Unit 12: Understand and Carry Out Forest and Woodland Skills

Unit code: L/601/1810

QCF Level 3: BTEC National

Credit value: 10

Guided learning hours: 60

Aim and purpose

This unit aims to provide learners with an understanding of forest and woodland skills and how these can be put into practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or to further education and training.

Unit introduction

People entering the forestry and arboriculture sectors often start with technical jobs before moving to other types of work. It is important that learners are proficient in a variety of forest and woodland skills before embarking on their careers.

Learners will be taught how to plant trees and ensure that they survive. This is an important skill, as there are numerous government initiatives around the country to increase the amount of woodland through planting more trees. Learners will spend most of their time outdoors carrying out tree planting, drainage, fencing and vegetation control activities.

The skills developed in this unit can be applied to a wide range of disciplines. Skills in tree planting, fencing and drainage are applicable to farming and landscaping, as well as forestry and arboriculture. The skills required to specify quotations and prepare estimates are also necessary for contractors in those fields.

Many of the activities for this unit can take place at the centre, but it would be useful for learners to have access to a variety of sites through visits and field studies. As part of the unit, learners may want to create a new woodland within the centre grounds, using the necessary skills of planting, drainage and fencing.

There is considerable scope to integrate the skills delivered in this unit with those of other units, such as *Understanding Woodland Management*. In addition, learners will be able to complete much of the unit as part of their work placements.

As with all practical units, health and safety considerations are paramount. Learners should be fully briefed on safety matters in advance of any practical tasks and should wear full personal protective equipment.

Learning outcomes

On completion of this unit a learner should:

1 Understand forest and woodland skills

2 Be able to control unwanted growth and vegetation in forests and woodlands

3 Be able to maintain an open drainage system within a forest or woodland

4 Be able to construct, maintain and repair forest and woodland fencing

5 Be able to set out and plant forest and woodland trees.

Unit content

1 Understand forest and woodland skills

Tree planting: uses of different types of planting stock eg transplants, whips, standards, feathered trees; planting methods eg pit, notch; health and safety considerations of different methods; planting plan (choice of species, planting density, fencing requirements, post-planting protection); cost considerations of different types of planting stock

Competing vegetation: importance of controlling competing vegetation; methods and application of weedy vegetation control including manual, motor-manual and chemical; reasons for using different methods of weedy vegetation control; financial considerations of different weedy vegetation control methods; reasons for thinning; methods of thinning; associated tools, equipment and machinery; reasons for pruning (formative, commercial, amenity, fire control); health and safety considerations of weed control, thinning and pruning

Drainage considerations: effects of wet soils on tree growth and other reasons for drainage, types of drainage systems available; health and safety issues; specification (route, profile, depth, grade, flow rate, treatment of excavated material, tolerance); current relevant legislation; cost of drainage systems

Forest fencing: types of forest fencing including wire types and properties eg galvanised mild steel, high tensile and barbed; uses of different fence types; associated tools, equipment and machinery; health and safety considerations for different types of fencing; determination of fencing versus individual tree protection; appropriate standards eg wire, netting, posts, strainers, access points, badger access, escape methods for trapped animals; criteria for evaluating different fence types eg cost, type of protection required (from animals eg livestock, deer, rabbits or human vandalism), site conditions; considerations of the general public such as public rights of way and public safety

2 Be able to control unwanted growth and vegetation in forests and woodlands

Control unwanted vegetation around trees: competing vegetation eg woody, herbaceous and grass; use and maintenance of tools and equipment; health and safety; prevention of pollution and environmental damage

Brashing and pruning: correct techniques; selection, use, maintenance and storage of tools; disposal of cut material; safe working practices; risk assessment

Crop thinning: thinning methods eg brushcutter/clearing saw, hand saws, chainsaw; use, maintenance and storage of tools; disposal of cut material; safe working practices; risk assessment

3 Be able to maintain an open drainage system within a forest or woodland

Maintenance tasks: identification of drainage problems, remedial action eg re-cutting of banks, clearance of debris, reinforcement of banks and revetments, adjustment of fall; assessment of need; proper use and maintenance of tools and equipment; prevention and treatment of pollution and environmental damage; health and safety issues in and near water

4 Be able to construct, maintain and repair forest and woodland fencing

Fence construction, maintenance and repair: forest and woodland fence types eg rabbit netting, stockproof, deer fencing; specifications, fence planning and quantity estimation, costs of different fencing systems; selection and safe use of suitable tools and equipment eg wire tensioners, post hole borers, post rammers and hand tools; safe handling techniques for wire; personal protective equipment (PPE)

