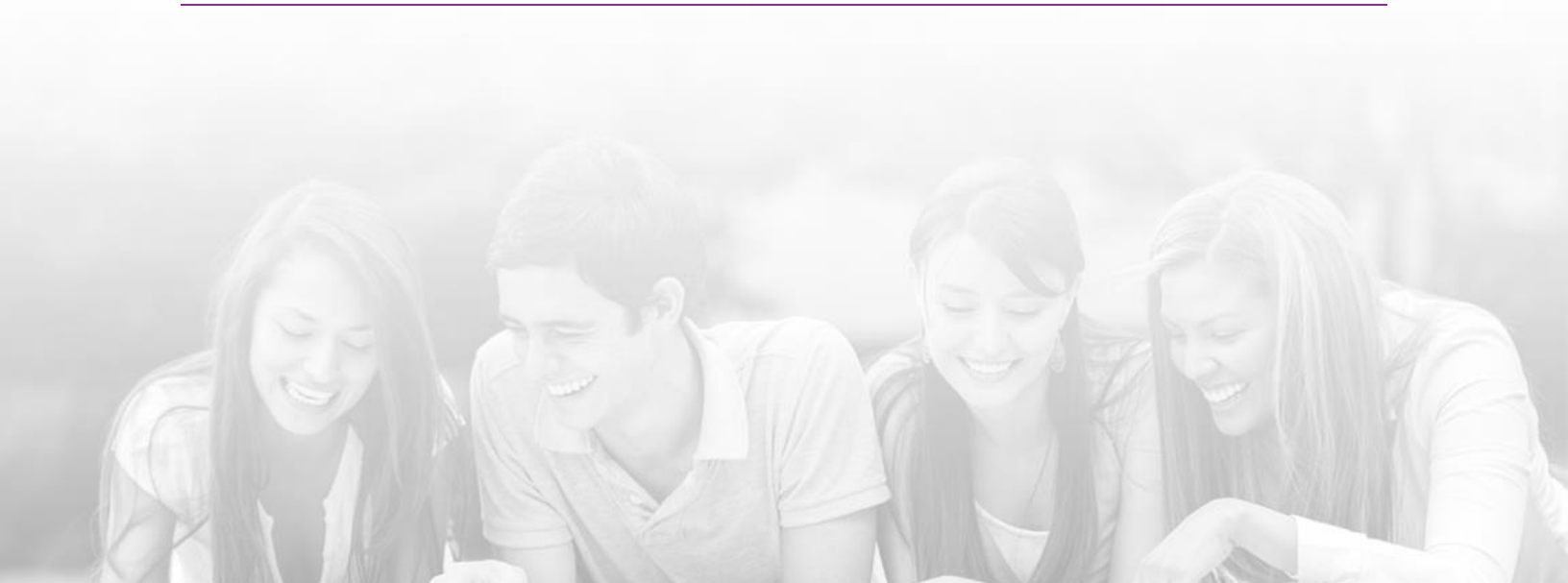
ABC Awards

SEG Awards ABC Award, Certificate and Diploma in Arboriculture

Qualification Guidance
Level 4

Level 4 Award – 600/2490/2
Level 4 Certificate - 600/2698/4
Level 4 Diploma – 600/2582/7



About Us

At the Skills and Education SEG Awards (ABC)[1] we continually invest in high quality qualifications, assessments and services for our chosen sectors. As a UK leading sector specialist we continue to support employers and skills providers to enable individuals to achieve the skills and knowledge needed to raise professional standards across our sectors.

ABC has an on-line registration system to help customers register learners on its qualifications, units and exams. In addition it provides features to view exam results, invoices, mark sheets and other information about learners already registered.

The system is accessed via a web browser by connecting to our secure website using a username and password:
https://secure.ABCawards.co.uk/ors/secure_login.asp

Sources of Additional Information

The ABC website www.ABCawards.co.uk provides access to a wide variety of information.

Copyright

Specification Code, Date and Issue Number

The specification code is A9300-04, C9300-04, D9300-04.
The date of this specification is November 2018. The Issue number is 5.2.

[1] ABC Awards is a brand of the Skills and Education Group Awards, a recognised awarding organisation and part of the Skills and Education Group. Any reference to ABC Awards, its registered address, company or charity number should be deemed to mean the Skills and Education Group Awards.

Contents

This is a live document and as such will be updated when required. It is the responsibility of the approved centre to ensure the most up-to-date version of the Qualification Guidance is in use. Any amendments will be published on our website and centres are encouraged to check this site regularly.

Introduction

The Level 4 Award, Certificate and Diploma in Arboriculture are designed for those people working in arboriculture, in both the public and private sectors, to complement their training and experience, and to provide evidence of their knowledge of arboriculture.

They have been developed in collaboration with industry, providers and Lantra, the Sector Skills Council for the Land based industries.

The Level 4 Award will be put forward for inclusion on the ASL catalogue. Please check the ABC Awards website for the current status of this qualification.

Aims

The ABC Level 4 Award, Certificate and Diploma in Arboriculture aim to:

- improve job prospects
- encourage knowledge and application of current arboricultural industry best practice
- encourage learners to follow a programme of structured continuing professional development (CPD)
- facilitate access to higher level management qualifications

Target Group

These qualifications are designed for those learners who

- have been involved in the practical side of the industry and wish to progress into a more managerial role
- work in related disciplines such as horticulture, forestry, countryside management, landscape architecture and planning and wish to increase their knowledge of arboriculture
- are currently working as tree officers, technicians and those involved in tree survey works who wish to achieve a recognised vocational qualification

ABC Awards expects approved centres to recruit with integrity on the basis of a learner's ability to contribute to and successfully complete all the requirements of a unit(s) or the full qualification.

Progression Opportunities

These qualifications provide suitable skills and experience to progress to other higher level qualifications such as the ABC Awards Level 6 Certificate or Diploma in Arboriculture.

In addition, achievement of these qualifications should provide a solid foundation of skills supporting progression to higher levels of responsibility and opening up the possibility of entrepreneurial activities such as starting one's own business.

Centres should be aware that Reasonable Adjustments which may be permitted for assessment may in some instances limit a learner's progression into the sector. Centres must, therefore, inform learners of any limits their learning difficulty may impose on future progression.

Language

These specifications and associated assessment materials are in English only.

Qualification Summary

Qualification and Pathways ABC Level 4 Award in Arboriculture – 600/2490/2 ABC Level 4 Certificate in Arboriculture – 600/2698/4 ABC Level 4 Diploma in Arboriculture – 600/2582/7	
Regulated	The qualifications identified above are all regulated by Ofqual
Assessment	Internal assessment, internal and external moderation.
Grading	Pass
Progression	Learners could progress from these Level 4 qualifications onto the Level 6 Certificate or Diploma in Arboriculture. Centres should be aware that Reasonable Adjustments which may be permitted for assessment may in some instances limit a learner's progression into the sector. Centres must, therefore, inform learners of any limits their learning difficulty may impose on future progression.
Operational Start Date	01/08/2011
Review Date	31/08/2021
ABC Sector	Land Based/Environmental
Ofqual SSA Sector	03.2 Horticulture and Forestry
Stakeholder support	These qualifications are supported by Lantra, the Sector Skills Council for environmental and land-based industries
Contact	See ABC website for the Centre Support Officer responsible for this qualification.

Level 4 Award in Arboriculture

Rules of Combination: Learners must achieve a minimum of 9 credits and a maximum of 12 credits from any of the units below. A minimum of 7 credits must be at Level 4 or above.

Unit	Level	Credit Value	GL
Woody vegetation formation and physiology [D/503/3316]	4	6	35
Tree biomechanics and maintenance [M/503/3319]	4	7	40
Pest, disease and disorder identification [M/503/3322]	3	5	24
Principles of tree management [T/503/3323]	5	9	45
Development and tree protection [A/503/3324]	4	5	25
Selection, planting and design with hardy nursery stock for amenity and landscape purposes [L/503/3330]	5	8	40
Principles of woodland establishment and management [F/503/3325]	3	5	25
Tree related damage to built structures [L/503/3327]	4	4	20

Qualification Purpose	B. Prepare for further learning or training and/or develop knowledge and/or skills in a subject area Sub Purpose B1. Prepare for further learning or training, B2. Develop knowledge and/or skills in a subject area					
Entry Requirements	16+					
Section 96/97	**Pre 16**		**16 – 18**	✓	**19 +**	✓
LARS Reference	TBC					
Recommended GLH[2]	44 GLH					

[2] See Glossary of terms

Recommended TQT[3]	90
Credit Value	See ABC Qualifications Directory
Type of Funding Available	See LARS (Learning Aim Rates Service)
Qualification Fee/Unit Fee	See ABC web site for current fees and charges
Additional Information	See ABC website for resources available for this qualification

[3] See Glossary of terms

Level 4 Certificate in Arboriculture

Rules of Combination: Learners must achieve a minimum of 31 credits. This must include 27 credits from the mandatory units.

Unit	Level	Credit Value	GL
Mandatory Units			
Woody vegetation formation and physiology [D/503/3316]	4	6	35
Tree biomechanics and maintenance [M/503/3319]	4	7	40
Pest, disease and disorder identification [M/503/3322]	3	5	24
Principles of tree management [T/503/3323]	5	9	45
Optional Units			
Development and tree protection [A/503/3324]	4	5	25
Selection, planting and design with hardy nursery stock for amenity and landscape purposes [L/503/3330]	5	8	40
Principles of woodland establishment and management [F/503/3325]	3	5	25
Tree related damage to built structures [L/503/3327]	4	4	20

Qualification Purpose	B. Prepare for further learning or training and/or develop knowledge and/or skills in a subject area Sub Purpose B1. Prepare for further learning or training, B2. Develop knowledge and/or skills in a subject area					
Entry Requirements	16+					
Section 96/97	**Pre 16**		**16 – 18**	✓	**19 +**	✓
LARS Reference	TBC					
Recommended GLH[4]	164					

[4] See Glossary of terms

Recommended TQT[5]	310
Credit Value	
Type of Funding Available	See LARS (Learning Aim Rates Service)
Qualification Fee / Unit Fee	See ABC web site for current fees and charges
Additional Information	See ABC website for resources available for this qualification

[5] See Glossary of terms

Level 4 Diploma in Arboriculture

Rules of Combination: Learners must achieve a minimum of 49 credits. This must include 40 credits from the mandatory units.

