



## Higher National Unit specification

### General information for centres

**Unit title:** Dental Fixed Prosthodontics: Bonded Restorations

**Unit code:** F1M8 34

**Unit purpose:** This Unit is about the theory and skills required to develop further knowledge and understanding of fixed restorations and the bonding of materials to dental alloys. The candidate will be given the opportunity to apply and extend previously developed skills in order to demonstrate competence in producing various ceramic bonded restorations. The candidate will be introduced to dental implants and precision attachments with consideration to their suitability for use.

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

- 1 Explain the construction and preparation of an underlying substructure, constructed to support porcelain.
- 2 Explain the mechanisms for bonding ceramics to dental alloys.
- 3 Demonstrate the planning and manufacture of bonded fixed prosthodontic restorations.

**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 the candidate would have completed National Qualifications Unit: D0K4 12 *Dental Casts* and the Higher National Units: F1M6 34 *Dental Biomaterials*, and F1M5 34 *Dental Alloy Techniques*. Candidates may have completed an induction to dental technology course.

**Core Skills:** There are opportunities to develop the Core Skill(s) of Communication: Written Communication at SCQF level 6, Numeracy: Using Number at SCQF level 5 and Problem Solving: Planning and Organising 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.

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

**Assessment:** Outcomes 1 and 2 could be assessed using separate short answer questions. This assessment should be carried out under controlled supervised conditions lasting no more than 45 minutes. Outcome 3 should be assessed in a dental technology laboratory.

It should be noted that candidates must produce all the minimum evidence specified for each Outcome in order to pass the Unit.

## **Higher National Unit specification: statement of standards**

**Unit title:** Dental Fixed Prosthodontics: Bonded Restorations

**Unit code:** F1M8 34

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 the construction and preparation of an underlying substructure, constructed to support porcelain

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

- ◆ Minimum porcelain thickness
- ◆ Substructure properties and materials
- ◆ Substructure construction
- ◆ Porcelain and substructure interface preparation

#### **Evidence Requirements**

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

- ◆ explain the procedure involved in the construction and preparation of a substructure used to support porcelain, detailing:
  - construction stages taking account of minimum porcelain thickness
  - properties including the ability to be micromechanically etched or roughened, unaffected by the temperatures reached during the porcelain firing cycle, thermal expansion should be greater than the porcelain
  - materials including base metal additions such as tin or indium to the gold alloys

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

**Unit title:** Dental Fixed Prosthodontics: Bonded Restorations

### **Outcome 2**

Explain the mechanisms for bonding ceramics to dental alloys

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

- ◆ Mechanical bonding
- ◆ Chemical bonding
- ◆ Compression Bonding
- ◆ Nature of the ceramo-metallic bond

#### **Evidence Requirements**

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

- ◆ explain the mechanisms of chemical, mechanical and compression bonding of porcelain on to alloy
- ◆ explain the characteristics of the ceramo-metallic bond and the factors that influence its success including: the geometry of the substructure, the surface treatment and handling during the process

### **Outcome 3**

Demonstrate the planning and manufacture of bonded fixed prosthodontic restorations

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

- ◆ Single Unit bonded restorations
- ◆ Multiple Unit bonded restorations

#### **Evidence Requirements**

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

- ◆ construct one single Unit bonded restoration and one multiple Unit bonded restoration to reflect accurate tooth form and adjacent and opposing dentition

This Outcome must be assessed within a dental laboratory setting.

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

**Unit title:** Dental Fixed Prosthodontics: Bonded Restorations

### **Assessment Guidelines for the Unit**

Outcomes 1 and 2 could be assessed using short answer questions. It is envisaged that 10 short answer questions could be used for the combined assessment. Assessment for Outcome 1 and 2 could take place as separate assessment events.

Assessment for Outcome 1 and 2 could be carried out under controlled supervised conditions lasting no more than 45 minutes for each assessment event.

Outcome 3 will be assessed within a dental laboratory setting.

## Administrative Information

<b>Unit code:</b>	F1M8 34
<b>Unit title:</b>	Dental Fixed Prosthodontics: Bonded Restorations
<b>Superclass category:</b>	PF
<b>Original date of publication:</b>	January 2008
<b>Version:</b>	01

### History of changes:

Version	Description of change	Date

**Source:** SQA

© Scottish Qualifications Authority 2008

This publication may be reproduced in whole or in part for educational purposes provided that no profit is derived from reproduction and that, if reproduced in part, the source is acknowledged.

SQA acknowledges the valuable contribution that Scotland's colleges have made to the development of Higher National qualifications.

