

Unit 9: Establish and Manage Exterior Plant Displays

Unit code	T/600/9971
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 how to establish and manage exterior plant displays and how these can be applied in practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or further education and training.

● Unit introduction

The ability to design, implement, maintain and manage exterior plant displays both in containers and in the open ground is becoming increasingly important. Exciting and innovative planting schemes play an important part in any garden design, and the demand for high quality landscapes has increased.

This unit focuses on the wide variety of plants used in outdoor displays and will include annual bedding, herbaceous borders, roses, shrubs and trees.

Annual bedding will include true annuals and those plants grown as annuals including bulbs. Summer, winter and spring will be covered, along with traditional, carpet and 3D bedding schemes

Herbaceous plants provide an important source of colour within the garden and are also important for attracting bees, butterflies and other wildlife. Learners will look at traditional herbaceous borders, including island beds, and be involved in the design, maintenance and management of mixed borders.

Roses are found in many gardens and many people associate them with UK tradition. Learners will look at the different types of roses available, including rambling, climbing and bush roses .

Trees and shrubs are the largest area covered by exterior plant establishment and management. This will include formal and informal hedges, specimen trees and shrubs, group and mixed planting.

On completion of this unit, learners will have a thorough understanding of exterior plant establishment and management which will include both practical and theoretical elements.

● Learning outcomes

On completion of this unit a learner should:

- 1 Be able to plan and establish annual and herbaceous plant displays outdoors
- 2 Be able to plan, establish and maintain plants in outdoor containers
- 3 Understand the selection and use of plants in temporary and permanent outdoor displays
- 4 Understand the establishment and maintenance of rose gardens
- 5 Be able to manage the establishment and maintenance of trees and shrubs.

Unit content

1 Be able to plan and establish annual and herbaceous plant displays outdoors

Annual planting: true annuals; plants grown as annuals; summer, winter and spring bedding; traditional bedding designs; tiered and raised beds; 3D bedding; carpet bedding

Herbaceous planting: island beds, traditional herbaceous borders; mixed beds and borders

Planning: site analysis (measuring, soil analysis, nutrient status, pH, existing vegetation etc); devising planting schemes and drawing up plans; marking out new beds and borders; specifications; bills of quantity

Establishment and maintenance: cultivation; planting and spacing; feeding; irrigation; support; weed control; pest and disease management; dead heading; risk assessment; health and safety legislation and considerations; risk assessment; environmental controls; maintenance plans

2 Be able to plan, establish and maintain plants in outdoor containers

Range of plants: annuals; bulbs; herbaceous; shrubs; conifers; alpiners; herbs; fruit; vegetables; trees; roses; exotics

Containers: freestanding; tiered eg fountain planters; crib walling; wall mounted; raised borders eg planters used on tops of walls as capping; hanging baskets

Media: peat based; soil based; peat free and peat alternative composts; soil improvers and additives including water retention granules

Scope: permanent; seasonal; temporary

Planning: calculation of media and plant requirements; choice of containers; devising planting schemes and drawing up plans; specifications; bills of quantity

Establishment and maintenance: planting and spacing; feeding; irrigation; support; weed control; pest and disease management; pruning; dead heading; risk assessment; health and safety legislation and considerations; risk assessment; environmental controls; maintenance plans

3 Understand the selection and use of plants in temporary and permanent outdoor displays

Climatic considerations: average temperatures; frost free period; exposure; rainfall; light levels; microclimate

Soil considerations: textural type; depth of soil; pH, drainage characteristics

Design considerations: availability; form; function; habit; texture; colour; scent; size

Client requirements: season of display; capital cost; maintenance requirements and costs; timescales; eventual size; compatibility with wildlife; suitability for use by children and other vulnerable groups

4 Understand the establishment and maintenance of rose gardens

Type of rose: bush (hybrid T and floribunda types); climbers; ramblers; shrub

Planning: site analysis (measuring, soil analysis, nutrient status, pH, existing vegetation etc); devising planting schemes and drawing up plans; marking out new beds and borders; specifications; Bill of Quantities

Establishment and maintenance: cultivation; planting and spacing; specific re-plant syndrome; feeding; irrigation; support; weed control; pest and disease management; pruning; winter wind rocking; dead-heading; climber maintenance; mulching; risk assessment; health and safety legislation and considerations; environmental controls; maintenance plans

5 Be able to manage the establishment and maintenance of trees and shrubs

Range of plants: appropriate sector specific range eg acid soil tolerant plants, alkaline soil tolerant plants; hedging plants; deciduous trees and shrubs; evergreen trees and shrubs; ground cover; native; non-native climbers; plants for full sun and deep shade; xerophytic plants; winter interest, autumn foliage and fruiting; wildlife and game value; sensory value