Unit	Level	Credit Value	GL
Mandatory Units			
Woody vegetation formation and physiology [D/503/3316]	4	6	35
Tree biomechanics and maintenance [M/503/3319]	4	7	40
Pest, disease and disorder identification [M/503/3322]	3	5	24
Principles of tree management [T/503/3323]	5	9	45
Development and tree protection [A/503/3324]	4	5	25
Selection, planting and design with hardy nursery stock for amenity and landscape purposes [L/503/3330]	5	8	40
Optional Units			
Principles of woodland establishment and management [F/503/3325]	3	5	25
Tree related damage to built structures [L/503/3327]	4	4	20

Qualification Purpose	B. Prepare for further learning or training and/or develop knowledge and/or skills in a subject area Sub Purpose B1. Prepare for further learning or training, B2. Develop knowledge and/or skills in a subject area					
Entry Requirements	16+					
Section 96/97	**Pre 16**		**16 – 18**		**19 +**	✓
LARS Reference	TBC					
Recommended GLH[6]	254					

[6] See Glossary of terms

Recommended TQT[7]	490
Credit Value	
Type of Funding Available	See LARS (Learning Aim Rates Service)
Qualification Fee / Unit Fee	See ABC web site for current fees and charges
Additional Information	See ABC website for resources available for this qualification

[7] See Glossary of terms

Unit Details

Woody Vegetation Formation and Physiology

Unit Reference	D/503/3316
Level	6
Credit Value	6
Guided Learning Hours	35
Unit Summary	This unit covers the physiological function of woody vegetation and the application of that understanding to arboriculture. The learner will understand the effects on the tree system when conditions are not at their optimum for growth and how adverse conditions may be prevented or improved.
Learning Outcomes (1 to 9) **The learner will:**	**Assessment Criteria** (is to be assessed by a method as deemed appropriate by the training provider in order to achieve this unit) **(1.1 to 9.3)** **The learner can:**
1. Understand primary and secondary growth processes in trees	1.1 Describe determinate and indeterminate shoot development in trees 1.2 Describe secondary growth processes in trees 1.3 Compare the benefits and limitations of ring porous, diffuse porous xylem anatomy in tree.
2. Understand the makeup of woody cell connections and water movement	2.1 Explain the symplastic and apoplastic movement that occurs in the tree 2.2 Explain each of the following related to water movement ○ root pressure (pushed up)

	○ tension-cohesion theory (pulled up)
3. Understand the relationship between the concepts of dynamic and static mass and potential energy	3.1 Explain how a tree regulates its mass/energy ratio as it ages 3.2 Analyse five ways in which the impact of tree work on potential energy (Non-structural carbohydrates) can be reduced
4. Understand how the efficiency of a tree's system can be adversely affected	4.1 Describe the significant effects on the tree system of: ○ carrying out any operation as named in BS 3998 ○ a named abiotic disorder (excluding any ○ climatic factor) ○ a named climatic condition ○ a named pest attacking the foliage ○ a named pest attacking the vascular system ○ a named pathogen attacking the root system ○ a 'complex' decline (combination of problems) 4.2 Describe how the principal requirements of an urban tree can be provided for in practice to achieve a healthy full-term life
5. Understand the process of photosynthesis	5.1 State what occurs in the light and dark reactions during photosynthesis. 5.2 Explain factors affecting the rate of photosynthesis

	5.3 Describe how chlorophyll fluorescence can be measured to monitor tree performance
6. Understand branch formation and shedding	6.1 Describe and compare the theories regarding fork/branch formation and attachment for similarities and differences (Shigo, Mattheck and Slater) 6.2 Explain how significant structural weaknesses found in branch and co-dominant stem formation can lead to failure 6.3 Describe measures that can reduce the incidence of branch or co-dominant stem failure 6.4 Describe four unsound arboricultural practices explaining how each may increase the risk of tree/branch failure
7. Understand the benefits of trees forming symbiotic relationships	7.1 Evaluate the symbiotic relationship as formed between trees and ○ fungi ○ bacteria 7.2 Describe how the above relationships can be encouraged to develop by cultural practices
8. Understand how soil conditions effect root system development and function.	8.1 Describe the formation, distribution and depth of a typical temperate root system 8.2 Describe the principal effects on root development and/or function of each of the following soil factors: ○ hydraulic conductivity ○ bulk density ○ soil aeration ○ soil temperature ○ pH

	○ poor cation exchange ○ a man-made or natural barrier
9. Understand how a tree responds to wounding	9.1 Evaluate the process called compartmentalisation that a tree goes through following wounding 9.2 Explain, with examples, why some species are better than others at compartmentalisation of wounds 9.3 Describe and justify the use of three practices that can be adopted at the time of carrying out tree surgery operations that may assist a tree to form barriers as represented in the CODIT model

Unit Content

To successfully achieve this unit, learners need to provide evidence that they have met the learning outcomes and assessment criteria for the unit.

Unit content is offered as key learning that is essential to aid delivery of the unit and to set the learning outcomes and assessment criteria in context.

Learning Outcome 1: Understand primary and secondary growth processes in trees.

1.1 The processes of plant growth

1.2 Tree design

1.3 The differences between ring porous, diffuse porous and semi-ring porous trees.

Learning Outcome 2: Understand the makeup of woody cell connections and water movement

2.1 The makeup of woody cell connections and water movement
The component parts of the symplastic and apoplastic connections present within the living tree

2.2 The makeup and operation of foliage and stomata

2.3 Identify the benefits to the plant of each of the following adaptation groups:

- needles and scales
- cladodes
- stipules

2.4 The difference in makeup and operation of shade and sun leaves

2.5 The distinction between juvenile and mature foliage

2.6 The movement of leaves

2.7 How abscission occurs

Learning Outcome 3: Understand the relationship between the concepts of dynamic and static mass and potential energy

3.1 To understand the relationship between dynamic and static mass and of potential and kinetic-energy ratio as described by Shigo

Learning Outcome 4: Understand how the efficiency of a tree's system can be adversely affected

4.1 The effects on the tree system of adverse situations

4.2 The principal requirements of an urban tree to achieve a healthy full term life

Learning Outcome 5: Understand the process of photosynthesis related to chlorophyll fluorescence analysis

5.1 The process of photosynthesis related to chlorophyll fluorescence analysis

5.2 Describe the makeup of the chlorophyll molecule

5.3 To explain the significance of the Adenosine Triphosphate (ATP) and Adenosine with two phosphates (ADP)

5.4 To describe the role that chlorophyll and the other pigments found in chloroplasts play to initiate the light-dependent reactions

5.5 A definition of Photophosphorylation

Learning Outcome 6: Understand branch formation and shedding

6.1 Branch formation and shedding

6.2 The formation of codominant stems

6.3 The natural process of branch shedding (Cladoptosis)

Learning Outcome 7: Understand the benefits of trees forming symbiotic relationships

7.1 The benefits of trees forming symbiotic relationships

Learning Outcome 8: Understand how soil conditions effect root system development and function.

8.1 The formation, distribution and depth of a typical temperate root system

8.2 The principal effects on root development and/or function of a range of soil factors

Learning Outcome 9: Understand how a tree responds to wounding

9.1 The processes of compartmentalization (CODIT model – Shigo)

9.2 Examples of species that are good and poor at compartmenting wounds and why this is

9.3 Good tree work practices that may assist a tree to form walls/barriers

Supporting Unit Information

Woody Vegetation Formation and Physiology – D/503/3316 - Level 4

Indicative Content

Note: Indicative content provides an indication of the scope for the Learning Outcomes and Assessment Criteria. It is intended as a resource to help guide the delivery and assessment of the unit. Indicative content is NOT a statement of material which must be covered and evidenced for assessment.

Learning Outcome 2. Understand the makeup of woody cell connections and water movement

Learning Outcome 3. Understand the relationship between dynamic and static mass and of potential kinetic-energy ratio

Learning Outcome 4. Understand how the efficiency of a tree's system can be adversely affected

Learning Outcome 5. Understand the process of photosynthesis related to chlorophyll fluorescence analysis

Learning Outcome 6. Understand branch formation and shedding

Learning Outcome 7. Understand the benefits of trees forming symbolic relationships

Learning Outcome 8. Understand how soil conditions effect root system development and function
Hydraulic conductivity, Bulk density, Soil aeration, Soil temperature, Chemical properties.
Learning Outcome 9. Understand how a tree protects and defends itself

Teaching Strategies and Learning Activities

Centres should adopt a delivery approach which supports the development of their particular learners. The aims and aspirations of all learners, including those with identified special needs, including learning difficulties/disabilities, should be considered and appropriate support mechanisms put in place.

Methods of Assessment

This unit will be internally assessed, internally and externally moderated via a learner's portfolio and other related evidence, against the unit outcomes and assessment criteria.

The assessment of some knowledge and understanding may take place in a non-work based environment e.g. training centre, however it must link directly to workplace performance and include performance evidence.

