



## Higher National Unit specification

### General information for centres

**Unit title:** Dental Orthodontics: Complex Removable Appliances

**Unit code:** F43P 35

**Unit purpose:** This Unit is designed to develop the candidate's knowledge and skills in the principles of treatment planning, appliance therapy and the techniques involved in the fabrication of complex removable appliances. It will involve candidates in the construction of complex removable appliances.

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

- 1 Explain the principles of treatment planning and the potential for tooth movements in appliance therapy.
- 2 Evaluate the principles of complex removable appliance design.
- 3 Construct complex removable orthodontic appliances to specified prescriptions.

**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:** Although access to this Unit is at the discretion of the centre, it is recommended that the candidate should have completed the HNC in Dental Technology or equivalent so that dental laboratory practice, working to a prescription, treatment planning skills and preparing products to a standard suitable for presentation to a clinical dental practitioner are established. The ability to prepare submissions to a standard format, which includes Harvard referencing, would also be preferable.

**Core Skills:** There are opportunities to develop the component 'Written Communication' of the Core Skill Communication at SCQF level 6, and the components 'Planning and Organising', 'Reviewing and Evaluating' and 'Critical Thinking' of the Core Skill Problem Solving at SCQF level 6 in this Unit. There are also opportunities to develop the Core Skill Information Technology at SCQF level 6, and the component 'Using Graphical Information' of the Core Skill Numeracy at SCQF level 6, 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 and 2 could be assessed using candidate submissions covering all of the theoretical aspects. Outcome 3 is assessed by practical tasks with candidates displaying competent technical performance in the manipulation of dental materials to given prescriptions to produce five pieces of practical work. These practical assessments should be carried out within a dental laboratory setting.

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

**Unit title:** Dental Orthodontics: Complex Removable Appliances

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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 the principles of treatment planning and the potential for tooth movements in appliance therapy

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

- ◆ Tooth movement
- ◆ Stability of the lower labial segment
- ◆ Extraction of teeth
- ◆ Cross-bite correction
- ◆ Class I molar relationship
- ◆ Overbite and overjet control
- ◆ Space closure

#### **Evidence Requirements**

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by explaining:

- ◆ the categories of tooth movement: labio-lingual, bucco-lingual, mesio-distal, rotation
- ◆ how the lower labial segment is stabilised
- ◆ the reasoning and need for extracting teeth and correcting a cross-bite
- ◆ the method used to establish a Class I molar relationship
- ◆ the method of controlling the overbite or overjet and the method of managing space closure

#### **Assessment Guidelines**

This Outcome could be assessed by a candidate submission. Whilst the format of the submission is at the discretion of the centre, it is recommended that the submission be equivalent to 1,000 words (excluding appendices and diagrams). Examples of suitable formats for the submission could be: oral questioning; candidate presentation; and candidate report. Further details are contained in the Support Notes.

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

**Unit title:** Dental Orthodontics: Complex Removable Appliances

### **Outcome 2**

Evaluate the principles of complex removable appliance design

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

- ◆ Indications and contra-indications for complex removable appliances
- ◆ The principles of:
  - base plate design
  - retention
  - active and passive component design
  - anchorage
- ◆ Guard wires
- ◆ Types of clasp
- ◆ Expansion screws

#### **Evidence Requirements**

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

- ◆ indications and contra-indications of complex removable appliances
- ◆ principles of base plate design, retention, active and passive component design, and anchorage and their impact on appliance success
- ◆ the importance of guard wires in appliance design
- ◆ two common types of clasps in appliance design
- ◆ the types of expansion screws used in tooth movement

#### **Assessment Guidelines**

This Outcome could be assessed by a candidate submission. Whilst the format of the submission is at the discretion of the centre, it is recommended that the submission be equivalent to 1,000 words (excluding appendices and diagrams). Examples of suitable formats for the submission could be: oral questioning; candidate presentation; and candidate report. Further details are contained in the Support Notes.

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

**Unit title:** Dental Orthodontics: Complex Removable Appliances

### **Outcome 3**

Construct complex removable orthodontic appliances to specified prescriptions

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

- ◆ Types of appliances
- ◆ Fabrication, positioning and fitting of components

#### **Evidence Requirements**

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can produce five complex removable appliances to a specified prescription. Working to the prescription, candidates must fabricate, position and fit components for five appliances to a finish and accuracy ready for delivery to the clinical dental professional. These practical assessment tasks must be carried out within a dental laboratory setting.

