Accredited Africa Training Institute for Capacity Development
Unit FO409, Hatfield Plaza · 1122 Burnett St, Hatfield 0028 · Pretoria, Gauteng · South Africa
Tel: +27 12 004 8389 · Mobile: +27 65 077 6310
Email: apply@aaticd.co.za · Website: www.aaticd.co.za

COURSE BROCHURE

Underground Coal Mine Blasting Operations Certification Training

Manufacturing, Engineering and Technology / Fabrication and Extraction

Unit Standard 110210 · NQF Level 3 · 11 Credits · 8 Days

COURSE OVERVIEW

This course equips learners with the knowledge and skills required to conduct safe and efficient blasting operations in underground coal mines. It covers legal requirements, blast design, risk assessment, and post-blast procedures to ensure compliance with South African mine health and safety regulations.

Category	Manufacturing, Engineering and Technology
Subfield	Fabrication and Extraction
Unit Standard	110210
Accreditation	SAQA Accredited · NQF Level 3 · 11 Credits
Duration	8 days
Training Method	Online, On-Campus, In-House
Certificate	Issued via AATICD LMS — verifiable online

LEARNING OUTCOMES

- Apply relevant legislation, standards, and codes of practice governing underground coal mine blasting.
- Analyze geological and operational conditions to design safe and effective blast patterns.
- Evaluate blast risks and implement control measures to prevent accidents and injuries.
- Demonstrate correct procedures for handling, storing, and transporting explosives and accessories.
- Implement blast initiation systems and conduct post-blast inspections to ensure safety.
- Assess blast outcomes and adjust designs to optimize fragmentation and minimize environmental impact.

WHO SHOULD ATTEND

- Blasting assistants, miners, and supervisors working in underground coal mines who require certification in blasting operations as per the Mine Health and Safety Act.

COURSE OUTLINE

Day 1: Introduction to Underground Coal Mining & Blasting Safety

- Overview of the Mine Health and Safety Act (MHSA) and relevant regulations.
- Blasting certificate requirements and competency standards (SAQA unit standard 110210).
- Key stakeholders: employer, blaster, shift boss, mine overseer.
- Hazard identification: methane, coal dust, roof instability, misfires.
- Introduction to explosives: types, classification, and energy release.
- Risk assessment methodology for blasting operations.
- Emergency preparedness and response procedures.
- Personal protective equipment (PPE) for underground blasting.

Day 2: Explosives and Initiating Systems

- Permitted explosives: ANFO, emulsion explosives, water gels.
- Explosive properties: velocity of detonation, density, water resistance.
- Detonators: electric, non-electric, electronic delay detonators.
- Booster charges and primers.
- Shock tube and detonating cord systems.
- Storage requirements: magazines, segregation, stock control.
- Handling procedures: transport, loading, and decommissioning.
- Compatibility and mixing restrictions.

Day 3: Blast Design and Blast Area Security

- Blast design fundamentals: burden, spacing, stemming length.
- Drilling patterns for coal headings: wedge cut, burn cut, fan cut.
- Charge weight calculations using powder factor.
- Blast area security: barricades, signs, and guards.
- Warning signals and communication protocols.
- Pre-blast inspection and risk assessment.
- Misfire management and procedures.
- Post-blast inspection and re-entry criteria.

Day 4: Drilling Operations and Charging Procedures

- Drilling equipment: pneumatic drifters, hydraulic rigs, handheld drills.
- Drilling parameters: diameter, depth, angle, and accuracy.
- Stemming materials and placement.
- Charging procedures: manual and mechanized loading.
- Use of stemming plugs and stemming retention.
- Hazards during charging: static electricity, premature initiation.
- Inspection of drill holes and charge verification.
- Housekeeping and waste management.

Day 5: Initiation and Blasting Operations

- Initiation sequence: connecting detonators, testing circuits.
- Delay timing: millisecond delays for sequential blasting.
- Blasting in gassy mines: methane and dust control.
- Ventilation requirements and re-entry protocols.
- Monitoring instruments: gas detectors, air velocity meters.