5 Be able to set out and plant forest and woodland trees

Clear sites for tree planting: clearance methods eg chemical spraying, burning, cutting, chipping, stump removal, brash raking; equipment maintenance

Cultivation: appropriate method eg screef, dollop, plough, scarify, rotovate, hand cultivation; equipment maintenance eg preparation, checks and adjustments, servicing, cleaning and storage

Delivery and storage: checks of plants and materials against specification; procedures for reporting defects; plant handling methods eg planting bags; storage methods eg heeling in, straw clamps, sheeting

Setting out and planting: handling techniques; planting stock types eg forest transplants, whips, feathered trees; distribution of planting material as directed; selection of appropriate tools and equipment; notch and pit planting; maintenance of tools and equipment; health and safety; risk assessment; removal of waste and materials as specified; tree protection eg spiral guards, netting, tubes; mulching; checking and replacement of protection

Assessment and grading criteria

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The criteria for a pass grade describe the level of achievement required to pass this unit.

Assessment and grading criteria		
To achieve a pass grade the evidence must show that the learner is able to:	**To achieve a merit grade the evidence must show that, in addition to the pass criteria, the learner is able to:**	**To achieve a distinction grade the evidence must show that, in addition to the pass and merit criteria, the learner is able to:**
P1 evaluate tree planting methods and categories of planting stock	**M1** prepare information required to plant a specified site	**D1** justify the selection of options within a planting plan for a specified site
P2 explain the need to remove and control unwanted and competing growth and vegetation		
P3 explain the need to establish and maintain open drainage systems		
P4 explain the need for forest and woodland fencing		
P5 evaluate types of forest fencing		
P6 control unwanted vegetation around trees [TW]	**M2** plan vegetation control to achieve site objectives	
P7 carry out brashing and pruning of trees [TW]		
P8 carry out thinning of tree stands [TW, CT]		

Assessment and grading criteria		
To achieve a pass grade the evidence must show that the learner is able to:	**To achieve a merit grade the evidence must show that, in addition to the pass criteria, the learner is able to:**	**To achieve a distinction grade the evidence must show that, in addition to the pass and merit criteria, the learner is able to:**
P9 identify drainage problems	**M3** specify fencing with cost estimates for a given forest or woodland	**D2** evaluate the importance of record keeping in tree planting projects.
P10 maintain an open drainage system		
P11 construct and erect forest fencing		
P12 maintain and repair existing forest fencing [TW]		
P13 prepare and cultivate sites for tree planting [TW]	**M4** assess health and safety risks for a given tree planting project.	
P14 correctly handle, store, transport and distribute planting stock [TW]		
P15 plant trees according to specifications. [TW, EP]		

PLTS: This summary references where applicable in the pass criteria, in the square brackets, the elements of the personal, learning and thinking skills. It identifies opportunities for learners to demonstrate effective application of the referenced elements of the skills.

Key	IE – independent enquirers	RL – reflective learners	SM – self-managers
	CT – creative thinkers	TW – team workers	EP – effective participators

Essential guidance for tutors

Delivery

There is a considerable practical emphasis to this unit which should be delivered using a range of activities. In addition to lectures and practical sessions, visits to forests and woodlands (often in association with other units) can enhance learner development of a range of skills. Talks from practitioners and contractors involved in the management of forests and woodlands will help learners to develop an awareness of current issues.

Some of the unit content can be delivered at the centre. However, the scope of the content is quite broad so regular access to a working woodland is required in order to meet the required breadth.

Work placements should be monitored regularly to ensure the quality of the learning experience. Learners and supervisors should be aware of the requirements of this unit before any work-related activities are undertaken, so that naturally occurring evidence can be collected at the time. For example, learners may have the opportunity to carry out extensive tree planting activities when they are on their work placement. Learners should ask for observation records and/or witness statements to be provided as evidence.

Tutors could integrate the delivery, private study and assessment relating to this unit with any other relevant units and assessment instruments in learners' programme of study. For example, some of the practical elements of this unit are related to the unit *Understanding Woodland Management*.

Health and safety issues relating to fieldwork must be stressed and reinforced regularly, with appropriate risk assessments undertaken before any practical activities. Learners will need access to a well-equipped store of tools and personal protective equipment.

Outline learning plan

The outline learning plan has been included in this unit as guidance and can be used in conjunction with the programme of suggested assignments.

The outline learning plan gives **an indication of the volume of learning it would take the average learner** to achieve the learning outcomes. It is **indicative and is one way of achieving the credit value**.

