

SQA Advanced unit specification

General information for centres

Unit title: Golf Course Management: Golf Course Irrigation Systems

Unit code: HW83 47

Unit purpose: This unit is designed to enable candidates to develop the knowledge and skills related to the design and maintenance of an automatic irrigation system on a golf course.

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

- 1 Describe the factors influencing the operation and management procedures for a golf course irrigation system.
- 2 Describe the components and their functions in a modern golf course irrigation system.
- 3 Produce a design plan for the effective coverage of a golf green.
- 4 Identify a range of management requirements for a golf course irrigation system.

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: Access to this unit is at the discretion of the centre, however it would be beneficial if the candidate had completed National Units: EA94 12 *Irrigating Sports Turf Surfaces* and D0NC 12 *Soil: Formation and Cropping Potential*.

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 four assessments: Outcome 1 is assessed by an assignment, Outcome 2 is assessed by a test of ten short answer questions and a short assignment, Outcome 3 is assessed by a project producing a design plan and Outcome 4 is assessed by an assignment.

SQA Advanced Unit Specification

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

Describe the factors influencing the operation and management procedures for a golf course irrigation system

Knowledge and/or Skills

- ◆ Soil water availability
- ◆ Factors based on infiltration rates, wetting fronts, evapotranspiration, hydrophobic conditions
- ◆ Irrigation methods/practices
- ◆ Water sources/quality and quantities
- ◆ Storage required
- ◆ Current Water Use Legislation
- ◆ Soil moisture measurement equipment and scheduling methods
- ◆ Drought resistance and water requirements of warm and cool season turfgrass species

Evidence Requirements

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

- ◆ relate the factors listed in the Knowledge and Skills to a Golf Course under summer conditions

Assessment Guidelines

This unit is assessed by an assignment of 1,000–1,200 words based on the knowledge and skills section of this outcome.

Outcome 2

Describe the components and their functions in a modern golf course irrigation system

Knowledge and/or Skills

- ◆ Knowledge of operating principles/features for sprinkler types
- ◆ Irrigation system components: decoders, communication cables, solenoid units, non-return and air valves, pressure vessels
- ◆ Basic knowledge of centrifugal pump operation
- ◆ Pipes and fittings
- ◆ Common problems with these components

SQA Advanced Unit Specification

Evidence Requirements

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

- ◆ describe the range of irrigation system components and their operational principles/features
- ◆ develop a basic fault finding chart for systematic recognition of common component faults

Assessment Guidelines

This outcome is assessed by a series of short answer questions and also a short assignment to develop a fault-finding chart showing logical sequence of checks to identify problem sources.

Outcome 3

Produce a design plan for the effective coverage of a golf green

Knowledge and/or Skills

- ◆ Spacing patterns
- ◆ Sprinkler/nozzle selection
- ◆ Wind allowances
- ◆ Other factors relating to uniform irrigation application for a golf green, tee and/or fairway

Evidence Requirements

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

- ◆ use the formulae and design criteria accurately
- ◆ produce an effective design for a golf green

Assessment Guidelines

This outcome is assessed by the production of a design plan to include sprinkler/nozzle selection, appropriate spacing and coverage for a given golf green supported by an accompanying commentary.

Outcome 4

Identify a range of management requirements for a golf course irrigation system

Knowledge and/or Skills

- ◆ Procedures/methods for decommissioning and recommissioning the system
- ◆ Types of programme required/used on control systems to meet the turf management needs

Evidence Requirements

Candidates will need evidence to demonstrate their knowledge and/or skills by showing that they can:

- ◆ produce a systematic and safe decommissioning and recommissioning sequence for winter protection of an irrigation system
- ◆ identify a range of programmes that might be used by the operator/course manager

Assessment Guidelines

This outcome is assessed by an assignment of 1,000–1,200 words.

SQA Advanced Unit Specification

Administrative Information

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| Unit code: | HW83 47 |
| Unit title: | Golf Course Management: Golf Course Irrigation Systems |
| Superclass category: | SF |
| Original date of publication: | November 2017 |
| Version: | 01 |

History of changes:

| Version | Description of change | Date |
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Source: SQA

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SQA Advanced Unit Specification

SQA Advanced unit specification: support notes

Unit title: Golf Course Management: Golf Course Irrigation Systems

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 provides the basis for golf course managers who may have a good working knowledge of the turf but have not linked this in with sound operation and management of irrigation. It also allows those with little or no knowledge of how the irrigation system works to develop confidence in assessing problems as well as operating the system.

Those wishing to develop as irrigation technicians may find this a useful starting point.

Guidance on the delivery and assessment of this unit

This unit would best be delivered after, (or alongside) the following unit:

HW83 47 *Soil Science for Turf Managers 1*

HW90 47 *Management of Turf Areas on Golf Courses*

Opportunities for developing Core Skills

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

Open learning

Authenticated evidence such as photographs, plans and other visual aids would be required from the candidate's place of work.

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.

SQA Advanced Unit Specification

General information for candidates

Unit title: Golf Course Management: Golf Course Irrigation Systems

This unit is designed to enable you to develop knowledge and skills in the design and maintenance an automatic irrigation system.

The use of irrigation is very much related to ‘water conservation’ and the ‘agronomic needs of turf’. A sound knowledge of how water reacts in different soils/situations and is retained under different soil textural types is relevant to candidates working on different golf course types, eg links and parkland.

On completion of this unit you will be able to:

- ◆ describe the factors influencing the operation and management procedures for a golf course irrigation system
- ◆ describe the components and their functions in a modern golf course irrigation system
- ◆ produce a design plan for the effective coverage of a golf green
- ◆ prepare a management programme for a golf course irrigation system

The assessments are a mixture of short answer questions and assignments and will be most useful to the candidate where, as much as possible, they relate to an actual practical situation on a golf course and not purely hypothetical examples.