

Citation: Application of Mining Geostatistics

Maptek™ is pleased to announce the first Intensive Course in the Application of Mining Geostatistics to be held in Australia. Maptek has previously offered the course in its Chile office for 6 years, and in 2007 held its inaugural US course in Denver.

The course includes 4 weeks of full-time attendance. Theoretical and practical aspects of geostatistics are covered. The objective is to provide knowledge in the theory and use of modern geostatistical tools, with an emphasis on mining applications.

Where & When

The course will be held at the Maptek office in Perth, Western Australia:
Level 2, 190 Aberdeen Street
Northbridge WA 6003

The dedicated classes will run between **February 2-13** and **March 2-13, 2009**. Students will have 4 weeks to work on individual or group projects, ending with project reviews and a graduation ceremony.

Facilities

Maptek provides a computer for the use of each participant during the course, with the necessary software and internet access. Maptek will also provide written material, photocopies and binding of the projects. A training room with a capacity for 15 people and a study room will be at the participants' disposal.

Acknowledgment

Once the final project has been developed and approved, students will be awarded a Citation in Applied Geostatistics from the Faculty of Extension at the University of Alberta, Canada. This citation is a formal statement of the achievements of the person receiving the academic honor and is officially recognised for later courses. On acceptance into a formal post-degree program in the University of Alberta, such as M. Eng., M. Sc. and Ph.D., the Citation would gain the student credit for a full semester course: 'MIN E 710: Application of Mining Geostatistics'.

Instructor

Dr Clayton Deutsch will be in charge of this course. Dr Deutsch is Professor of the department of Civil and Environmental Engineering, University of Alberta, where he teaches and conducts research on the geostatistical methods applied to resource estimation and grade control.

"This was a great course and exciting four weeks with geostatistical theory nicely blended with practical applications. The instructors were very skillful in explaining even the most complex theoretical concepts in an intuitive and very well understood manner."

*Tomasz Postolski, Newmont,
Denver 2007*

Registration

Spaces are limited so book early

Registration fees: \$9,500 per person

Discount of 5% on registrations before
30 November 2008

While participants will use Maptek Vulcan™ software, the course is open to all interested mining professionals regardless of software background.

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This course will

- Reinforce basic geostatistics concepts and tools
- Teach how to apply the latest simulation/uncertainty concepts

These objectives will be achieved through classroom lectures, tutorials and study. Besides prepared homework, each participant must work on a real project using their own data (if available) or data provided for this purpose.

Schedule

February 2-13	<i>Fundamentals of Theory and Practice</i> Short course covering fundamentals and a general overview of techniques.
	<i>Selected Topics</i> Covered during classes, with short theoretical homework about statistics and simulation.
Feb - March	<i>Project</i> Participants will prepare a conducted project, individually or in small groups, using their own data.
March 2-13	<i>Final Report and Advanced Topics</i> Projects will be reviewed and marked. Advanced topics will be presented in classes. Some homework.

Fundamentals of Theory and Practice

Practical aspects of geostatistics modelling in reserves and grade control, using Maptek Vulcan™ software complemented with GSLIB where necessary. The main topics include:

- Stationarity: Considering geological rock types and drifts
- Variograms: A new approach to an old tool
- Kriging: Details of implementation and conditional bias
- Simulation: How is kriging different and how is it used?
- Multiple Grades: Cosimulation
- Recoverable Reserves: 'Probability of ore' and 'Grade if ore'
- Grade Control: Classification and excavation limits in practice

Selected Topics

Selected topics are designed to reinforce the theoretical concepts and implementation details:

- Random Variables and Random Functions – Notation and Theory of random variables, probability distributions, combination of distributions, expected values, statistical concepts such as Bayes Law and Central Limit Theorem
- Rock types and trend modelling – definition of rock types, soft and hard limits, Stochastic modelling of rock types, trend evaluation and modelling
- Quantification of Spatial Variability – calculation, interpretation and variogram modelling, indicator variograms and cross-variograms
- Recoverable Reserves Estimation – relationship of volume/variance, models of change of support, kriging for map construction, conditional bias, kriging for recoverable reserves, indicator kriging and uniform conditioning
- Simulation for uncertainty quantification – Monte Carlo simulation, sequential simulation, matrix methods, turning band, conditional simulation, multivariate simulation and post-processing of multiple runs

Project

Following the Selected Topics, participants will work on a specially defined project, individually or in small groups. Ideally, each group will use its own data, otherwise, data will be provided. The study will involve the solution of practical problems. The project will require critical interpretation of the results and accurate documentation, and will be reviewed and qualified. During the final week, there will be time for essential corrections.

Final Report and Advanced Topics

The final stage is when projects will be reviewed. Follow-up studies and validation exercises will also be proposed.

Advanced topics may include:

- Grade control and optimisation of the excavation line
- Simulation of the probability field
- Hermite polynomial and disjunctive kriging
- Plurigaussian simulation truncated for facies modelling
- Cokriging, Markov-Bayes and kriging of advanced indicator, direct simulation, annealing
- Geostatistical techniques based on objects and surfaces, comparison of modelling techniques
- Classification and selection of runs and evaluation of uncertainty in modelling parameters