



## Higher National Unit specification

### General information for centres

**Unit title:** Sensory Assessment of Foods

**Unit code:** F8L3 35

**Unit purpose:** This Unit is designed to enable candidates to apply sensory analysis techniques to evaluate food products. It will enable them to plan a sensory testing panel and evaluate data gathered from sensory testing.

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

- 1 Plan the conduct of a sensory panel.
- 2 Interpret the results from sensory panel testing.

**Credit points and level:** 1 HN credit at SCQF level 8: (8 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:** Access to this Unit will be at the discretion of the centre. However, it would be beneficial if candidates had some background in food chemistry and microbiology. This could be demonstrated by relevant practical experience or the completion of Units at SCQF level 7 such as:

- ◆ F6VD 34 Food Composition
- ◆ F6VC 34 Food Analysis
- ◆ F6VL 34 Microbiology of Foods 1
- ◆ F6VM 34 Microbiology of Foods 2

It would also be beneficial if candidates had some background knowledge of the principles of food manufacturing. This could be demonstrated by relevant practical experience or the completion of Units at SCQF level 7 such as:

- ◆ F6VG 34 Food Manufacturing: Processing Practices at Ambient Temperatures
- ◆ F6VJ 34 Food Manufacturing: Processing Practices at Sub-Ambient Temperatures Practices
- ◆ F6VH 34 Food Manufacturing: Processing Practices at Elevated Temperatures

**Core Skills:** There are opportunities to develop the following Core Skills components in this Unit: *Written Communication* (Writing) at SCQF level 6; *Numeracy* (Using Number) at SCQF level 6; *Problem Solving* (Critical Thinking) at SCQF level 6; *Problem Solving* (Planning and Organising) at SCQF level 6; *Problem Solving* (Reviewing and Evaluating) at SCQF level 6; *Working with Others* (Working Co-operatively with Others) at SCQF level 6. However, there is no automatic certification of these Core Skills components.

## **General information for centres (cont)**

**Unit title:** Sensory Assessment of Foods

**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.

**Assessment:** Assessment for this Unit can take several forms but it should reflect the practical nature of the Unit. Also, assessment for both Outcomes can be integrated: candidates could be asked to prepare a plan for the conduct of a sensory testing panel and then gather data by actually conducting a sensory panel according to the arrangements set out in the plan. This would enable them to gather relevant sensory data which they can then analyse and interpret.

## Higher National Unit specification: statement of standards

**Unit title:** Sensory Assessment of Foods

**Unit code:** F8L3 35

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.

### Outcome 1

Plan the conduct of a sensory panel

#### Knowledge and/or Skills

- ◆ standards for the conduct of sensory panels
- ◆ planning stages
- ◆ process of a sensory panel
- ◆ selection and training of panel members
- ◆ sources of bias

### Outcome 2

Interpret the results from sensory panel testing

#### Knowledge and/or Skills

- ◆ difference, descriptive and acceptance/preference tests
- ◆ statistical tests
- ◆ advantages and limitations of sensory panel testing

### Evidence Requirements for the Unit

Candidates will need to provide written/oral and practical evidence to meet all the Knowledge and/or Skills items to demonstrate sound knowledge/skills of procedures to assure food quality by:

- 1 Preparing a plan for the conduct of a sensory panel. The plan must be in accordance with current national and international standards and guidelines for sensory panels and must also:
  - ◆ clearly follow each of the key planning stages
  - ◆ cover all aspects of the process of a sensory panel including panel timing, number of samples per session, sample preparation and presentation [coding, quantity of sample, and temperature] use of palate cleansers and control of the judging environment
  - ◆ recommend, and give reasons to justify a suitable membership for the panel and arrangements for the selection, screening and training/familiarisation procedures appropriate for each of the categories of members of the panel
  - ◆ give valid reasons to explain why the plan will avoid different sources of bias in the conduct of the sensory panel

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

### **Unit title: Sensory Assessment of Foods**

- 2 Interpreting the results from three different sensory panel tests. These tests should cover one example of a difference test, a descriptive test and an acceptance/preference test. The interpretation must:
  - ◆ collate the data from the sensory tests and present this in a suitable format
  - ◆ evaluate the significance of the sensory test data from the use of the appropriate statistical test
  - ◆ draw conclusions from the sensory data and the statistical tests

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

This is a practical Unit and this can be reflected in the assessment, eg candidates could be asked to produce a plan for a sensory panel testing based on an actual or a hypothetical situation. They could make use of this plan to conduct an actual sensory panel. This could enable them to gather relevant data which they could then analyse and interpret.

