



Higher National Unit specification

General information for centres

Unit title: Forestry: Silvicultural Systems

Unit code: F3YY 34

Unit purpose: This Unit sets in context the range of silvicultural systems available for the sustainable management of forests and woodlands. This Unit will be relevant for candidates wishing to enhance their knowledge and skills in forest and woodland management and regeneration.

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

- 1 Explain the use of silvicultural systems in forests and woodlands.
- 2 Select silvicultural systems for an area of forest or woodland.
- 3 Select regeneration methods for an area of forest or woodland.

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: It would be beneficial if candidates have an understanding of the principles of silviculture and have completed Unit F3YC 34 *Establishment of Woodland* prior to undertaking this Unit.

Core Skills: There are opportunities to develop the component Written Communication of the Core Skill *Communication* and the components Critical Thinking and Reviewing and Evaluating of the Core Skill *Problem Solving* to SCQF level 5 although there is no automatic certification of Core Skills or the 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: Outcome 1 of this Unit could be assessed through a response to questions covering all the Knowledge and/or Skills

Outcomes 2 and 3 could be assessed holistically in the form of a project based on a given or agreed area of forest or woodland, which is designed to cover all the Knowledge and Skills. Evidence could be presented in the form of a report prepared by the candidate of approximately 1,500 words or equivalent.

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

Explain the use of silvicultural systems in forests and woodlands

Knowledge and/or Skills

- ◆ Sustainability of forests and woodlands
- ◆ Forest and woodland structure
- ◆ Silvicultural systems

Evidence Requirements

Candidates will be required to demonstrate their Knowledge and/or Skills by providing evidence that they can:

- ◆ explain the concept of sustainability in respect of forests and woodlands and describe a minimum of two ways by which sustainability may be improved, stating the advantages and disadvantages of each way.
- ◆ explain a minimum of two ways in which even-aged forests and woodlands may be structured to improve the delivery of multiple objectives.
- ◆ select one silvicultural system for each of a minimum of two site and crop types, descriptions of which will be given by the tutor. The system must be suitable for each site and crop type. Candidates must explain how each system may be managed and state the advantages and disadvantages.

Assessment Guidelines

This Outcome could be assessed through the use of extended response questions. The questions could be contextualised and provide sufficient information to allow the candidate to present a justified response. The questions should ensure that the candidates are able to display knowledge and understanding and draw conclusions rather than state facts. The questions could also provide opportunity for candidates to demonstrate such skills as evaluation, comparison and discussion.

It is recommended that assessment of this Outcome is unsupervised and carried out in the candidate's own time. It is recommended that three weeks could be allowed for submission of the response. There is a suggested word limit of 1,000 words or equivalent.

Higher National Unit specification: statement of standards (cont)

Unit title: Forestry: Silvicultural Systems

Outcome 2

Select silvicultural systems for an area of forest or woodland

Knowledge and/or Skills

- ◆ Crop and site conditions
- ◆ External factors
- ◆ Silvicultural systems' selection methods
- ◆ Silvicultural systems' implementation methods
- ◆ Future management requirements

Evidence Requirements

Candidates will be required to demonstrate their Knowledge and/or Skills by showing that they can select silvicultural systems based on an evaluation of a given or agreed area of forest or woodland.

Candidates must:

- ◆ evaluate an area of forest or woodland. The evaluation must consider factors in terms of current and potential silvicultural systems. These factors must include: crop and site conditions, visual amenity, public use and biodiversity.
- ◆ select at least two silvicultural systems based on the evaluation of the area of forest or woodland. Candidates must provide justification for the choice of systems in terms of the potential for their successful implementation and future benefits.
- ◆ describe the way in which the selected silvicultural systems may be implemented taking into account the evaluation of the forest or woodland and the timescale.
- ◆ explain the future management of the selected silvicultural systems detailing future intervention requirements and resolution of potential problems.

The area of forest or woodland must be given by the tutor or agreed in advance with the tutor.

This Outcome is integrated with Outcome 3. The evaluation of an area of forest and woodland and the chosen silvicultural systems must be used in Outcome 3 to select regeneration methods.

