



## Higher National Unit specification

### General information for centres

**Unit title:** Calculations and Practical Techniques in Health Care

**Unit code:** F0K9 34

**Unit purpose:** This Unit is intended to develop candidate's ability to carry out calculations and practical techniques that are frequently used in health care.

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

- 1 Demonstrate a holistic approach when carrying out practical techniques in health care.
- 2 Carry out calculations and practical techniques in health care.
- 3 Record, interpret and report results of practical techniques.

**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:** Candidates should have good communication skills, both written and oral. These can be evidenced either by the achievement of nationally recognised qualifications for example Higher English, or a qualification equivalent to SCQF level 6, or by the completion of a pre-course interview part of which could take the form of a written assignment. The skills to undertake this Unit could also be demonstrated through an employer's reference or the process of application and interview. In addition to this candidates should preferably have undertaken some work experience, paid or voluntary, in a health care setting. Candidates would benefit from having achieved numeracy skills at SCQF level 5 or above since they will be expected to demonstrate these skills in theory and in practice.

**Core Skills:** There are opportunities to develop the Core Skills of:

*Communication at SCQF level 5  
Problem Solving at SCQF level 5  
Working with Others at SCQF level 5  
Numeracy at SCQF level 5*

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)

This Unit is included in the framework for HNC Health Care.

Work experience is essential to the achievement of this Unit.

**Assessment:** This Unit is assessed in two ways:

A skills booklet or portfolio of practice to record the candidate's ability to carry out practical techniques competently, using a holistic approach. This will be carried out when the candidate is working or on placement in a care setting and monitored by a supervisor/mentor.

Questions will be asked relating to calculations, graphs and measurements. This will be done as a closed-book test.

This assessment may contribute to the portfolio of practice evidence required for the *Health Care: Practice Experience* Unit.

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

**Unit title:** Calculations and Practical Techniques in Health Care

**Unit code:** F0K9 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**

Demonstrate a holistic approach when carrying out practical techniques in health care

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

- ◆ Holistic care that demonstrates an understanding physical, social, cognitive and emotional development and needs
- ◆ Sensitivity in interactions including cultural awareness
- ◆ Compliance with organisational policy and procedure

#### **Evidence Requirements**

The candidate will demonstrate a holistic approach when carrying out practical techniques. This will include:

- ◆ use of appropriate interpersonal skills when carrying out practical techniques
- ◆ safe practice which complies with employer's policies and procedures
- ◆ observation by a qualified supervisor/mentor

#### **Assessment Guidelines**

See under Outcome 3.

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

**Unit title:** Calculations and Practical Techniques in Health Care

### **Outcome 2**

Carry out calculations and practical techniques in health care

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

##### **Units of measurement:**

- ◆ Ranges for pulse, respiration, temperature, blood pressure, oxygen saturation, fluid balance, urinalysis, height, weight, body mass index and peak flow
- ◆ Specimen collection including observation of normal and abnormal features
- ◆ Conversions between different Units of measurement
- ◆ Calculations involving decimals and fractions

##### **Practical techniques:**

Using equipment and carrying out all of the following procedures

- ◆ Pulse
- ◆ Respiration
- ◆ Temperature
- ◆ Blood pressure
- ◆ Oxygen saturation
- ◆ Fluid balance
- ◆ Testing urine
- ◆ Height and weight/body mass index
- ◆ Peak flow
- ◆ Specimen collection
- ◆ Awareness of administration of medication

#### **Evidence Requirements**

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

- ◆ knowledge of normal values and Units of measurement used in relation to each of the above procedures
- ◆ numerical skills required for accurate calculations including, addition, subtraction, multiplication, division, fractions, decimals, percentages and conversion
- ◆ the ability to identify the appropriate equipment and demonstrate the correct procedure for the measuring technique required.

#### **Assessment Guidelines**

See under Outcome 3.

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

**Unit title:** Calculations and Practical Techniques in Health Care

### **Outcome 3**

Record, interpret and report results of practical techniques

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

*Recording of results:*

- ◆ accurately
- ◆ graphically
- ◆ numerically

*Interpretation of results:*

- ◆ interpretation of graphs
- ◆ recognition of normal values
- ◆ recognition of deviation from the norm

*Factors that can affect the reliability of results:*

- ◆ environmental factors
- ◆ individual factors
- ◆ faulty equipment
- ◆ faulty technique
  
- ◆ Reporting procedures

#### **Evidence Requirements**

The ability to record results of all techniques accurately, using appropriate charts. Candidates will be required to:

- ◆ interpret a graph
- ◆ recognise a normal value
- ◆ recognise deviation from a norm in relation to two practical techniques
- ◆ recognise factors that can affect the reliability of results.