Learning time should address all learning (including assessment) relevant to the learning outcomes, regardless of where, when and how the learning has taken place.

Topic and suggested assignments/activities and/assessment
Introduction and overview of the unit.
Assignment 1: Planning Forestry Projects (P1, P2, P4, P5, M1, D1) Tutor introduces assignment.
Comparison of tree planting methods.
Explanation of the need to control vegetation.
Discussion of the importance of constructing fences around forest sites and the types of fencing.
Description and creation of a planting plan (including independent research).
Assignment 2: Controlling Vegetation (P6, P7, P8, M2) Tutor introduces assignment.
Discussion of different control methods and tools.
Demonstration of control methods.

Topic and suggested assignments/activities and/assessment
Practising vegetation control and thinning of forest plantations.
Assignment 3: The Drainage of Forest Sites (P3, P9, P10) Tutor introduces assignment.
Discussion of the importance of drainage.
Review of methods for draining forest sites.
Carrying out drainage works on a forest site.
Assignment 4: Forest Fencing (P11, P12, M3) Tutor introduces assignment.
Review of methods for fencing forest sites.
Carrying out fencing works on a forest site.
Planning and estimation of costs for a fencing project.
Assignment 5: Planting Trees (P13, P14, P15, M4, D2) Tutor introduces assignment.
Discussion of types of tree planting stock.
Demonstration of different tree planting methods and tools.
Handling, storage and planting of trees and shrubs.
Unit review.

Assessment

For P1, learners are required to evaluate tree planting methods and categories of planting stock covering transplants, whips and larger stock. Assessment could be linked to P15. Suitable evidence would be a practical observation record, witness statement, oral presentation, written report or illustrated leaflet.

For P2, learners are expected to explain the need to remove and control unwanted and competing growth and vegetation. Assessment could be combined with P6. Suitable evidence would be a practical observation record, witness statement, oral presentation, written report or illustrated leaflet.

For P3, learners must explain the need to establish and maintain open drainage systems. Assessment could be linked to P10. Suitable evidence would be a practical observation record, witness statement, oral presentation, written report or illustrated leaflet.

For P4, learners are required to explain the need for forest and woodland fencing. Assessment could be linked to P11. Suitable evidence would be a practical observation record, witness statement, oral presentation, written report or illustrated leaflet.

For P5, learners must evaluate types of forest fencing. The tutor should supply a list of at least three evaluation criteria and a minimum of two scenarios where forest fencing has been utilised or planned. Suitable evidence would be a practical observation record, witness statement, oral presentation, written report or illustrated leaflet.

For P6, learners need to control unwanted vegetation around trees. Learners should be observed clearing at least two categories of vegetation. Suitable evidence would be a practical observation record or witness statement.

For P7, learners are required to carry out brashing and pruning of trees. Suitable evidence would be a practical observation record or witness statement.

For P8, learners are expected to carry out thinning of tree stands. Assessment could be linked to the work for P7. Suitable evidence would be a practical observation record or witness statement.

For P9, learners need to identify drainage problems. Learners must identify a minimum of two drainage problems and suggest appropriate remedial action for each. Suitable evidence would be a practical observation record or witness statement.

For P10, learners are required to maintain an open drainage system. Suitable evidence would be a practical observation record or witness statement.

For P11, learners are expected to construct and erect forest fencing. Learners should be observed erecting a minimum of two different forest and woodland fence types. Assessment could be linked to P15. Suitable evidence would be a practical observation record or witness statement.

For P12, learners need to maintain and repair existing forest fencing. Suitable evidence would be a practical observation record or witness statement.

For P13, learners need to prepare and cultivate sites for tree planting. Learners should carry out a minimum of two cultivating methods. Suitable evidence would be a practical observation record or witness statement.

For P14, learners are required to handle, store, transport and distribute planting stock appropriately. As well as demonstrating proper storage and transport methods, learners should be observed inspecting trees for defects. Learners should identify a minimum of three defects. Suitable evidence would be a practical observation record or witness statement.

For P15, learners are expected to plant trees according to specifications. Learners should be observed planting at least three types of planting stock and using a minimum of two methods of tree protection. Assessment could be linked to P14. Suitable evidence would be a practical observation record or witness statement.

For M1, learners should create a planting plan for a specified site. Assessment could be linked to P15. Suitable evidence would be an annotated poster, oral presentation or written report.

For M2, learners need to plan a vegetation control programme for a specified site. The site could be the same one used for P15. Suitable evidence would be a practical observation record, witness statement, oral presentation or written report.

