

Higher National Unit specification

General information for centres

Unit title: Fundamentals of Landscape Surveying

Unit code: F1J7 34

Unit purpose: The aims of this Unit are to allow the candidate to develop an understanding of basic techniques of linear and level surveying. It is of relevance to those wishing to work in landscape management and construction or landscape/garden design.

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

- 1 Compare ways of fixing the position of a feature.
- 2 Carry out an accurate survey of an area of land.
- 3 Set out a feature.

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 is at the discretion of the delivering centre, however it would be beneficial for candidate to possess basic mathematical skills equivalent to standard grade level.

Core Skills: There are opportunities to develop the Core Skills of Numeracy and Problem Solving at SCQF level 6 in this Unit, although there is no automatic certification of Core Skills or Core Skills components.

Context for delivery: This Unit is normally delivered as part of a Group Award, however it may be offered as a free standing Unit for Continued Professional Development. 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. The learning experience of students could be enhanced by teaching the Unit in tandem with other landscape or design based Units such as; F21M 34 *Design Process and Composition in the Landscape: An Introduction*, F1J5 34 *Design and Use of Hard Landscape Features*, F1J3 34 *Constructing Hard Landscape Features*.

Assessment: Outcome 1 is assessed using extended response questions. Outcomes 2 and 3 are normally assessed by practical assignment.

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.

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

Compare ways of fixing the position of a feature

Knowledge and/or Skills

- ◆ Fixed frames of reference and positioning of points
- ◆ Methods of fixing a feature
- ◆ Appropriate techniques for fixing specific features

Evidence Requirements

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

- ◆ identify the frames of reference for a feature
- ◆ describe trilateration, triangulation, coordinate, bearing and distance techniques for fixing a feature
- ◆ select the appropriate technique to fix the position of a specific feature

Assessment Guidelines

This Outcome can be assessed by extended response questions

Outcome 2

Carry out an accurate survey of an area of land

Knowledge and/or Skills

- ◆ Linear survey field and office work
- ◆ Area levelling techniques
- ◆ Survey calculations

Higher National Unit specification: statement of standards (cont)

Unit title: Fundamentals of Landscape Surveying

Evidence Requirements

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

- ◆ the field and office work for a linear survey
- ◆ the field and office work for a level survey using area levelling techniques
- ◆ area, gradient and simple cut and fill calculations from survey data

Assessment Guidelines

Evidence for this learning Outcome would normally be generated by a practical assignment where candidates for a given site.

- ◆ complete a practical linear survey in the field
- ◆ draw up the linear survey
- ◆ complete a practical level survey in the field
- ◆ draw up the level survey with an appropriate section
- ◆ complete area, gradient and simple cut and fill calculations from the survey data

Outcome 3

Set out a feature

Knowledge and/or Skills

- ◆ Setting out processes
- ◆ Ground marking methods

Evidence Requirements

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

- ◆ set out a proposed feature accurately in plan view
- ◆ mark out the ground for a proposed feature

Assessment Guidelines

Evidence for this learning Outcome would normally be generated by a practical assignment where candidates, for a given site, accurately set out and mark out the ground for a proposed feature.

Administrative Information

Unit code: F1J7 34
Unit title: Fundamentals of Landscape Surveying
Superclass category: RG
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History of changes:

Version	Description of change	Date

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Higher National Unit specification: support notes

Unit title: Fundamentals of Landscape Surveying

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 has been designed to introduce candidates to the basic techniques of linear and level surveying.

Outcome 1 lays a foundation for an understanding of surveying theory and practice. The student should be introduced to the four geometric alternatives for describing the position of a point relative to a fixed frame of reference (namely: a known point and a defined direction). Consideration of the equipment (whether distance or angle measurement required, or both, and accuracy thereof) for each alternative will give the student an appreciation of the different surveying techniques available.

For Outcome 2 after a classroom introduction to the linear survey technique, the student should participate in a team exercise to do a linear survey on an area of land. Instruction should cover the stepping method to deal with sloping land and the importance of, as well as techniques to help, the accurate judgement of right angles. Once the field data are collected, the students should draw a scale plan of the area surveyed, indicating orientation of the plan and using industry standard symbols for features on the plan. Area measurement and calculation techniques should be considered, and some of these can be used to calculate the area of a feature on the drawn plan. After an introduction to the theory of levelling, the students should be involved in an area levelling exercise in the field, ideally on the same site as has been previously surveyed. Data should be recorded using a rise and fall level book with reduced levels related, ideally, to an ordnance bench mark. After calculation of the reduced levels, a section should be drawn through the site, and the average gradient along the section calculated. A proposed linear feature (eg trench for a drain, access ramp) can be superimposed on the section, and the depths of cut or heights of fill at regular intervals along the line calculated. All the measured reduced levels should be shown as spot heights on the plan, and contours can then be drawn on the plan, by interpolation between these.

In Outcome 3 the point that setting out is similar to, but the reverse of, surveying should be emphasised. The simple setting out covered in this Unit should only involve horizontal control, and should be based around a field exercise with the students working as a team, or several teams, depending on group size. Techniques for aligning features and setting out right angles should be considered, and the importance of checking all measurements stressed. Methods of marking the set out lines on the ground should be discussed, together with techniques for preserving the location of these lines during earthworks.

Higher National Unit specification: support notes (cont)

Unit title: Fundamentals of Landscape Surveying

Guidance on the delivery and assessment of this Unit

This Unit may be delivered as a free standing Unit. As a part of a Group Award framework there is some scope for integration into the following Units; Design Process and Composition in the Landscape, Design and Use of Hard Landscape Features, Constructing Hard Landscape Features. Outcome 1 should be delivered first, assessment for Outcome 1 may be deferred until the end of the Unit when most of the surveying theories have been practised and are therefore better understood by the student. Outcome 2 and 3 should be assessed by practical field work and the production of plans and sections, with submission of the completed level book and calculation sheets for the gradient, areas and cut and fill exercise.

Work in small groups in the field and in the classroom or drawing office should be used as much as possible as it is important for candidates to get used to surveying being a team occupation. Whilst teamwork is necessary in order to generate survey data, the assessment submissions should be the candidate's own work. However, the practical approach to the teaching of this Unit should most easily enable the candidate to individually demonstrate knowledge, understanding and competence in the basics of land surveying and setting out procedures.

Opportunities for developing Core Skills

There are opportunities to develop the Core Skills of Numeracy and Problem Solving at SCQF level 6 in this Unit, although there is no automatic certification of Core Skills or Core Skills components.

Open learning

Due to the practical nature of Outcomes 2 and 3 of this Unit it does not lend itself to delivery via open or distance learning.

Candidates with disabilities and/or additional support needs

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering alternative Outcomes for Units. Further advice can be found in the SQA document *Guidance on Assessment Arrangements for Candidates with Disabilities and/or Additional Support Needs* (www.sqa.org.uk).

General information for candidates

Unit title: Fundamentals of Landscape Surveying

This Unit is designed to allow you to develop the knowledge and skills required for basic linear and level surveying. In Outcome 1 you will consider the different surveying techniques and their suitability for different scenarios. Outcome 2 and Outcome 3 are practically based, providing the opportunity to carry out a site survey and then set out a feature.

On completion of this Unit you should be able to:

- 1 Compare ways of fixing the position of a feature.
- 2 Carry out an accurate survey of an area of land.
- 3 Set out a feature.

You will be assessed in this Unit by a series of extended response questions for Outcome 1 and by practical assignments for Outcomes 2 and 3.