All learners must complete a portfolio of evidence that shows achievement of all the relevant learning outcomes and assessment criteria

Minimum requirements when assessing this unit
ABC expects that staff will be appropriately qualified to assess learners against the outcomes and criteria within the units. Generally teaching staff should be qualified and/or vocationally experienced to at least a level above that which they are teaching

It is important that practical assessment activities are supervised appropriately

Evidence of Achievement

Evidence presented to support achievement is not prescribed for each learning outcome. It **could** typically include:

- Product evidence
- Observation reports
- Oral/written questions and answers
- Reports/notes
- Worksheets/job sheets/workbooks
- Witness statements

- Taped evidence (video or audio)
- Photographic evidence
- Case studies/assignments/projects
- Interview/professional discussion
- Site risk assessment
- Tool / equipment inventory lists / maintenance schedules
- Pictorial identifications
- Letters / emails seeking clarification / confirmation of understanding
- Internet research / copies of items with relevant knowledge highlighted

This is not an exhaustive list and learners should be encouraged to develop the most appropriate evidence to demonstrate their achievement of the learning outcomes and assessment criteria.

All evidence must be clearly signposted and made available for the external moderator upon request.

All internal assessments must be accompanied by a signed Declaration of Authenticity (this document is available on the ABC web site).

Additional Information

Useful sources of reference

- "Modern Arboriculture" by Alex Shigo - *ISBN 0-943563-09-7*
- "Trees: Their Natural History" by Peter Thomas - *ISBN 0-521-45963-X*
- "Photosynthesis" by D. O. Hall and K. K. Rao - *ISBN 0-521-64497-6*
- "Tree Roots in the Built Environment" – 'Research for Amenity Trees No.8' - *ISBN 0-11-753620-2*
- "Field Guide: The Identification of Soils for Forest Management" – Forestry Commission - *ISBN 0 85538 559 6*
- "Soil Types: A Field Identification Guide" by Stephen Trudgill, Field Studies Council - *ISBN 1 58153 196 3*
- "Up by Roots: Healthy Soils and Trees in the Built Environment" by James Urban - *ISBN 1-881956-65-2*
- Applied Tree Biology by A D Hirons and P A Thomas ISBN 978-1-118-29640-0

See ABC website for further information

Tree Biomechanics and Maintenance

Unit Reference	M/503/3319
Level	4
Credit Value	7
Guided Learning Hours	40
Unit Summary	This unit covers the inspection of trees related to their condition and remedial actions that maybe required as a result of finding defects.
Learning Outcomes (1 to 4) **The learner will:**	**Assessment Criteria** (is to be assessed by a method as deemed appropriate by the training provider in order to achieve this unit) **(1.1 to 4.4)** **The learner can:**
1. 1 Understand tree form as an ideal structure	1.1 Summarise the concept that is the foundation of the principle 'The Axiom of Uniform Stress' 1.2 Outline the reasoning for the school of thought that the axiom of uniform stress is an incomplete concept 1.3 Explain why sound trees might break
2. 2 Be able to recognise warning signs or symptoms of impending mechanical failure in trees	2.1 Identify ten symptoms of mechanical defects and explain how each defect can lead to a named failure type 2.2 Undertake a systematic inspection of five trees and record any defects found: ○ evaluate the defects, without the use of specialised equipment,

	○ draw conclusions regarding the potential risk posed by each tree ○ present the findings in an appropriate format 2.3 Apply one hollow tree failure criteria to a tree
3. Understand the treatment of defects in trees	3.1 Describe how each of the following may reduce or prevent risks to a target posed by trees ○ formative pruning ○ crown reduction ○ selective branch removal ○ monolithing ○ treatment of significant decay/cavities ○ treatment of weak structures 3.2 Prescribe an appropriate treatment for each of five given tree conditions in accordance with best practice 3.3 Evaluate the effectiveness of each treatment prescribed in assessment criteria 3.2
4. Understand the principles of operation of specialised devices used to assist tree inspection	4.1 Prescribe the use of an appropriate device to a given range of three different tree conditions and justify the decision 4.2 Evaluate the use of specialist equipment listed in one of the following categories identifying four strengths and four weaknesses excluding cost: ○ sonic or ultrasonic ○ electrical impedance ○ computerised tomography ○ micro-drills

	○ Fractometer ○ ground penetrating radar 4.3 Evaluate the use of invasive decay detection devices and draw conclusions in relation to: ○ wounding of woody tissues ○ providing a pathway for colonisation by fungi ○ monetary cost of their use versus the benefits 4.4 Demonstrate the application of one specialist item of equipment used to undertake an investigation of symptoms or signs of structural defects from the following: ○ sonic or ultrasonic ○ electrical impedance ○ computerised tomography ○ micro-drills ○ Fractometer ○ ground penetrating radar

Unit Content

To successfully achieve this unit, learners need to provide evidence that they have met the learning outcomes and assessment criteria for the unit.

Unit content is offered as key learning that is essential to aid delivery of the unit and to set the learning outcomes and assessment criteria in context.

Learning Outcome 1: Understand tree form as an ideal structure.

1.1 Tree form as an ideal structure

1.2 The distribution of a tree's external and internal stresses

1.3 The axiom of uniform stress/thigmomorphogenesis

1.4 Self-optimisation of the undamaged tree

1.5 The law of the minimal lever arm and the strategy of flexibility

1.6 Why sound trees might break despite having an ideal structure

Learning Outcome 2: Be able to recognise warning signs or symptoms of impending mechanical failure in trees.

2.1 To recognise warning signs or symptoms of impending mechanical failure in trees

2.2 To undertake a systematic inspection of trees and record findings
Hollow tree failure criteria

Learning Outcome 3: Understand the treatment of defects in trees

3.1 Pruning methods to reduce or prevent risks to a target

3.2 The treatments that are appropriate/inappropriate to reduce/prevent risk to a target

Learning Outcome 4: Understand the principles of operation of specialised devices used to assist tree inspection.

4.1 The principles of operation of specialised devices used to assist tree inspection

4.2 What are invasive and non-invasive devices

Supporting Unit Information

Tree Biomechanics and Maintenance – M/503/3319 - Level 4

Indicative Content

Note: Indicative content provides an indication of the scope for the Learning Outcomes and Assessment Criteria. It is intended as a resource to help guide the delivery and assessment of the unit. Indicative content is NOT a statement of material which must be covered and evidenced for assessment.

Learning Outcome 1. Understand tree form as an ideal structure

Learning Outcome 2. Be able to recognise warning symptoms of impending failure in trees

Learning Outcome 3. Understand the treatment of defects in trees

Learning Outcome 4. Understand the principles of operation of specialised devices used to assist tree inspection

Teaching Strategies and Learning Activities

Centres should adopt a delivery approach which supports the development of their particular learners. The aims and aspirations of all learners, including those with identified special needs, including learning difficulties/disabilities, should be considered and appropriate support mechanisms put in place.

Methods of Assessment

This unit will be internally assessed, internally and externally moderated via a learner's portfolio and other related evidence, against the unit outcomes and assessment criteria.

The assessment of some knowledge and understanding may take place in a non-work based environment e.g. training centre, however it must link directly to workplace performance and include performance evidence.

All learners must complete a portfolio of evidence that shows achievement of all the relevant learning outcomes and assessment criteria

Minimum requirements when assessing this unit
ABC expects that staff will be appropriately qualified to assess learners against the outcomes and criteria within the units. Generally teaching staff should be qualified and/or vocationally experienced to at least a level above that which they are teaching

It is important that practical assessment activities are supervised appropriately.

Evidence of Achievement

Evidence presented to support achievement is not prescribed for each learning outcome. It **could** typically include:

- Product evidence
- Observation reports
- Oral/written questions and answers
- Reports/notes
- Worksheets/job sheets/workbooks
- Witness statements
- Taped evidence (video or audio)
- Photographic evidence
- Case studies/assignments/projects
- Interview/professional discussion
- Site risk assessment
- Tool / equipment inventory lists / maintenance schedules
- Pictorial identifications
- Letters / emails seeking clarification / confirmation of understanding
- Internet research / copies of items with relevant knowledge highlighted

This is not an exhaustive list and learners should be encouraged to develop the most appropriate evidence to demonstrate their achievement of the learning outcomes and assessment criteria.

All evidence must be clearly signposted and made available for the external moderator upon request.

All internal assessments must be accompanied by a signed Declaration of Authenticity (this document is available on the ABC web site).

Additional Information

Useful sources of reference

- "The Body Language of Trees: A Handbook for Failure Analysis" by Claus Mattheck and Helge Breloer - 'Research for Amenity Trees No.4' - *ISBN 0-11-753067-0*
- "Principles of Tree Hazard Assessment and Management" by David Lonsdale - 'Research for Amenity Trees No.7 - *ISBN 0-11-753355-6*
- British Standard 3998:2010 'Tree Work – Recommendations'

See ABC website for further information

Pest, Disease and Disorder Identification

Unit Reference	M/503/3322
Level	3
Credit Value	5
Guided Learning Hours	24
Unit Summary	This unit covers the identification, diagnosis, understanding, implications and treatment of present diseases and disorders that are a threat to woody vegetation populations in GB
Learning Outcomes (1 to 4) **The learner will:**	**Assessment Criteria** (is to be assessed by a method as deemed appropriate by the training provider in order to achieve this unit) **(1.1 to 5.3)** **The learner can:**
1. Understand how the control of pests and diseases are regulated	1.1 Describe how domestic legislation would operate for a named pest or disease which is subject to a plant health order
2. Know how to undertake an investigation to establish the presence of a pest, disease or abiotic disorder	2.1 Using signs or symptoms present on woody vegetation identify three different causal agents from each of the following categories: ○ bacteria ○ mammals ○ invertebrates ○ abiotic disorders
3. Know what preventative measures or remedial	3.1 Prescribe and justify an appropriate prevention, control or treatment intervention for those agents identified in 2.1

	treatments are available	
4.	Understand how fungi colonise woody tissues	4.1 Describe the four principal strategies employed by tree decay fungi to colonise woody tissues 4.2 Describe each of the following types of rot and give an example of a fungal pathogen for each ○ white – selective delignification ○ white simultaneous ○ brown ○ soft 4.3 For each of 20 principal decay fungi identify the following aspects: ○ common hosts ○ colonisation strategy ○ type of rot caused ○ arboricultural significances ○ parts of host affected ○ any preventative measures/treatment
5.	Understand about biosecurity	5.1 Describe the main benefits to the UK of a biosecurity policy 5.2 Outline the main points to be included in a biosecurity policy. 5.3 Undertake / produce a biosecurity risk assessment.

