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**SOUTH AFRICAN QUALIFICATIONS AUTHORITY (SAQA)**

In accordance with Regulation 24(c) of the National Standards Bodies Regulations of 28 March 1998, the Standards Generating Body (SGB) for

**Mining and Minerals**

registered by Organising Field 06 – Manufacturing, Engineering and Technology, publishes the following qualification for public comment.

This notice contains the titles, fields, sub-fields, NQF levels, credits, and purpose of the qualification. The full qualification can be accessed via the SAQA web-site at [www.saqg.org.za](http://www.saqg.org.za). Copies may also be obtained from the Directorate of Standards Setting and Development at the SAQA offices, SAQA House, 1067 Arcadia Street, Hatfield, Pretoria.

Comment on the qualification should reach SAQA at the address below and **no later than 13 April 2007**. All correspondence should be marked **Standards Setting – Mining and Minerals** and addressed to

The Director: Standards Setting and Development  
SAQA

**Attention: Mr. D. Mphuthing**

Postnet Suite 248

Private Bag X06

Waterkloof

0145

or faxed to 012 – 431-5144

e-mail: [dmpthuthing@saqa.org.za](mailto:dmpthuthing@saqa.org.za)

**DIRECTOR: STANDARDS SETTING AND DEVELOPMENT**



## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

**QUALIFICATION:****Further Education and Training Certificate: Jewellery Setting Processes**

SAQA QUAL ID	QUALIFICATION TITLE		
58274	Further Education and Training Certificate: Jewellery Setting Processes		
<b>SGB</b>	<b>PROVIDER</b>		
SGB Mining and Minerals			
<b>ETQA</b>			
QUALIFICATION TYPE	FIELD	SUBFIELD	
Further Ed and Training Cert	6 - Manufacturing, Engineering and-Technology	Fabrication and Extraction	
ABET BAND	MINIMUM CREDITS	NQF LEVEL	QUAL CLASS
Undefined	146	Level 4	Regular-Unit Stds Based
REGISTRATION STATUS	SAQA DECISION NUMBER	REGISTRATION START DATE	REGISTRATION END DATE
Draft - Prep for P Comment			

**PURPOSE AND RATIONALE OF THE QUALIFICATION****Purpose:**

This qualification will enable qualifying learners with the necessary knowledge, understanding and competence in diamond and gemstone setting. Learners credited with this qualification are able to set diamond and gemstones utilising advanced jewellery technology.

The ability of the industry to develop its potential in the beneficiation of raw materials is dependent upon the development of these skills to provide the platform for expansion and to have a base of skilled workers for further development. The Jewellery Manufacturing Industry relies on competent jewellery designers and manufacturers, who in turn rely on the expertise of competent setters.

Learners credited with this qualification are able to:

- Communicate and solve problems within a jewellery-setting environment.
- Prepare materials for the incorporation of gemstones into jewellery.
- Comply with workplace practices regarding Occupational Health and Safety.
- Set diamonds and gemstones jewellery using various setting processes and techniques.

**Rationale:**

Jewellery designers, manufacturers and setters work closely together to create, produce and market jewellery. For this reason, the South African Jewellery Manufacturing Industry has identified Jewellery Setting as a critical skill. Rapid technological development has necessitated the need for high-level skilled jewellery designers in South Africa.

As 80% of commercial jewellery in South Africa is imported there are great opportunities for the Jewellery Manufacturing Industry in South Africa to design and manufacture jewellery for the South African market and abroad. The competitive jewellery market requires products that follow and set fashion trends, are of a high quality and are well marketed.

Currently there is a shortage of well-rounded jewellery setters that can meet the industry needs and grow the South African jewellery market. This qualification will produce more skilled setters who, in conjunction with jewellery designers and manufacturers, will contribute to developing the South African jewellery market by producing quality products which can compete locally and in the global market.

This qualification will increase the technical proficiency and size of the workforce; which would then enable industry to satisfy the local demands for jewellery without having to rely on imports, thereby decreasing the importation of cheap jewellery which is a threat to the Industry.

The majority of the learners entering this qualification are likely to be working in the jewellery industry as diamond and gemstone designers or jewellery manufacturing operators. The benefits of achieving a recognised qualification may also draw those already working as Jewellery setters formally or informally and who will benefit from the opportunities of assessment and subsequent recognition presented by RPL (Recognition of Prior Learning).

In some cases learners may come from other industries, however they would have to become familiar with the basic operations associated with Jewellery setting before they can proceed with this qualification.