Planning: site analysis (measuring, soil analysis, locating services, nutrient status, pH, existing vegetation etc); planting using scale plans; specifications; Bills of Quantities

Establishment and maintenance: cultivation; planting and spacing; selection of stock (container grown, bare rooted, root balled); feeding; irrigation; weed control; pest and disease management; pruning; dead-heading; climber maintenance; staking and tying; mulching; risk assessment; health and safety legislation and considerations; environmental controls; maintenance plans

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 assessment 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 assess the site suitability and requirements and select suitable plants [IE, CT, RL]		
P2 prepare plans of bedding displays and herbaceous borders [IE, CT, RL]		
P3 establish and maintain annual and herbaceous ornamental plants on outdoor sites safely [IE, CT, RL, TW, SM, EP]	M1 prepare a maintenance plan for a successional annual bedding scheme and a newly planted herbaceous border	D1 produce a scheme of work and Bills of Quantities for a successional annual bedding scheme and herbaceous border
P4 plan temporary and permanent displays in outdoor containers [IE, CT, RL, SM]		
P5 establish suitable plants for temporary and permanent display in outdoor containers safely [IE, CT, RL, TW, SM, EP]	M2 explain plant selection for selected permanent and temporary decorative displays	D2 discuss the positioning of temporary and permanent displays for maximum visual impact
P6 specify the maintenance of plants in containers [IE, CT, RL]		
P7 evaluate the growing media requirements for plants in outdoor beds and containers [IE, CT, RL]		
P8 review the types and preparation of containers for outdoor displays [IE, CT, RL]		

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 explore the use of colour, texture and form in outdoor beds and containers [IE, CT, RL]		
P10 review the types of roses available, their decorative features, uses and requirements [IE, CT, RL]	M3 discuss the advantages and disadvantages of the types of roses	D3 evaluate the establishment and maintenance operations carried out for the different types of roses making recommendations for improvement.
P11 evaluate the use of roses in rose gardens and in combination with other plants [IE, CT, RL, SM]		
P12 establish trees, shrubs and hedges safely with regard to <ul style="list-style-type: none"> ◇ preparing soil to receive plants ◇ marking out the position from a plan ◇ planting ◇ immediate aftercare [IE, CT, RL, TW, SM, EP]	M4 discuss methods used for establishing trees, shrubs and hedges using root balled, bare rooted and container grown stock.	
P13 schedule the maintenance of woody plants, to include trees, shrubs and hedges [IE, CT, RL, SM]		
P14 evaluate pruning and training techniques for woody plants [IE, CT, RL]		
P15 summarise the legal, environmental and health and safety requirements for working with trees, shrubs and hedges. [IE, CT, RL]		

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

Delivery of this unit will involve practical assessments, written assessment, visits to a range of gardens and horticultural shows and will link to work experience placements.

The use of as wide a range of techniques as possible is essential. These could include lectures seminars, site visits, plant establishment practicals, and internet and/or library-based research. Delivery should stimulate, motivate, educate and enthuse learners and utilise the framework of personal, learning and thinking skills.

It is essential that tutors stress the importance of safe working practices, legal obligations and effective management in ensuring outdoor plant establishment operations have a minimal impact on the environment. Risk assessments should be undertaken before any practical activity.

Tutors should consider integrating the delivery, private study and assessment for this unit with other relevant units and assessment instruments learners are taking as part of their programme of study.

All the learning outcomes involve practical activities and may also include lectures, discussions, plant identifications, learner-led activities, visits to gardens and shows and talks by visiting experts.

Learning outcome 1 focuses on the establishment of outdoor annual and herbaceous plant displays. Learners should have opportunities to work on different borders so that a wide range of techniques and methods can be demonstrated and practised. It is imperative that centres have a wide range of plant material available so that learners can undertake regular plant identifications and build a good all-round knowledge of herbaceous and annual plants.

Learners should also be involved in planning and designing herbaceous and alpine beds and borders. Therefore access to measuring and drawing equipment is required.

Visits to inspect different types of bedding displays and herbaceous borders should be arranged as should talks from horticultural professionals involved in these types of schemes.

Access to IT and the internet is also required for learner research and setting up of maintenance plans and Bills of Quantities. This is the same for all learning outcomes.

Learning outcome 2 involves the establishment and maintenance of plants in containers for temporary and permanent outdoor displays. Learners should have access to a variety of different types of plant material suitable for outdoor containers and it is important that they are able to use a wide selection of containers including self-watering containers.

A range of media and soil improvers should be available, enabling learners to gain in-depth knowledge of their use and effectiveness.

