



## Higher National Unit specification

### General information for centres

**Unit title:** Dental Alloy Techniques

**Unit code:** F1M5 34

**Unit purpose:** This Unit is about the theory and skills required to manipulate various dental alloys. The Unit introduces the candidate to a range of melting and casting systems, which will enable them to produce a number of cast restorations. They will also be able to demonstrate their knowledge of, and carry out a number of dental soldering and welding procedures.

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

- 1 Explain and demonstrate the techniques involved in the manipulation of dental alloys.
- 2 Explain and demonstrate soldering and welding techniques employed when joining dental alloys.

**Credit points and level:** 1 HN credit at SCQF level 7: (8 SCQF credit points at SCQF level 7\*)

*\*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:** Access to this Unit is at the discretion of the centre. It would be beneficial that candidates complete a locally devised programme of National Qualification Units in Dental Technology at SCQF level 6. Candidates could have completed a compulsory induction to dental technology course.

**Core Skills:** There are opportunities to develop the Core Skills of Communication to SCQF level 6, Numeracy at SCQF level 5 and Problem Solving to 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:** The assessment of this Unit could be carried out holistically using a single instrument of assessment or it could be broken down into two assessment events which assess Outcomes 1 and 2 separately. Each assessment could consist of 10 restricted response questions and last no longer than 30 minutes

If a holistic assessment approach is adopted the assessment event could consist of 20 short answer questions, lasting no longer than one hour. This assessment should be carried out at the end of the delivery of the Unit.

## **General information for centres (cont)**

The practical elements of Outcome 1 and 2 requires the candidate to produce three pieces of practical work displaying competent technical performance in the manipulation of dental materials and should be carried out in a dental laboratory setting.

## **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**

Explain and demonstrate the techniques involved in the manipulation of dental alloys

#### **Knowledge and/or Skills**

- ◆ Lost Wax Technique
- ◆ Melting systems for dental alloys
- ◆ Casting systems for dental alloys

#### **Evidence Requirements**

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

- ◆ explain the 'Lost Wax Technique'
- ◆ explain gas/air and induction melting systems used for melting dental alloys
- ◆ explain centrifugal and vacuum casting systems utilised in the casting of dental alloys
- ◆ demonstrate the production of the following to a given prescription:
  - complete upper cobalt chromium casting
  - full gold veneer crown using student's alloy

The practical element of this assessment should take place in a dental laboratory setting.

#### **Assessment Guidelines**

See Outcome 2.

## **Higher National Unit specification: statement of standards (cont)**

**Unit title:** Dental Alloy Techniques

### **Outcome 2**

Explain and demonstrate soldering and welding techniques employed when joining dental alloys

#### **Knowledge and/or Skills**

- ◆ Dental alloy soldering processes
- ◆ Dental alloy welding processes

#### **Evidence Requirements**

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

- ◆ explain free-hand and investment soldering utilised when joining dental alloys
- ◆ explain resistance and spot welding utilised when joining dental alloys
- ◆ demonstrate the production of an orthodontic removable appliance to a given prescription, incorporating one soldered joint and one welded joint

The practical element of this assessment should take place in a dental laboratory setting.

#### **Assessment Guidelines**

Outcomes 1 and 2 could be assessed in a holistic way. The assessment event could consist of 20 short answer questions, lasting no longer than one hour.

It would be possible, if desired, to break this assessment down into two separate assessment events which assess each Outcome separately. Where separate instruments of assessments are used they should take 30 minutes each.

The practical assessment for Outcome 1 and 2 requires the candidate to display competent technical performance in the manipulation of dental materials to given. The practical assessments will be carried out within a dental laboratory environment.

## Administrative Information

**Unit code:** F1M5 34  
**Unit title:** Dental Alloy Techniques  
**Superclass category:** PF  
**Original date of publication:** January 2008  
**Version:** 01

### History of changes:

Version	Description of change	Date

**Source:** SQA

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## **Higher National Unit specification: support notes**

### **Unit title: Dental Alloy 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 40 hours.

### **Guidance on the content and context for this Unit**

This purpose of this Unit is to allow candidates to develop knowledge and understanding of how the manipulation of various dental alloys influences the activities of the dental technician.

It is envisaged that the teaching of this Unit could be delivered through lecturer mediated discussion, practical demonstrations and the reading of recommended texts.

A list of topics for each Outcome is given below.

#### **Outcome 1**

In this Outcome candidates may become familiar with the procedure of producing dental castings in a variety of dental alloys.

Candidates may be able to define the term 'lost wax technique' and explain the process.

In this Outcome it is expected that the candidate may be able to identify the methods available to melt dental alloys.

Candidates could be able to describe the options available for casting to produce dental castings.

Candidates may construct one complete upper cobalt chromium casting and one full gold veneer crown using student's alloy using the lost wax technique.

#### **Outcome 2**

In this Outcome candidate may be able to explain the process of soldering dental alloys.