A typical learning pathway for learners with this qualification would be the GETC: Mining and Minerals Processes (Jewellery stream), National Certificate: Jewellery Manufacture in a Production Environment (NQF level 3), Learning programmes in Indigenous Jewellery Manufacture, Cast Jewellery, String Beads and Pearls and Hand Made Chains. Learners who have achieved this qualification can progress onto the National certificate: Jewellery Production Management.

Qualifying learners will be appointed as diamond and gemstone setters working in conjunction with jewellery designers and manufacturers under the guidance of an experienced mentor. This qualification provides the learner with the knowledge and skills in diamond and gemstone setting and the techniques necessary for the setting of stones in jewellery. The elective unit standards provide the learner with knowledge in jewellery design and jewellery manufacture, which could provide a basis for further specialisation in those areas.

Diamond and gemstone setting is based on information from the Goldsmith in terms of the design specifications. The setter will guide the Goldsmith in terms of the combination of stones and setting lay out. This qualification will provide learners with the knowledge and skills necessary for diamond and gemstone setting.

#### **RECOGNIZE PREVIOUS LEARNING?**

Y

#### **LEARNING ASSUMED TO BE IN PLACE**

Communication and Mathematical Literacy at NQF Level 3.

Recognition of Prior Learning:

This qualification can be achieved wholly or in part through recognition of prior learning in terms of the criteria laid out.

Evidence can be presented in a variety of forms, including international or previous local qualifications, reports, testimonials mentioning functions performed, work records, portfolios, videos of practice and performance records.

Access to the qualification:

Access is open; however it is preferable that learners have completed the GETC: Mining and Minerals Processes (Jewellery stream) and the National Certificate: Jewellery Manufacture in a Production Environment (Level 3).

### **QUALIFICATION RULES**

Fundamental:

- All 56 credits must be achieved.

Core:

- o All 80 credits must be achieved.

Electives:

- o 10 credits may be selected from the list of Elective unit standards to make up a minimum of 146 credits for the qualification.

### **EXIT LEVEL OUTCOMES**

1. Communicate and solve problems regarding the setting of diamonds and gemstones.
2. Adhere to Occupational Health and Safety standards in the workplace.
3. Prepare materials for the incorporation of gemstones into jewellery.
4. Set diamonds and gemstones into jewellery using various setting processes and techniques.

Consistency of Exit Level Outcomes with Critical Cross-Field Outcomes:

In accordance with SAQA guidelines, all unit standards include the assessment of relevant Critical Cross-Field Outcomes. Consequently, Exit Level Outcomes are consistent with Critical Cross-Field Outcome requirements.

The following CCFO's have been addressed in this qualification as per the unit standards outlined:

- o Identifying and solving problems in which responses display that responsible decisions using critical thinking have been made.
  - o Evident in Exit Level Outcomes: 1, 2, 3, 4.
- Working effectively with others as a member of a team, group, organization and community.
  - o Evident in Exit Level Outcomes: 1, 2, 3, 4.
- Organising and managing oneself and one's activities responsibly and effectively.
  - o Evident in Exit Level Outcomes: 1, 2, 3.
- o Collecting, analysing, organizing and critically evaluating information.
  - o Evident in Exit Level Outcomes: 1, 2, 3.
- o Communicating effectively using visual, mathematical and/or language skills.
  - o Evident in Exit Level Outcomes: 1, 3, 4.
- Using science and technology effectively and critically, showing responsibility toward the environment and health of others.
  - o Evident in Exit Level Outcomes: 3, 4.

- o Demonstrating an understanding of the world as a set of related systems by recognizing that problem contexts do not exist in isolation.
- o Evident in Exit Level Outcomes: 3, 4.

### **ASSOCIATED ASSESSMENT CRITERIA**

1:

- Oral communication skills is maintained and adapted as required to promote effective interaction in the setting of diamonds and gemstones.
- o Written communication is conducted at an appropriate level for designated target: audiences.
- o Mathematical principles and techniques needed to measure dimensions of the stone/s for the layout of the setting area are explained and applied in accordance with specified requirements.

2:

- o Workplace Occupational Health and Safety requirements are adhered to at all times as per workplace requirements.
- o Hazardous conditions are identified and reported in accordance with specified requirements.

3:

- Tools, materials and equipment are selected in accordance with the job specifications.
- Gemstones and diamonds are measured and prepared for use in accordance with the job specifications.
- The layout of the stones is calculated according to the job specifications.

4:

- o The process of setting diamonds and gemstones into jewellery is explained in accordance with specified requirements.
- o Diamonds and gemstones are set using setting techniques in accordance with the specified requirements.
- o Tools and equipment are used to incorporate diamonds and gemstones in the setting process in accordance with manufacturer's specifications.

