

Register early!

Early bird rate  
deadline is  
August 2, 2018.

SHORT COURSE

## The Fundamentals of Mineral Resource Estimation

This course, presented by a team of professional experts from RPA Inc., introduces the fundamentals of estimating mineral resources. The content is prepared for an audience of exploration and mine geologists who are primarily responsible for the discovery, definition, and production of mineral deposits, but are often not involved in estimation stage. This course is intended to outline the key components and important considerations for mineral resource estimation, so that the audience can incorporate these learnings into their work

The course starts at the drill hole database and proceeds through resource domaining, trend analysis, exploratory data analysis, estimation techniques, cut-off grade calculation, and classification criteria. Specific considerations for a mineral resource model will be explored, including practical aspects such as proposed mining method and equipment, and geostatistical aspects, such as the selection of appropriate domain criterion. RPA will explain the fundamentals and importance of each step, and touch on common risks and mistakes.

Exercises to complement the material may include: geological interpretation, database verification, managing high-grade assays, calculating cut-off grades, exploratory data analysis, block grade estimation, search-ellipse strategies, classification, and block-model verification.

**Level of comprehension:** Beginner to intermediate. Participants should have an understanding of mineral deposits and basic mineral exploration, including drilling.

**WHEN:** September 19, 2018 from 8:30 a.m. to 4:30 p.m.

**WHERE:** Bond Place Hotel, Piccadilly Room  
65 Dundas Street East, Toronto M5B 2G8

**COST:** **Early Bird Rate until August 2, 2018**  
Member rate: \$250 + HST  
Non-member rate: \$299 + HST  
**After August 2, 2018**  
Member rate: \$299 + HST  
Non-member rate: \$349 + HST

**REGISTRATION:** Visit <https://www.apgo.net/apgo-events> to register online.

Registration fee includes light break refreshments, lunch and course materials.

## The Fundamentals of Mineral Resource Estimation

**Luke Evans, M.Sc., P.Eng. is the Executive Vice President of Geology and Resource Estimation, and a Principal Geologist** at RPA. In this role, Luke manages the direction and growth of RPA's geology team comprising over 20 geologists. His 35 years' experience allow him to incorporate cross-discipline learnings, bringing in practical strategies that add value to RPA's clients. He has participated in the direction of resource estimation as an evolving specialty field, in the context of increasingly challenging projects and rapidly evolving software and technological innovation. He has worked on gold, silver, PGE, REE, base metal, copper, iron, manganese, phosphate, sulphide and laterite nickel, uranium, niobium, diamond, and industrial mineral projects worldwide. He specializes in resource and reserve audits, estimates and training, geostatistical studies, valuations of mineral properties, technical reports, stock exchange listings, and due diligence assignments. He has contributed to the growth and institution of industry best practices and is regarded as a touchstone for mining leaders seeking to maximize performance and efficiency. Luke holds a Bachelor of Applied Science in Geological Engineering from the University of Toronto and a Master of Science in Mineral Exploration from Queen's University.

**Jason Cox, P.Eng., is the Executive Vice President of Mine Engineering and a Principal Mining Engineer** at RPA. In his capacity as EVP, Jason supervises project teams, providing guidance reflective of more than 20 years of industry experience spanning development, construction, operation, and closure of mining projects. He influences industry best practice guidelines, both in his role at RPA, a leading mining consultancy firm, and as a committee member for the Professional Standards Committee (PSC) with the Professional Engineers Ontario (PEO). Jason specializes in project management, mine design, cost estimation, and cash flow forecasting, and is responsible for providing up to date metal price guidance for RPA. As a Principal Mining Engineer, Jason provides mentorship to his team, and conducts peer and senior review of project work, with focus on optimization, and the identification of risks and opportunities impacting project economics. Jason earned his degree in Mining Engineering from Queen's University and has held progressively more senior roles at RPA since joining in 2004.

**David Ross, M.Sc., P.Geo., is the Director of Resource Estimation, and a Principal Geologist** at RPA. As Director, he oversees a team of resource geologists, providing technical direction and guidance, supporting the team to identify geological strengths, weaknesses, opportunities and threats impacting the economic viability of projects, as well as providing mentorship. He is responsible for ensuring best practices in geological and resource modelling, and regulatory compliance. As a Principal Geologist, David brings over 20 years of experience in the mining industry, including international exploration with both major and junior mining companies. Since joining RPA in 2005, he has assisted clients on over 120 mineral deposits at various development stages, providing technical assistance, preparation and management of public disclosure documents including PEAs, PFS and FS, and due diligence reviews in support of capital market transactions. Mr. Ross received a Bachelor of Science in Geology from Carleton University and an M.Sc. in Mineral Exploration from Queen's University.

## The Fundamentals of Mineral Resource Estimation

**Sean Horan, P.Geo, is a Principal Geologist/Geostatistician** at RPA. Over his 10 years of experience, Mr. Horan has grown to be an innovator in the fields of resource estimation and geostatistics. At RPA, Sean shares his knowledge through peer and senior review of projects, as well as providing technical assistance to clients, due diligence reviews in support of financial transactions, and the preparation of public disclosure documents for exploration and mining companies. His clients benefit from his creative and original approaches to geological and resource modeling. His experience spans exploration target evaluation, database integration, development and evaluation of grade control work flows, geological and resource modelling using explicit and implicit modelling, linear and non-linear resource estimation, simulation, and geostatistical studies. Sean is an expert user of Leapfrog and Datamine software, develops custom utilities in Visual Basic and Python, and is well versed in a number of scripting languages. Prior to joining RPA in 2013, Sean held positions in both Africa and northern Ontario as an Underground Mine Geologist, as an Exploration Geologist, and as a Consultant. Sean holds a Bachelor of Science in Geology with Honours from Rhodes University in South Africa and a post graduate citation course in Geostatistics from the University of Alberta.

**Valerie Wilson, M.Sc., is a Senior Geologist** at RPA. She is focused on the preparation and evaluation of geological and resource models for a diverse number of commodity and deposit types. Her models reflect geological understanding and improve the predictive capacity of mineral resource models through advanced techniques and integration of feedback from drilling campaigns, mapping projects and reconciliation results. Since joining RPA in 2012, she has worked to foster communication between contributing technical and financial teams, facilitating the development of flexible and encompassing models for use beyond resource estimation to span various aspects of the mine cycle. Valerie is an expert user of Leapfrog and an advanced user of Vulcan and Supervisor. She provides technical assistance, composes documentation for public disclosure, and assists in due diligence reviews to support mergers and acquisitions. Previous to RPA, Valerie held positions in Canada and Scandinavia as a Mine Geologist and as an Exploration Geologist. She earned her Bachelor of Science in Geology at the University of Victoria, and her M.Sc. in Mining Geology, with a specialization in Geostatistics, at the Camborne School of Mines, in England.