



Higher National Unit specification

General information for centres

Unit title: Dental Orthodontic Technology

Unit code: F1MB 34

Unit purpose: This Unit covers a range of simple splints, mouth protectors and sleep apnoea appliances. When studying this Unit the candidate will have an opportunity to produce orthodontic trimmed study casts. The Unit will cover the theories surrounding the eruption sequence of the deciduous and permanent teeth as well as Dr. Angles classification and osteoclastic and osteoblastic activity related to tooth movement.

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

- 1 Describe the design features and function of protective and thermo-formed appliances.
- 2 Construct two protective and one thermo-formed appliance.
- 3 Demonstrate the construction of orthodontic trimmed study casts.
- 4 Explain malocclusion, tooth movement, and eruption sequence of the deciduous and permanent dentition.

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*, and F1M5 34 *Dental Alloy Techniques*. 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: The assessment of Outcomes 1 and 4 could be carried out as a combined instrument of assessment or it could be broken down into two separate assessment events.

If a combined assessment approach is adopted for Outcomes 1 and 4 the assessment event could consist of a number of short answer questions, which may last no more than one hour. This assessment may be carried out at the end of the delivery of the Unit.

Where separate instruments of assessments are used for Outcomes 1 and 4 these may take 30 minutes each.

Assessment of Outcomes 2 and 3 are practical assessments requiring the candidate to produce four pieces of practical work displaying competent technical performance in the manipulation of dental materials to a given prescription. These practical assessments should be carried out within a dental laboratory setting.

Higher National Unit specification: statement of standards

Unit title: Dental Orthodontic Technology

Unit code: F1MB 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

Describe the design features and function of protective and thermo-formed appliances

Knowledge and/or Skills

- ◆ Design features and function of Splints
- ◆ Design features and function of Mouth protectors

Evidence Requirements

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

- ◆ describe the design and function of splints including:
 - Materials — heat cure acrylic, self cure acrylic and polycarbonate
 - Canine guidance
 - Anchorage
- ◆ describe the design and function of mouth protectors including:
 - Materials
 - Extension and coverage

Assessment Guidelines

See Outcome 4.

Higher National Unit specification: statement of standards (cont)

Unit title: Dental Orthodontic Technology

Outcome 2

Construct two protective and one thermo-formed appliance

Knowledge and/or Skills

- ◆ Michigan Splints
- ◆ Mouth protectors
- ◆ Thermo-formed appliances

Evidence Requirements

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

- ◆ two protective appliances:
 - one Michigan splint with canine guidance
 - one maxillary mouth protector
- ◆ one thermo-formed appliance

Assessment of this Outcome must be carried out within a dental laboratory setting.

Assessment Guidelines

See Outcome 4.

Outcome 3

Construct a set of orthodontic trimmed study casts

Knowledge and/or Skills

- ◆ Orthodontic study cast (OSC) production

Evidence Requirements

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

- ◆ construct OSC, ensuring that a candidate's cast is accurate in terms of the:
 - base of the upper cast is parallel to the occlusal plane
 - posterior edge of the cast is at right angles to the Median Raphe
 - cast wall is trimmed orthodontically
 - base of the lower cast is parallel to the upper model in occlusal contact
 - casts remain in contact when placed on posterior border or cast wall

Assessment of this Outcome must be carried out within a dental laboratory setting.

Higher National Unit specification: statement of standards (cont)

Unit title: Dental Orthodontic Technology

Assessment Guidelines

See Outcome 4.

Outcome 4

Explain malocclusion, tooth movement, and eruption sequence of the deciduous and permanent dentition

Knowledge and/or Skills

- ◆ Angle's Classification of Malocclusion
- ◆ Principles of tooth movement
- ◆ Eruption sequence
- ◆ Deciduous and permanent teeth.

Evidence Requirements

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

- ◆ explain the classification in terms of: mesio-distal relations of the teeth; basal areas of the jaws; Dr Angle's Class I; Dr Angle's Class II, including divisions 1 and 2; Dr Angle's Class III
- ◆ explain the tooth movement is described accurately in terms of: type of pressure applied; changes to periodontal membrane; increases in blood supply; Osteoblastic and Osteoclastic activity
- ◆ explain the eruption sequence in terms of name and position in the dental arch; age of the child, within six months, as individual teeth erupt is described accurately

Assessment Guidelines for this Unit

The assessment of the Outcomes 1 and 4 can be carried out as a combined assessment. If a combined assessment approach is adopted the assessment event could consist of a number of restricted response questions, which may last no more than one hour and it could be carried out at the end of the delivery of the Unit.

It would be possible, if desired, to break this assessment down into two separate assessment events for Outcomes 1 and 4. Where separate instruments of assessments are used they should take 30 minutes each.

The practical assessments for Outcomes 2 and 3 require the candidate to produce four pieces of practical work displaying competent technical performance in the manipulation of dental materials to a given prescription. The practical assessments should take place within a dental laboratory environment.

Administrative Information

Unit code: F1MB 34
Unit title: Dental Orthodontic Technology
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Higher National Unit specification: support notes

Unit title: Dental Orthodontic Technology

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

The purpose of this Unit is to allow candidates to develop knowledge and understanding of the theories surrounding the eruption sequence of the deciduous and permanent teeth as well as Dr. Angles classification and osteoclastic and osteoblastic activity related to tooth movement. In addition candidates will develop skills involved in the construction of a range of simple splints and mouth protectors and thermo-formed 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.