Integrated assessment:

Integrated assessment at the level of the qualification provides an opportunity for learners to show they are able to integrate concepts, actions and ideas achieved across a range of unit standards and contexts.

Integrated assessment must evaluate the quality of observable performance as well as the thinking behind the performance, and must be based on a summative assessment guide. The guide will spell out how the assessor will assess different aspects of the performance and will include:

- Observing the learner while setting gemstones into jewellery items: (This includes manufacturing, interaction with clients, colleagues and management).
- Asking questions regarding the processes underlying a wide range of activities such as:
  - o Jewellery manufacture.
  - o Gem setting.
  - o Design.
  - o Gemmology.
- o And initiating short discussions to test understanding of:
  - o House keeping.
  - o Productivity.

- Looking at the objects and artefacts that were set, or photos in lieu thereof, records such as employment history and references, progress reports and statement of competency, other evidence in the portfolio and reviewing previous assessments.

In some cases inference will be necessary to determine competence depending on the nature and context within which performance takes place, particularly when looking at the set items of jewellery to see whether the requirements have been met.

The setting of the jewellery entails:

- Applied numeracy:
  - Measuring the dimensions of the stone/s for the layout of the setting area.
  - Set gemstones to specified requirements.
- Applied communication:
  - Liaising with the clients and key people in the production process.
- Problem solving:
  - Combining setting techniques, materials and processes to produce innovative variations of jewellery.
  - Produce standard forms of jewellery settings using unique and innovative processes, techniques and tools.
  - Troubleshooting.
  - Improving productivity.

It is necessary to ensure that the fundamental part of the qualification is also targeted to ensure that while the competence may have been achieved in a particular context, learners are able to apply it in a range of other contexts and for further learning. The assessment should also ensure that all the critical cross-field outcomes have been achieved.

The learner may choose in which language s/he wants to be assessed. This should be established as part of a process of preparing the learner for assessment and familiarising the learner with the approach being taken.

While this is primarily a workplace-based qualification, evidence from other areas of endeavour may be introduced if pertinent to any of the exit-level outcomes. The assessment process should cover both the explicit tasks required for the qualification as well as the understanding of the concepts and principles that underpin the activities associated with the setting process.

### **INTERNATIONAL COMPARABILITY**

A search was conducted for possible courses and/or qualifications existing in countries that are considered world leaders in jewellery design, setting and manufacture.

The structures found in other countries do not necessarily match the South African design of separate qualifications for design, manufacturing and setting respectively.

Courses and qualifications were analysed from a number of countries:

- America (one of the strongest economies in the world and a recognised producer of jewellery).
- India (a growing economy which will soon be one of the strongest in the world, and widely recognised for the proficiency of the jewellery industry).
- Hong Kong (a strong economy which is strongly export oriented).
- Thailand (well renowned for its jewellery industry).

International skills programmes, qualifications and other training interventions were investigated to ensure that the proposed FETC qualification structure and unit standards are comparable in terms of level, scope of qualification and competencies covered. The qualifications and/or

programmes were selected based on proven best practice within the field of the Jewellery industry, covering design, manufacturing and setting operations.

America: (<http://www.jewelrystschool.net/stonesetting.htm>),  
(<http://www.grstrainingcenter.com/descriptionshtml#advanced>)

- Stone Setting:

Introduction to stone setting:

- General explanation of techniques for diamond setting. Caution exercised with different shapes of stones.

Preparation of tools:

- The use of burs and stone setting tools will be shown and explained. Learn to select the proper size and type of bur for each individual project.

Round and Oval stones:

- Pin point setting.
- Tiffany setting.
- 4 square prong setting.
- 4 prong cast solitaire setting.
- 4 prong studs.
- 4 prong oval setting.
- 7 stone cluster setting.

Fancy cut stones, stones with points:

- Stones with pointed tips explained to the student and special tools will be introduced to minimize and avoid breakage of stones.

Emerald, Marquise, Pear, Trillion and Princess cut stones:

- Emerald cut stone in four round prongs.
- Emerald cut stone in four flat prongs.
- Marquise stone in four prongs.
- Marquise stone in two "V" end prongs.
- Pear stone in three and five prongs including a "V" end prong.
- Trillion and Princess cut settings.

Projects: Round, Princess and Baguette stones:

- Channel and prong combination setting of round stones.
- Channel row setting of round stones.
- Channel Baguette setting.

Projects: Burnishing tools explained:

- Bezel setting.
- Gypsy setting.
- Burnished setting with multiple stones.

