



Higher National Unit specification

General information for centres

Unit title: Glass Slumping: Advanced Techniques

Unit code: F1WW 35

Unit purpose: This Unit is designed to enable the candidate to develop the advanced skills and knowledge required for advanced slumping of glass and covers areas including firing temperatures, annealing temperatures, firing schedules and the types of moulds suitable for glass slumping. It is suitable for candidates studying glasswork and those working in the glasswork industry.

On completion of the Unit the candidate should be able to:

- 1 Research and develop styles and designs for glass slumping.
- 2 Calculate firing schedules for kiln programming.
- 3 Make moulds for the purpose of glass slumping.
- 4 Produce advanced slumped glass artefacts.

Credit points and level: 2 HN credits at SCQF level 8: (16 SCQF credit points at SCQF level 8*)

**SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates.*

Recommended prior knowledge and skills: While entry to this Unit will be at the discretion of the centre, it is recommended that candidates have previously achieved Higher National Units which involve glass fusing at SCQF level 7 such as F1WV 34 *Glass Slumping: An Introduction* or the equivalent.

Core Skills: There are opportunities to develop the Core Skills of Problem Solving and Numeracy at SCQF level 6 in this Unit, although there is no automatic certification of Core Skills or Core Skills components.

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.

Assessment: This Unit will be assessed through practical activities with accompanying written firing schedules. Candidates will also require to produce evidence of research and development of designs. The practical activities involve the candidate producing glass artefacts without gaseous bubbles or devitrification type marks to a minimum glass thickness of 6 mm. Health and safety procedures must be adhered to throughout.

Higher National Unit specification: statement of standards

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The sections of the Unit stating the Outcomes, Knowledge and/or Skills, and Evidence Requirements are mandatory.

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. Candidates 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

Research and develop styles and designs for glass slumping

Knowledge and/or Skills

- ◆ Research skills
- ◆ Techniques and materials
- ◆ Styles and designs created by slumping
- ◆ Experimental techniques
- ◆ Production methods
- ◆ Problem solving
- ◆ Health and safety

Evidence Requirements

Candidates will need to provide evidence to demonstrate their advanced Knowledge and Skills by showing that they can:

- ◆ research designs, styles, materials and techniques for advanced glass slumping. This evidence should include visual evidence of a minimum of 10 different designs with accompanying annotated notes which clearly state sources of reference, materials and techniques used as well as technical information on production methods
- ◆ produce a sketch book showing development of designs
- ◆ produce a minimum of ten sketches of designs and select and develop at least three of these designs into working drawings
- ◆ produce a minimum of two samples relating to each of the selected designs for development. Each sample should show experimentation and should be retained. Samples should be of sufficient size so that experimental techniques used can be clearly identified and evaluated
- ◆ maintain annotated notes of the processes, materials and techniques involved

Assessment Guidelines

This Outcome could be linked to the practical task of Outcomes 2, 3 and 4 and could be in the form of a research report accompanied by sketch book or could be a portfolio which contains evidence of research, design development and visuals of experimental techniques.

Higher National Unit specification: statement of standards (cont)

Unit title: Glass Slumping: Advanced Techniques

Outcome 2

Calculate firing schedules for kiln programming

Knowledge and/or Skills

- ◆ Slumping temperatures
- ◆ Annealing temperatures
- ◆ Calculation of surface areas
- ◆ Calculation of firing schedules
- ◆ Kiln programming
- ◆ Types of glass
- ◆ Coefficient of Expansion (COE)

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and Skills by showing that they can accurately calculate firing schedules for at least three slumped glass artefacts for kiln programming. Each calculation should be within a range of 10 degrees above or below the manufacturer's recommendations for the types of glass used for slumping. The firing schedules must clearly show the correct temperatures; soak times within a range of 5 minutes above or below the manufacturer's recommendations and correct annealing temperatures within a range of 10 degrees above or below the manufacturer's recommendations for the area of glass and the types of glass used.

Assessment Guidelines

This Outcome could be linked to the designs developed in Outcome 1 and the practical task of Outcomes 3 and 4 and may be completed on pre-printed forms or in a format devised by the candidate.

Outcome 3

Make moulds for the purpose of glass slumping

Knowledge and/or Skills

- ◆ Drape moulds
- ◆ Slump moulds
- ◆ Drop out moulds
- ◆ Mould materials
- ◆ Mould production techniques
- ◆ Mould design
- ◆ Designing and sketching techniques
- ◆ Design development
- ◆ Health and safety procedures

Higher National Unit specification: statement of standards (cont)

Unit title: Glass Slumping: Advanced Techniques

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and Skills by showing that they can select mould materials suitable for glass slumping, draping and drop outs. Candidates will also need to provide evidence of the manufacture of three moulds of their own design, one for draping, one for slumping and one for a drop out, using a different mould material for each one. All moulds produced must withstand the firing process without breaking or shrinking and must be free from undercuts.

Health and safety procedures must be followed throughout which will include the wearing of Personal Protective Equipment at all times and working in a safe manner without risk to themselves or others. Candidate performance of practical activities and following health and safety precautions should be recorded in an observation schedule which should be completed by the tutor.

Technical notes on moulds, materials and techniques should be made about each artefact produced.

Assessment Guidelines

This Outcome could be jointly assessed with Outcome 1, 2 and 4. Candidates could add to the information recorded in their portfolio of design development and accompanying technical notes. See also Assessment guidelines after Outcome 4.