Assessment Guidelines

Please see Assessment Guidelines after Outcome 3

Higher National Unit specification: statement of standards (cont)

Unit title: Forestry: Silvicultural Systems

Outcome 3

Select regeneration methods for an area of forest or woodland

Knowledge and/or Skills

- ◆ Regeneration methods
- ◆ Regeneration implementation methods
- ◆ Future management requirements for regeneration

Evidence Requirements

Candidates will be required to demonstrate their Knowledge and Skills by showing that they can select regeneration methods for a given area of forest or woodland. Candidates must:

- ◆ select at least two regeneration methods based on the evaluation of an area of forest or woodland from Outcome 2. The candidate must provide justification for the choice of methods in terms of the potential for their successful implementation and future management benefits.
- ◆ describe the way in which the chosen regeneration methods will be implemented taking into account the evaluation of the area of forest or woodland and the chosen silvicultural systems from Outcome 2. The candidate must describe and justify the requirements for preparatory site work, crop management and proposed timescales for regeneration.
- ◆ explain the future management requirements for regeneration in order to achieve industry standard stocking.

This Outcome is integrated with Outcome 2. The selection of regeneration methods in Outcome 3 must be based on the evaluation of an area of forest and woodland and the chosen silvicultural systems in Outcome 2.

Assessment Guidelines

The assessment of this Outcome could be combined with the assessment for Outcome 2.

It is recommended that the assessment could require the candidate to undertake a project to produce a report for a given or agreed area of forest or woodland where there is the potential to introduce new silvicultural systems and where all Evidence Requirements in Outcomes 2 and 3 can be covered.

Candidates could be provided with sufficient data to avoid the need for extensive crop enumeration and site survey. Site evaluation could be carried out in class time and under supervision. If candidates produce their evidence in the form of a report, this could be produced in their own time.

The use of annotated maps could be encouraged in order to keep the content of the report within a guideline limit of 1,500 words or equivalent.

Administrative Information

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Unit title: Forestry: Silvicultural Systems
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Higher National Unit specification: support notes

Unit title: Forestry: Silvicultural 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 is optional in the delivery of the Group Awards for the HNC in Forestry and the HND in Forestry. It would be beneficial if candidates have a knowledge of basic silviculture, preferably through successful completion of the Unit F3YC 34 *Establishment of Woodlands*.

The content of the Unit should enable candidates to understand the basic principles of the range of silvicultural systems and associated regeneration methods for forests and woodlands. Both coniferous and broadleaved forests and woodlands could be covered. Candidates should also be equipped to implement appropriate silvicultural systems and associated regeneration methods in a wide range of site and crop conditions.

It is recommended that the delivery of this Unit should be through a combination of lectures, classroom exercises and field visits.

The following information expands upon the information given in the statement of standards.

Outcome 1

- ◆ sustainability: the concept of sustainability in global terms and in the context of forest and woodland management.
- ◆ forest and woodland structure; amenity, recreation and conservation benefits; size of felling coupes/management areas; coupe design, use of natural features, managed open space; opportunities for continuous cover management in UK.
- ◆ silvicultural systems: clearfelling, modified clearfelling, selection, group selection, shelterwood (uniform, group, irregular, strip, wedge), two storey forest; coppice, coppice with standards; sequence of operations; suitable species; advantages and disadvantages of systems.

Outcome 2

- ◆ crop and site conditions: soils, climatic conditions, existing species, crop stability, past management
- ◆ external factors: visual amenity, recreation interests, general and specific conservation values; communities
- ◆ Silvicultural systems' selection methods: management objectives; site and crop constraints; external constraints; management constraints; cost implications; evaluation of available options
- ◆ Silvicultural systems' implementation methods: preparatory work, thinning, ground preparation; coupe selection; timing of operations; harvesting, planning, methods, volume control
- ◆ future management requirements: sequential intervention, timing, intensity

Higher National Unit specification: support notes (cont)

Unit title: Forestry: Silvicultural Systems

Outcome 3

- ◆ regeneration methods: management objectives; proposed silvicultural systems; potential for natural regeneration (species, age, seeding potential); constraints; cost implications; evaluation of available options
- ◆ regeneration implementation methods: harvesting residues; ground preparation; timing
- ◆ future management requirements for regeneration: weeding, beating up, respacing, protection; monitoring

Guidance on the delivery and assessment of this Unit

Outcome 1

If questions are used as the instrument of assessment for this Outcome, they could provide the candidate with descriptions of practical situations, for which a range of solutions are possible. The questions could be designed to enable candidates to evaluate and compare options rather than simply state facts.