Candidates can present their work in several forms eg a report or reports in a style which replicates those used by companies in the food industry. Candidates could be given guidance on the format and structure of the reports.

## Administrative Information

**Unit code:** F8L3 35

**Unit title:** Sensory Assessment of Foods

**Superclass category:** NH

**Original date of publication:** August 2009

**Version:** 02

### History of changes:

Version	Description of change	Date
02	Titles of Units F6VD 34 and F6VC 34 amended by removal of numeral 1 in line with QDT agreement.	26/04/10

**Source:** SQA

© Scottish Qualifications Authority 2009, 2010

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: Sensory Assessment of Foods

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 designed to enable candidates to apply sensory analysis techniques to evaluate food products. It will also enable them to plan a sensory testing panel and evaluate data gathered from sensory testing. The taste of food is of great importance to consumers, therefore food manufacturers must ensure that the taste of their products is acceptable to consumers. The main way in which this is done is by setting up situations where the taste of foods can be tested.

The emphasis of this Unit is, therefore, on sensory panels and how they are used by companies in the food industry — both food manufacturers and food retailers. The Unit covers the establishment of panels and the process by which they taste food products and comment on them. It introduces candidates to the range of sensory tests which are available and to the statistical techniques which can be used to evaluate the data obtained from panellists. An important part of the Unit is enabling candidates to recognise the extent of the reliability and validity of sensory testing. Candidates should be aware of the sources of bias in sensory panels and of the advantages and limitations of all aspects of sensory testing. These include the sensory tests themselves and the statistical techniques used to analyse the data.

The Unit offers many opportunities for candidates to gain practical experience of the food industry and what it does. Candidates can gain practical experience of being a member of a sensory panel and get first hand knowledge of the way in which they are run and the factors (such as possible bias) which affect them. They may also be able to work with others, such as consumers and experts who act as panel members, as well as coming into contact with panel organisers.

Where this Unit is delivered as part of the HND Food Science and Technology, it is a precursor to the Unit, (F8L7 35) Food Product Development Principles so candidates will benefit if they have completed this Unit first.

Candidates should have some background in food science, especially food chemistry and food processing. This could be demonstrated by relevant practical experience or achievement of Units such as:

- ◆ F6VD 34 Food Composition
- ◆ F6VC 34 Food Analysis
- ◆ F6VL 34 Microbiology of Foods 1
- ◆ F6VM 34 Microbiology of Foods 2
- ◆ F6VG 34 Food Manufacturing: Processing Practices at Ambient Temperatures
- ◆ F6VJ 34 Food Manufacturing: Processing Practices at Sub-Ambient Temperatures Practices
- ◆ F6VH 34 Food Manufacturing: Processing Practices at Elevated Temperatures

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

### Unit title: Sensory Assessment of Foods

As part of the Unit, candidates should be introduced to the concept of food evaluation by the use of the human senses. This could involve basic practical tests/demonstrations, such as colour blindness determination, which illustrate the diverse nature of the potential panellist. The application of sensory tests in the food industry should be comprehensive and include its use in quality assurance, product development and consumer acceptability tests.

Candidates will require underpinning knowledge and understanding of the role of senses in food quality evaluations. They will be expected to apply this in both Outcomes of the Unit but particularly when evaluating the results of sensory tests in Outcome 2. Candidates should be aware of the importance of the five senses in food quality evaluation and the role of the four primary tastes in sensory analysis. They should also appreciate the importance of sensory analysis in the evaluation of food quality and how it can be used in quality assurance, product development and consumer acceptability tests. Candidates should also be aware of the industrial applications for sensory analysis.

The following give some further details on each of the 2 Outcomes.