Unit Content

To successfully achieve this unit, learners need to provide evidence that they have met the learning outcomes and assessment criteria for the unit.

Unit content is offered as key learning that is essential to aid delivery of the unit and to set the learning outcomes and assessment criteria in context.

Learning Outcome 1: Understand how the control of pests and diseases are regulated

1.1 How the control of pests and diseases is regulated in the UK

1.2 To identify the bodies responsible for regulation in the UK

1.3 Explain the purposes of plant passports, phytosanitary certificates and plant health orders

Learning Outcome 2: Know how to undertake an investigation to establish the presence of a pest, disease or abiotic disorder

2.1 What is a sign or a symptom of the presence of a pest, disease or abiotic disorder

2.2 How to undertake an investigation to establish the presence of a pest, disease or disorder

Learning Outcome 3: Know what preventative measures or remedial treatments are available

3.1 The types of treatments available for pests, diseases and abiotic disorders

Learning Outcome 4: Understand how fungi colonise woody tissues

4.1 Layers of cell walls and the construction of a woody cell

4.2 How fungi enter and degrade woody tissues

Learning Outcome 5: Understand about biosecurity

5.1 The need for a biosecurity policy and the risk to the UK of not having measures in place

Supporting Unit Information

Pest, Disease and Disorder Identification – M/503/3322 - Level 3

Indicative Content

Note: Indicative content provides an indication of the scope for the Learning Outcomes and Assessment Criteria. It is intended as a resource to help guide the delivery and assessment of the unit. Indicative content is NOT a statement of material which must be covered and evidenced for assessment.

Learning Outcome 1. Know the legislation that regulates pest and disease control

Learning Outcome 2. Know how to undertake an investigation to establish the presence of a pest, disease or disorder

Learning Outcome 3. Know what preventative or remedial treatments are available

Learning Outcome 4. Know how to undertake diagnosis of ill health with the aid of specialist equipment

Learning Outcome 5. Understand how fungi colonise woody tissues

Teaching and Learning Activities

Centres should adopt a delivery approach which supports the development of their particular learners. The aims and aspirations of all learners, including those with identified special needs, including learning difficulties/disabilities, should be considered and appropriate support mechanisms put in place.

Methods of Assessment

This unit will be internally assessed, internally and externally moderated via a learner's portfolio and other related evidence, against the unit outcomes and assessment criteria.

The assessment of some knowledge and understanding may take place in a non-work based environment e.g. training centre, however it must link directly to workplace performance and include performance evidence.

All learners must complete a portfolio of evidence that shows achievement of all the relevant learning outcomes and assessment criteria

Minimum requirements when assessing this unit
ABC expects that staff will be appropriately qualified to assess learners against the outcomes and criteria within the units. Generally teaching staff should be qualified and/or vocationally experienced to at least a level above that which they are teaching

It is important that practical assessment activities are supervised appropriately.

Evidence of Achievement

Evidence presented to support achievement is not prescribed for each learning outcome. It **could** typically include:

- Product evidence
- Observation reports
- Oral/written questions and answers
- Reports/notes
- Worksheets/job sheets/workbooks
- Witness statements
- Taped evidence (video or audio)
- Photographic evidence
- Case studies/assignments/projects
- Interview/professional discussion
- Site risk assessment
- Tool / equipment inventory lists / maintenance schedules
- Pictorial identifications
- Letters / emails seeking clarification / confirmation of understanding
- Internet research / copies of items with relevant knowledge highlighted

This is not an exhaustive list and learners should be encouraged to develop the most appropriate evidence to demonstrate their achievement of the learning outcomes and assessment criteria.

All evidence must be clearly signposted and made available for the external moderator upon request.

All internal assessments must be accompanied by a signed Declaration of Authenticity (this document is available on the ABC web site).

Additional Information

Useful sources of reference

- "Principles of Tree Hazard Assessment and Management" by David Lonsdale - 'Research for Amenity Trees No.7 - *ISBN 0-11-753355-6*
- "Diagnosis of Ill-Health in Trees" - 'Research for Amenity Trees No.2' - *ISBN 0-11-752919-2*
- "Diagnosis and Prognosis of the Development of Wood Decay in Urban Trees" by Francis W. M. R. Schwarze - *ISBN 978-0-646-49144-8*

See ABC website for further information.

Principles of Tree Management

Unit Reference	T/503/3323
Level	5
Credit Value	9
Guided Learning Hours	45
Unit Summary	This unit covers management aspects of trees, legislation and common laws that apply to working practices.
Learning Outcomes (1 to 7) **The learner will:**	**Assessment Criteria** (is to be assessed by a method as deemed appropriate by the training provider in order to achieve this unit) **(1.1 to 7.4)** **The learner can:**
1. Know the value of trees	1.1 Describe six principal values and four drawbacks of trees under each of the following headings ○ environmental ○ ecological ○ social/economic ○ amenity/landscape 1.2 Carry out an amenity evaluation of a tree using a recognized methodology and draw conclusions related to the outcome 1.3 Evaluate the strengths and weaknesses of the methodology used
2. Understand how common law precedent may be applied to trees	2.1 Extrapolate from previous cases, the current common law precedents related to the following: ○ overhanging branches ○ encroaching roots ○ poisonous trees

	○ dangerous trees ○ rights to light 2.2 Apply common law to the following: ○ overhanging branches ○ encroaching roots ○ dangerous trees
3. Understand the implications of statutes related to trees	3.1 Interpret statute law related to each of the following scenarios: ○ the management of height clearance of highway trees ○ a dangerous tree within falling distance of a public bridleway ○ a high evergreen boundary hedge between house owners ○ the removal of an important hedge in the countryside ○ the movement of waste materials ○ the application of a systemic herbicide ○ a protected species harmed by the actions of a tree surgeon ○ the habitat of a protected species destroyed by tree removal ○
4. Understand the implications of Health and Safety legislation and best practice related to tree work	4.1 Interpret statute law and/or best practice as applied to each of the following scenarios: ○ the manual lifting of wood ○ the use of work equipment ○ the use of noisy machinery ○ the use of hazardous substance ○ working at height ○ the use of equipment used for lifting purposes

	○ the requirement to have a first aid assistance ○ an accident at work carrying out tree work ○ the use of machinery that can vibrate ○ carrying out tree work alongside a highway ○ working near electric utility lines 4.2 Identify the duties, rights, or responsibilities under the Management of Health and Safety at Work Regulations for: ○ employer ○ employee ○ self-employed 4.3 Prepare a site specific risk assessment for a given tree surgery operation that conforms to the requirements of the regulations 4.4 Prepare a method statement for dismantling trees on a construction site
5. Understand the application and implications of pruning methods to tree management, excluding risk management	5.1 Evaluate each of the following pruning operations available to manage trees as described in the British Standard illustrated with named examples of tree species: ○ formative pruning ○ crown reduction ○ crown thinning ○ selective branch removal ○ pollarding

6. Understand the advantages of pro-actively managing tree populations	6.1 Contrast the pro-active and re-active management of a population of trees and form a conclusion 6.2 Identify the values of preparing a tree renewal programme for an example of over-mature trees in a street
7. Understand the values of Ancient and Veteran trees	7.1 Identify twelve reasons why a veteran or an ancient tree is recognised as being 'special' 7.2 Outline ten principles of managing Ancient/Veteran trees and justify why each principle contributes to enhancing the special aspects of those trees 7.3 Describe the principles and processes involved in 'veteranising' a tree and evaluate the potential results related to: • Habitat creation 7.4 Describe the treatment required for a 'lapsed pollard' that is to be retained as a pollard and identify the physiological threats to its continued survival as a result of the treatment

Unit Content

To successfully achieve this unit, learners need to provide evidence that they have met the learning outcomes and assessment criteria for the unit.

Unit content is offered as key learning that is essential to aid delivery of the unit and to set the learning outcomes and assessment criteria in context.

Learning Outcome 1: Know the value of trees.

1.1 The benefits and drawbacks of trees

1.2 Methods of valuing trees

Learning Outcome 2: Understand how common law precedent may be applied to trees.

2.1 How common law is devised and what a precedent is

2.2 The cases applicable to trees to be interpreted

Learning Outcome 3: Understand the implications of statutes related to trees

3.1 What statute law is

3.2 The statues that are relevant to tree work

Learning Outcome 4: Understand the implications of Health and Safety legislation and best practice related to tree work

4.1 The importance of complying with health and safety legislation and best practice

4.2 The contents of risk assessment in the work place and the use of a generic methodology combined with the site specific statute requirement

4.3 The background to method statements and the objectives of producing one

Learning Outcome 5: Understand the application and implications of pruning methods to tree management, excluding risk management

5.1 Definitions and description of pruning operations as per the British Standard

Learning Outcome 6: Understand the advantages of pro-actively managing tree populations

Learners will be taught:

6.1 An understanding of what pro-active and re-active management of a tree population is

6.2 Identify what a tree renewal programme is and the consequences of not having one

Learning Outcome 7: Understand the values of Ancient and Veteran trees.