It is recommended that the response to the assessment could be carried out in the candidate's own time.

Outcomes 2 and 3

The assessment for these Outcomes could be combined and take the form of a project to select suitable silvicultural systems and regeneration methods for a given or agreed area of forest or woodland. The project area could be semi-mature or mature coniferous, broadleaved or mixed species where there are opportunities to introduce a minimum of two silvicultural systems and regeneration methods. It is recommended that the size of the project area should be between 10 and 20 hectares. Candidates could be provided with sufficient data to limit the need for detailed crop enumeration.

A site visit could be carried out under supervision during class time and the project could be completed in the candidate's own time. The project could be the equivalent of 1,500 words and supported by maps, and cover all the Evidence Requirements for the two Outcomes.

Opportunities for developing Core Skills

Core Skills may be developed during delivery and assessment of the Unit. The component Written Communication of the Core Skill *Communication* and components Critical Thinking and Reviewing and Evaluating of the Core Skill *Problem Solving* to SCQF level 5 may be developed through reading and producing work for formative and summative assessment. There is no automatic certification of Core Skills or the Core Skills components.

Higher National Unit specification: support notes (cont)

Unit title: Forestry: Silvicultural Systems

Open learning

All Outcomes are appropriate for open and distance learning approaches, and it would be good practice to provide candidate packs and tutor input and support at all stages. Centre-devised supervision agreements should detail any conditions to ensure authenticity of evidence.

In the case of a distance/open learning candidate, a site of the candidate's choice i.e. at their work or close to their home may be used, with the caveat that the site has to be agreed as suitable beforehand by the Unit Tutor and that there is prior agreement for candidate and possible Tutor access to the site by the landowner.

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: Forestry: Silvicultural Systems

This Unit will equip you with the relevant Knowledge and Skills to use silvicultural systems and regeneration methods for the sustainable management of forests and woodlands.

Successful completion of the Unit attracts 1 HN credit (8 SCQF credit points) at SCQF level 7. This Unit is an optional Unit in the HNC Forestry and HND Forestry which are Group Awards. It is, however, a free-standing Unit and may be delivered as such for purposes of continuing professional development.

There are three sections or Outcomes in this Unit. The first Outcome will enable you to explain the concept of sustainability in the context of the management of forests and woodlands and you will be able to explain how forest and woodland structure may be changed in order to meet a range of management objectives. You will be able to describe the silvicultural systems used, explain how each system is managed and state the advantages and disadvantages of each.

The second Outcome is concerned with the selection of appropriate silvicultural systems. You will be able to evaluate an area of forest or woodland taking into account site and crop conditions, visual amenity, public use and biodiversity in the context of the present and the potential silvicultural systems. You will be able to select suitable systems and know how to implement them on site. You will also be able to explain the future management requirements for each system.

The third Outcome is concerned with methods of regeneration. You will be able to select regeneration methods, which are appropriate in terms of site and crop conditions, and existing or proposed silvicultural systems. You will be able to describe how regeneration methods are implemented and explain future management requirements in order to achieve industry standard stocking levels.

The assessment of Outcome 1 may require you to respond to questions about the use of silvicultural systems in the sustainable management of forests and woodlands.

The assessment of Outcomes 2 and 3 may be combined in the form of a project to select suitable silvicultural systems and regeneration methods for an area for forest or woodland. You will explain your choice of systems and methods, describe how they could be implemented, explain future management requirements, and state the benefits and drawbacks of each.

If you are already in employment this Unit provides an opportunity to extend your existing knowledge and skills and lays a sound grounding for further study in forest management and land use.

This Unit will give you the opportunity to develop the component Written Communication of the Core Skill *Communication* and the components Critical Thinking and Reviewing and Evaluating of the Core Skill *Problem Solving* at SCQF level 5 through reading and producing work for formative and summative assessment.