**Outcome 1:** Candidates should be aware of the following:

- ◆ current ISO standards and Institute of Food Science and Technology (IFST) guidelines for selection and training of assessors and the moral and ethical standards expected of panel organisers
- ◆ need for sensory panels to include expert, assessor and consumer members
- ◆ guidelines for physical resources including the recommended design features for a judging room — these are guidelines and may be adapted in light of circumstances which constrain resource availability such as the need to meet budgetary requirements
- ◆ process of a taste panel — the importance of panel timing, limitation of number of samples per session, sample preparation and presentation [coding, quantity of sample, and temperature of serving] use of palate cleansers and control of the serving environment.
- ◆ common bias factors, both psychological and physiological
- ◆ potential limitations of sensory panel testing

**Outcome 2:** Candidates should be aware of sensory tests such as the following:

- ◆ Descriptive tests: sensory profiling, quantitative descriptive analysis and free choice profiling
- ◆ Difference tests: Paired Comparison, Triangle and Duo-Trio tests
- ◆ Acceptance/Preference tests: Paired Preference, Ranking and Hedonic rating tests.

They should be aware of the sensory data produced by each test and any limitations associated with it. They should know how to collate the data and carry out appropriate significance tests. They should know also that tests differ in their requirements for training of panel numbers in order to obtain statistically sound results.

When examining the advantages and limitations of sensory panel testing, candidates should refer to all aspects of the sensory panel testing process. This includes the advantages and limitations of sensory analysis itself as well as issues raised by all aspects of planning and conducting a sensory panel. It also comprises advantages and the limitations of the specific statistical tests. Candidates would be expected to interpret the results of sensory panel testing in the light of all these factors.

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

### **Unit title:** Sensory Assessment of Foods

Discussion on the limitations of sensory results could include the comparison of results from the chemistry laboratory to the response by the human senses eg salt determination

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

#### **Delivery Guidance:**

This is a practical, applied Unit which aims to enable candidates to develop skills which are of considerable importance to the food industry. Delivery and assessment should, therefore, reflect this practical and applied emphasis. Candidates should be encouraged to make use of any experience that they have of the food industry and of sensory testing food processing companies. The Unit provides an ideal opportunity for candidates to explore the range of industrial applications for sensory analysis (eg their use by the multiples to assess brand acceptability).

Ideally, each candidate should be given the opportunity to take part — as a panellist — in as wide a variety of tests as possible. They should be encouraged to participate in industry sensory testing panels and this can be supplemented with simulated work in the delivery environment. Candidates should also be encouraged to research the way in which the food industry approaches sensory testing and find examples of how this has been done.

Delivery could also make use of hypothetical situations, eg candidates could work in small groups to plan and set up a mock sensory panel and make use of existing food products to carry out sensory tests. Each group could make use of other members of the cohort in their sensory panels. It might be possible for groups to report their findings back to the cohort as a whole. This could be done by a group presentation or by electronic arrangements such as conference, blog or wiki.

Throughout delivery, candidates should be encouraged to recognise the importance of sensory testing to the food industry and the contribution it can make to product development. In this way the Unit can help candidates to think about the types of opportunities open to them when they take up employment in the food industry.

#### **Assessment Guidance:**

Assessment for this Unit can be based on either actual or hypothetical situations, eg candidates may be able to plan for an actual sensory panel and become involved in the conduct of it. In this way they would obtain the data that they are required to analyse and interpret. Alternatively, candidates can be given a hypothetical situation, perhaps in the form of a case study, and asked to plan a sensory panel. In this situation, it may be possible to ask candidates to convene a mock panel through which they can gather the sensory data they require. It may be possible to invite experts from the food industry to participate in these panels. This would not only ensure that the composition of the panels was suitable but also would give candidates the chance to work with people from the food industry. Where candidates are familiar with an organisation, they could use it as the basis for their assessment work.

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

### Unit title: Sensory Assessment of Foods

Candidates can present their assessment work in a number of different formats, eg in the form of a report or reports and, if desired they could be asked to adopt a suitable report format. This may be give useful practice for future work in industry. Alternatively, they could make use of a poster presentation or use relevant presentation software. Oral evidence should be recorded (eg by video) and retained.

#### *Opportunities for developing Core Skills*

##### ***Communication: Written Communication (Writing) at SCQF level 6***

As part of their assessment work for this Unit, candidates are expected to present their plan for the conduct of a sensory testing panel and to report on their interpretation of the result of sensory tests. Both these can be achieved using a written report. Candidates will be expected to present and analyse essential information in a logical and effective order. They will have to do this by using a structure which links the various points together and organises the content in a manner which distinguishes between explanation and evaluative conclusions drawn from the analysis. They will be expected to follow the conventions of report writing and ensure that their report is comprehensible to an industrial readership.

