Accredited Africa Training Institute for Capacity Development
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COURSE BROCHURE

Drilling And Blasting Operations Coordination Training

Manufacturing, Engineering and Technology / Fabrication and Extraction

Unit Standard 115615 · NQF Level 3 · 26 Credits · 23 Days

COURSE OVERVIEW

This course equips learners with the knowledge and skills to coordinate drilling and blasting operations effectively and safely within the mining and quarrying industries. It covers planning, supervision, and compliance with relevant legislation and best practices to ensure operational efficiency and risk mitigation.

Category	Manufacturing, Engineering and Technology
Subfield	Fabrication and Extraction
Unit Standard	115615
Accreditation	SAQA Accredited · NQF Level 3 · 26 Credits
Duration	23 days
Training Method	Online, On-Campus, In-House
Certificate	Issued via AATICD LMS — verifiable online

LEARNING OUTCOMES

- Apply relevant legislation, regulations, and safety standards to drilling and blasting operations.
- Analyze geological and site conditions to develop effective drilling and blasting plans.
- Evaluate blast designs and implement appropriate blast patterns and timing sequences.
- Coordinate drilling and blasting activities to minimize environmental impact and ensure compliance.
- Demonstrate effective communication and teamwork during blast execution and post-blast inspection.
- Implement emergency response procedures and incident management protocols for drilling and blasting operations.

WHO SHOULD ATTEND

- This training is designed for supervisors, team leaders, and coordinators responsible for drilling and blasting operations in mining, quarrying, and construction environments.

COURSE OUTLINE

Day 1: Introduction to Drilling and Blasting Operations

- Overview of drilling and blasting in South African context
- Legal framework: Mine Health and Safety Act, explosives regulations
- Roles of the blasting coordinator, shift supervisor, and drill operator
- Basic rock mechanics and fragmentation theory
- Introduction to drill types and blast designs

Day 2: Rock Mechanics and Geology for Blasting

- Rock types and their behavior under dynamic loading
- Joints, faults, bedding planes, and their impact
- Rock Mass Rating (RMR) and Q-system basics
- Geological mapping for blast design
- Case studies: geological challenges in South African mines

Day 3: Explosives and Initiating Systems

- Types of explosives: ANFO, emulsions, water gels, dynamite
- Properties: density, velocity of detonation, water resistance
- Non-electric, electric, and electronic detonators
- Safety in explosives handling
- Magazine management and inventory control

Day 4: Drill Selection and Drilling Operations

- Drill rig types and applications
- Drill bit selection and maintenance
- Drill pattern geometry fundamentals
- Factors affecting drillhole deviation
- Quality control in drilling operations

Day 5: Blast Design Principles

- Empirical design methods (Konya, Ash, etc.
- Bench blasting design parameters
- Charge distribution and decking
- Stemming materials and techniques
- Environmental considerations: vibration, airblast, flyrock

Day 6: Blast Initiation and Timing

- Pyrotechnic, electronic, and shock tube delay systems
- Timing design: inter-row and intra-row delays
- Sequence diagrams and blast timing plans
- Controlled blasting: pre-splitting, smooth blasting
- Case studies: timing optimization

Day 7: Environmental and Safety Management

- Blast vibration monitoring and scaling laws
- Airblast overpressure and noise control
- Dust suppression techniques
- Blast clearance procedures and exclusion zones

- Risk assessment matrix and safe work procedures

Day 8: Blast Monitoring and Assessment

- Seismographs and geophones setup
- Interpreting vibration waveforms
- Fragmentation analysis software (e.g., WipFrag, Split-Desktop
- Muckpile analysis and diggability assessment
- Continuous improvement cycle

Day 9: Blasting Regulations and Compliance

- Mine Health and Safety Act sections relevant to blasting
- Explosives Act and regulations
- Blasting permits and reporting requirements
- Incident reporting and investigation
- Compliance checklists and audit procedures