- Emergency procedures: misfire, hang-up, explosives theft.
- Post-blast inspection: roof condition, face profile, fragmentation.
- Blast reporting and record keeping.

Day 6: **Environmental and Community Considerations**

- Ground vibration: measurement, prediction, and control.
- Airblast and overpressure: effects and mitigation.
- Dust generation and suppression techniques.
- Water management: acid mine drainage prevention.
- Community relations: notification, complaints handling.
- Regulatory requirements: environmental impact assessments.
- Blasting near historical or cultural sites.
- Rehabilitation of blasting areas.

Day 7: **Advanced Blast Design and Optimization**

- Advanced blasting: pre-splitting, smooth blasting.
- Fragmentation analysis: sieving, image analysis.
- Blast optimization: reducing oversize, minimizing dilution.
- Quality control: monitoring blast results, adjusting design.
- Blast design for longwall and bord-and-pillar operations.
- Use of blasting software (e.g., JKSimBlast).
- Case studies of typical underground coal blasting challenges.
- Cost-benefit analysis of blasting improvements.

Day 8: **Assessment and Certification Preparation**

- Comprehensive review of all modules.
- Mock assessment scenarios and problem-solving.
- Blast planning exercise: complete blast design from start to finish.
- Documentation: blast reports, risk assessments, permits.
- Legal obligations: blasting logbook, incident reporting.
- Continuous professional development and refresher training.
- Assessment criteria and evidence requirements.
- Final Q&A; and course evaluation.

ASSESSMENT & CERTIFICATION

Delegates are assessed through exercises and a final test. A mark of **50% or above** earns an **AATICD Certificate of Completion**, issued digitally with a unique verification code. This course carries **11 NQF credits** at **NQF Level 3**.

PRICING (PER DELEGATE, EX-VAT)

Delegates	Training Method	Price per Delegate	Total
1	Online	R 22,600.00	**R 22,600.00**
1	In-House	R 30,500.00	**R 30,500.00**
1	On-Campus (Pretoria)	R 33,900.00	**R 33,900.00**

UPCOMING SESSIONS

Start	End	Method	Venue
02 Dec 2026	11 Dec 2026	On-Campus	Victoria Falls, Zimbabwe
02 Dec 2026	11 Dec 2026	On-Campus	Kinshasa, DRC
03 Dec 2026	14 Dec 2026	On-Campus	Pretoria, South Africa
04 Dec 2026	15 Dec 2026	On-Campus	Dar es Salaam, Tanzania
07 Dec 2026	16 Dec 2026	On-Campus	Victoria Falls, Zimbabwe
07 Dec 2026	16 Dec 2026	On-Campus	Blantyre, Malawi
08 Dec 2026	17 Dec 2026	On-Campus	Kinshasa, DRC
09 Dec 2026	18 Dec 2026	On-Campus	Bangkok, Thailand

Contact us if no suitable date is listed — on-demand sessions can be arranged for groups.

HOW TO GET A QUOTATION OR APPLY

1. **Get an instant quotation online:** visit www.aaticd.co.za, open the page for this course (Unit Standard 110210) and click **Get A Quotation**. Select your training method and number of delegates — your quotation is generated immediately and emailed to you with the course brochure attached.
2. **Apply by email:** send the course title, your preferred training method (Online, In-House or On-Campus Pretoria), the number of delegates and your preferred dates to **apply@aaticd.co.za** — our team will reply with a formal quotation.
3. **Apply by phone or WhatsApp:** call **+27 12 004 8389** or WhatsApp **+27 65 077 6310** and we will prepare your quotation and reserve your seats.
4. **Confirm your booking:** accept the quotation and settle the invoice. As soon as payment is confirmed your delegates are enrolled and receive their AATICD LMS login details by email, along with joining instructions for their chosen training method.

Group discounts apply automatically — the more delegates you enrol, the lower the price per delegate. No payment is required to request a quotation.

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