

## SQA Advanced Unit specification

### General information for centres

**Unit title:** Soil Science for Turf Managers 1

**Unit code:** HW8A 47

**Unit purpose:** This Unit will develop understanding of the way in which soils provide for the growing needs of the turfgrass plant, and how these contribute to the maintenance of turf quality. Different soils in different golf course types or other turf areas will be discussed to provide examples of how differences in soils contribute to differences in turf quality, and how these can be managed in order to provide the desired turf quality for a given situation.

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

- 1 Identify the land capability for agriculture, parent materials and soil types in different golf courses or other turf areas.
- 2 Describe the physical properties of soils in different golf courses or other turf areas.
- 3 Describe the nutritional properties of soils in different golf courses or other turf areas.

**Credit points and level:** 1 SQA 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 National 1 to Doctorates.*

**Recommended prior knowledge and skills:** There are no formal prior knowledge requirements, but it would be useful if the candidate had completed a Unit in soils at NC level or a science subject at National 5.

**Core Skills:** There are opportunities to develop the Core Skills of *Problem Solving*, *Communication*, *Numeracy* and *IT* 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.

**Assessment:** This Unit is assessed by three assessments. A structured written summary in the form of a field notebook (750 words); restricted response questions (closed-book), and short answer paper and matching exercise (closed-book).

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## **SQA Advanced 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.

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**

Identify the land capability for agriculture, parent materials and soil types in different golf courses or other turf areas

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

- ◆ the Land Capability for Agriculture of historical and contemporary golf courses or other turf areas, climate, topography and soils
- ◆ the parent materials of soils and their deposition processes
- ◆ the soils of selected golf courses or other turf areas

#### **Evidence Requirements**

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

- ◆ list and briefly describe factors of Land Capability for Agriculture
- ◆ identify soil parent materials and describe the deposition processes and the implications of these
- ◆ describe the properties of soils in different types of golf course or other turf area

#### **Assessment Guidelines**

A structured, written summary of field notes from visits to different golf courses or other turf areas identifying and describing the factors listed above. This will be open-book, and will be expected to include labelled diagrams of the soils profiles, photographs or sketches of the soils and surrounding area, extracts from Land Capability for Agriculture and Soil Survey maps. Soils from at least two contrasting locations representing different golf course types or other turf areas should be included. The report should be 750–1,000 words plus diagrams etc. This assessment may be integrated with the Unit assessments for *Turfgrass Ecology*.

## **Outcome 2**

Describe the physical properties of soils in different golf courses or other turf areas

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

- ◆ the physical properties of soils which are relevant to the turf manager, ie texture, structure, porosity and percolation rate
- ◆ soils which possess the desired properties
- ◆ the factors which determine physical properties in soils

### **Evidence Requirements**

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

- ◆ define soil texture, structure, porosity and percolation rate
- ◆ identify the degree to which these properties are present in different soils
- ◆ discuss the reasons why some soils possess these properties whilst others do not

### **Assessment Guidelines**

Restricted response questions for definitions and identification of properties would be an appropriate assessment instrument, coupled with use of the soil texture triangle, asking candidates to plot four or five soils on it from data provided and to explain which is the most suitable for turf. This would be closed-book, working solely from materials provided.

## **Outcome 3**

Describe the nutritional properties of soils in different golf courses or other turf areas

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

- ◆ the nutrients required by turf grasses
- ◆ the sources within soils of these nutrients
- ◆ the properties of soils which allow release of these nutrients to turf
- ◆ the abilities of different soils to provide nutrients to turf

### **Evidence Requirements**

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

- ◆ identify the essential nutrients for turfgrass growth
- ◆ describe the role of these nutrients in turf growth and management
- ◆ identify the sources of these nutrients including soil organic matter, mineral matter and fertilisers
- ◆ describe the abilities of different soils to provide these nutrients to turf grasses

### **Assessment Guidelines**

These knowledge and evidence could be assessed by short answer questions describing the roles of nutrients in the plant, the forms they take within the soil, and the ability of different soils to provide these nutrients to turf grasses. Candidates should also be able to match fertiliser analysis to different seasons in turf management. This will be a closed-book assessment.

## SQA Advanced Unit Specification

### Administrative Information

**Unit code:** HW8A 47

**Unit title:** Soil Science for Turf Managers 1

**Superclass category:** SF

**Original date of publication:** November 2017

**Version:** 01

#### History of changes:

Version	Description of change	Date

**Source:** SQA

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### SQA Advanced Unit specification: support notes

#### Unit title: Soil Science for Turf Managers 1

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 will form a basis for understanding of the way in which soils provide for the growing needs of the turfgrass plant, and how these contribute to the maintenance of turf quality. Different soils in different golf course types or other turf areas will be discussed to provide examples of how differences in soils contribute to differences in turf quality, and how these can be managed in order to provide the desired turf quality for a given situation.

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

Delivery will be a combination of field visits from which Outcome 1 will be assessed, classroom delivery with examples and data to support content, and discussion of soils, turf areas and turf quality in a variety of situations. Assessment will be through a combination of structured report of field work, restricted choice and selection of suitable materials from sample data. Assessment for Outcome 1 may be integrated with the Unit assessments for *Turfgrass Ecology*.

#### *Opportunities for developing Core Skills*

While there may be opportunities to develop the Core Skills of *Problem Solving*, *Communication*, *Numeracy* and *IT* at SCQF level 6, there is no automatic certification of Core Skills or Core Skills components.

#### Open learning

This Unit could be ideally suited to delivery in open/distance learning format. Closed-book assessments can either be achieved during in-college supervised sessions or via Web CT development of online assessment.

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

### General information for candidates

#### Unit title: Soil Science for Turf Managers 1

The Unit will form the basis of your knowledge of soils in golf courses, and will contribute to your understanding of the soil/turf/maintenance considerations of the turf manager. For example, soils of links golf courses provide conditions in which particular grasses can grow; these grasses in turn provide a surface suited to a particular style of play. For turf manager in situations other than golf the same considerations will apply, ie the understanding of soils will develop your ability to consider and make decisions about turf in other areas.

On completion of this Unit you should be able to:

- ◆ identify the land capability for agriculture, parent materials and soil types in different golf courses or other turf areas
- ◆ describe the physical properties of soils in different golf courses or other turf areas
- ◆ describe the nutritional properties of soils in different golf courses or other turf areas

This Unit will be assessed by means of a report for Outcome 1 and a series of closed-book restricted response questions for both Outcome 2 and Outcome 3.