



Higher National Unit specification

General information

Unit title: Jewellery: Lost Wax Casting: An Introduction
(SCQF level 7)

Unit code: H6DS 34

Superclass: JH

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Version: 02

Unit purpose

This Unit is designed to enable learners to produce wax models suitable for casting in precious metal. Learners should be able to use a variety of waxes, produce designs for the casting process, prepare the wax models for casting and fabricate finished pieces of jewellery from the metal casting.

Outcomes

On successful completion of the Unit the learner will be able to:

- 1 Describe the Lost Wax Casting Process.
- 2 Produce wax models suitable for casting.
- 3 Prepare models for casting.
- 4 Produce finished pieces of jewellery.

Credit points and level

2 Higher National Unit credits at SCQF level 7: (16 SCQF credit points at SCQF level 7)

Recommended entry to the Unit

Access to this Unit is at the discretion of the centre. However, it would be beneficial if learners had an understanding of basic jewellery skills and the design process. This could have been gained through the completion of a programme in jewellery or similar qualifications or experience at SCQF level 6.

Higher National Unit Specification: General information (cont)

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Core Skills

Achievement of this Unit gives automatic certification of the following:

Complete Core Skills	None
Core Skill component(s)	Critical Thinking at SCQF level 6

There are also opportunities to develop aspects of Core Skills which are highlighted in the Support Notes of this Unit Specification.

Context for delivery

If this Unit is delivered as part of a Group Award, it is recommended that it should be taught and assessed within the subject area of the Group Award to which it contributes.

This Unit is delivered as part of the Group Award HND Jewellery.

Equality and inclusion

This Unit specification has been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners should be taken into account when planning learning experiences, selecting assessment methods or considering alternative evidence.

Further advice can be found on our website www.sqa.org.uk/assessmentarrangements.

Higher National Unit specification: Statement of standards

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Acceptable performance in this Unit will be the satisfactory achievement of the standards set out in this part of the Unit specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

Where evidence for Outcomes is assessed on a sample basis, the whole of the content listed in the Knowledge and/or Skills section must be taught and available for assessment. Learners should not know in advance the items on which they will be assessed and different items should be sampled on each assessment occasion.

Outcome 1

Describe the Lost Wax Casting Process.

Knowledge and/or Skills

- ◆ Master Pattern Making
- ◆ Vulcanised Mould Preparation
- ◆ Wax Injection
- ◆ Tree preparation
- ◆ Investment
- ◆ Burnout
- ◆ Metal Casting
- ◆ Finishing

Outcome 2

Produce wax models suitable for casting.

Knowledge and/or Skills

- ◆ Hand carved wax models.
- ◆ Injected wax models.
- ◆ Weight calculation
- ◆ Shrinkage
- ◆ Cost

Outcome 3

Prepare models for casting.

Knowledge and/or Skills

- ◆ Sprue
- ◆ Investment processes
- ◆ Investment equipment
- ◆ Metal preparation

Higher National Unit specification: Statement of standards (cont)

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Outcome 4

Produce finished pieces of jewellery.

Knowledge and/or Skills

- ◆ Tools
- ◆ Techniques
- ◆ Finishing

Evidence Requirements for this Unit

Learners will need to provide evidence to demonstrate their Knowledge and/or Skills across all Outcomes by showing that they can:

Produce a report to demonstrate the knowledge and skills in **Outcome 1**, the report should include:

- ◆ important factors which must be taken into account when designing and constructing a master pattern suitable for the production of repeat castings.
- ◆ procedures for the production of standard vulcanised rubber moulds and RTV moulds and state the advantages of each material.
- ◆ procedures for the production of repeat wax models from a suitable rubber mould.
- ◆ important factors which must be considered when preparing a tree prior to investment and describe how one may calculate the required metal weights and costs.
- ◆ the burnout cycle and the importance of incremental stages and final casting temperature.
- ◆ metal casting procedure with reference to centrifugal and vacuum assist methods and with reference to the benefits of each method.
- ◆ procedures for production finishing of cast items.

Product Evidence is required to demonstrate the learners' knowledge and skills for **Outcomes 2, 3 and 4**

Learners will need show that they can:

Outcome 2

- ◆ produce five designs suitable for carving in wax and converting into items of jewellery.
- ◆ produce two hand carved wax patterns (one for a small item of jewellery and one for a large item of jewellery).
- ◆ use a wax injector to produce repeat wax patterns from prepared rubber moulds.

Learners must consider the effect of metal shrinkage and remedy where appropriate. Learners must also estimate the equivalent metal weight of each wax carving and calculate the metal cost in a variety of precious metals.

Higher National Unit specification: Statement of standards (cont)

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Outcome 3

Prepare two wax models (One model must be for a small item of jewellery and one for a large item of jewellery) for casting by:

- ◆ attaching the sprue correctly.
- ◆ investing the models. This must include accurate weighing of plaster and water, mixing the plaster correctly, using vacuum equipment to remove air, filling the flask and vacuum.
- ◆ preparing the metal according to the type and form of metal used.

Outcome 4

Produce two items of jewellery (one piece must be a small item of jewellery and one a large item of jewellery) from the castings produced in Outcome 3. Learners must:

- ◆ use tools and techniques to complete the items of jewellery. The tools and techniques must be appropriate to the items of jewellery being produced.
- ◆ use finishing techniques appropriate to the design of the items of jewellery.



Higher National Unit Support Notes

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Unit Support Notes are offered as guidance and are not mandatory.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 80 hours.