Pave:

- o Preparation of tools for bead setting.
- o Sharpening of gravers will be demonstrated.
- o The importance of design and layout will be explained to the student.

Projects: Round stones:

- o Block bright cut setting.
- o Bead setting.
- o Pave setting.

This is a one-week course offered by the American School of Jewellery. The course covers similar competencies covered in this FETC, however no judgement could be made on the level but it seems to be at a lower level.

o Advanced Stone Setting:

Course Objective:

o Many of the innovative techniques revealed in this hands-on workshop can dramatically improve craftsmanship and reduce breakage of fragile gemstones such as tanzanite, emeralds and opals. Jewellers with intermediate stone setting experience are amazed at how fast they learn in this truly extraordinary class. The advanced stone setter will be impressed with the wealth of new concepts taught in this comprehensive course.

Learning Objectives:

- o Introduce the tools used during the course.
- o Flush and prong setting techniques for diamond, round and coloured stones.
- o Prong setting fancies: Princess cut, Marquis cut, Pear cut, Emerald cut and Baguette cuts.
- o Channel setting: Rounds, Princess cut and Inlaid channel.
- o Bezel setting ovals.
- o Invisible Settings: Grooved Princess cuts.
- o Bead Setting and Pave: Bead and Bright cut, Thread Setting, Pave and Advanced Pave.
- o Creating the 10 stone Pave cluster.
- o Flush setting.
- o Gypsy setting cabochons.
- o Tool making and graver sharpening.
- o Final individual projects.

The FETC Jewellery Setting Technologies matches closely in terms of purpose, outcomes and entry level with the Advanced Stone setting course. Favourable comparisons were found in terms of the outcomes for Bead setting and Pave, prong-setting fancies, channel setting and flush and prong setting techniques.

Outcomes or competencies identified in are generally quite comparable to this South African qualification in terms of levels and range of competencies covered. Both provide a firm foundation for setters.

Hong Kong:

([http://www.vtc.edu.hk/prospectus/eng/search.php?action\\_type=search&search\\_type=title&course\\_title=stone+setting](http://www.vtc.edu.hk/prospectus/eng/search.php?action_type=search&search_type=title&course_title=stone+setting))

o Certificate in Precious Stone Setting:

This is a part time course offered by the Jewellery Industry Training Centre. No course information was available, therefore no judgement could be made on level, scope and outcomes.



United Kingdom: (<http://www.londonmet.ac.uk/index.cfm?5E62DCEB-0F0E-9BD4-B8E0-507ECD64C087>)

- Introduction to Stone Setting offered by the London Metropolitan University:

This is a five-week course is designed for students with some experience at the bench who are interested in including stones in their work. The programme covers both setting cabochon and faceted stones as well as mount making in preparation for a setter.

Thailand - Gemmological Institute of America (GIA) Thailand: (<http://w.giathailand.com/>), ([http://www.gia.edu/education/31732/jewelry\\_manufacturing\\_arts\\_program\\_descriptions.cfm](http://www.gia.edu/education/31732/jewelry_manufacturing_arts_program_descriptions.cfm))

- Graduate Jeweller Diploma:

The curriculum covers:

- Work with metals including how to melt, pour, roll, form, and solder.
- Learn how to file, pierce, and polish metal.
- Learn to perform the most common repair requests, including sizing rings, repairing chains, replacing earring posts, and resetting stones.
- Use laser welding technology to manufacture or repair jewellery - and reduce your production time.
- Learn the basics of working with gemstones.
- Learn how to set stones by working with a variety of mounting styles, settings, and fancy shape stones.

Similar competencies were found that match closely with the outcomes of many of the unit standards covered in this FETC.

India: (<http://www.jdtiindia.com/jdti106.htm>)

- Certificate Programme in Stone Setting offered by the Jewellery Design and Technology Institute:

Programme outline:

- Introduction to fundamental stone-setting tools including Gravers and Burs.
- Claw and Bezel Setting.
- Pave and Channel Setting.
- Flush and Tension Setting.
- Setting Fancy shape stones.

Here again, the content covered in this programme is very similar to the outcomes and competencies within this FETC, however the two are different in terms of structure.

- ART and Design Institute offer a course in Jewellery Manufacturing Part I:

- Properties of metals, alloys, terminologies in manufacturing.
- **Tools** used in Jewellery manufacturing, utility & limitations of important tools.
- Cutting and bending, pattern and texture, fusing and soldering, cold joining, finishing, patinas, stone setting, mechanism & chains.

This course covers stone setting and similar competencies that are covered in the elective unit standards of this FETC.