For M3, learners are expected to create a fencing specification with cost estimates for a given forest or woodland. Assessment can be combined with P11 and suitable evidence would be a practical observation record, witness statement, oral presentation or written report.

For M4, learners are required to assess health and safety risks for a given tree planting project. Assessment could be combined with P15. Suitable evidence would be a practical observation record or witness statement.

For D1, learners are required to justify the selection of options within a planting plan for a specified site. It is anticipated that the planting plan would be the same one produced for M1. Suitable evidence would be an oral presentation or written report.

For D2, learners must evaluate the importance of record keeping in tree planting projects. Reference should be made to the tree planting project for M4. Learners should reflect on the records kept and suggest alternative approaches or improvements. Suitable evidence would be an individual tutorial record form or written report.

Programme of suggested assignments

The following table shows a programme of suggested assignments that cover the pass, merit and distinction criteria in the grading grid. This is for guidance and it is recommended that centres either write their own assignments or adapt any Edexcel assignments to meet local needs and resources.

Criteria covered	Assignment title	Scenario	Assessment method
P1, P2, P4, P5, M1, D1	Planning Forestry Projects	A well known singer has recently purchased a country estate. As a forestry consultant, you have been employed to plan a new woodland. Create a planting plan for the site and explain your choices to the landowner who is very new to the countryside.	Practical observation records. Witness statements. Written report. Oral presentation with accompanying notes.
P6, P7, P8, M2	Controlling Vegetation	You are working as a forestry worker on a country estate, and are responsible for the brashing, pruning and thinning of forestry plantations. In addition, the landowner has recently planted a new woodland in memory of her late husband. You need to ensure that the trees become established and plan the thinning regime for future management.	Practical observation records. Witness statements.
P3, P9, P10	The Drainage of Forestry Sites	One of the woodlands that you manage is showing signs of poor growth and you have identified inadequate drainage of the site as the reason. You will need to carry out a drainage maintenance operation to rectify the problem.	Practical observation records. Witness statements.
P11, P12, M3	Forest Fencing	In your role as a community woodland officer, you have been asked by a local tree group to provide advice and assistance with the fencing of a new tree planting site.	Practical observation records. Witness statements. Written report.
P13, P14, P15, M4, D2	Planting Trees	You are a community woodland officer and have been asked to carry out a tree planting task with local volunteers. You have been given a planting plan by the district council but you need to organise the tools and materials to lead a safe tree planting task.	Practical observation records. Witness statements.

Links to National Occupational Standards, other BTEC units, other BTEC qualifications and other relevant units and qualifications

This unit forms part of the BTEC Land-based sector suite. This unit has particular links with:

Level 2	Level 3
Undertake Tree Climbing and Pruning Operations	T2 Establish and maintain an open drainage system T5 Cultivate sites for tree planting T6 Plant trees T8 Control unwanted plant growth around trees CU22 Construct, maintain and repair boundaries and access points
Introduction to Practical Forestry Skills	Understand and Carry out Tree Planting, Aftercare and Protection
Understanding Ecology of Trees, Woods and Forests	Understand the Principles of Silviculture

Essential resources

Learners will need access to a range of woodland work sites, both conifer and broadleaved. There must be a full range of well-maintained hand tools including planting spades of various types, weeding hooks, slashers, brashers and pruning saws, shovels and mattocks.

Fence erection tools and equipment must also be available, in particular post drivers, shuv-holers, wire strainers, fixings and fencing pliers and grips. Tractor-mounted post drivers may be appropriate for larger fencing projects, which should preferably have a fully guarded mechanism. Powered augers may also prove useful.

Field measuring equipment will be necessary for the surveying and planning of works.

Employer engagement and vocational contexts

As much of this unit is practically based, most of the assessment could take place within the learner's work placement. To ensure that learners have access to a variety of forest and woodland sites, centres are encouraged to make links with the Woodland Trust, local country estates, the Forestry Commission and other woodland organisations. A visit to a local commercial tree nursery is also advised so that learners can see how trees are grown, stored and prepared for delivery.

A visit to a sawmill would help learners to visualise the effects of thinning on the quality of timber produced from a variety of trees.

