



Higher National Unit specification

General information for centres

Unit title: Food Analysis

Unit code: F6VC 34

Unit purpose: This Unit is designed to enable candidates to develop the practical laboratory skills and techniques required to perform analysis of the chemical properties of foodstuffs.

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

- 1 Use practical techniques to investigate the properties of foodstuffs.
- 2 Report the results of investigations.

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 will be at the discretion of the centre. However, it would be beneficial if candidates had completed a science subject. This could be achieved through the HN Unit F6VD 34 *Food Composition* or the HN Unit F6VB 33 *Science for the Food Industry: An Introduction* or through Units in Chemistry at SCQF level 6.

Core Skills: There are opportunities to develop the Core Skills component of *Communication: Written Communication (Writing)* at SCQF level 5 and *Numeracy (Using Number)* 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 in the subject area of the Group Award to which it contributes. This Unit is part of the HNC in Food Science and Technology. It is recommended that it should be taught and assessed within this Group Award. It is closely linked to the Unit F6VD 34 *Food Composition*. Candidates therefore attempting this Unit may find it beneficial to have completed, or be in the process of completing the Unit F6VD 34 *Food Composition*.

Assessment: Candidates will be expected to carry out experiments using a number of different analytical techniques. They will record the results of these experiments and interpret the results. This can be assessed in a variety of ways, eg they could use a laboratory logbook. In addition, observation checklists can be used to ensure that experimental work is carried out safely and accurately.

Higher National Unit specification: statement of standards

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

Please refer to *Knowledge and/or Skills for the Unit* and *Evidence Requirements 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

Use practical techniques to investigate the properties of foodstuffs

Knowledge and/or Skills

- ◆ Volumetric analysis
- ◆ Gravimetric analysis
- ◆ Wet chemical analysis
- ◆ Preparing equipment for the analyses
- ◆ Safe performance of laboratory techniques
- ◆ Precise results

Outcome 2

Report the results of investigations

Knowledge and/or Skills

- ◆ Data analysis and calculation of results
- ◆ Comparison of results with expected standards

Evidence Requirements for the Unit

Candidates will need to provide written/oral and practical evidence to meet all the Knowledge and/or Skills items by showing that they can carry out eight food analyses. The eight food analyses should include at least two of each of the following:

- ◆ perform volumetric analyses for at least two foodstuffs
- ◆ perform gravimetric analyses for at least two foodstuffs
- ◆ perform wet chemistry analyses for at least two foodstuffs

The remaining two analyses can come from any of the above.

Higher National Unit specification: statement of standards (cont)

Unit title: Food Analysis

These eight analyses should be recorded in a suitable format. The records should contain:

- ◆ methodology
- ◆ all relevant results, including correct calculations where appropriate
- ◆ a comparison of the results with the expected standards
- ◆ conclusions drawn from the results

Candidates should prepare and set up equipment in an appropriate manner for each experiment. They should deploy suitable practical techniques in accordance with prevailing safety requirements in the laboratory and ensure that their work produces precise results. To ensure that candidates meet these requirements, they should be observed on all eight occasions and a record should be kept of the observation.

Assessment Guidelines for the Unit

Candidates can maintain a laboratory logbook to record the evidence of their practical work. An observation checklist can be used to record the achievement of practical skills such as safe laboratory practice.

Candidates could be asked questions about the work they have done to supplement the observation checklist and the recording of analyses.

Administrative Information

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Unit title: Food Analysis
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History of changes:

Version	Description of change	Date
02	Title amended by removal of numeral 1 in line with QDT agreement.	27/04/10

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Higher National Unit specification: support notes

Unit title: Food Analysis

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 enable candidates to analyse the chemical properties of foodstuffs. In order to do this, candidates need to develop appropriate laboratory skills and techniques including the reporting of experimental work. The Unit is, therefore, a practically-based Unit involving experimental work in the laboratory.

This Unit forms part of the HNC Food Science and Technology. It is closely linked to the Unit, F6VD 34 *Food Composition* in which candidates gain underpinning knowledge and understanding of chemistry which they apply to food processing and the food industry. This Unit also, therefore, helps candidates to appreciate why food chemistry is critical to food manufacturing.

Candidates undertaking this Unit will require some prior scientific knowledge. This could be provided by F6VD 34 *Food Composition*. Alternatively, candidates could have completed Units in chemistry or a related science at SCQF level 6 or F6VB 33 *Science for the Food Industry: An Introduction*.

The Unit should enable candidates to become familiar with laboratory techniques of relevance to the food industry and of the importance of following proper procedures in the laboratory. Candidates should be made fully aware of the importance of safe working practices and the precautions that should be taken to ensure that these are achieved. They should recognise the need to obtain accurate results and the consequent requirement to conduct experiments carefully and according to the relevant procedure. They will be expected also to keep a record of their observations and results including calculations where necessary and interpretation of the results. At the completion of the Unit, candidates should feel confident about performing routine experiments.