7.1 To distinguish between an ancient tree and a veteran tree

7.2 To understand what a lapsed pollard is

Supporting Unit Information

Principles of Tree Management – T/503/3323 - Level 5

Indicative Content

Note: Indicative content provides an indication of the scope for the Learning Outcomes and Assessment Criteria. It is intended as a resource to help guide the delivery and assessment of the unit. Indicative content is NOT a statement of material which must be covered and evidenced for assessment.

Learning Outcome 1. Know the value of trees

Learning Outcome 2. Understand how common law precedent may be applied to trees

Learning Outcome 3. Understand the implications of statutes related to trees

Learning Outcome 4. Understand the implications of Health and Safety legislation and best practice related to tree work

Learning Outcome 5. Understand the application and implications of pruning methods to tree management, excluding risk management

Learning Outcome 6. Understand the advantages of pro-actively managing tree populations

Learning Outcome 7. Understand the values of Ancient and Veteran trees

Teaching Strategies and Learning Activities

Centres should adopt a delivery approach which supports the development of their particular learners. The aims and aspirations of all learners, including those with identified special needs, including learning difficulties/disabilities, should be considered and appropriate support mechanisms put in place.

Methods of Assessment

This unit will be internally assessed, internally and externally moderated via a learner's portfolio and other related evidence, against the unit outcomes and assessment criteria.

The assessment of some knowledge and understanding may take place in a non-work based environment e.g. training centre, however it must link directly to workplace performance and include performance evidence.

All learners must complete a portfolio of evidence that shows achievement of all the relevant learning outcomes and assessment criteria

Minimum requirements when assessing this unit
ABC expects that staff will be appropriately qualified to assess learners against the outcomes and criteria within the units. Generally teaching staff should be qualified and/or vocationally experienced to at least a level above that which they are teaching

It is important that practical assessment activities are supervised appropriately

Evidence of Achievement

Evidence presented to support achievement is not prescribed for each learning outcome. It **could** typically include:

- Product evidence
- Observation reports
- Oral/written questions and answers
- Reports/notes
- Worksheets/job sheets/workbooks
- Witness statements
- Taped evidence (video or audio)
- Photographic evidence
- Case studies/assignments/projects
- Interview/professional discussion
- Site risk assessment
- Tool / equipment inventory lists / maintenance schedules

- Pictorial identifications
- Letters / emails seeking clarification / confirmation of understanding
- Internet research / copies of items with relevant knowledge highlighted

This is not an exhaustive list and learners should be encouraged to develop the most appropriate evidence to demonstrate their achievement of the learning outcomes and assessment criteria.

All evidence must be clearly signposted and made available for the external moderator upon request.

All internal assessments must be accompanied by a signed Declaration of Authenticity (this document is available on the ABC web site).

Additional Information

Useful sources of reference

- Arboricultural Association Guidance Note 4 – "Visual Amenity Valuation of Trees and Woodlands – The Helliwell System" 2008
- Capital Asset Value for Amenity Trees (CAVAT) by Christopher Neilan
- British Standard 3998:2010 'Tree Work – Recommendations'
- "The Law of Trees, Forests and Hedgerows" – by Charles Mynors - *ISBN 042159040-8*
- Arboricultural Practice Note 11 – "Trees and Hedges in Dispute"
- www.communities.gov – various downloads:
    - 'Tree Preservation Orders: A guide to the Law and Good Practice'
    - 'Hedge Height and Light Loss'
- 'Health and Safety Package' – produced by the Arboricultural Association - *ISBN 0 900978 40 6*
- 'Safety at Street Works and Road Works – A Code of Practice' – *ISBN 011551958-0*
- www.hse.gov - free downloads available for:
    - information relating to all health and safety legislation
    - industry best practice - AFAG leaflets
- www.businessballs.com - free downloads available for all aspects of management

- "Veteran Trees: A guide to Good Management" by Helen Read - *ISBN 1 85716 474 1*
- "Veteran Trees: A guide to Risk and Responsibility" - *ISBN 1 85716 508 X*
- Ancient and other Veteran Trees: further guidance on management edited by D Lonsdale. ISBN 978-0-904853-09-4

See ABC website for further information

Development and Tree Protection

Unit Reference	A/503/3324
Level	4
Credit Value	5
Guided Learning Hours	25
Unit Summary	This unit covers the arboricultural aspects of site development and tree protection and how this is managed through planning policies, legislation and best practice.
Learning Outcomes (1 to 3) **The learner will:**	**Assessment Criteria** (is to be assessed by a method as deemed appropriate by the training provider in order to achieve this unit) **(1.1 to 3.5)** **The learner can:**
1. Understand the impacts on trees of development and how this may be mitigated or reduced	1.1 Explain how to determine the value and quality of the woody vegetation on and around the site 1.2 Identify: ○ The tree constraints on a development site ○ the likely impacts of development on woody vegetation and vice versa ○ the importance of physically protecting trees on a development site 1.3 Identify the tree related components required in a

	planning application to assist a developer within the planning process 1.4 For each of the following impacts describe an appropriate measure which mitigates or eliminates the impact on trees within a root protection area ○ ground compaction and asphyxiation of roots ○ severance of roots for foundation construction ○ severance of roots for construction of a utility service 1.5 For each of the following impacts describe an appropriate measure which mitigates or eliminates the impact on trees on a development site: ○ mixing of materials ○ use of cranes ○ hard landscaping ○ soft landscaping ○ storage of materials ○ entry by contractors to a Construction Exclusion Zone (CEZ) ○ post development requests for pruning due to a shading issue ○ impacts on new tree planting
2. Understand planning policy and guidance	2.1 Summarise the aims of planning policies and legislation as used by local planning

	authorities to both plan for and control development
3. Understand how tree protection mechanisms operate	3.1 Distinguish between the purposes of each of the following: ○ Tree Preservation Order (TPO) ○ Designated Conservation Area (CA) ○ Felling license 3.2 Identify the information that must be present on a: ○ completed TPO ○ Regulation 5 notice 3.3 Describe the procedures undertaken by the parties involved following: ○ a planning application to fell a protected tree ○ a notice to prune a tree in a Conservation Area

Unit Content

To successfully achieve this unit, learners need to provide evidence that they have met the learning outcomes and assessment criteria for the unit.

Unit content is offered as key learning that is essential to aid delivery of the unit and to set the learning outcomes and assessment criteria in context.

Learning Outcome 1: Understand the impacts on trees of development and how this may be mitigated or reduced

1.1 What information is required in order to determine the value and quality of the woody vegetation on and around a site to be developed

1.2 To identify what is meant by constraints posed by trees to developing a site

1.3 To identify what an actual impact is as referred to by the British Standard in the section Arboricultural Impact Assessment

Learning Outcome 2: Understand planning policy and guidance

2.1 To identify what policies and legislation are in place that that gives protection to trees

Learning Outcome 3: Understand how tree protection mechanisms operate.

3.1 The penalties and consequences of breaching tree protection legislation

Supporting Unit Information

Development and Tree Protection – A/503/3324 - Level 4

Indicative Content

Note: Indicative content provides an indication of the scope for the Learning Outcomes and Assessment Criteria. It is intended as a resource to help guide the delivery and assessment of the unit. Indicative content is NOT a statement of material which must be covered and evidenced for assessment.

Learning Outcome 1. Understand the impacts on trees of development and how this may be mitigated or reduced
BS 5837, National Joint Utilities Group (NJUG) Vol 4, Arboricultural Practice Note 12.

Learning Outcome 2. Understand planning policy and guidance
National, Regional, Local planning policies, planning policy guidance notes and statements.

Learning Outcome 3. Understand how tree protection mechanisms operate
Town and Country Planning Acts, Town and Country Planning (Trees) Regs, Planning (Listed Buildings and Conservation Areas) Act, Forestry Act

Teaching Strategies and Learning Activities

Centres should adopt a delivery approach which supports the development of their particular learners. The aims and aspirations of all learners, including those with identified special needs, including learning difficulties/disabilities, should be considered and appropriate support mechanisms put in place.

Methods of Assessment

This unit will be internally assessed, internally and externally moderated via a learner's portfolio and other related evidence, against the unit outcomes and assessment criteria.

The assessment of some knowledge and understanding may take place in a non-work based environment e.g. training centre, however it must link directly to workplace performance and include performance evidence.

All learners must complete a portfolio of evidence that shows achievement of all the relevant learning outcomes and assessment criteria

Minimum requirements when assessing this unit
ABC expects that staff will be appropriately qualified to assess learners against the outcomes and criteria within the units. Generally teaching staff should be qualified and/or vocationally experienced to at least a level above that which they are teaching.

It is important that practical assessment activities are supervised appropriately.

Evidence of Achievement

Evidence presented to support achievement is not prescribed for each learning outcome. It **could** typically include:

- Product evidence
- Observation reports
- Oral/written questions and answers
- Reports/notes
- Worksheets/job sheets/workbooks
- Witness statements
- Taped evidence (video or audio)
- Photographic evidence
- Case studies/assignments/projects
- Interview/professional discussion
- Site risk assessment
- Tool / equipment inventory lists / maintenance schedules
- Pictorial identifications
- Letters / emails seeking clarification / confirmation of understanding
- Internet research / copies of items with relevant knowledge highlighted

- This is not an exhaustive list and learners should be encouraged to develop the most appropriate evidence to demonstrate their achievement of the learning outcomes and assessment criteria.

All evidence must be clearly signposted and made available for the external moderator upon request.

All internal assessments must be accompanied by a signed Declaration of Authenticity (this document is available on the ABC web site).