##### ***Numeracy: Using Number at SCQF level 6***

Outcome 2 of the Unit requires that candidates use significance testing to analyse and interpret data gathered from sensory tests. Candidates will, therefore, have to solve problems using standard deviation and carry out the calculations associated with the significance tests used. Candidates will have to work to a high degree of accuracy in these calculations which can be complex.

##### ***Problem Solving: Critical Thinking at SCQF level 6***

All aspects of this Unit require candidates to identify factors involved in a situation, assess their relevance and develop an approach to deal with the situation. In Outcome 1, for example, they must decide on the composition of a sensory panel and what arrangements should be made to select and train suitable participants. For Outcome 2, they must decide which sensory data tests to use and which statistical tests are appropriate for the evaluation of the data obtained.

##### ***Problem Solving: Planning and Organising at SCQF level 6***

Outcome 1 requires that candidates plan the conduct of a sensory panel for food tasting. This is a complex task which involves a large number of unfamiliar variables. They include the composition of the panel, the design features of the judging room as well as the details of the process by which the sensory testing will be carried out. In addition, the arrangements must make sure that sources of bias are minimised. Candidates may, depending on the assessment method adopted, carry out the plan in order to gather data for Outcome 2.

##### ***Problem Solving: Reviewing and Evaluating at SCQF level 6***

For Outcome 2, candidates are expected to evaluate the results gathered from the sensory data they have collected. This evaluation includes drawing conclusions which take into account the arrangements for a sensory panel and, therefore, the plan for the conduct of the sensory panel. The evaluation will require candidates to gather data on product testing using quantitative methods to analyse this data.

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

**Unit title:** Sensory Assessment of Foods

***Working with Others: Working Co-operatively with Others at SCQF level 6.***

The assessment for this Unit could involve candidates carrying out their plan for a sensory testing and actually conducting a sensory panel. This could be in a real or a hypothetical situation and will require candidates to work with others, such as prospective panel members, to identify factors such as their role in the panel, the training required and so on. Candidates will have to encourage panel members to work together and deal with any difficulties that arise in the conduct of the panel, including possible conflict. This may require candidates to adapt their own behaviour to resolve the difficulties.

### **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](http://www.sqa.org.uk/assessmentarrangements)

## General information for candidates

### **Unit title:** Sensory Assessment of Foods

This Unit is designed to enable you to apply sensory analysis techniques to evaluate food products. Sensory analysis is vitally important to food industry as it enables manufacturers to find out how consumers react to food products. It is of particular importance in new product development as manufacturers need to be sure that consumers like the taste of new products. You will be able to make use of the things you learn in this Unit when you go on to study the Food Product Development Principles Unit.

The Sensory of Assessment of Foods Unit has two main parts. Firstly, you will be asked to draw up a plan for the conduct of a sensory testing panel. In this you will have to take into account factors such as the composition of the panel and the selection and training of panel members. There are many sensory tests which can be done and you will have to decide which ones are most suitable for the food products which the panel are asked to taste.

In the second part of the Unit, you will be asked to interpret the results of sensory data gathered from the tests used with a sensory panel. There are a number of different statistical tests which can be used and you will have to decide which to use and do the necessary calculations. Interpreting the results depends on a variety of factors including the advantages and limitations of the tests used. You will be expected to take these into account when interpreting your results.

During the delivery of the Unit, you will be given the opportunity to take part in a variety of sensory tests as a panellist. These may be both actual tests carried out by the food industry as well as simulated panels with other people, eg your student colleagues. You may, for example, get the chance to carry out your plan for a sensory testing. Overall, these types of experiences will be of value to you when you seek employment in the food industry.

The assessment for the Unit will require you plan for the conduct of a sensory panel and interpret the results of sensory tests. These could be linked to actual or case study situations. As the assessment for this Unit can take several forms, your tutor will explain how you should present your assessment work, eg it could be in the form of industry report(s). You will have succeeded in meeting all the requirements of this Unit if you pass the assessment.