The following give some examples of analyses which could be used. They are examples only and any other appropriate analysis could be used. The choice may be influenced by factors such as the availability of equipment; the need to develop particular skills among candidates; and so on.

Volumetric

- ◆ Acetic acid in vinegar
- ◆ Lactic acid in yoghurt
- ◆ Tartaric acid in wine
- ◆ Vitamin c in fruit juice
- ◆ Saponification (sap) value of oil
- ◆ Salt in crisps by chloride meter

Higher National Unit specification: support notes (cont)

Unit title: Food Analysis

Gravimetric

- ◆ Ash content
- ◆ Lactose in milk
- ◆ Fat determination by Soxhlet
- ◆ Moisture by oven drying or moisture meter

Wet chemistry

- ◆ Alcohol in wine by distillation
- ◆ Dean and Stark moisture determination
- ◆ Iron in cereal by spectrophotometry

Guidance on the delivery and assessment of this Unit

Delivery should aim to build laboratory skills in candidates so that their confidence in undertaking laboratory work is enhanced. Throughout, candidates can be encouraged to see how their work in this Unit is important to the activities of the food industry.

This Unit is closely associated with the Unit, F6VD 34 *Food Composition*. If candidates are taking both Units, it may be appropriate to integrate the way in which they are delivered. Candidates could for example complete F6VD 34 *Food Composition* and then move directly into this Unit.

Assessment for this Unit is based on the practical work undertaken. Candidates should be observed during their work and observation should be recorded on a checklist (photographic and/or video evidence could be used to supplement the checklist). This will provide evidence that candidates have followed proper laboratory procedures and carried out the work safely and accurately. If necessary, the observation checklists may be supplemented by additional questions.

Candidates must also record and interpret the results of their experiments and they could use a laboratory log book to do this. Reports should include the results of the analyses including any calculations which are necessary. The evidence should include referencing and sources of errors where appropriate. Candidates should interpret the results by comparing them with the expected standard.

Opportunities for developing Core Skills

Communication: Written Communication (Writing) at SCQF level 5

As part of their assessment work for this Unit, candidates are expected to maintain details of practical work. This can be done in a laboratory log book or diary and candidates will be expected to organise the content into a logical and effective structure. Candidates will, therefore, use written information to demonstrate their knowledge and understanding of relevant ideas and information. Candidates can also be asked to write up their practical work in a report style which can replicate that used in industry. In these cases, candidates can be expected to make sure that the report meets its intended purpose by a format and layout appropriate to an industrial readership.

Higher National Unit specification: support notes (cont)

Unit title: Food Analysis

Numeracy (Using Number) at SCQF level 5

As part of this Unit, candidates are required to carry out practical work. They are expected to undertake calculations using scientific formulae and, using the Outcome of these calculations, draw conclusions about the results of their practical work. This will involve quantitative data over a range and candidates will be required to decide what numerical operations are to be carried out and the order in which to do them

Open learning

This Unit could be delivered by Open Learning. However, candidates must be able to undertake practical laboratory work under supervised conditions, something which may be time-consuming and difficult to organise. If suitable arrangements can be made, they would have to cover assessment and quality assurance.

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

General information for candidates

Unit title: Food Analysis

This Unit is an optional Unit in the HNC Food Science and Technology. It follows on from *Food Composition* and is designed to enable you to develop practical laboratory skills and techniques which will enable you to analyse the chemical properties of foodstuffs and draw conclusions.

Food Analysis provides you with knowledge and understanding of the chemical properties of foodstuffs. It is a practical Unit in which you will learn some of the practical techniques used in the food industry to investigate the properties of foodstuffs. These practical skills complement the ones you will have developed in the mandatory Unit *Microbiology of Foods 1*.

You will know from your work on *Food Composition* and from the Units in food processing that chemical properties of foodstuffs are a vital part of the day to day operation of food businesses. You will also know the implications that they have for consumers. This Unit, therefore, provides you with practical skills which will be beneficial when you take up employment in the food industry. It will also help you consolidate things that you have learnt in other Units.

During this Unit you will be introduced to a number of different practical techniques such as volumetric analysis, gravimetric analysis and wet chemistry analysis. You will be shown how to do these experiments and how to perform them safely and in accordance with laboratory procedures. You will also draw conclusions from the results of your work by comparing your results with the expected standards for the experiments that you do.

The assessment for the Unit will require you to carry out eight food analyses. You will be observed while you are doing your laboratory work and will have to keep records of work that you have done. These records will include the results of your work and the conclusions you have drawn.

You will have succeeded in meeting all the requirements of this Unit if you pass the assessments.