#### **Assessment Guidelines**

Two modes of assessment are required for this Unit.

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

### Unit title: Calculations and Practical Techniques in Health Care

#### Outcomes 1, 2 and 3

An integrated assessment in the form of a skills booklet or portfolio of practice should be used for recording evidence of the candidate's ability. A supervisor/mentor will observe the candidate carrying out calculations and practical techniques. The candidate will demonstrate a holistic approach when carrying out practical techniques in health care in Outcome 1 and when carrying out the physiological measurements and practical techniques listed as procedures in Outcome 2. The candidate will have the opportunity to increase awareness of health promotion activities whilst carrying out practical techniques.

Candidates will also provide evidence of the recording, interpreting and reporting results of practical techniques:

- ◆ using appropriate interpersonal skills when carrying out practical techniques
- ◆ demonstrating safe practice which complies with employer's policies and procedures
- ◆ identifying the appropriate equipment and demonstrating the correct procedure for the practical technique
- ◆ signed as satisfactory when observed by a qualified supervisor/mentor

Candidates should aim to demonstrate ability in relation to these procedures on a minimum of three occasions. Candidates should be observed on each occasion. Evidence can be compiled in the form of checklists, completed recording sheets and reflective accounts. Where candidates are unable to provide evidence for all the procedures, simulation may be used for up to five procedures.

#### Outcome 3

A closed-book assessment of 10 multiple choice **worth 10 marks** questions assessing:

- ◆ knowledge of normal values and Units of measurement used in relation to procedures identified in Outcome 2
- ◆ the ability to record results of all techniques accurately, using appropriate charts
- ◆ ability to interpret a graph
- ◆ recognition of normal values for physiological measurements
- ◆ recognition of deviations from the norm in relation to physiological measurements
- ◆ knowledge of factors that can affect the reliability of results

A closed-book assessment of 10 restricted response questions **worth 20 marks** aimed at assessing:

- ◆ numerical skills required for accurate calculations including, addition, subtraction, multiplication, division, fractions, decimals, percentages and conversion, eg grams/milligrams/micrograms

Calculators may be used in all parts of this assessment.

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

**Unit title:** Calculations and Practical Techniques in Health Care

Candidates will be required to achieve **80% (to maintain professional standard)** to pass. **Straight resit no oral remediation allowed.**

Assessments should vary from year to year and alternative assessments should be available for re-assessment or for use with different groups.

## Administrative Information

<b>Unit code:</b>	F0K9 34
<b>Unit title:</b>	Calculations and Practical Techniques in Health Care
<b>Superclass category:</b>	PH
<b>Original date of publication:</b>	September 2006
<b>Version:</b>	02 (October 2009)

### History of Changes:

Version	Description of change	Date
02	Assessment Guidelines: Additional guidance provided	Oct 09

**Source:** SQA

© Scottish Qualifications Authority 2006, 2009

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: Calculations and Practical Techniques in Health Care

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 is intended to develop candidate's ability to carry out calculations and practical techniques that are frequently used in health care.

**Outcome 1** provides the opportunity to emphasise that practical techniques are only one aspect of individual patient/client care. Candidates should be encouraged to avoid a task oriented approach to acquiring and demonstrating the techniques contained in this Unit. Candidates should understand the importance of applying the values and principles from other parts of the HNC programme. Issues relating to informed consent, confidentiality, privacy, health and safety should be discussed. Practical placement preparation should include role-play and simulation to enable candidates an opportunity to develop the ability to explain and carry out procedures safely and sensitively and with cultural awareness.

**Outcome 2** should be taught in the context of health care. The ability to recognise normal values is important and candidates should learn these for the techniques listed in this Outcome.

Candidates should be familiar with Units of measurement used in health care and should understand the importance of being able to carry out simple conversions. For example, candidates might be asked to convert grams to milligrams to micrograms or convert fractions to decimals.

Calculations should be related to events that occur in a health care environment, eg the calculation of body mass index or the amount of intravenous fluid administered in millilitres per minute if one litre is to be administered over a four-hour period.

It would be beneficial for candidates to have the opportunity to become familiar with a range of equipment and procedures through classroom demonstration and practice prior to practical placement experience. Candidates should have the opportunity to simulate situations in a practical classroom. This should include:

- ◆ Pulse
- ◆ Respiration
- ◆ Temperature
- ◆ Blood pressure
- ◆ Oxygen saturation
- ◆ Fluid balance
- ◆ Testing urine
- ◆ Height and weight/body mass index
- ◆ Peak flow
- ◆ Specimen collection
- ◆ Awareness of administration of medication

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

**Unit title:** Calculations and Practical Techniques in Health Care

### **Outcome 3**

Should be taught through classroom demonstration and practice. Sample documentation should be available for candidates to examine and use to record results. Case study material with associated graphs and charts should be made available and candidates could work in groups to evaluate the individual patient/client's condition and report on their findings.

