



## Higher National Unit specification

### General information for centres

**Unit title:** Dental Orthodontic Technology: Removable Appliances

**Unit code:** F1MA 34

**Unit purpose:** This Unit covers the theory and knowledge required to describe fixation, retention, anchorage and how these theories relate to the construction of orthodontic appliances. The Unit will also cover the construction and repair of simple and active removable appliances using stainless steel and appropriate base plate materials.

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

- 1 Explain the design principles of removable orthodontic appliances.
- 2 Construct simple and active removable orthodontic appliances.
- 3 Repair and modify simple and active removable orthodontic appliances.

**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 and the Higher National Units: F1M6 34 *Dental Biomaterials*, F1M5 34 *Dental Alloy Techniques*, and F1MD 34 *Dental Removable Prosthodontics: Partial Dentures*. Candidates could have completed an induction to dental technology course.

**Core Skills:** There are opportunities to develop the Core Skills of Communication: Written Communication at SCQF level 5, Numeracy: Using Number at SCQF level 5, Problem Solving: Planning and Organising at SCQF level 6 and Working with Others 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:** Outcome 1 of this Unit could be assessed using short answer questions and may last no longer than 45 minutes.

Outcomes 2 and 3 practical exercises require the candidate to produce practical work displaying their competent technical performance in the manipulation of dental materials to a given prescription. The practical exercises should be assessed within a dental laboratory setting.

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

**Unit title:** Dental Orthodontic Technology: Removable Appliances

**Unit code:** F1MA 34

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

Please refer to Assessment Guidelines for the Unit after the Outcomes.

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 design principles of removable orthodontic appliances

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

- ◆ Fixation design principles
- ◆ Retention design principles
- ◆ Anchorage design principles
- ◆ Removable appliance design

#### **Evidence Requirements**

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

- ◆ explain the terms fixation, retention and anchorage in terms of: simple, reinforced, inter-maxillary, reciprocal, and extra-oral
- ◆ explain how these principles (fixation, retention and anchorage) affect removable appliance design and their application in design

#### **Assessment Guidelines**

See Outcome 3.

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

**Unit title:** Dental Orthodontic Technology: Removable Appliances

### **Outcome 2**

Construct simple and active removable orthodontic appliances

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

- ◆ Simple removable orthodontic appliances
- ◆ Active removable orthodontic appliances
- ◆ Space maintainer
- ◆ Construction stages
- ◆ Construction techniques

#### **Evidence Requirements**

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

- ◆ construct four removable appliance with the active components:
  - a Hawley retainer
  - a double cantilever springs appliance
  - a palatal spring appliance
  - a 'T' spring appliance

Assessors should ensure that candidates have accurately carried out the:

- ◆ technique for fitting each component to tooth and tissue
- ◆ technique for positioning the active components
- ◆ technique for ensuring that the active components are functional
- ◆ design of the appliance complies with the prescription given
- ◆ technique for polishing the appliance
  
- ◆ construct one space maintainer appliance

Assessors should ensure that candidates have accurately carried out the:

- ◆ technique for fitting each component to tooth and tissue
- ◆ design of the appliance complies with the prescription given
- ◆ technique for polishing the appliance

This Outcome must be carried out within a dental laboratory setting.

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

**Unit title:** Dental Orthodontic Technology: Removable Appliances

### **Outcome 3**

Repair and modify simple and active removable orthodontic appliances

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

- ◆ Repairing base plates
- ◆ Properties of stainless steel wire
- ◆ Manipulation of stainless steel wire.
- ◆ Replacing and adding stainless steel components.
- ◆ Spot welding
- ◆ Soldering

#### **Evidence Requirements**

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

- ◆ carry out repairs to acrylic and light-cure base plates
- ◆ explain the properties of stainless steel wire and the effects of:
  - work hardening
  - soldering
  - welding
- ◆ repair stainless steel components by Soldering and Spot Welding

The practical assessment of this Outcome must be carried out within a dental laboratory setting.

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

Outcome 1 of this Unit could be assessed using 10 short answer questions and may last no longer than 45 minutes.

Outcomes 2 and 3 are assessed by practical exercises which require the candidate to produce practical work displaying competent technical performance in the manipulation of dental materials to a given prescription. Assessors, in Outcome 3, may question the candidate in the dental laboratory on the properties and effects of stainless steel wire. The practical exercises should be carried out within a dental laboratory setting.

## Administrative Information

<b>Unit code:</b>	F1MA 34
<b>Unit title:</b>	Dental Orthodontic Technology: Removable Appliances
<b>Superclass category:</b>	PF
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### History of changes:

Version	Description of change	Date

**Source:** SQA

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

### **Unit title: Dental Orthodontic Technology: Removable Appliances**

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 allows candidates to develop knowledge and understanding of how fixation, retention, anchorage and how these theories relate to the construction of orthodontic appliances. The Unit will also cover the construction and repair of simple and active removable appliances using stainless steel and appropriate base plate materials.