Candidates may be able to explain the purpose of and identify the properties of:

- ◆ Dental solders
- ◆ Soldering investments
- ◆ Dental fluxes

The candidate may be able to describe the possible causes of soldering failure as either:

- ◆ Failure to clean components
- ◆ Incorrect flux
- ◆ Space between components
- ◆ Poor solder flow
- ◆ Overheating

## **Higher National Unit specification: support notes (cont)**

### **Unit title:** Dental Alloy Techniques

In this Outcome the candidate may compare and contrast the common methods of welding in dentistry ie resistance welding and spot welding.

Candidates could demonstrate soldering and welding by producing a removable orthodontic appliance incorporating a soldering and welding exercise.

### **Guidance on the delivery and assessment of this Unit**

It is envisaged that the teaching of this Unit could be delivered through lecturer mediated discussion, practical demonstrations and the reading of recommended texts.

The assessment event could consist of 20 restricted response questions.

It would be possible, if desired, to break this assessment down into two separate assessment events which assess each Outcomes 1 and 2 separately. Where separate instruments of assessments are used they could consist of 10 restricted response questions and should take 30 minutes each.

The practical assessment for Outcomes 1 and 2 requires the candidate to display competent technical performance in the manipulation of dental materials to given. The practical assessments will be carried out within a dental laboratory.

### ***Opportunities for developing Core Skills***

In completing the class work of both Outcomes candidates may have the opportunity to develop the component 'Written Communication (reading)' of the Core Skill Communication at SCQF level 6. Candidates may have the opportunity to analyse and evaluate complex information from a variety of dental materials literature sources. The general Core Skill that the candidate may complete is "Read and understand complex written communication".

There are opportunities for the candidate to develop Oral Communication at SCQF level 6 in the assessment of this Unit. When candidates are involved in dental laboratory practical work they will an opportunity to develop the general skill 'Produce and respond to oral communication on a complex topic'. Candidates will have to convey essential information or ideas and respond to questions which ask them to expand on key dental technology concepts. Candidates will, also, have an opportunity to evaluate and present a substantial body of information on dental laboratory concepts.

There is also the opportunity for the candidate to develop the component 'Planning and Organising' of the Core Skill Problem Solving at SCQF level 5 while completing the practical work involved in both Outcomes. The candidate will need to identify the appropriate strategy and implement this strategy in the construction of cast cobalt chromium baseplate; full gold shell crown and removable orthodontic appliance. The general Core Skill that the candidate may have to complete is 'Plan, organise and complete a task'.

## **Higher National Unit specification: support notes (cont)**

### **Unit title: Dental Alloy Techniques**

The Core Skill of Numeracy: Using Graphical Information SCQF level 5 could also be developed within this Unit in particular in relation to the work within the laboratory. The general skill at SCQF level 5 is 'Interpret and communicate graphical information in everyday and generalised contexts'. Candidates can be encouraged to analyse and interpret information from suppliers data which has been presented in complex graphical form. This Core Skill could be developed without formal certification.

In Outcome 1 there is the opportunity for the candidate to further develop the component 'Critical Thinking' of the Core Skill Problem Solving at SCQF level 6. The candidate will be required to investigate the processes involved in the manipulation of dental alloys. The general Core Skill that the candidate may have to complete is 'Analyse a complex situation or issue'.

The assessment of this Unit may also contribute towards the component 'Written Communication (writing)' of the Core Skill Communication at SCQF level 6. Candidates may have to structure their responses, which could include complex vocabulary, accurately and using a logical structure. The general Core Skill that candidates may have to complete is 'Produce well-structured written communication on complex topics'.

### **Open learning**

This Unit could be delivered by distance learning, which may incorporate some degree of online support. With regard to assessment for Outcomes 1 and 2, planning would be required of the centre concerned to ensure the sufficiency and authenticity of the candidate evidence.

### **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](http://www.sqa.org.uk)).

## **General information for candidates**

### **Unit title: Dental Alloy Techniques**

This Unit has been designed to develop your knowledge, understanding, and practical skills in the manipulation of dental alloys. This will involve a demonstration of the lost wax technique, melting and casting dental alloys, and soldering and welding joins in dental alloys.

The Unit has two main areas, each the subject of a separate Outcome. To begin with you will be looking at the techniques for manipulating dental alloys ie lost wax technique, melting and casting. You will then examine the techniques involved in soldering and welding dental alloys. This is then followed by the construction of appliances incorporating all of the above techniques as per prescription.

On completion of this Unit you will be able to:

- ◆ explain and demonstrate the techniques involved in the manipulation of dental alloys
- ◆ explain and demonstrate soldering and welding techniques employed when joining dental alloys

The assessment Outcome 1 and 2 of this Unit may consist of a practical assessment in a dental laboratory and a series of restricted response questions. The practical assessment will require you to demonstrate your competence in the manipulation of dental materials to a given prescription.