National Unit Specification

General information

Unit title: Beekeeping: Theory (SCQF level 5)

Unit code: HP9T 45

Superclass: SH

Publication date: July 2017

Source: Scottish Qualifications Authority

Version: 01

Unit purpose

This unit allows learners to develop their understanding of the principles that underpin beekeeping. This unit is appropriate for learners who wish to become beekeepers or who already have some practical experience and understanding of beekeeping and wish a formal qualification.

The unit is a core unit in the NPA Beekeeping (SCQF level 5), but it can also be used on a stand-alone basis.

Outcomes

On successful completion of the unit the learner will be able to:

1 Explain the science and practice of beekeeping.
2 Explain the basic theory behind the practical techniques of beekeeping.
3 Describe the role of *Apis mellifera* in the overall agricultural economy of the UK.

Credit points and level

1 National Unit credit at SCQF level 5: (6 SCQF credit points at SCQF level 5)

Recommended entry to the unit

Entry to this unit is at the discretion of the delivering centre however, it is recommended that learners should have already completed *Beekeeping: An introduction*. This unit can also be delivered alongside or integrated with *Beekeeping: Practical Skills*.

National Unit Specification: General information (cont)

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Core Skills

Opportunities to develop aspects of Core Skills are highlighted in the support notes for this unit specification.

There is no automatic certification of Core Skills or Core Skill components in this unit.

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.

Equality and inclusion

This unit specification has been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners should be taken into account when planning learning experiences, selecting assessment methods or considering alternative evidence.

Further advice can be found on our website **www.sqa.org.uk/assessmentarrangements**.

National Unit Specification: Statement of standards

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Acceptable performance in this unit will be the satisfactory achievement of the standards set out in this part of the unit specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

Outcome 1

Explain the science and practice of beekeeping.

Performance criteria

(a) Describe the life cycle of *Apis mellifera* and the characteristics and tasks undertaken in the colony by its various castes.
(b) Describe the division of labour within a colony.
(c) Identify the basic external anatomy of *Apis mellifera.*
(d) Describe communication between, and senses of, Apis mellifera.
(e) Explain the methods by which bees gather and the uses within the colony of the following:
- nectar
- pollen
- water
- propolis.

Outcome 2

Explain the basic theory behind the practical techniques of beekeeping.

Performance criteria

(a) Explain the processes of swarming and supersedure.
(b) Describe swarm prevention and swarm control systems.
(c) Describe queen rearing systems and explain the need for and method of requeening.
(d) Describe the principle hive designs used by beekeeper in the UK, identifying their strengths and weaknesses.
(e) Describe the effect of weather, topography, geography and soil chemistry on the ability of plants to secrete, and bees to collect, nectar.
(f) Describe the effect of herbicides, pesticides, fungicides and insecticides on honey bees.
(g) Describe the importance of migratory beekeeping to a successful beekeeping venture.
(h) Describe the concept of the bee space and its significance in the modern beehive.

National Unit Specification: Statement of standards (cont)

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Outcome 3

Describe the role of *Apis mellifera* in the overall agricultural economy of the UK.

Performance criteria

(a) Explain the value of pollination to the agricultural industry.
(b) Identify the range of crops which honey bees are best suited to pollinate.
(c) Explain the value and amount of honey produced and the context of honey production in the UK.

Evidence requirements for this unit

Evidence is required to demonstrate that learners have achieved all outcomes and performance criteria.

For Outcome 1 written and/or recorded oral evidence is required of the learner's ability to:

- describe the life cycle of Apis mellifera and the characteristics and tasks undertaken in the colony by its various castes.
- describe the division of labour within a colony.
- identify the basic external anatomy of Apis mellifera.
- describe communication between, and senses of, Apis mellifera.
- explain the methods by which bees gather and the uses within the colony of:
  - nectar
  - pollen
  - water
  - propolis.

For Outcome 2 written and/or recorded oral evidence is required of the learner's ability to:

- explain the difference between swarming and supersedure and the reason why they take place and describe swarm prevention and swarm control systems.
- describe queen rearing systems and explain the need for and method of requeening.
- describe the principle hive designs used by beekeeper in the UK, and identify their strengths and weaknesses.
- describe the effect of weather, topography, geography and soil chemistry on the ability of plants to secrete, and bees to collect nectar.
- describe the effect of herbicides, pesticides, fungicides and insecticides on honey bees.
- explain the importance of migratory beekeeping to a successful beekeeping venture.
- describe the concept of the bee space and its significance in the modern beehive.