Candidates should also be aware of the factors that can affect results.

The acquisition of skills should be seen as a process and a skills booklet can demonstrate that candidates have:

- ◆ underpinning knowledge/an evidence base relating to procedures
- ◆ observed the practical technique being carried out correctly (this may be on one or more occasions depending on candidate competence)
- ◆ demonstrated the practical techniques under supervision (this may be on one or more occasions depending on candidate competence)
- ◆ been judged to have carried out the procedure competently on a minimum of three occasions when supervised by a qualified member or members of staff, preferably the named supervisor/mentor

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

This Unit should provide candidates with the opportunity to put theory into practice in a non-threatening simulated environment prior to practical placement.

It is recommended that theory in this Unit be linked to theory contained in other Units in the programme. Links can be made to values and principles, health and safety policy, health promotion and physiology.

Candidates should be given opportunities to gain confidence in their ability to perform calculations through the provision of formative assessment opportunities.

College/placement liaison is also essential, as candidates will need access to a supervisor/mentor who will observe and sign candidate evidence recorded in a skills booklet.

The following web sites provide a useful resource:

#### **Calculations**

[www.nes.scot.nhs.uk/nursing/](http://www.nes.scot.nhs.uk/nursing/)

[www.nes.scot.nhs.uk/syringe\\_driver](http://www.nes.scot.nhs.uk/syringe_driver)

[www.accd.edu/sac/nursing/math/mathindex2.html](http://www.accd.edu/sac/nursing/math/mathindex2.html)

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

**Unit title:** Calculations and Practical Techniques in Health Care

**Mathematics Practice for Nursing and Midwifery**

[www.studyadvice.hull.ac.uk](http://www.studyadvice.hull.ac.uk)

**Drug calculations**

[www.ceds.vu.edu.au/studentlearning/CourseSpecific/DrugCalculations](http://www.ceds.vu.edu.au/studentlearning/CourseSpecific/DrugCalculations)

### *Opportunities for developing Core Skills*

There are opportunities to develop the Core Skills of *Communication*, *Problem Solving*, *Working with Others* and *Numeracy* all at SCQF level 5, in this Unit, although there is no automatic certification of Core Skills or Core Skills components.

**Communication:** Will be evidenced via the candidate's work with individuals and groups.

**Problem Solving:** Critical Thinking, Planning and Organising, Reviewing and Evaluating will be evidenced through supervision in the candidate's workplace and assessment evidence.

**Working with Others:** Will be evidenced in the candidate's workplace via their ability to interact, communicate and negotiate with those with whom they come into contact.

**Numeracy:** Will be evidenced through candidate ability to carry out physiological measurements. Results of measurements are recorded graphically and numerically. Candidates will recognise normal values and deviations from the norm. Candidates will also demonstrate the ability to carry out basic calculations relating to drug dosage.

## Open learning

Theory for this Unit may be developed for delivery by open learning.

The Unit can only be achieved by candidates working in a care setting under the supervision of a qualified supervisor/mentor who will assess their competence in relation to the practical techniques contained in the Unit.

## Disabled candidates and/or those with additional support needs

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering whether any reasonable adjustments may be required. Further advice can be found on our website [www.sqa.org.uk/assessmentarrangements](http://www.sqa.org.uk/assessmentarrangements)

## **General information for candidates**

### **Unit title:** Calculations and Practical Techniques in Health Care

This Unit is designed to enable you to acquire the knowledge and skills needed to carry out calculations and practical procedures carried out in care settings.

Practical work experience is essential for this Unit. You will need to be working or on placement in a care setting and have a qualified nurse as a supervisor/mentor as you progress through this Unit.

Outcome 1 emphasises the importance of demonstrating a holistic approach when carrying out practical techniques in health care. This Outcome will also raise your awareness of the importance of safe working practice and the need to act in accordance with organisational policies and procedures.

Outcome 2 will increase your confidence in carrying out calculations. You will be introduced to Units of measurements used when carrying out practical techniques. You will become familiar with different care situations that require measurements and calculations to be made and you will learn how to carry these out accurately.

Outcome 3 requires you to carry out a range of practical techniques. You will be shown how to do these and then you will practise under supervision until you become competent. You will also be aware of some of the factors that can affect results.

The Unit is assessed in two ways:

A skills booklet or portfolio of practice to record your ability to carry out practical techniques competently, using a holistic approach. This will be completed when you are working or on placement in a care setting and monitored by your supervisor/mentor.

Questions will be asked relating to calculations, graphs and measurements. This will be done as a closed-book test.