Indicative reading for learners

Textbooks

Agate E – *Fencing: A Practical Handbook* (BTCV, 2001) ISBN 9780946752294

Agate E – *Footpaths: A Practical Handbook* (BTCV, 2001) ISBN 9780946752317

Agate E – *Tree Planting and Aftercare: A Practical Handbook* (BTCV, 2001) ISBN 9780946752256

Agate E – *Woodlands: A Practical Handbook* (BTCV, 2002) ISBN 9780946752331

Evans J – *Silviculture of Broadleaved Woodlands* (Stationery Office Books, 1984) ISBN 9780117101548

Forestry Commission – *Forest Fencing* (Forestry Commission, 1992) ISBN 9780117103047

Harmer R and Howe J – *The Silviculture and Management of Coppiced Woodlands* (Forestry Commission, 2003) ISBN 9780855385910

Hart C – *Practical Forestry for the Agent and Surveyor, 3rd Edition* (Sutton Publishing Ltd, 1991) ISBN 9780862999629

Hibberd B – *Forestry Practice* (The Stationery Office Books, 1991) ISBN 9780117102811

Other publications

HSE – *Chainsaws at Work* (Health and Safety Executive, 2006) ISBN 9780717661879

HSE – *Managing Health and Safety in Forestry (Leaflet)* (Health and Safety Executive, 2003) ISBN 9780717627172

HSE – *Safe Use of Lifting Equipment: Lifting Operations and Lifting Equipment Regulations* (Health and Safety Executive, 1998) ISBN 9780717616295 1

HSE – *Safe Use of Work Equipment: Approved Code of Practice and Guidance* (Health and Safety Executive, 1998) ISBN 9780717616268

HSE – *Selection of Suitable Respiratory Protective Equipment* (Health and Safety Executive, 1992) ISBN 9780717622207

HSE – *Using Work Equipment Safely* (Health and Safety Executive, 2006) ISBN 9780717623891

HSE – *Watch Your Back: Avoiding Back Strain in Timber Handling and Chainsaw Work* (Health and Safety Executive, 2000) ASIN B0019ZPZQ4

Journals

Forestry Journal

Quarterly Journal of Forestry

Small Woods

Websites

www.btcv.org.uk	British Trust for Conservation Volunteers
www.forestry.gov.uk	Forestry Commission
www.rfs.org.uk	Royal Forestry Society
www.smallwoods.org.uk	Small Woods Association
www.woodlandheritage.org	Woodland Heritage
www.woodland-trust.org.uk	Woodland Trust

Delivery of personal, learning and thinking skills (PLTS)

The following table identifies the PLTS opportunities that have been included within the assessment criteria of this unit:

Skill	When learners are ...
Creative thinkers	determining the correct trees to remove when carrying out thinning operations
Team workers	working in groups to prepare a site for tree planting carrying out thinning of tree stands
Effective participators	working together to plant trees.

Although PLTS opportunities are identified within this unit as an inherent part of the assessment criteria, there are further opportunities to develop a range of PLTS through various approaches to teaching and learning.

Skill	When learners are ...
Independent enquirers	justifying the selection of options for a planting plan
Creative thinkers	generating ideas for a planting plan leading a tree planting task planning a thinning programme
Reflective learners	evaluating their experience of leading a tree planting task planning a tree planting task
Self-managers	planning a tree planting task leading a tree planting task
Effective participators	creating a planting plan justifying the selection of options for a planting plan leading a tree planting task.

Functional Skills – Level 2

Skill	When learners are ...
ICT – Use ICT systems	
Select, interact with and use ICT systems independently for a complex task to meet a variety of needs	using software to analyse and present data for determining a thinning programme using spreadsheets to complete fencing estimates
ICT – Find and select information	
Select and use a variety of sources of information independently for a complex task	researching information on the costs of different fencing supplies
ICT – Develop, present and communicate information	
Enter, develop and format information independently to suit its meaning and purpose including: • text and tables • images • numbers • records	summarising and analysing information obtained for creating a fencing specification with costs
Bring together information to suit content and purpose	putting together the planting plan from several sources and types of information
Present information in ways that are fit for purpose and audience	creating an oral presentation or an annotated poster for justifying a planting plan to an audience
Mathematics	
Understand routine and non-routine problems in a wide range of familiar and unfamiliar contexts and situations	creating a thinning regime for a woodland
Identify the situation or problem and the mathematical methods needed to tackle it	carrying out the calculations required for a fencing specification
Select and apply a range of skills to find solutions	preparing a planting plan
Draw conclusions and provide mathematical justifications	finalising the specification for the fencing of a woodland site
English	
Speaking and listening – make a range of contributions to discussions and make effective presentations in a wide range of contexts	discussing methods for carrying out a thinning programme
Reading – compare, select, read and understand texts and use them to gather information, ideas, arguments and opinions	researching different methods to compile recommendations for the planting plan
Writing – write documents, including extended writing pieces, communicating information, ideas and opinions, effectively and persuasively	providing a persuasive account of the benefits of the recommendations within a planting plan.