Additional Information

Useful sources of reference

- British Standard 5837: 2005 - 'Trees in Relation to Construction'
- National House Building Council (NHBC) Chapter 4.2 – 'Building near Trees'
- British Standard 3998 : 2010 – 'Tree Work – Recommendations'
- National Joint Utilities Group (NJUG) Vol 4 – 'Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees'
- Arboricultural Practice Note 4 – "Root Barriers and Building Subsidence"
- Arboricultural Practice Note 5 – "Shaded by Trees?"
- Arboricultural Practice Note 12 – "Through the Trees to Construction"
- "The Law of Trees, Forests and Hedgerows" – by Charles Mynors - *ISBN 0-421-59040-8*
- 'Tree Preservation Orders: A guide to the Law and Good Practice'

See ABC website for further information

Selection Planting and Design with Hardy Nursery Stock for Amenity and Landscape Purposes

Unit Reference	L/503/3330
Level	5
Credit Value	8
Guided Learning Hours	40
Unit Summary	Learners will cover nomenclature, tree and shrub identification, nursery selection, plant selection, transportation, planting, protection, production, after care, planning, uses and design principles for planted hardy nursery stock used in amenity landscapes.
Learning Outcomes (1 to 8) **The learner will:**	**Assessment Criteria** (is to be assessed by a method as deemed appropriate by the training provider in order to achieve this unit) **(1.1 to 8.5)** **The learner can:**
1. Understand nomenclature and how to use a botanical key and other source to identify trees and shrubs.	1.1 Identify 100 trees/shrubs by their genera, species cultivar or variety names as applicable using their characteristics and features to include a minimum of 15 each from ○ evergreen broadleaved ○ deciduous broadleaved ○ conifer ○ shrubs 1.2 Demonstrate the use of a botanical key to identify a species 1.3 For each tree or shrub identified in 1.1 state their main arboricultural ○ attributes

	○ uses ○ limitations ○ in urban, rural or woodland landscapes as applicable
2. Understand the principles of taking trees from the nursery to independence in the landscape	2.1 Summarise the processes of taking trees from the nursery to independence in the landscape under the following headings: ○ Policy and strategy ○ Site evaluation and constraints assessment ○ Species selection ○ Nursery Production and procurement ○ Handling and Storage ○ Planting ○ Post Planting management and maintenance 2.2 Discuss the concept of adding or not adding soil ameliorants to the planting pit at the time of planting
3. Know what species to select for any set of conditions or requirements.	3.1 Prepare and present advice with justifications for clients on species choice related to three sets of different difficult site conditions/usage.
4. Know what woody plant stock size and type is available.	4.1 Specify an appropriate species, size, stock type and appropriate protection for each of the following sites, justifying the selection for each aspect ○ tree in a city street ○ canopy tree for an amenity woodland ○ tree for a motorway embankment ○ ornamental tree for a public open space

	○ tree for prestigious development ○ shrubs for mass planting adjacent to a highway 4.2 Critically compare the selection of each of the following stock types for planting ○ bare rooted whip versus cell grown ○ bare root standard versus air pot standard 4.3 Critically evaluate the quality of one sample of purchased standard sized tree stock against British Standards and the HTA plant specification manual
5. Understand current methods of tree and shrub production.	5.1 For each of the following describe a production method used by nursery growers to produce one named ornamental tree to a standard size ○ worked tree (budded or grafted) to include rootstock and scion production ○ tree from seed to include collection and breaking of dormancy
6. Know how to select hardy nursery stock and have it delivered in good condition.	6.1 Produce a list of criteria to be used in selecting a supplier of good quality nursery stock. 6.2 Specify the measures required to get stock delivered at the planting site in good condition in accordance with the JCLI code of practice for plant handling – lifting in the nursery to delivery at site. 6.3 Prepare a schedule of purchase for tree and shrub stock for a given scenario using

	the Horticultural Trades Association (HTA) plant specification guidance.
7. Know how to prepare a site for planting	7.1 Conduct a preliminary site survey and undertake a basic soil analysis drawing conclusion regarding suitableness and if improvements are required. 7.2 Apply survey and analysis findings to determine the required preparation for planting site and be able to identify further analysis requirements as applicable.
8. Know how to plant, protect and care for newly planted trees and shrubs	8.1 Describe an appropriate planting method for each of the following in a given site situation ○ 40-60 transplant ○ bare-rooted standard tree ○ container grown shrub ○ Semi-mature tree 8.2 Evaluate four given methods/ materials for each of the following practices drawing conclusions ○ support systems ○ protection methods ○ moisture control methods ○ soil ameliorants 8.3 Describe the post planting aftercare requirements for each in a given situation ○ 40-60 transplant ○ bare-rooted standard tree ○ container grown shrub ○ Semi-mature tree 8.4 Cost the stock and materials for the following ○ whip in a tree shelter

	○ standard tree with stake requiring rabbit protection ○ 2 litre shrub with a strimmer/mower guard 8.5 Critically evaluate post-planting conditions on a recently (up to 5 years) planted site where trees are failing, draw conclusions and make management recommendations preparing advice for a client in line with current professional practice

Unit Content

To successfully achieve this unit, learners need to provide evidence that they have met the learning outcomes and assessment criteria for the unit.

Unit content is offered as key learning that is essential to aid delivery of the unit and to set the learning outcomes and assessment criteria in context.

Learning Outcome 1: Understand nomenclature and how to use a botanical key and other source to identify trees and shrubs

1.1 The purpose of the International Code of Nomenclature for algae, fungi, and plants

1.2 Definitions for the following terms

- Family
- Genus
- Species
- Variety
- Cultivar
- Clone
- Common name
- Interspecifc hybrid
- Intergeneric hybrid
- Chimera/graft hybrid.

1.3 To write scientific and common names correctly in accordance with the International code for the terms listed above

Learning Outcome 2: Understand the principles of taking trees from the nursery to independence in the landscape

2.1 The sequence and phases of taking trees from the nursery through to independence in the landscape as outlined in the British standard

Learning Outcome 3: Know what species to select for any set of conditions or requirements.

3.1 Why advice is required regarding tree species selection

Learning Outcome 4: Know what woody plant stock size and type is available

4.1 Woody plant stock sizes in accordance with British Standards

4.2 The differences in stock type availability

4.3 To select criteria to enable an evaluation of stock quality

Learning Outcome 5: Understand current methods of tree and shrub production

5.1 Field production method used for tree and shrub production

5.2 The reasons for budding/grafting trees as part of production

5.3 Shrub production by semi-ripe cutting to a 2 litre pot size

Learning Outcome 6: Know how to select hardy nursery stock and have it delivered in good condition.

6.1 How to ensure stock is delivered in good condition

Learning Outcome 7: Know how to prepare a site for planting

7.1 To prepare criteria for assessing a site for its suitability for tree planting

7.2 To understand soil assessments

Learning Outcome 8: Know how to plant, protect and care for newly planted trees and shrubs

8.1 A wide range of planting methods combined with support and protection available for newly planted trees and shrubs

8.2 A procedure for evaluating post planting conditions

Supporting Unit Information

Selection, Planting and Design with Hardy Nursery Stock for Amenity and Landscape Purposes – L/503/3330 - Level 5

Indicative Content

Note: Indicative content provides an indication of the scope for the Learning Outcomes and Assessment Criteria. It is intended as a resource to help guide the delivery and assessment of the unit. Indicative content is NOT a statement of material which must be covered and evidenced for assessment.

Learning Outcome 1. Understand nomenclature and how to use a botanical key and other sources to identify trees and shrubs

Learning Outcome 2. Know what species to select for any set of conditions or requirements

Learning Outcome 3. Know what woody plant stock size and type is available

Learning Outcome 4. Understand current methods of tree and shrub production

Learning Outcome 5. Know how to select hardy nursery stock and have it delivered in good condition

Learning Outcome 6. Know how to prepare site for planting

Learning Outcome 7. Know how to plant, protect and care for newly planted trees and shrubs

Learning Outcome 8. Understand the principles of taking trees from the nursery to independence in the landscape

Teaching Strategies and Learning Activities

Centres should adopt a delivery approach which supports the development of their particular learners. The aims and aspirations of all learners, including those with identified special needs, including learning difficulties/disabilities, should be considered and appropriate support mechanisms put in place.

Methods of Assessment

This unit will be internally assessed, internally and externally moderated via a learner's portfolio and other related evidence, against the unit outcomes and assessment criteria.

The assessment of some knowledge and understanding may take place in a non-work based environment e.g. training centre, however it must link directly to workplace performance and include performance evidence.

All learners must complete a portfolio of evidence that shows achievement of all the relevant learning outcomes and assessment criteria

Minimum requirements when assessing this unit
ABC expects that staff will be appropriately qualified to assess learners against the outcomes and criteria within the units. Generally teaching staff should be qualified and/or vocationally experienced to at least a level above that which they are teaching

It is important that practical assessment activities are supervised appropriately

Evidence of Achievement

Evidence presented to support achievement is not prescribed for each learning outcome. It **could** typically include:

- Product evidence
- Observation reports
- Oral/written questions and answers
- Reports/notes
- Worksheets/job sheets/workbooks
- Witness statements

- Taped evidence (video or audio)
- Photographic evidence
- Case studies/assignments/projects
- Interview/professional discussion
- Site risk assessment
- Tool / equipment inventory lists / maintenance schedules
- Pictorial identifications
- Letters / emails seeking clarification / confirmation of understanding
- Internet research / copies of items with relevant knowledge highlighted

This is not an exhaustive list and learners should be encouraged to develop the most appropriate evidence to demonstrate their achievement of the learning outcomes and assessment criteria.

All evidence must be clearly signposted and made available for the external moderator upon request.