A list of topics for each Outcome is given below.

Outcome 1

In this Outcome candidates could be able to describe the design features and function of splints and mouth protectors.

The candidate could describe canine guidance.

The candidate could describe the process of producing thermo-formed appliances.

Outcome 2

In this Outcome candidates could demonstrate their knowledge and understanding of the construction of a protective and thermo-formed appliances by producing:

- ◆ one Michigan splint with canine guidance
- ◆ one maxillary mouth protector
- ◆ one thermo-formed appliance

Outcome 3

In this Outcome candidates could demonstrate the construction of orthodontic trimmed study casts.

The candidates could clearly demonstrate the:

- ◆ treatment of dental impressions to prevent cross infection.
- ◆ mixing of dental stone (alpha hemihydrate)
- ◆ pouring of a dental model from the impression
- ◆ orthodontic trimming of the dental casts

Higher National Unit specification: support notes (cont)

Unit title: Dental Orthodontic Technology

Outcome 4

In this Outcome candidates could explain malocclusion, tooth movement, and eruption sequence of the deciduous and permanent dentition.

In this Outcome the candidate could describe the principles and theory of Dr. Angle's classification of malocclusion, oral osteoclastic and osteoblastic activity, eruption sequence of the deciduous and permanent dentition.

The candidates could clearly describe the principles and theory of Dr Angle's classification of malocclusion. Including:

- ◆ the mesio-distal relationship of the teeth and basal areas of the jaws
- ◆ the three classes of malocclusion
- ◆ the divisions associated with Class II
- ◆ causes of malocclusion

Candidates could describe accurately the tooth movement in terms of:

- ◆ type of pressure applied
- ◆ changes to periodontal membrane
- ◆ increases in blood supply
- ◆ Osteoblastic and Osteoclastic activity

The candidate could describe the eruption sequence of the deciduous and permanent teeth. In terms of:

- ◆ name of tooth and position in the dental arch
- ◆ age of child when individual erupt

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 of Outcomes 1 and 4 can be carried out as a combined assessment. If a combined assessment approach is adopted the assessment event could consist of a number of short answer questions, which may last no more than one hour and it should be carried out at the end of the delivery of the Unit.

It would be possible, if desired, to break assessment of Outcomes 1 and 4 into two separate assessment events. Where separate instruments of assessments are used they should take 30 minutes each.

Outcomes 2 and 3 may be assessed by practical exercises requiring the candidate to produce four pieces of practical work displaying competent technical performance in the manipulation of dental materials to a given prescription.

Higher National Unit specification: support notes (cont)

Unit title: Dental Orthodontic Technology

The practical assessments should be carried out in non-examination conditions within a dental laboratory environment.

Opportunities for developing Core Skills

In completing the class work of Outcomes 1 and 4 candidates may have the opportunity to develop the component 'Written Communication (reading)' of the Core Skill Communication at 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 Outcome 2. In this Outcome the candidate will produce three pieces of practical work: Michigan splint; maxillary mouth protector; and sleep apnoea appliance, this will require the candidate to organise, plan and review the procedures involved in the task as well as evaluating the Outcome.

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 6 while completing the assessment. The assessment will involve the candidate producing one set of orthodontic trimmed study casts, this will require the candidate to organise, plan and review the procedures involved in the tasks. The candidate should also evaluate their cast. The general skills that the candidate may have to complete are 'Plan, organise and complete a task', 'Review and evaluate a problem solving activity'.

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 assessment of this Unit may also contribute towards the component 'Written Communication (writing)' 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'.

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.

Higher National Unit specification: support notes (cont)

Unit title: Dental Orthodontic Technology

Open learning

This Unit could be delivered by distance learning, which may incorporate some degree of online support. With regard to assessment of Outcome 1 and 4, planning would be required of the centre concerned to ensure the sufficiency and authenticity of the candidate evidence. Outcome 2 and 3 require 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).

General information for candidates

Unit title: Dental Orthodontic Technology

This Unit has been designed to develop your knowledge and understanding in the theories surrounding the eruption sequence of the deciduous and permanent teeth as well as Dr. Angles classification and osteoclastic and osteoblastic activity related to tooth movement.

The Unit has four main areas, each the subject of a separate Outcome. Firstly you will be looking at the design features and function of splints and mouth guards. You will then construct splints, mouth protectors and thermo formed appliances. You will then explore the planning and construction of study casts that have been orthodontically trimmed. Finally you will then explore the principles and theory of malocclusion, tooth movement and eruption.

On completion of this Unit you will be able to:

- 1 Describe the design features and function of protective and thermo-formed appliances.
- 2 Construct two protective and one thermo-formed appliances.
- 3 Construct a set of orthodontic trimmed study casts.
- 4 Explain malocclusion, tooth movement, and eruption sequence of the deciduous and permanent dentition.

The assessment of this Unit may consist of a practical assessment for Outcomes 2 and 3 and short answer questions for Outcomes 1 and 4. The assessment for Outcomes 1 and 4 may be carried out at the end of delivery of the Unit. The practical exercises should 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 SCQF level 4, and 'Planning and Organising' of the Core Skill Problem Solving up to SCQF level 6.