Day 10: Emergency Response and Incident Management

- Types of blasting emergencies: misfires, premature detonation
- Misfire handling procedures
- Emergency communication and evacuation plans
- First aid for blast injuries
- Incident investigation techniques

Day 11: Drilling and Blasting in Underground Operations

- Underground drill rigs and jumbos
- Tunnel blasting patterns (burn cut, wedge cut
- Stope blasting design
- Ventilation requirements after blasting
- Ground support interaction with blasting

Day 12: Drilling and Blasting in Open Pit Mining

- Open pit bench blasting design
- Production blast planning and scheduling
- Blast movement monitoring and ore control
- Slope stability and presplit blasting
- Highwall safety

Day 13: Blasting in Civil Construction and Quarrying

- Construction blasting: trenching, foundation excavation
- Quarry blasting for crushed stone
- Demolition blasting techniques
- Urban blasting: vibration and noise limits
- Blast design for near-structure blasting

Day 14: Advanced Blast Design Techniques

- Blast design software (e.g., JKSimBlast, Blastware
- Electronic detonator programming
- Underwater blasting considerations
- Cast blasting and directional blasting
- Cost analysis: explosives, drilling, and productivity

Day 15: Drilling and Blasting Economics

- Cost components: drilling, explosives, labor, equipment
- Cost per ton and cost per blast analysis
- Key performance indicators (powder factor, drill factor
- Value-in-use analysis for explosives selection
- Budgeting and cost control

Day 16: Blast Planning and Scheduling

- Blast planning process: from design to execution
- Production scheduling integration
- Collaboration with geologists and surveyors
- Inventory management of explosives and accessories
- Blast documentation and reporting

Day 17: Quality Control and Continuous Improvement

- Drilling quality: deviation surveys, depth checks
- Blast quality: fragmentation, backbreak, heave
- Data collection and analysis for improvement
- Post-bast review meetings and action plans
- Lean blasting: reducing waste and variability

Day 18: Leadership and Communication in Blasting Teams

- Supervisory skills for blasting coordinators
- Toolbox talks and pre-blast meetings
- Interdepartmental communication
- Conflict resolution and team motivation
- Safety leadership and behavior-based safety

Day 19: Practical Simulation and Case Studies

- Simulation exercises: open pit and underground scenarios
- Case studies of successful and failed blasts
- Group design projects
- Peer review and feedback
- Problem-solving: misfires, poor fragmentation, high vibration

Day 20: Final Assessment and Integration

- Written exam covering theory and regulations
- Practical assessment: blast design and planning
- Oral presentation of a blast plan
- Course review and Q&A;
- Certification and handover

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 **26 NQF credits** at **NQF Level 3**.

PRICING (PER DELEGATE, EX-VAT)

Delegates	Training Method	Price per Delegate	Total
1	Online	R 69,100.00	**R 69,100.00**
1	In-House	R 89,800.00	**R 89,800.00**
1	On-Campus (Pretoria)	R 103,600.00	**R 103,600.00**

UPCOMING SESSIONS

Start	End	Method	Venue
05 Aug 2026	04 Sep 2026	On-Campus	Dubai, UAE
06 Aug 2026	07 Sep 2026	On-Campus	Pretoria, South Africa
06 Aug 2026	07 Sep 2026	On-Campus	Lagos, Nigeria
07 Aug 2026	08 Sep 2026	On-Campus	Johannesburg, South Africa
10 Aug 2026	09 Sep 2026	On-Campus	Cape Town, South Africa
11 Aug 2026	10 Sep 2026	On-Campus	Dubai, UAE
12 Aug 2026	11 Sep 2026	On-Campus	Pretoria, South Africa
13 Aug 2026	14 Sep 2026	On-Campus	Abu Dhabi, UAE

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

HOW TO GET A QUOTE OR APPLY

1. **Get an instant quotation online:** visit **www.aaticd.co.za**, open the page for this course (Unit Standard 115615) and click **Get A Quote / Apply**. 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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