All internal assessments must be accompanied by a signed Declaration of Authenticity (this document is available on the ABC web site).

Additional Information

Useful sources of reference

- A Field Guide to the Trees of Britain and Northern Europe by Alan Mitchell - *ISBN 0 00 219213 6*
- Trees in Britain, Europe and North America by Roger Phillips - *ISBN 0 330 25480 4*
- The Tree and Shrub Expert by Dr. D.G. Hessayon - *ISBN 0-903505-17-7*
- Hillier's Manual of Trees and Shrub - *ISBN 0-7153-8302-7*
- British Standard 3936 Part 1 – 'Specification for Trees and Shrubs'
- Horticultural Trades Association – 'National Plant Specification' and 'Handling and Establishing Landscape Plants'
- Principles and Practice of Planting Trees and Shrubs by Gary Watson and E.B. Himelick – ISA - *ISBN 1-881956-18-0*
- The Planting Design Handbook 2nd edition by Nick Robinson - *ISBN 0-7546-3035-8*

See ABC website for further information

Principles of Woodland Establishment and Management

Unit Reference	F/503/3325
Level	3
Credit Value	5
Guided Learning Hours	25
Unit Summary	This unit covers the maintenance of existing woodland and establishment of new amenity woodlands which are open to public access and where the main aims of management include public enjoyment, conservation of wildlife and landscape value.
Learning Outcomes (1 to 7) **The learner will:**	**Assessment Criteria** (is to be assessed by a method as deemed appropriate by the training provider in order to achieve this unit) **(1.1 to 7.4)** **The learner can:**
1. Understand the principles of silviculture	1.1 Describe the main principles of the following silvicultural systems: ○ Clear fell ○ Selection ○ single ○ strip ○ Shelterwood ○ Group ○ Irregular 1.2 Evaluate the application of a Continuous Cover Forestry approach where the primary aims include wildlife conservation, recreation and landscape value

2. Know the different types of woodland present in GB	2.1 Distinguish the main characteristics of the following: ○ ancient woodland ○ ancient semi-natural woodland ○ plantation on an ancient woodland site ○ semi-natural woodland ○ recent semi-natural woodland ○ new native woodland ○ pasture woodland ○ coppice with standards ○ coppice 2.2 Summarise the main principles of managing five of the following: ○ ancient woodland ○ ancient semi-natural woodland ○ plantation on an ancient woodland site ○ semi-natural woodland ○ recent semi-natural woodland ○ new native woodland ○ pasture woodland ○ coppice with standards ○ coppice
3. Know what sources and types of funding are available to assist woodland management and establishment	3.1 Summarise the main sources of funding for establishing and managing woodland 3.2 Provide details of one type of funding
4. Understand the processes of forming a woodland management plan	4.1 Identify the significant information to be collected as part of an existing woodland site assessment and justify how that information contributes to the formation of a management plan

	4.2 Explain the purpose of the following when written in to a plan ○ aims ○ objectives ○ operation statements 4.3 Analyse three given objectives and three given operational statements that cover the following two aims ○ wildlife conservation ○ recreation
5. Understand the processes involved in establishing a new woodland	5.1 Identify the significant information to be collected as part of a site assessment, prior to woodland creation and justify how each item of information contributes to the formation of a plan of operations 5.2 Provide and justify realistic and economic solutions for the following site constraints: ○ low nutrient levels particularly nitrogen ○ compacted slopes of 40 year old mining spoil ○ improved grassland 5.3 Provide solutions to the threats to tree establishment posed by one named example from each of the following groups ○ mammals ○ mechanical damage ○ excessive weed growth ○ lack of moisture 5.4 Select and justify the following to be used in the establishment of a new amenity woodland on a given site ○ 5 main canopy trees ○ 3 understory shrub species

	○ 5 woodland edge species
6. Understand the concept of woodland ecology	6.1 Describe a basic food chain related to trees that covers the four levels of the recognized pyramid of trophic levels 6.2 Define the terms ecosystem and ecotone 6.3 Describe each of the following and explain their ecological inter-relationship: ○ plant subsystem ○ herbivore/carnivore subsystem ○ decomposition subsystem 6.4 Define each of the following and explain their importance to woodland ecology: ○ saproxylic invertebrate ○ red data book species ○ wood decay fungi ○ deadwood ○ phoenix regeneration
7. Understand plant survival or 'ecological' strategies	7.1 Define the terms Competition, Stress Tolerance and Disturbance in relation to life-strategies within plant communities 7.2 Describe the impact of competition, stress and disturbance upon the diversity of plant communities 7.3 Exemplify and explain the evolutionary adaptations of named woodland species as life-strategies for survival in mature climax-woodland 7.4 Define the term biodiversity and explain why it is important to the success and survival of a woodland community

Unit Content

To successfully achieve this unit, learners need to provide evidence that they have met the learning outcomes and assessment criteria for the unit.

Unit content is offered as key learning that is essential to aid delivery of the unit and to set the learning outcomes and assessment criteria in context.

Learning Outcome 1: Understand the principles of silviculture

1.1 The principles of clear fell, selection and shelterwood systems

1.2 The principles of continuous cover forestry

Learning Outcome 2: Know the different types of woodland present in GB.

2.1 The different types of woodland present in GB

2.2 Summarise the principles of five of the above types of woodland

Learning Outcome 3: Know what sources and types of funding are available to assist woodland management and establishment

3.1 The available sources of funding

Learning Outcome 4: Understand the processes of forming a woodland management plan.

4.1 The contents of forming a woodland management plan

4.2 A definition of aims, objectives and operational statements

4.3 The values of a monitoring and review process

Learning Outcome 5: Understand the processes involved in establishing a new woodland

5.1 The principles of establishing a new woodland

Learning Outcome 6: Understand the concept of woodland ecology

6.1 The origins of ecology and importance to preserving wildlife

6.2 The concept of trophic levels and subsystems

Learning Outcome 7: Understand plant survival or 'ecological' strategies

7.1 Definition of terms related to competition

7.2 An interpretation of Grime's triangle of relationship between the life strategies

7.3 Define the term biodiversity

Supporting Unit Information

Principles of Woodland Establishment and Management – F/503/3325 - Level 3

Indicative Content

Note: Indicative content provides an indication of the scope for the Learning Outcomes and Assessment Criteria. It is intended as a resource to help guide the delivery and assessment of the unit. Indicative content is NOT a statement of material which must be covered and evidenced for assessment.

Learning Outcome 1. Understand the principles of silviculture

Learning Outcome 2. Know the different types of woodland present in GB

Learning Outcome 3. Know what sources and types of grant are available to assist woodland management and establishment

Learning Outcome 4. Understand the processes of forming a woodland management plan

Learning Outcome 5. Understand the processes involved in establishing a new woodland

Learning Outcome 6. Understand the concept of woodland ecology

Learning Outcome 7. Understand plant survival or 'ecological' strategies

Teaching Strategies and Learning Activities

Centres should adopt a delivery approach which supports the development of their particular learners. The aims and aspirations of all learners, including those with identified special needs, including learning difficulties/disabilities, should be considered and appropriate support mechanisms put in place.

Methods of Assessment

This unit will be internally assessed, internally and externally moderated via a learner's portfolio and other related evidence, against the unit outcomes and assessment criteria.

The assessment of some knowledge and understanding may take place in a non-work based environment e.g. training centre, however it must link directly to workplace performance and include performance evidence.

All learners must complete a portfolio of evidence that shows achievement of all the relevant learning outcomes and assessment criteria

Minimum requirements when assessing this unit
ABC expects that staff will be appropriately qualified to assess learners against the outcomes and criteria within the units. Generally teaching staff should be qualified and/or vocationally experienced to at least a level above that which they are teaching

It is important that practical assessment activities are supervised appropriately

Evidence of Achievement

Evidence presented to support achievement is not prescribed for each learning outcome. It **could** typically include:

- Product evidence
- Observation reports
- Oral/written questions and answers
- Reports/notes
- Worksheets/job sheets/workbooks
- Witness statements
- Taped evidence (video or audio)
- Photographic evidence
- Case studies/assignments/projects
- Interview/professional discussion
- Site risk assessment
- Tool / equipment inventory lists / maintenance schedules

- Pictorial identifications
- Letters / emails seeking clarification / confirmation of understanding
- Internet research / copies of items with relevant knowledge highlighted

This is not an exhaustive list and learners should be encouraged to develop the most appropriate evidence to demonstrate their achievement of the learning outcomes and assessment criteria.

All evidence must be clearly signposted and made available for the external moderator upon request.

All internal assessments must be accompanied by a signed Declaration of Authenticity (this document is available on the ABC web site).

