



Accredited Africa Training Institute for Capacity Development

Unit FO409, Hatfield Plaza · 1122 Burnett St, Hatfield 0028 · Pretoria, Gauteng · South Africa

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COURSE BROCHURE

Diamond Gemstone Modelling And Optimal Processing Techniques Training

Manufacturing, Engineering and Technology / Fabrication and Extraction

Unit Standard 110235 · NQF Level 6 · 13 Credits · 10 Days

COURSE OVERVIEW

This course equips learners with the skills to model and optimize the processing of diamond gemstones using specialized software and techniques. It covers the entire workflow from 3D modelling to optimal cutting strategies, ensuring maximum yield and value from rough diamonds.

Category	Manufacturing, Engineering and Technology
Subfield	Fabrication and Extraction
Unit Standard	110235
Accreditation	SAQA Accredited · NQF Level 6 · 13 Credits
Duration	10 days
Training Method	Online, On-Campus, In-House
Certificate	Issued via AATICD LMS – verifiable online

LEARNING OUTCOMES

- Apply 3D modelling software to create accurate digital representations of rough diamond gemstones.
- Analyze diamond internal and external characteristics to determine optimal cutting orientations.
- Evaluate different processing techniques to maximize carat yield and gemstone value.
- Design optimized cutting plans using advanced simulation tools.
- Implement processing workflows that minimize waste and enhance diamond quality.
- Demonstrate proficiency in interpreting modelling outputs for production decisions.

WHO SHOULD ATTEND

- This course is designed for diamond graders, gemologists, jewellery designers, and processing technicians who wish to enhance their technical proficiency in diamond modelling and processing optimization.

COURSE OUTLINE

Day 1: Introduction to Diamond Gemstone Modelling

- What is diamond gemstone modelling?
- Physical and optical properties of diamonds
- Introduction to modelling software and tools
- Industry standards and quality benchmarks
- Course logistics and safety protocols

Day 2: Diamond Anatomy and Optical Properties

- Diamond anatomy: crown, pavilion, girdle, culet
- Refraction, dispersion, and total internal reflection
- The role of facet angles and symmetry
- Introduction to ray tracing concepts
- Practical exercise: identifying diamond parts on models

Day 3: Introduction to 3D Modelling Software

- Software overview: menus, tools, and views
- Creating primitive shapes and modifying meshes
- Importing diamond specifications from databases
- Exporting models for analysis
- Hands-on: build a simple diamond shape

Day 4: Modelling Round Brilliant Cuts

- Round brilliant cut specifications
- Step-by-step modelling of crown and pavilion
- Ensuring facet alignment and symmetry
- Using reference tables for angles
- Practical: model a 1-carat round brilliant

Day 5: Modelling Fancy Cuts – Princess, Emerald, and Radiant

- Princess cut: square shape with chevron facets
- Emerald cut: step-cut with elongated facets
- Radiant cut: hybrid of round and emerald
- Modifying models for different proportions
- Practical: model one fancy cut of choice

Day 6: Advanced Modelling Techniques – Inclusions and Clarity

- Types of inclusions: feathers, crystals, clouds
- Modelling inclusions as 3D features
- Effect on light scattering and brilliance
- Clarity grading simulation
- Practical: add inclusions to a round brilliant model

Day 7: Optimal Processing Techniques – Cutting and Polishing

- Cutting planning from rough to polished
- Yield optimisation strategies
- Polishing angles and surface finish
- Modelling rough diamond shapes

- Practical: plan cut for a given rough diamond model

Day 8: Light Performance Analysis and Optimisation

- Metrics: brilliance, fire, scintillation
- Ray tracing simulation setup
- Adjusting angles to improve scores
- Comparing before/after optimisation
- Practical: optimise a model's light performance

Day 9: Quality Control and Grading Simulation

- Grading parameters: cut, clarity, colour, carat
- Common modelling mistakes and fixes
- Using grading tools within software
- Documentation for certification
- Practical: grade and correct a set of models

Day 10: Capstone Project and Industry Integration

- Capstone: model a diamond from rough to polished with optimisation
- Presentation of project outcomes
- Industry trends in diamond modelling
- Certification pathways
- Course evaluation and feedback

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 **13 NQF credits** at **NQF Level 6**.

PRICING (PER DELEGATE, EX-VAT)

Delegates	Training Method	Price per Delegate	Total
1	Online	R 39,400.00	R 39,400.00
1	In-House	R 51,200.00	R 51,200.00
1	On-Campus (Pretoria)	R 59,100.00	R 59,100.00

UPCOMING SESSIONS

Start	End	Method	Venue
03 Aug 2026	14 Aug 2026	On-Campus	Dubai, UAE
04 Aug 2026	17 Aug 2026	On-Campus	Pretoria, South Africa
04 Aug 2026	17 Aug 2026	On-Campus	Lagos, Nigeria
05 Aug 2026	18 Aug 2026	On-Campus	Johannesburg, South Africa
06 Aug 2026	19 Aug 2026	On-Campus	Mauritius
07 Aug 2026	20 Aug 2026	On-Campus	Cape Town, South Africa
10 Aug 2026	21 Aug 2026	On-Campus	Pretoria, South Africa
11 Aug 2026	24 Aug 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 110235) 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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