The appliances to be constructed should be taken from the following list:

- ◆ Habit breaking appliance
- ◆ Price type appliance
- ◆ Mills bow appliance
- ◆ Expansion appliance
- ◆ Eastman En'Masse appliance
- ◆ Piston screw appliance
- ◆ Multi-component appliance
- ◆ Multi-directional appliance
- ◆ ELSAA appliance
- ◆ Kesling Set-up
- ◆ Barrer positioner
- ◆ Appliances new to the market

#### **Assessment Guidelines**

The assessment of Outcome 3 could be in the form of practical tasks involving the candidate in the production of five functional appliances, of their choice, in response to prescription details. New appliances could encompass any new developments within the field of removable dental appliances.

## Administrative Information

<b>Unit code:</b>	F43P 35
<b>Unit title:</b>	Dental Orthodontics: Complex Removable Appliances
<b>Superclass category:</b>	PF
<b>Original date of publication:</b>	August 2008
<b>Version:</b>	01

### History of changes:

Version	Description of change	Date

**Source:** SQA

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

### **Unit title: Dental Orthodontics: Complex 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 80 hours.

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

The purpose of this Unit is to allow candidates to develop the knowledge and understanding required to become competent in the description of treatment therapy, the principles of complex removable appliance design and the techniques involved in the fabrication of complex removable appliances. In addition candidates will develop the skills involved in the construction of a range of complex removable orthodontic appliances.

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

#### **Outcome 1**

This Outcome looks at the four methods of tooth movement: labio-lingual; bucco-lingual; mesio-distal; rotation. Candidates will also become familiar with methods to stabilise the lower lingual segment.

Candidates may be introduced to the rationale for extraction of teeth, necessary in some situations through case study examples. They could also cover the method of: correcting severe cross-bites; control of overbite and/or overjet; and space closure.

#### **Outcome 2**

In this Outcome, candidates could become familiar with the indications and contra-indications of a variety of complex removable appliances.

Candidates should be able to explain the principles of successful complex removable appliance design. In doing so candidates could investigate the importance of good base plate design; retention; active and passive component design; anchorage and the impact on complex removable appliance success.

The importance of guard wires for component protection, and types of clasp design to offer appliance retention may also be covered.

The Outcome should cover the clasp types currently used in orthodontic practice, for example the Adams Clasp and Southend Clasp. It is recognised that new clasp types and design may come into common use, therefore the Evidence Requirements relating to clasp types is left non-specific to reflect this. Centres are advised to keep up to date with developments in this area.

Candidates should also explain the role of expansion screws in tooth movement, detailing when expansion screws are an appropriate component.

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

### **Unit title: Dental Orthodontics: Complex Removable Appliances**

#### **Outcome 3**

In this Outcome candidates may demonstrate their competence in the production of five complex removable appliances from the list detailed below. The centre has the flexibility to select any five appliances or, where possible, could let the candidate select which appliances to construct. This will obviously depend on resources available.

- ◆ Habit breaking appliance
- ◆ Price type appliance
- ◆ Mills bow appliance
- ◆ Expansion appliance
- ◆ Eastman En'Masse appliance
- ◆ Piston screw appliance
- ◆ Multi-component appliance
- ◆ Multi-directional appliance
- ◆ ELSAA appliance
- ◆ Kesling Set-up
- ◆ Barrer positioner
- ◆ Appliances new to the market

Construction of any five appliances will demonstrate success in this Outcome. All appliances should be finished accurately for delivery. New appliances could encompass any new developments within the field of removable dental appliances

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

This Unit is likely to form part of a Group Award designed to provide candidates with technical and professional knowledge and skills for employment within a dental technology environment. It is envisaged that the teaching of this Unit could be delivered through lecturer-mediated discussion, practical demonstrations, reading of recommended texts and professional peer-review journals.

This Unit offers the opportunity to introduce the candidates to self and peer assessment as formative assessment methods. Such an initiative as well as providing both the candidate and the centre with an indication of candidate progress will also help in the development of the candidate's critical skills. A possible example would be to ask the candidates to develop quality criteria for the appliances being constructed in Outcome 3 as a group work activity, evaluate their own performance and that of a peer against this agreed set of criteria.

Outcomes 1 and 2 could be assessed by candidate submissions. Whilst the format the submission takes is left to the discretion of the centre the author would recommend that such a submission be the equivalent to 1,000 words (excluding appendices and diagrams) for each Outcome. Examples of possible submissions types are:

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

### **Unit title: Dental Orthodontics: Complex Removable Appliances**

#### *Oral Questioning*

The underpinning knowledge and skills could be assessed using the form of oral questioning. The centre would need to develop a bank of suitable questions of equal reliability and validity to ensure that each candidate is assessed appropriately ensuring coverage of all underpinning knowledge. If this format is selected careful consideration is required in relation to venue, etc.