Additional Information

Useful sources of reference

- "Woodland Management – A Practical Guide" by Chris Starr - *ISBN 1 86126 789-4*
- "Urban Forestry Practice" – Forestry Commission Handbook 5 - *ISBN 0-11-710273-3*
- "Creating and Managing Woodlands Around Towns" - Forestry Commission Handbook 11 - *ISBN 0-11-710328-4*
- "Wildlife Conservation in Managed Woodlands and Forests" E. and J. Harris - *ISBN 0 86380 206 0*
- "Woodland Conservation and Management" by George Peterken - *ISBN 0-412-55730-4*
- www.forestry.gov for a multitude of useful downloads, including:
    - 'The Management of Semi-natural woodlands – Practice Guides' – Nos. 1 to 8

See ABC website for further information

Tree Related Damage to Build Structures

Unit Reference	L/503/3327
Level	4
Credit Value	4
Guided Learning Hours	20
Unit Summary	Learners will gain a theoretical knowledge of how trees can cause damage to built structures by direct and indirect means and what possible solutions are available to reduce, mitigate or remediate the problem
Learning Outcomes (1 to 3) **The learner will:**	**Assessment Criteria** (is to be assessed by a method as deemed appropriate by the training provider in order to achieve this unit) **(1.1 to 3.3)** **The learner can:**
1. Understand the interaction and relationship between roots, clay soils and built structures	1.1 Describe the following: ○ a shrinkable clay soil ○ modified plasticity index ○ plastic limit ○ liquid limit ○ a desiccated clay soil 1.2 Explain how woody vegetation causes the following types of damage to built structures ○ by contact ○ blockage of drainage pipes ○ subsidence ○ heave 1.3 Briefly describe eight other possible causes of damage to built structures that are not woody vegetation related

2. Know what investigations are appropriate to inform actions	2.1 Identify the information required and the sources of that information in order to carry out an investigation into: ○ direct damage ○ subsidence damage
3. Know what solutions are available related to structural damage	3.1 Evaluate the following four arboricultural options as solutions for direct and indirect damage: ○ Tree removal ○ Crown reduction as per BS 3998 ○ Crown thinning as per BS 3998 ○ Root pruning 3.2 Describe one engineering solution for each of the following: ○ house subsidence damage ○ pavement damage ○ a pushed up brick wall ○ a blocked underground drainage pipe 3.3 Identify two strengths and two weakness for each engineering solution

Unit Content

To successfully achieve this unit, learners need to provide evidence that they have met the learning outcomes and assessment criteria for the unit.

Unit content is offered as key learning that is essential to aid delivery of the unit and to set the learning outcomes and assessment criteria in context.

Learning Outcome 1: Understand the interaction and relationship between roots, clay soils and built structures.

1.1 The interaction and relationship between roots, clay soils and built structures

1.2 An understanding of the term 'water demand'

Learning Outcome 2: Know what investigations are appropriate to inform actions

2.1 To divide the information in to sections related to the soil, built structure and woody vegetation

Learning Outcome 3: Know what solutions are available related to structural damage

3.1 What arboricultural solutions are available

3.2 What engineering solutions are available

Supporting Unit Information

Tree Related Damage to Built Structures – L/502/3327 - Level 4

Indicative Content

Note: Indicative content provides an indication of the scope for the Learning Outcomes and Assessment Criteria. It is intended as a resource to help guide the delivery and assessment of the unit. Indicative content is NOT a statement of material which must be covered and evidenced for assessment.

Learning Outcome 1. Understand the interaction and relationship between roots, clay soils and built structures

Learning Outcome 2. Know what investigations are appropriate to inform actions

Learning Outcome 3. Know what solutions are available related to structural damage

Learning Outcome 4. Understand the theories and concept of the rate of water use by trees

Teaching Strategies and Learning Activities

Centres should adopt a delivery approach which supports the development of their particular learners. The aims and aspirations of all learners, including those with identified special needs, including learning difficulties/disabilities, should be considered and appropriate support mechanisms put in place.

Methods of Assessment

This unit will be internally assessed, internally and externally moderated via a learner's portfolio and other related evidence, against the unit outcomes and assessment criteria.

The assessment of some knowledge and understanding may take place in a non-work based environment e.g. training centre, however it must link directly to workplace performance and include performance evidence.

All learners must complete a portfolio of evidence that shows achievement of all the relevant learning outcomes and assessment criteria

Minimum requirements when assessing this unit
ABC expects that staff will be appropriately qualified to assess learners against the outcomes and criteria within the units. Generally teaching staff should be qualified and/or vocationally experienced to at least a level above that which they are teaching

It is important that practical assessment activities are supervised appropriately

Evidence of Achievement

Evidence presented to support achievement is not prescribed for each learning outcome. It **could** typically include:

- Product evidence
- Observation reports
- Oral/written questions and answers
- Reports/notes
- Worksheets/job sheets/workbooks
- Witness statements
- Taped evidence (video or audio)
- Photographic evidence
- Case studies/assignments/projects
- Interview/professional discussion
- Site risk assessment
- Tool / equipment inventory lists / maintenance schedules
- Pictorial identifications
- Letters / emails seeking clarification / confirmation of understanding
- Internet research / copies of items with relevant knowledge highlighted

This is not an exhaustive list and learners should be encouraged to develop the most appropriate evidence to demonstrate their achievement of the learning outcomes and assessment criteria.

All evidence must be clearly signposted and made available for the external moderator upon request.

All internal assessments must be accompanied by a signed Declaration of Authenticity (this document is available on the ABC web site).

Additional Information

Useful sources of reference

- National House Building Council (NHBC) Chapter 4.2 – 'Building near Trees'
- "Has Your House Got Cracks?" by Freeman, Driscoll and Litttlejohn - *ISBN 0-7277-3089-4*
- "Subsidence Damage to Domestic Buildings" by Driscoll and Skinner - *ISBN 978-1-86081-977-3*
- "The Subsidence Handbook – A Practical Guide to Subsidence in Domestic Property" by The Subsidence Forum - no ISBN

See ABC website for further information

Appendices

Recognition of Prior Learning (RPL), Exemption and Credit Transfer

ABC Awards policy enables learners to avoid duplication of learning and assessment in a number of ways:

- Recognition of Prior Learning (RPL) – a method of assessment that considers whether a learner can demonstrate that they can meet the assessment requirements for a unit through knowledge, understanding or skills they already possess and do not need to develop through a course of learning.
- Exemption - Exemption applies to any certificated achievement which is deemed to be of equivalent value to a unit within ABC qualification but which does not necessarily share the exact learning outcomes and assessment criteria. It is the assessor's responsibility, in conjunction with the Internal Moderator, to map this previous achievement against the assessment requirements of the ABC qualification to be achieved in order to determine its equivalence.
  Any queries about the relevance of any certificated evidence, should be referred in the first instance to your centre's internal moderator and then to ABC.
  It is important to note that there may be restrictions upon a learner's ability to claim exemption or credit transfer which will be dependent upon the currency of the unit/qualification and a learner's existing levels of skill or knowledge.
  Where past certification only provides evidence that could be considered for exemption of part of a unit, learners must be able to offer additional evidence of previous or recent learning to supplement their evidence of achievement.
- Credit Transfer – ABC may attach credit to a qualification, a unit or a component. Credit transfer is the process of using certificated credits achieved in one qualification and transferring that achievement as a valid contribution to the award of another qualification.
  Units/Components transferred must share the same learning outcomes and assessment criteria along with the same unit number. Assessors must ensure that they review and verify the evidence through sight of:
  - original certificates OR

- copies of certificates that have been signed and dated by the internal moderator confirming the photocopy is a real copy and make these available for scrutiny by the External Moderator

- Equivalencies – opportunities to count credits from the unit(s) from other qualifications or from unit(s) submitted by other recognised organisations towards the place of mandatory or optional unit(s) specified in the rule of combination. The unit must have the same credit value or greater than the unit(s) in question and be at the same level or higher.

  For this qualification achievement of equivalent units is identified in the table below.

Unit title	**URN**	**Equivalent unit URN**
The interaction of soil environments and woody plants	X/nnn/nnnn	T/602/3921
Woody plant physiology	X/nnn/nnnn	A/602/3922
The supply, planting and aftercare of woody plants	X/nnn/nnnn	A/602/3936
Principles of tree surgery operations	X/nnn/nnnn	L/602/3956
Tree inspections and statute and common law applied to trees	X/nnn/nnnn	Y/602/3958
The principles of aerial tree surgery and ground based arboricultural operation	X/nnn/nnnn	R/602/3960
Basic principles of woodlands, forestry and ecology	X/nnn/nnnn	H/602/3963
The principles of managing special trees	X/nnn/nnnn	T/602/3966
Principles of tree surgery equipment use and maintenance	X/nnn/nnnn	A/602/3967

ABC encourages its centres to recognise the previous achievements of learners through Recognition of Prior Learning (RPL), Exemption and Credit Transfer. Prior achievements may have resulted from past or present employment, previous study or voluntary activities. Centres should provide advice and guidance to the learner on what is appropriate evidence and present that evidence to the external moderator in the usual way.

Certification

Learners will be certificated for all units and qualifications that are claimed.

ABC's policies and procedures are available on the ABC web site in the Examination Officers' Guide.

Glossary of Terms

GLH (Guided Learning Hours)
GLH is where the learner participates in education or training under the immediate guidance or supervision of a tutor (or other appropriate provider of education or training). It may be helpful to think – 'Would I need to plan for a member of staff to be present to give guidance or supervision?'
GLH is calculated at qualification level and not unit/component level.

Examples of Guided Learning include:

- Face-to-face meeting with a tutor
- Telephone conversation with a tutor
- Instant messaging with a tutor
- Taking part in a live webinar
- Classroom-based instruction
- Supervised work
- Taking part in a supervised or invigilated assessment
- The learner is being observed.

TQT (Total Qualification Time)
'The number of notional hours which represents an estimate of the total amount of time that could reasonably be expected to be required, in order for a learner to achieve and demonstrate the achievement of the level of attainment necessary for the award of a qualification.' The size of a qualification is determined by the TQT.

TQT is made up of the Guided Learning Hours (GLH) plus all other time taken in preparation, study or any other form of participation in education or training but not under the direct supervision of a lecturer, supervisor or tutor.

TQT is calculated at qualification level and not unit/component level.

Examples of unsupervised activities that could contribute to TQT include:

- Researching a topic and writing a report
- Watching an instructional online video at home/e-learning
- Watching a recorded webinar
- Compiling a portfolio in preparation for assessment
- Completing an unsupervised practical activity or work
- Rehearsing a presentation away from the classroom
- Practicing skills unsupervised
- Requesting guidance via email – will not guarantee an immediate response.