Short Course: Approaches in Mine-Mill Integration: Economic Evaluation of Pre-concentration Opportunities presented by **Dr. Andrew Bamber**, MineSense Technologies Ltd

Summary
Mine-Mill Integration encompasses a range of approaches for the integration of novel technologies into the mining system to improve the efficiency and effectiveness of the mineral extraction and beneficiation process, and therefore reduce energy and costs. Mine Mill Integration approaches include the integration of mineral sensing and sorting systems as well as systems for ore pre-concentration such as dense media separation into the mining system. Economic evaluation of these opportunities to integrate value-added technologies such as pre-concentration into the flow sheet requires consideration of capital, operating and revenue impacts both up and down the mining value chain. The course presents a comprehensive and systematic approach for interpreting results from pre-concentration testwork and discusses several case studies which fully describe the opportunity to be considered.

Background
The term Mine-Mill Integration or Mine-to-Mill was first coined by the Australians in the 1990's. It was defined typically in terms of approaches to improve the interface between the mining operation in the pit and the surface mill. Aspects included in this definition include drill-mill technologies, down the hole sensing, blast fragmentation/comminution optimization, and interpretation of ore textures in terms of their impact on mineral processing. Since 1999, the author has been involved in strategic research into Mine-Mill Integration, more specifically research into the integration of mineral processing and waste disposal technologies into the underground and surface mining environment. Technologies and approaches considered include the integration of innovative ore grade sensing and control systems, and ore pre-concentration by size classification, sensor-based sorting as well as dense media separation into the mining flowsheet. Consideration of coarse waste disposal strategies such as rocky past fill is also made. A new geometallurgical laboratory procedure has been developed which delivers data for input into a comprehensive model for the economic evaluation of opportunities.

Who Should Attend?
The course is profiled for project leaders, engineers and technologists presently involved in the evaluation of pre-concentration or other types mine-mill integration opportunities for an existing mine or new deposit. A wider audience of mine managers and other resource professionals is also envisaged.

Course Schedule
Day 1: March 22th
Session 1 – Technical and Economic Aspects of Hard Rock Metal Mining
Session 2 – Mine Mill Integration Approaches and Enabling Technologies
Session 3 – Strategies for Economic Evaluation: the mining value chain and parametric estimation methods
Day 2: March 23th
Session 4 – Interpreting Process Impacts in Terms of Cost and Revenue
Session 5 – Resource Impacts: cost, revenue, cutoff grade and Net Present Value of the Resource
Session 6 – Case Studies, Summary and Discussion