Applied Gold Metallurgy for the Mining Industry

Focus on: The Manager ☐ The Specialist ☑ Spotlight Programme ☐ Hands-on Skills ☑

This course provides mining metallurgists, mining engineers, process plant and chemical engineers with a strong foundation in applied gold metallurgy. It combines theoretical understanding with practical insight, and it uses case studies and exercises to reinforce the connection between metallurgical science and real-world process applications.
Participants will learn about beneficiation and metallurgical processing of gold ores, along with sampling methods and procedures, comminution methods, separation and ore sorting technologies. They will also learn about pyrometallurgy and polymetallic and trace element separation. Waste and water management will be addressed, along with dewatering methods, deleterious element sequestration, environmental considerations and process decarbonization.

Course Objectives		This Course is Ideal For:	
1	Understand the core principles of mineral beneficiation, process mineralogy, and the critical role of representative sampling in process design and optimization.	✓	Metallurgists
2	Explore the latest advancements in size reduction, classification, and gravity-based separation technologies, emphasizing efficiency and selectivity.	✓	Mining engineers
3	Examine leaching systems, pyrometallurgical pathways, and process strategies for recovering metals from complex and polymetallic ores.	✓	Process plant engineers
4	Environmental and sustainability aspects of mineral processing, addressing waste, water, and deleterious element management within the context of responsible mining.	✓	Chemical engineers
5	Integrate the technical principles learned throughout the course into cohesive process flowsheets, with emphasis on energy efficiency and decarbonization strategies for future-ready mineral plants.		

Course Content

Day	Theme	Coverage
1	Foundations of Mineral Beneficiation and Sampling	• Advanced mineral beneficiation and metallurgical processing • Process mineralogy of gold ores • Sampling methods and procedures
2	Comminution and Physical Separation Technologies	• Comminution (crushing and grinding) technologies and recent advancements • Gravity separation, flotation and ore sorting technologies

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		• Dewatering methods
3	Chemical and Thermal Processing of Ores	• Leaching and other separation technologies • Pyrometallurgy • Polymetallic and trace element separation
4	Environmental Stewardship and Process Sustainability	• Waste/water management & recycling • Deleterious element sequestration • Environmental consideration in mineral processing
5	Process Integration, Optimization, and Decarbonization	• Process integration • Process decarbonization • Flowsheet development • Course assessment, summary and close

Course Assessment

Participants will be assessed on:
Participation in sessions
Completion of exercises & case studies
Performance in assessments

Certification

Upon successful completion of the course, participants will receive a **Certificate of Successful Completion**, along with a **Transcript of Marks** showing the performance by grade in each element of assessment and overall.

Course Instructor

The speaker for this course is a hugely experienced ex-Technical Director from the mining industry, who has worked in more than 30 countries, all across the world.
He is an internationally renowned expert in Material Treatment, Mineral Processing, Pyrometallurgy and Hydrometallurgy.
He has led international teams delivering mining projects of up to $25M in value and has been a member of the design and commissioning teams for mining plants of $100M+. He has also developed and managed operational budgets for mining operations with 200 staff.