Additional copies of this Unit specification can be purchased from the Scottish Qualifications Authority. Please contact the Customer Contact Centre for further details, telephone 0845 279 1000.

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

### **Unit title: Dental Fixed Prosthodontics: Bonded Restorations**

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 Unit has been written in order to allow candidates to develop further knowledge and understanding of fixed restorations and the bonding of materials to dental alloys.

#### **Outcome 1**

In this Outcome candidates may become familiar with the ideal properties of metallic substructures for porcelain-bonded restorations. This may include minimum casting thickness, shape and marginal fit. The candidate may also become familiar with the process of preparing the substructure for porcelain, this may include: sprue removal; trimming technique (single direction); micro blasting; bur /trimmer selection.

The candidate could also be able to describe the procedure for producing a metallic substructure using the lost wax technique.

This Outcome may ask the candidate to identify the components that make up the bridge restoration and explain the role of each.

#### **Outcome 2**

In this Outcome candidates may become familiar with mechanisms of chemical, mechanical and compression bonding of porcelain on to alloy.

Candidates may be introduced to the ceramo-metallic bond and the factors that influence its success:

- ◆ Base metal additions
- ◆ Chemical etching
- ◆ Wetting of the metal or metal oxide
- ◆ Thermal expansion mismatch

#### **Outcome 3**

In this Outcome the candidate may demonstrate competence in producing two bonded restorations:

- ◆ One single Unit bonded restoration
- ◆ One multiple Unit bonded restoration

Both restorations should reflect accurate tooth form to adjacent and opposing dentition.

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

**Unit title:** Dental Fixed Prosthodontics: Bonded Restorations

### **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.

Outcomes 1 and 2 could be assessed using short answer questions, minimum of 10 maximum of 15. This assessment could be carried out under controlled supervised conditions lasting no more than 45 minutes.

Outcome 3 should be assessed within a dental laboratory setting.

It should be noted that candidates must produce all the minimum evidence specified for each Outcome in order to pass the Unit.

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

In completing the class work of Outcomes 1 and 2 candidates may have the opportunity to develop the component ‘Written Communication (reading)’ of the Core Skill Communication at SCQF level 5. Candidates may have the opportunity to analyse and evaluate complex information from a variety of dental literature sources. The general skill that the candidate may have to complete is ‘Read, understand and evaluate written communication’.

There is also the opportunity for the candidate to develop the components ‘Planning and Organising’ and ‘Reviewing and Evaluating’ of the Core Skill Problem Solving at SCQF level 6 while completing the class work of all Outcome 3. In this Outcome the candidate will produce one single Unit bonded restoration and one multiple Unit bonded restoration, this will require the candidate to organise, plan and review the procedures involved in the task as well as evaluating the Outcome. The general skills that the candidate may have to complete are ‘Plan, organise and complete a task’, ‘Review and evaluate a complex problem solving activity’.

Also in Outcome 3 each of the practical exercises requires the candidate to be familiar with a variety of weights and measures. This will give the candidate the opportunity to develop the component ‘Numeracy — Using Number’ of the Core Skill Numeracy at SCQF level 5.

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 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, planning would be required of the centre concerned to ensure the sufficiency and authenticity of the candidate evidence. However the practical elements of Outcome 3, within this Unit should be carried out within a dental laboratory setting.



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

**Unit title:** Dental Fixed Prosthodontics: Bonded Restorations

### **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 Fixed Prosthodontics: Bonded Restorations

This Unit has been designed to develop your knowledge, understanding, and practical skills by producing various ceramic bonded restorations.

The Unit has three main areas, each the subject of a separate Outcome. Firstly you will be looking at the design and preparation of an underlying substructure, constructed to support porcelain. You will then explore the various mechanisms for bonding ceramics to dental alloys. This is then followed by the construction of various bonded fixed prosthodontic restorations.

On completion of this Unit you will be able to:

- ◆ explain the construction and preparation of an underlying substructure, constructed to support porcelain
- ◆ explain the mechanisms for bonding ceramics to dental alloys
- ◆ demonstrate the planning and manufacture of bonded fixed prosthodontic restorations

Assessment of this Unit will consist of a practical assessment and an assessment in the form of short answer questions. The short answer questions which assess Outcomes 1 and 2 will normally be carried out at the end of delivery of the Unit. The practical assessment will be carried out within a dental laboratory setting.

In completing the class work and assessments of this Unit you may have the opportunity to develop the component: 'Written Communication' of the Core Skill Communication up to SCQF level 5, 'Using Number' of the Core Skill Numeracy up to CQF level 4, and 'Planning and Organising' of the Core Skill Problem Solving up to SCQF level 6.