Summary:

The FETC Jewellery Setting Technology compares favourably with the relevant components of a wide selection of international qualifications, programmes, courses identified above. Where outcomes or competencies were identified within the international qualifications, programmes or courses, they are generally quite comparable to the South African qualification in terms of competencies covered.

It is believed that this qualification will render a useful contribution to developing competent jewellery setters who can help the South African jewellery industry become globally competitive.

### **ARTICULATION OPTIONS**

This qualification allows for both vertical and horizontal articulation.

Vertical articulation exists with:

- National Certificate: Jewellery Production Management, NQF Level 5 (a relevant qualification is still in the design phase).

Horizontal articulation exists with:

- 57876: Further Education and Training Certificate: Jewellery Manufacturing Operations, NQF Level 4.
- 57875: Further Education and Training Certificate: Jewellery Designing, NQF Level 4.

### **MODERATION OPTIONS**

- Anyone assessing a learner or moderating the assessment of a learner against the qualification must be registered as an assessor with the relevant Education, Training, Quality, Assurance (ETQA) Body, or with an ETQA that has a Memorandum of Understanding with the relevant **ETQA**.
- Any institution offering learning that will enable the achievement of this qualification must be accredited as a provider with the relevant Education, Training, Quality, Assurance (ETQA) Body, or with an ETQA that has a Memorandum of Understanding with the relevant ETQA.
- Assessment and moderation of assessment will be overseen by the relevant Education, Training, Quality, Assurance (ETQA) Body, or by an ETQA that has a Memorandum of Understanding with the relevant ETQA, according to the ETQA's policies and guidelines for assessment and moderation.
- Moderation must include both internal and external moderation of assessments, unless **ETQA** policies specify otherwise. Moderation should also encompass achievement of the competence described in the associated unit standards.
- Anyone wishing to be assessed against this qualification may apply to be assessed by any assessment agency, assessor or provider institution that is accredited by the relevant ETQA.

### **CRITERIA FOR THE REGISTRATION OF ASSESSORS**

Assessors should be in possession of:

- An appropriate qualification at NQF Level 5 or higher, and preferably relevant workplace practical experience.
- Registration as an assessor with the relevant ETQA.

### **NOTES**

N/A

### **UNIT STANDARDS**

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Core	9638	Set stones in multiple claw or wire settings	Level 4	15
Core	9642	Set faceted stones in multiple tube settings	Level 4	15
Core	9644	Tension set a single faceted stone	Level 4	2
Core	9643	Set faceted stones in channel settings	Level 4	18
Core	9645	Flush-set faceted stones	Level 4	15
Core	243001	Pave- and star-set faceted stones	Level 4	15
Elective	243000	Manufacture jewellery	Level 3	7
Elective	243002	Use a 3D computer programme as a design- tool to produce drawings to specifications	Level 4	12
Elective	243006	Grade a gemstone	Level 4	8
Elective	243004	Mass produce jewellery using lost wax casting techniques	Level 4	20
Elective	243003	Manufacture and repair complicated jewellery	Level 4	23
Elective	15268	Forge metal to manufacture jewellery	Level 4	21
Elective	15264	Make and use repousse and chasing punches	Level 3	20
Elective	243008	Identify a gemstone	Level 4	10
Elective	243005	Describe and understand metallurgical principles for jewellery manufacture	Level 4	12
Elective	243007	Demonstrate an understanding of the historical developments of jewellery	Level 4	12
Elective	9647	Draw and design jewellery	Level 3	15
Elective	9648	Manufacture jewellery for single faceted stone settings	Level 3	21
Fundamental	119462	Engage in sustained oral/signed communication and evaluate spoken/signed texts	Level 4	5
Fundamental	119469	Read/view, analyse and respond to a variety of texts	Level 4	5
Fundamental	119471	Use language and communication in occupational learning programmes	Level 4	5
Fundamental	119459	Write/present/sign for a wide range of contexts	Level 4	5
Fundamental	119472	Accommodate audience and context needs in oral/signed communication	Level 3	5
Fundamental	119457	Interpret and use information from texts	Level 3	5
Fundamental	119465	Write/present/sign texts for a range of communicative contexts	Level 3	5
Fundamental	119467	Use language and communication in occupational learning programmes	Level 3	5
Fundamental	9015	Apply knowledge of statistics and probability to critically interrogate and effectively communicate findings on life related problems	Level 4	6
Fundamental	7468	Use mathematics to investigate and monitor the financial aspects of personal, business, national and international issues	Level 4	6
Fundamental	9016	Represent analyse and calculate shape and motion in 2- and 3-dimensional space in different contexts	Level 4	4