Guidance on the content and context for this Unit

This Unit has been developed as an introduction to the process of lost wax casting. The Unit enables learners to produce designs suitable for lost wax casting; fabricate wax models from a variety of waxes; prepare the models for casting; and produce finished pieces of jewellery from those castings.

Guidance on approaches to delivery of this Unit

This Unit has been developed as part of the HNC Jewellery. It is recommended that it should be taught and assessed within the subject area of the Group Award to which it contributes.

Opportunities may be taken to link or integrate with other aspects of the course and a thematic approach adopted for both delivery and assessment.

The content of the Unit should enable learners to achieve the level of competence of someone who would be expected to design and make a piece of jewellery using the techniques and processes involved in lost wax casting. Learners should explore different ideas in response to a design brief set by the tutor. Final ideas should be selected from a number of roughs, and these ideas developed into a finished presentation drawing of the proposed piece.

Different materials in this Unit could include, for example, dental wax, carving wax, modelling wax, plaster, silver. Design materials such as pencils, pens, and paint could be used and the kind of techniques shown could include drawing, designing, carving, modelling, investing in plaster and fabricating the finished pieces.

A workshop fully equipped with all necessary machines, including kiln vacuum pump, vacuum chamber, centrifugal casting machine, and melting equipment, as well as an adequate supply of wax and wax working tools should be available for each learner. Previous examples of jewellery made by the lost wax method should be available.

Ongoing discussion and tutorials could be used to give learners the chance to verbally justify explain the development of their work in preparation for assessment.

Higher National Unit Support Notes (cont)

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A learner based project with a concise design brief is recommended. Learners could be asked to generate evidence using a logbook detailing all techniques and processes. This could include any sketches, preliminary drawings and notes. Learners will also have to produce wax models, castings and completed pieces of cast jewellery.

Guidance on approaches to assessment of this Unit

Evidence can be generated using different types of assessment. The following are suggestions only. There may be other methods that would be more suitable to learners.

Centres are reminded that prior verification of centre-devised assessments would help to ensure that the national standard is being met. Where learners experience a range of assessment methods, this helps them to develop different skills that should be transferable to work or further and higher education.

Outcome 1 — assessment of this Outcome should be in the form of a report which covers all areas outlined in the knowledge and skills.

Outcome 2 — product evidence in the form of a sketchbook with five suitable designs, two completed wax carvings and a selection of successfully injected wax models.

Outcome 3 — product evidence in the form of successfully cast objects complete with a log book noting all requirements from the knowledge and skills.

Outcome 4 — product evidence in the form of completed jewellery objects.

Since the Component of Critical Thinking at SCQF Level 6 is embedded in this Unit, it is strongly recommended that you follow the assessment guidelines given. If you wish to use a different assessment model, you should seek prior verification of the assessment instrument(s) you intend to use to ensure that the Core Skill is still covered.

Opportunities for e-assessment

E-assessment may be appropriate for some assessments in this Unit. By e-assessment we mean assessment which is supported by Information and Communication Technology (ICT), such as e-testing or the use of e-portfolios or social software. Centres which wish to use e-assessment must ensure that the national standard is applied to all learner evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. The most up-to-date guidance on the use of e-assessment to support SQA's qualifications is available at www.sqa.org.uk/e-assessment.

Higher National Unit Support Notes (cont)

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Opportunities for developing Core and other essential skills

This Unit has the Problem Solving component Critical Thinking embedded in it. This means that when the candidates achieve the Unit, their Core Skills profile will also be updated to show they have achieved Critical Thinking at SCQF level 6.

There are opportunities to develop the Core Skills of *Problem Solving*, *Working with Others* and the *Numeracy* component Using Number at SCQF level 5 in this Unit, although there is no automatic certification of Core Skills or Core Skills components.

Problem Solving may be developed throughout the Unit. Learners are required to consider designs and select two for further development, and they then have to evaluate the suitability of designs for casting and make appropriate adjustments. This will require Critical Thinking and Planning and Organising skills. Producing the castings and finished pieces of jewellery also involve learners in carrying out practical tasks.

Working with Others at SCQF level 5 may be developed as learners will have to work together to share resources and equipment and negotiate with class members and technicians on equipment use.

The component Using Number of the Core Skill of *Numeracy* may be developed at SCQF level 5, during activities in this Unit. In Outcome 2, learners are required to calculate weight, cost and shrinkage for each wax model. In Outcome 3, learners are required to weigh plaster.

History of changes to Unit

Version	Description of change	Date
02	Core Skills Component Critical Thinking at SCQF level 6 embedded.	31/03/14

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General information for learners

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This section will help you decide whether this is the Unit for you by explaining what the Unit is about, what you should know or be able to do before you start, what you will need to do during the Unit and opportunities for further learning and employment.

In this Unit you will learn how to design and produce wax models suitable for casting using different types of wax; how to prepare these models for casting; and how to fabricate finished pieces of jewellery from the metal castings.

You will work with different materials for example, dental wax, carving wax, modelling wax, plaster, silver. You will also work with design materials such as pencils, pens, and paint.

The kind of techniques you will be shown will include drawing, designing, carving, modelling, investing in plaster and fabricating the finished pieces.

The pieces of jewellery you produce will be developed from your own design source, as will the sample waxes. You will select and present some of these samples with your design work for your final assessment. You will be encouraged to keep a logbook describing the processes used with designs and technical notes on the casting process.

You will be assessed on the finished pieces of jewellery and you may also be required to keep logbook describing the process.

There are opportunities to develop the Core Skills of *Problem Solving*, *Working with Others* and the *Numeracy* component Using Number at SCQF level 5 in this Unit.