National Unit Specification: Statement of standards (cont)

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For Outcome 3 written and/or recorded oral evidence is required of the learner's ability to:

- explain the value of pollination to the agriculture industry
- identify the range of crops pollinated by honey bees
- describe the context of UK honey production
- explain the quantity and value of honey produced in the UK
- describe the scale of pollination required for various crops
- identify the legal agreements which should be in place if bees are used in the pollination of agricultural crops
- describe the factors that should be considered when introducing bees to a crop for pollination with regard to:
    - access
    - permission
    - timing
    - number of hives
    - species/types of crops
    - importance of monitoring hives
    - market for produced honey.

National Unit Support Notes

Unit title: Beekeeping: Theory (SCQF level 5)

Unit support notes are offered as guidance and 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 has been created to run parallel to and complement the existing Scottish Beekeepers' Association training. Although this unit is an introduction, when delivered in association with the other units of the NPA Basic Beekeeping course it will also help to prepare learners for the national Scottish Beekeepers' Examination. Learners wishing to undertake this examination should register with the SBA. Further information can be found on their website or at: https://www.scottishbeekeepers.org.uk/learn/exams-dates-fees.

Guidance on approaches to delivery of this unit

If delivered as part of the NPA Beekeeping, it is recommended that the theory be spread throughout the course, perhaps with guest speakers or presentations clustered in the winter months when the practical delivery is limited. Although the majority of this unit could be delivered in the classroom, it is important that any practical aspects of learning take place under the supervision of experienced and qualified apiculturists. Partnerships with land based education providers, beekeeping associations or training providers are likely to provide the most appropriate settings. Prior to commencement, a risk assessment should be conducted of the site to be used, as well as identifying any personal protective equipment required.

Guidance on approaches to assessment of this unit

Evidence can be generated using different types of assessment. The following are suggestions only. There may be other methods that would be more suitable to learners.

Centres are reminded that prior verification of centre-devised assessments would help to ensure that the national standard is being met. Where learners experience a range of assessment methods, this helps them to develop different skills that should be transferable to work or further and higher education.

It is recommended that Outcomes 1 and 2 take the form of a closed book assessments consisting of twenty short answer questions with pass set at 70 per cent, whilst Outcome 3 could be a report or a poster presentation. There should be a checklist for the latter. Learners are required to demonstrate competency in each of the performance criteria.

National Unit Support Notes (cont)

Unit title: Beekeeping: Theory (SCQF level 5)

Opportunities for e-assessment

E-assessment may be appropriate for some assessments in this unit. By e-assessment we mean assessment which is supported by Information and Communication Technology (ICT), such as e-testing or the use of e-portfolios or social software. Centres which wish to use e-assessment must ensure that the national standard is applied to all learner evidence and that conditions of assessment as specified in the evidence requirements are met, regardless of the mode of gathering evidence. The most up-to-date guidance on the use of e-assessment to support SQA's qualifications is available at **www.sqa.org.uk/e-assessment**.

Opportunities for developing Core and other essential skills

There is no automatic certification of Core Skills or Core Skills components in this unit, however there may be opportunities to develop the Core Skills of *Numeracy* and *Information and Communication Technology (ICT)* at SCQF level 5.

History of changes to unit

Version	Description of change	Date

General information for learners

Unit title: Beekeeping: Theory (SCQF level 5)

This section will help you decide whether this is the unit for you by explaining what the unit is about, what you should know or be able to do before you start, what you will need to do during the unit and opportunities for further learning and employment.

This unit is designed to provide you with an introduction to the theory behind beekeeping and includes the biology of honey bees, their lifecycle, the effect of external factors on bees and how to best apply this knowledge in beekeeping.

On completion of the unit you will be able to:

- explain the science and practice of beekeeping.
- explain the basic theory behind the practical techniques of beekeeping.
- describe the role of *Apis mellifera* in the overall agricultural economy of the UK.

This is a standalone unit but also makes up part of the NPA in Beekeeping. Upon successful completion of this unit, you may wish to go onto complete the NPA, or if studying further with the Scottish Beekeepers' Association, to take the formal SBA Basic Beekeeping examination.