Outcome 4

Produce advanced slumped glass artefacts

Knowledge and/or Skills

- ◆ Minimum thickness of glass
- ◆ Types of glass
- ◆ Kiln programming
- ◆ Health and safety procedures

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and Skills by showing that they can produce six glass artefacts each to a minimum thickness of 6 mm in a minimum of three types of glass using three different moulds. Each artefact should be without gaseous bubbles or devitrification type marks.

The candidate must demonstrate their ability to work in a manner which conforms to the health and safety requirements of the workshop which will include the wearing of Personal Protective Equipment at all times and working in a safe manner without risk to themselves or others.

Higher National Unit specification: statement of standards (cont)

Unit title: Glass Slumping: Advanced Techniques

Assessment Guidelines

The candidate's work could be assessed holistically by producing three glass artefacts using the three chosen moulds designed and developed in Outcomes 1, 2 and 3. As part of the process of production, the candidate should maintain a record of the development of design ideas and calculations of firing schedules which could be completed on pre-printed pro formas. The candidate should calculate the surface area of the glass used. In addition the candidate should be encouraged to produce a log book of processes used. The candidate should fire a kiln successfully to achieve the desired end result.

Administrative Information

Unit code: F1WW 35

Unit title: Glass Slumping: Advanced Techniques

Superclass category: WF

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Higher National Unit specification: support notes

Unit title: Glass Slumping: Advanced Techniques

This part of the Unit specification is offered as guidance. The support notes 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 is a mandatory Unit in the HND Art Glass Production Group Award framework.

The kind of mould materials which should be used would include: ceramic moulds, fibre moulds, fibre board, clay, vermiculite or stainless steel although candidates should also be encouraged to experiment with other types of mould materials.

Candidates should be encouraged to access information about Health and Safety online to ensure that up to date legislation is being followed. They should also be encouraged to use innovative materials for mould making and to work with different types of glass to widen their skills in working with glass.

Guidance on the delivery and assessment of this Unit

Candidates should have all processes demonstrated by the tutor and should be given sufficient time to practise processes before assessment takes place. Additionally candidate design development skills should be encouraged by candidates being asked to design progressively more complex glass slumped items.

Outcome 1

Candidates will investigate styles and ideas and should record the development with the use of a sketch book showing a progressive development of styles and ideas. Experimental samples should be part of this process.

Outcome 2

Methods of calculating firing schedules should be introduced to the candidate by tutor demonstration and time should be allowed for thorough experimentation.

Outcome 3

Candidates should be guided by the tutor towards suitable mould materials for designs selected and exemplars may be useful at this stage. Candidates should be guided by the tutor on mould design. Candidate developments should show clear links to the finished design solution.

Outcome 4

Slumped glass artefacts using complex techniques should be demonstrated to the candidate by the tutor and the candidate should have the opportunity to practise techniques before producing complex artefacts of successful slumping, draping and drop outs. Candidate performance and following health and safety procedures should be recorded by the tutor on an observation schedule.

Higher National Unit specification: support notes (cont)

Unit title: Glass Slumping: Advanced Techniques

The Health and Safety at Work Act (HASWA) Control of Substances Hazardous to Health (COSHH) and Personal Protective Equipment (PPE) should be explained to the candidate by the tutor and should be back by notes.

Learning and teaching materials should be accessible and where applicable positively promote equality and cultural diversity.

Opportunities for developing Core Skills

The component Core Skill of Problem Solving will be developed throughout this Unit. Candidates will plan, organise and complete a task. They will do this during Outcomes 2 and 3 when they will produce complex glass artefacts which requires them to source suitable materials, collate them, develop concepts and produce a finished design solution and evaluate the processes and quality of the artefact at each stage of production. Additionally candidates will require to research information in Outcome 1 and to develop ideas for designs.

There are also opportunities to develop the Core Skill of Numeracy. Candidates will calculate firing schedules, work out the volume of glass required and mould materials required. Candidates will also require to read charts and apply the information to the artefacts being produced.

Open learning

This Unit is not suitable for Open Learning due to the equipment and workshop health and safety requirements inherent in the process.

For further information and advice, please refer to the SQA document *Assessment and Quality Assurance for Open and Distance Learning* (www.sqa.org.uk).

Candidates with disabilities and/or additional support needs

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering alternative Outcomes for Units. Further advice can be found in the SQA document *Guidance on Assessment Arrangements for Candidates with Disabilities and/or Additional Support Needs* (www.sqa.org.uk).

General information for candidates

Unit title: Glass Slumping: Advanced Techniques

This Unit is designed to give you the advanced skills and knowledge required for the slumping of glass. You will learn about and gain the abilities to slump, drape and drop out glass, calculate firing schedules, program kilns and select suitable materials and designs for moulds which may be used in the process of advanced slumping, draping and drop out glass.

Throughout the Unit, you will be required to pay due care and attention to any health and safety requirements relevant to the chosen process and this will be assessed in Outcomes 3 and 4.

For Outcome 1 you will research, investigate and develop designs and styles for slumped glass. You will record your research and development and your ideas for design.

In Outcome 2 you will learn about slumping temperatures, annealing temperatures and how to calculate firing schedules for advanced slumping. You will also learn how to calculate the surface area of glass, how to program a kiln. You will learn about the types of glass which can be used and the importance of Coefficient of Expansion (COE).

For Outcome 3 you will learn to design and make various moulds in different materials for the purpose of advanced glass slumping, draping and drop outs, which will each be assessed using practical projects. You will also learn the health and safety precautions related to mould materials.

For Outcome 4 you will produce six glass pieces using three moulds of your design and these will be assessed by practical projects. In addition, you will learn the health and safety procedures related to hot glass work.

In undertaking this Unit there may be opportunities for you to develop important Core Skills in the areas of Problem Solving and Numeracy.