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 be able to describe the design principles of removable orthodontic appliances including: fixation, retention, and anchorage.

The candidate may be able to describe the five types of anchorage, namely:

- ◆ Simple
- ◆ Reinforced
- ◆ Intermaxillary
- ◆ Reciprocal
- ◆ Extra-oral

#### **Outcome 2**

Demonstrate the construction of simple and active removable orthodontic appliances.

The candidate may be able to construct four removable appliances incorporating active components, namely:

- ◆ A Hawley retainer
- ◆ A double cantilever springs appliance
- ◆ A palatal spring appliance
- ◆ A 'T' spring appliance

The candidate may be able to construct a space maintainer appliance.

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

### **Unit title:** Dental Orthodontic Technology: Removable Appliances

#### **Outcome 3**

In this Outcome the candidate may be able to demonstrate competence in the repairing of acrylic/light-cure base plates and repairing/adding stainless steel components to removable appliances.

The candidate may be able to demonstrate competence at carrying out repairs to acrylic and light-cure base plates.

The candidate may be able to describe the properties of Stainless Steel and the effects that ‘work hardening’, ‘soldering’ and ‘welding’ have on it.

The candidate may be able to demonstrate competence in soldering and spot welding.

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

Outcome 1 of this Unit could be assessed using 10 short answer questions and could last no longer than 45 minutes.

The practical assessment for Outcome 2 and 3 require the candidate to produce work displaying competent technical performance in the manipulation of dental materials to a given prescription. The practical exercises should be assessed within a dental laboratory setting.

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

In completing the class work of Outcomes 1 candidates may have the opportunity to develop the component ‘Written Communication’ of the Core Skill Communication at level 5. Candidates will 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 Outcome 2. In this Outcome the candidate will produce four removable appliances with active components and one space maintainer appliance, this will require the candidate to organise, plan and review the procedures involved in the task. The candidate should also evaluate their Outcome. The general skills that the candidate may have to complete are ‘Plan, organise and complete a complex task’, ‘Review and evaluate a complex problem solving activity’.

Outcome 3 the candidate may have the opportunity to develop the components ‘Planning and Organising’ and ‘Reviewing and Evaluating’ of the Core Skill Problem Solving at SCQF level 5 while completing the class work. The class work may involve the candidate repairing and modifying existing removable orthodontic appliances, this will require the candidate to organise, plan and review the procedures involved in the tasks. The candidate may also evaluate their Outcome. The general skills that the candidate may have to complete are; Plan, organise and complete a task’, ‘Review and evaluate a problem solving activity’.



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

### Unit title: Dental Orthodontic Technology: Removable Appliances

In Outcome 2 and 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 Core Skill of Working with Others at SCQF level 6 could also be developed within this Unit in particular in relation to the work within the laboratory. Working with Others involves the ability to work with others to plan, agree and take responsibility for tasks, to support co-operative working in appropriate ways, and to review the effectiveness of one's own contribution. This would fit with a group task to carry out research for on techniques to complete a piece of dental work. The general skill at SCQF level 6 is 'Work with others in a group to analyse, plan and complete a complex activity'. Candidates can be encouraged to analyse the task and negotiate goals, roles and responsibilities, anticipating and responding to needs of others, supporting cooperative working and evaluating and drawing conclusions the effectiveness of one's own contribution. This Core Skill could be developed without formal certification.

The assessment of this Unit may also contribute towards the component 'Written Communication' of the Core Skill Communication at SCQF level 5. 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 the assessment for Outcome 1, planning would be required of the centre concerned to ensure the sufficiency and authenticity of the candidate evidence. The practical elements contained within Outcomes 2 and 3 require to be carried out within a dental laboratory setting.

### 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**

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

#### **Unit title:** Dental Orthodontic Technology: Removable Appliances

This Unit has been designed to develop your knowledge and understanding of fixation, retention, anchorage and how these theories relate to the construction of orthodontic appliances. The Unit will also cover the construction and repair of simple and active removable appliances using stainless steel and appropriate base plate materials.

The Unit has three main areas, each the subject of a separate Outcome. Firstly you may look at the design considerations involved in the construction of removable appliances. You will then construct a selection of simple active removable orthodontic appliances. This is then followed by the modification and repair of a selection of simple active removable orthodontic appliances to a given prescription.

On completion of this Unit you will be able to:

- ◆ explain the design principles of removable orthodontic appliances
- ◆ construct simple and active removable orthodontic appliances
- ◆ repair and modify of simple and active removable orthodontic appliances

Outcome 1 may be assessed by 10 short answer questions. The practical assessment for Outcomes 2 and 3 will take place 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 SCQF level 4, and 'Planning and Organising' of the Core Skill Problem Solving up to SCQF level 6.