



## 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](mailto:apply@aaticd.co.za) · Website: [www.aaticd.co.za](http://www.aaticd.co.za)

### COURSE BROCHURE

# Engineering Grinding Operations for Component Production

Manufacturing, Engineering and Technology / Manufacturing and Assembly

Unit Standard 258716 · NQF Level 3 · 12 Credits · 9 Days

## COURSE OVERVIEW

This course equips learners with the practical skills and theoretical knowledge required to produce components by performing engineering grinding operations. It covers the setup, operation, and maintenance of grinding machines, ensuring components meet specified tolerances and surface finishes. The course aligns with the SAQA unit standard 258716, focusing on safe and efficient grinding practices in an engineering environment.

|                 |                                            |
|-----------------|--------------------------------------------|
| Category        | Manufacturing, Engineering and Technology  |
| Subfield        | Manufacturing and Assembly                 |
| Unit Standard   | 258716                                     |
| Accreditation   | SAQA Accredited · NQF Level 3 · 12 Credits |
| Duration        | 9 days                                     |
| Training Method | Online, On-Campus, In-House                |
| Certificate     | Issued via AATICD LMS – verifiable online  |

## LEARNING OUTCOMES

- Apply safety procedures and personal protective equipment when setting up and operating grinding machines.
- Demonstrate the ability to select and mount grinding wheels according to workpiece material and grinding requirements.
- Perform grinding operations to produce components with specified dimensions, tolerances, and surface finishes.
- Analyze grinding defects and implement corrective actions to ensure quality output.
- Evaluate grinding machine performance and conduct routine maintenance to ensure operational efficiency.
- Implement quality control measures, including measuring and inspecting finished components using appropriate instruments.

## WHO SHOULD ATTEND

- This course is designed for engineering technicians, artisans, and machine operators who need to develop or enhance their grinding skills for component production.
- It is also suitable for individuals seeking formal recognition of their grinding competencies in the manufacturing and engineering sectors.

## COURSE OUTLINE

### Day 1: Introduction to Grinding Operations

- Overview of grinding in manufacturing
- Types of grinding machines: surface, cylindrical, centreless
- Abrasive materials and bonding agents
- Grinding wheel specifications and marking systems
- Safety regulations and PPE for grinding operations
- Introduction to cutting fluids and their functions

### Day 2: Grinding Wheel Selection and Conditioning

- Factors influencing wheel selection: material, hardness, grit size
- Dressing tools: single-point diamonds, rotary dressers
- Truing and dressing procedures
- Wheel balancing methods
- Mounting and safety checks
- Impact of wheel speed and feed on surface finish

### Day 3: Surface Grinding Techniques

- Surface grinder components and controls
- Workholding methods: magnetic chucks, vises
- Grinding parameters: depth of cut, cross feed, table speed
- Coolant application and filtration
- Surface finish measurement: Ra, Rz
- Common defects: burn, chatter, cracks

### Day 4: Cylindrical Grinding Operations

- Cylindrical grinder types: external, internal, universal
- Workholding: centres, chucks, collets
- Grinding cycles: plunge, traverse
- Taper grinding methods
- Measuring roundness and concentricity
- Troubleshooting out-of-round conditions

### Day 5: Centreless Grinding Principles

- Centreless grinding machine components
- Through-feed and in-feed methods
- Regulating wheel angle and speed adjustments
- Work rest blade positioning
- Size control and automatic gauging
- Applications: pins, shafts, bearings

### Day 6: Tool and Cutter Grinding

- Tool materials: HSS, carbide, CBN
- Tool geometry: rake, relief, clearance angles
- Tool grinder attachments and fixtures
- Sharpening drills: point angles, lip relief
- Sharpening milling cutters: end teeth, peripheral

- Measuring tool angles with protractors

#### Day 7: Advanced Grinding Processes and Abrasives

- Creep-feed grinding: principles and applications
- High-speed grinding: wheel speeds above 45 m/s
- Superabrasive wheels: CBN, diamond
- Coolant nozzles and high-pressure systems
- In-process gauging and adaptive control
- Grinding of ceramics and hardened steels

#### Day 8: Quality Control and Dimensional Inspection

- Measuring instruments: micrometers, callipers, bore gauges
- Surface roughness measurement: profilometers, comparators
- Statistical process control: X-bar and R charts
- Capability studies (Cpk, Cp)
- Common causes of variation: machine stiffness, thermal effects
- Corrective actions for out-of-tolerance parts

#### Day 9: Practical Integration and Assessment

- Review of key grinding processes
- Component production: surface, cylindrical, centreless grinding
- Process troubleshooting: burn, taper, chatter
- Final assessment: produce a part to drawing tolerances
- Documentation: inspection reports, process sheets
- Course wrap-up and Q&A;

## 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 **12 NQF credits** at **NQF Level 3**.

## PRICING (PER DELEGATE, EX-VAT)

| Delegates | Training Method      | Price per Delegate | Total       |
|-----------|----------------------|--------------------|-------------|
| 1         | Online               | R 33,300.00        | R 33,300.00 |
| 1         | In-House             | R 43,300.00        | R 43,300.00 |
| 1         | On-Campus (Pretoria) | R 50,000.00        | R 50,000.00 |

## UPCOMING SESSIONS

| Start       | End         | Method    | Venue                      |
|-------------|-------------|-----------|----------------------------|
| 04 Aug 2026 | 14 Aug 2026 | On-Campus | Pretoria, South Africa     |
| 04 Aug 2026 | 14 Aug 2026 | On-Campus | Lagos, Nigeria             |
| 05 Aug 2026 | 17 Aug 2026 | On-Campus | Johannesburg, South Africa |
| 06 Aug 2026 | 18 Aug 2026 | On-Campus | Mauritius                  |
| 07 Aug 2026 | 19 Aug 2026 | On-Campus | Cape Town, South Africa    |
| 10 Aug 2026 | 20 Aug 2026 | On-Campus | Pretoria, South Africa     |
| 11 Aug 2026 | 21 Aug 2026 | On-Campus | Abu Dhabi, UAE             |
| 12 Aug 2026 | 24 Aug 2026 | On-Campus | Mauritius                  |

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](http://www.aaticd.co.za), open the page for this course (Unit Standard 258716) 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](mailto: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.

### 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 · WhatsApp: +27 65 077 6310 · [apply@aaticd.co.za](mailto:apply@aaticd.co.za) · [www.aaticd.co.za](http://www.aaticd.co.za)