#### *Candidate Presentation*

A candidate presentation could take the form of an oral presentation by the candidate to their peers and teaching staff. Such a submission would need time to be prepared and therefore careful consideration will need to be given as to when the assessment is given to candidates to allow time for research and preparation. The candidate may use presentation software such as PowerPoint to aid the presentation delivery but this is not essential. The candidate may opt to produce and talk to a handout supplied to the group. Using such software could give the candidate the opportunity to develop their Core Skills in Information Technology.

#### *Candidate Report*

A candidate report may be presented in a variety of suitable ways: oral, written or signed. The author would suggest that if a candidate report is selected as the chosen assessment format that this should have a conventional structure ie title page; table of contents; introduction; report body; conclusion(s); reference list. Such a submission would need time to be prepared and therefore careful consideration will need to be given as to when the assessment is given to candidates to allow time for research and preparation.

The assessment of Outcome 3 will be in the form of practical tasks involving the candidate in the production of five functional appliances, from those listed in the Outcome's Evidence Requirements, to a given prescription. These practical tasks should be carried out within a dental laboratory setting.

#### ***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' 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 literature sources. The general skill that the candidate may have to complete is 'Read and understand complex written communication'.

If the candidates produce a report for Outcomes 1 and 2, they will have the opportunity to develop the component 'Written Communication' of the Core Skill Communication at SCQF level 6. Candidates may have to structure their report, 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'.

If the candidate produces a report for Outcomes 1 and 2 there is the opportunity for the candidate to develop the Core Skill Information Technology at SCQF level 6. Candidates could carry out searches of information databases whilst carrying out research for the report.

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

### Unit title: Dental Orthodontics: Complex Removable Appliances

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 3. In this Outcome the candidate will produce five complex pieces of practical work that will require the candidate to organise, plan and review the procedures involved in the task.

There is the opportunity for the candidate to develop the component 'Critical Thinking' of the Core Skill Problem Solving at SCQF level 6 while completing the Evidence Requirements for Outcomes 1 and 2. The candidate may be required to analyse and evaluate complex information, clarify the principles of treatment planning and the sequence of tooth movements in appliance therapy in Outcome 1, and analyse and evaluate complex information, clarify the principles of complex removable appliance design in Outcome 2. The general skill that candidates may have to complete is 'Analyse a complex situation or issue'.

There is the opportunity to develop the component 'Using Graphical Information' of the Core Skill Numeracy at SCQF level 6. When constructing the complex appliances in Outcome 3 candidates will have to interpret complex data presented in graphical form from numerous dental material manufacturers. The general skill that candidates may have to complete is 'Apply a wide range of graphical skills to interpret and present complex information in generalised contexts'.

### 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 by the centre to ensure the sufficiency and authenticity of the candidate evidence. Outcome 3 requires to be assessed 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

### Unit title: Dental Orthodontics: Complex Removable Appliances

This Unit has been designed to develop your understanding of the principles of treatment planning, appliance therapy and the techniques involved in the fabrication of complex removable appliances.

The Unit has three main areas, each the subject of a separate Outcome. Firstly you will look at the principles of treatment planning and how teeth move in appliance therapy. In Outcome 2 you will evaluate the principles of complex removable appliance design. Outcome 3 is practical and you will construct five complex removable orthodontic appliances.

On completion of this Unit you will be able to:

- 1 Explain the principles of treatment planning and the potential for tooth movements in appliance therapy.
- 2 Evaluate the principles of removable complex appliance design.
- 3 Construct complex removable orthodontic appliances to specified prescriptions.

The formal assessment of this Unit will consist of a candidate submission for Outcomes 1 and 2 and a practical assessment for Outcome 3. The assessment for Outcomes 1 and 2 may 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 for this Unit, there may be opportunities to develop the component 'Written Communication' of the Core Skill Communication at SCQF level 6, and the components 'Planning and Organising', 'Reviewing and Evaluating' and 'Critical Thinking' of the Core Skill Problem Solving at SCQF level 6 in this Unit. There are also opportunities to develop the Core Skill Information Technology at SCQF level 6, and the component 'Using Graphical Information' of the Core Skill Numeracy at SCQF level 6, although there is no automatic certification of Core Skills or Core Skills components.