

## Graduate Student Scholarships in

# Mine Planning Optimization, Geostatistical Simulations and AI methods for Self-learning Industrial Mining Complexes

COSMO Stochastic Mine Planning laboratory, McGill University, Montreal, Qc Canada

<http://cosmo.mcgill.ca>

Graduate student positions and scholarships (MSc/MEng and PhD) are available at the COSMO research group at McGill University (<http://cosmo.mcgill.ca>). COSMO is a collaborative laboratory dedicated to the development of new simultaneous stochastic optimization and self-learning frameworks for production planning needed to create value across the entire mining-mineral value chain. The related industrial environment requires particular focus on geostatistical simulations, stochastic mathematical programming, machine learning methods, and real-time optimization. Research is funded by the National Sciences and Engineering Research Council of Canada (NSERC) and a consortium of major mining companies: AngloGold Ashanti, BHP, Anglo American, De Beers, IAMGOLD, Kinross Gold, Newmont, and Vale.

**Research projects** are largely integrated to combine mine planning and production scheduling of mining complexes with uncertainty in supply (mineral deposits) and demand (markets), new stochastic simulation methods, stochastic mathematical programming, and artificial intelligence methods (reinforcement learning). A key component of graduate work is the testing of new methods developed at mine sites world-wide, thus providing exposure to mining operations and interaction of new methods and reality.

**The ideal candidate** should have a degree in mining engineering or industrial engineering or geological engineering or engineering mathematics and spatial statistics, as well as have good analytical skills; good programming skills are an asset.

The COSMO Lab offers a high-tech working environment and laboratory and collaborates with related professors in other Departments at McGill and research groups such as GERAD, IVADO and McGill's CIM, as well as universities in the USA, Australia and South Africa.

Scholarships/research-assistantships are offered to highly qualified candidates at the maximum NSERC level: \$24,000/year for PhD students and \$19,000/year for MSc. A generous top-up of \$10,000/year is available for candidates holding NSERC scholarships.

Candidates will have the opportunity to apply their developments at mine sites worldwide, thus learn about mining complexes and mineral value chains, test newly developed methods in real-life applications and gain experience with advanced digital technologies in industrial environments.

For further information, please contact:

Dr. Roussos Dimitrakopoulos, E-mail: [roussos.dimitrakopoulos@mcgill.ca](mailto:roussos.dimitrakopoulos@mcgill.ca); Tel: (514) 398-4986  
McGill University, Dept of Mining and Materials Engineering  
3450 University Street,  
Montreal, Quebec H3A 0E8  
Canada