overview of borehole data type and variable
- Borehole database setup requirement
- Prepare surface and borehole data in Minex format
- Setup new borehole database

Working with Borehole data and surface grid

- Import and validate borehole data
- Display borehole data in 3D and 2D
- Create seam/layer sequence
- Manipulate and export borehole data
- Create topography and weathering surfaces

Seams Interpretation and Correlation

- Plotting borehole data using Profile; Plan; and Section map
- Add/Edit/Rename/Delete seam intervals

Introduction to Sql

- Sql Syntax
- Conditional Clauses/Selection Criteria
- Control Structures
- Input / Output and Limitations
- Types of Sql (borehole.Sql and seampick Sql)

Borehole database advance manipulation

- Update borehole database using basic Sql
- Borehole data manipulation using borehole.Sql
- Seampick manipulation using seampick Sql

Minex AMD (NAF/PAF) Modeling	
Course Code	N/A
Available	Classroom and on-demand
Duration	4 Days
Course Material	Printed Manual
Level	Advanced
Audience	Existing Minex Users (Geologists)
Description	The GEOVIA Minex Coal seam and AMD (NAF/PAF) material modeling course is designed for Geologists who want to combine between coal seam model and multiple NAF/PAF material layer to generate final geology model.
Objectives	<p>At the completion of the course, you will have been exposed to the following topics and concepts:</p> <ul style="list-style-type: none"> • Understand data types, concepts, and file structure of Minex • Import sample data (lithology, geophysical, and quality) into borehole database • Create and combine stratigraphic sequence for coal seam and NAF/PAF material • Import and validate coal seam and NAF/PAF material • Understand Bore Seam Modeling concepts for coal seam and NAF/PAF material • Adjust NAF/PAF material depth • Apply NAF/PAF material in barren holes • Adjust NAF/PAF material layer against coal seam model • Generate final geology model with combination between coal seam and NAF/PAF material layer • Quality compositing for coal seam and NAF/PAF material • Generate quality model for coal seam and NAF/PAF material • Resources Reporting
Prerequisites	<p>Before taking this course, you require the following:</p> <ul style="list-style-type: none"> • Knowledge of Windows® 2000, XP, Vista® or Windows 7 Operating System • Knowledge of file management • Basic understanding of text editors and Microsoft® Excel® • Knowledge of file management • Knowledge of ASCII format files and Microsoft® Excel® • Basic understanding of mining practices • Completion of Minex for Geologists course or equivalent experience and competency in the use of Minex. <p>The Minex menu structure and graphical user interface (GUI) are similar to most Windows-based packages and therefore a basic knowledge of the Windows operating system and environment is necessary.</p>

Course Structure Flow

- Borehole database preparation
 - Overview of borehole data type and variable
 - Borehole database setup requirement
 - Prepare surface and borehole data in Minex format
 - Setup new borehole database
- Working with Borehole data and surface grid
 - Import and validate borehole data
 - Create stratigraphic sequence for coal seam
 - Import coal seam intervals
 - Generate topography and weathering surfaces
 - Bore seam modeling for coal seam
 - Export and re-import coal seam intervals
- Working with NAF/PAF material
 - Insert NAF/PAF material sequence in stratigraphic sequence
 - Import NAF/PAF material intervals
 - Adjust NAF/PAF material depth intervals
 - Bore seam modeling for coal seam and NAF/PAF material intervals
 - Apply NAF/PAF material intervals in barren holes
- Generate coal seam and NAF/PAF model
 - Generate floor and thickness grid
 - Adjust NAF/PAF layer against coal seam model
 - Generate final cut and uncut model for coal seam and NAF/PAF material
- Generate quality model for coal seam and NAF/PAF layer Selecting seam/sample compositing parameters
 - Generate quality grids
- Resources reporting
 - In-situ resources reporting
 - Generate polygon resources
 - Detailed resources reporting

Strategic Mine Planning	
Course Code	N/A
Available	Classroom and on-demand
Duration	3 Days
Course Material	Printed Manual
Level	Advanced
Audience	Experienced Surpac Users or New Whittle Users
Description	The GEOVIA Surpac/Whittle Strategic Mine Planning three-day course is designed for experienced users of Surpac and new users of Whittle (Engineers, Geologists and Surveyors) to develop an understanding of the principles of strategic mine planning and practical implementation of the same, using Surpac and Whittle
Objectives	<p>At the completion of the course, you will have been exposed to the following topics and concepts:</p> <ul style="list-style-type: none"> • Complete an uncomplicated mine planning study using Surpac and Whittle for a given resource block model and input parameters • Generate optimal shells, reports and schedules • Understand the steps involved in strategic mine planning and the tools available in Surpac and Whittle
Prerequisites	<p>Before taking this course, you require the following:</p> <ul style="list-style-type: none"> • Knowledge of Windows® 2000, XP, Vista® or Windows 7 Operating System • Knowledge of file management • Knowledge of ASCII format files and Microsoft® Excel® • Completion of Surpac Foundation or an introductory Surpac course or basic experience and competency in the use of Surpac • Surpac block modeling knowledge • Minimum two years open cut mining experience

Course Structure Flow

- Introduction to mine planning concepts
 - Strategic planning
 - Economic evaluation
 - Decision making discussion
 - Mine planning studies
 - JORC code
 - Pit optimization theory
- Optimizations theory discussion
 - Optimizations algorithms
 - Slopes
 - Block value
 - Whittle concepts
 - Block model dimensions
 - Costs
 - Revenue factors
 - Ore selection discussion
 - Welcome to your block model
- Creating the mod and par file in Surpac
 - Rock code attribute
 - Grade attribute
 - Density attribute
 - Slope handling
 - Attribute definition
 - Cost attributes
 - Validation reports
 - Exporting a mod and par file
 - Quick tour of Whittle
- Optimization in Whittle
 - Creating the new project
 - Importing the mod file
 - Validation
 - Grade tonnage graph
 - Reblock node
 - Slope set node
 - Pit shell node
 - Operational scenario
- Choosing a pit shell in Whittle
 - Spider diagram
 - Pit by pit graph
 - Schedule graph and bench schedules
 - Milawa schedules
 - Reporting in Whittle
- Block size and SMU
 - Block size discussion
 - Importing Whittle shells and schedules into Surpac
- Milawa schedules
 - Importing and reporting from mod and res files in Surpac
 - Importing and reporting from msq files in Surpac
- Exporting pit design from Surpac to Whittle
 - Creating pit file and exporting design

