AusIMM Courses

Underground Mining: Planning, Safety and Design

ASSOCIATE CERTIFICATE

Build real-world capability to plan and execute underground mining safely and efficiently.

Course overview

Underground mining is complex, high-pressure, and unforgiving — and the expectations placed on new engineers have never been higher. This course equips early-career mining professionals with the applied knowledge, frameworks, and practical tools needed to step confidently into underground planning, design, and operations.

Across four structured modules, you'll learn how underground systems work in practice, how to apply safe and efficient design principles, how to communicate plans effectively across departments, and how to validate and troubleshoot execution in the field. Developed with underground engineering specialists from Resolve Mining Solutions, this course closes the critical gap between university theory and real-world site performance.

- 100% online and flexible
- Designed for graduates, junior engineers, and operational teams
- Includes digital credential and CPD hours

Why this course matters

Many graduates and early-career engineers move underground with deep theoretical knowledge — but limited practical exposure.

This capability gap can lead to:

- Re-work, delays, and avoidable production losses
- Safety risks associated with poor design understanding
- Miscommunication between planning and operations
- Low confidence in technical and decision-making responsibilities

The industry needs engineers who can think critically, communicate clearly, and make informed decisions underground.

This course provides the foundation to:

- Understand how mine plans are actually implemented
- Apply safe, efficient, cost-aware design criteria
- Recognise, communicate , and manage underground hazards
- Build the confidence to engage openly with supervisors and operators
- Validate design execution and troubleshoot issues on site

Whether you're stepping into your first underground role or responsible for developing team capability, this course delivers immediately applicable outcomes.

PD hours
20 hours

Delivery
100% online

Duration
5 weeks

Certificate
Digital credential

Pricing

Member $1,550
Non-member $2,020

Prices are in Australian dollars and are inclusive of 10% GST

Discounts available when 3 or more participants book together.

Scan for more information

ENROL NOW

Who should enrol?

This course is purpose-built for professionals involved in underground mine planning, operations, and short-term engineering responsibilities, including:

- Graduate & Junior Underground Mining Engineers
- Planning, Scheduling & Technical Services Engineers
- Mine Operations Engineers transitioning into underground roles
- Training Managers onboarding graduates or early-career staff
- Consultants working across underground projects
- Site teams seeking consistent, structured capability development

Ideal for professionals across Australia, Africa, Asia, and Latin America, where underground mining demand and depth are increasing.

What you'll learn

Practical Underground Mining Fundamentals

- How underground mining systems, layouts, and sequencing work in practice
- Drilling & blasting mechanics, production cycles, and heading development
- Underground infrastructure essentials (power, ventilation, pumping, services)

Safe and Efficient Mine Design

- Core design criteria that balance safety, productivity, and cost
- Vertical, horizontal and mass excavation design concepts
- Hazard identification and risk management at the design stage
- Approval processes and design quality assurance

Communication & Stakeholder Engagement

- How to present mine plans clearly to operators, supervisors, and contractors
- Required planning inputs, priorities, constraints, and enablers
- Strategies for reducing misalignment and improving execution

Execution, Validation & Troubleshooting

- How to validate design execution in-field
- Troubleshooting frameworks to diagnose and correct issues
- Using production data for continuous improvement and root-cause analysis

By the end of the course, learners will not just understand underground mining — they will be able to participate confidently in planning, design, and operations.

RESOLVE MINING SOLUTIONS

Industry-led expertise, built for underground success

Co-created with Resolve Mining Solutions, this initiative brings together practical experience and innovative thinking to deliver real capability for underground operations

This course offers practical, real-world underground mining capability that new engineers urgently need. It is designed to accelerate confidence, reduce risk, and build the applied skills required to plan, design, communicate, and troubleshoot safely and effectively.

Career outcomes

After completing this course, professionals will be able to:

- Transition confidently from university to underground engineering roles
- Contribute meaningfully to weekly planning, scheduling, and short-term design
- Communicate effectively with supervisors and experienced operators
- Make informed decisions that improve safety and productivity
- Build credibility early in their careers, accelerating progression
- Strengthen their technical capability with a recognised credential

This course gives early-career engineers the clarity, confidence, and capability to succeed in high-pressure underground environments.

Organisational benefits

For mining companies seeking to strengthen underground capability, this course provides:

- Structured onboarding for efficiency and safety of graduates and junior engineers
- Reduced risk of design errors, miscommunication, and re-work
- Stronger safety outcomes through hazard-aware design and execution
- Improved collaboration between planning and operations teams
- A scalable, repeatable training solution across multiple sites
- Capability uplift critical for regions with limited structured graduate programs

This course helps organisations build a workforce that is confident, competent, and operationally aligned.

Bridge the gap between theory and practice. Become the underground engineer teams can trust.

ENROL NOW

Underground Mining modules

1 Underground mining essentials

1. The underground environment - mining methods and variations
2. Fundamentals of rock breakage
3. The mining cycle - development
4. The mining cycle - production

2 Designing for safety and efficiency

1. The planning cycle
2. The mining cycle - development
3. The mining cycle - production
4. Mine services and infrastructure planning

3 Introduction to mine economics and cost estimation

1. Economics in mining
2. Capital and operating costs
3. Cost modelling (First principles)
4. Principles in practise

4 Communication, execution and design quality assurance

1. Governance
2. Communication and engagement
3. Measuring and tracking
4. Design quality assurance and troubleshooting