Visits to horticultural shows and town centres, especially where they are entered for Britain in Bloom, should be considered in order to stimulate and enthuse learners as should talks by visiting speakers. These visits and talks could be linked to learning outcome 1.

Learning outcome 3 requires learners to select the plants appropriate to the displays being established. This requires learners to develop sound plant identification skills and may be integrated with the other learning outcomes.

Delivery may be via formal lectures and presentations reinforced by learners' independent research and visits to appropriate gardens and plant collections.

Learning outcome 4 requires learners to understand the establishment and maintenance of rose gardens. Learners should have access to rose beds and borders which contain all the types of roses listed within the unit content. They will also require a selection of bare rooted and containerised roses and areas for establishing new rose beds.

Guided visits to specialised rose nurseries should also be considered and would best be timetabled for when roses are in bloom.

Learning outcome 5 requires learners to have knowledge of and the ability to manage the establishment and maintenance of trees and shrubs. The range of plants required is broad, and it is anticipated that the centre's own plant collection will be supplemented by guided visits to specialist gardens or plant collections to broaden learners' experience of plants and management techniques.

Learners should be given opportunities to undertake all the seasonal maintenance operations normally required for trees and shrubs. Regular plant identification exercises will help to reinforce learners' plant knowledge.

This unit does include a wide range of practical tasks and it is imperative that learners have access to appropriate PPE and that full risk assessments are undertaken before any practical activity. As far as possible waste should be minimised and activities organised in a way that has minimum impact on the environment.

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, Establishment and Maintenance of Annual and Herbaceous Borders (P1, P2, P3, M1, D1)
Tutor introduces the assignment brief.
Theory sessions: site assessment and planning including health and safety and environmental issues.
Theory sessions: border design techniques.
Practical sessions: annual bed planning, establishment and maintenance.
Practical session: herbaceous bed planning establishment and maintenance.
Learner research and recording information from site assessments.
Visiting speakers.
Visits to nurseries.
Assignment 2: Planning, Establishment and Maintenance of Permanent and Temporary Containers (P4, P5, P6, P7, P8, P9, M2, D2)
Tutor introduces the assignment brief.
Theory session: container management and design.
Practical sessions: permanent containers.
Practical sessions: design and show gardens.

Topic and suggested assignments/activities and/assessment
Visiting speakers.
Visits to shows and gardens.
Assignment 3: Establishment and Maintenance of Rose Gardens (P10, P11, M3, D3)
Tutor introduces the assignment brief.
Theory session: rose garden establishment and maintenance.
Practical sessions: bush roses.
Practical sessions: ramblers.
Practical sessions climbers.
Learner research.
Visits to specialist nurseries.
Assignment 4: Establishment and Maintenance of Trees and Shrubs (P12, I3, P14, P15, M4) Tutor introduces the assignment brief.
Theory session: tree and shrub maintenance.
Practical session: shrub establishment and maintenance.
Practical session: tree establishment and maintenance.
Learner research.
Visiting speakers.
Unit review.

Assessment

For P1, learners will need to assess sites for bedding and for a herbaceous border. Learners will need to produce a site analysis and select suitable plant material. This could take the form of detailed notes or a report. Where possible, to ensure assessment is fair the size and complexity of the tasks should be the same for all learners.

For P2, learners are required to use the information gathered in P1 to produce a scaled plan for a bedding display and herbaceous border.

For P3, using the scale plans they have produced in P2, learners will need to carry out practical activities involving the establishment and maintenance of both a herbaceous border and bedding display. Evidence could take the form of observation and question sheets produced by the tutor.

For P4, learners are required to plan for permanent and temporary plant displays for different outdoor containers. They could produce a plan, one for summer interest, one for spring interest, one for autumn/winter interest and one for all-year-round interest.

For P5 and P6, using the plans they have produced in P4, learners will need to carry out practical activities involving the establishment and maintenance of permanent and temporary outdoor container displays. Evidence could take the form of observation and question sheets produced by the tutor.

For P7, P8, and P9, learners are required to evaluate the growing media requirements, review the preparation techniques used and explore the use of colour, texture and form when planning and establishing the containers. Evidence could be in the form of a report that links to P1 or a poster.

For P10 and P11, learners are required to provide information on the uses of roses in a garden setting, review the range of plant types available and compare their use in rose gardens in combination with other plants. Evidence could be a presentation or in a pictorial format.

For P12, learners are required to establish trees, shrubs and hedges. This could be assessed by tutors completing observation sheets. There must be opportunity for soil preparation, marking out, planting and immediate aftercare.

For P13 and P14, learners could produce a maintenance schedule for established woody plants and evaluate the pruning and training techniques required for their care. Evidence could be in a written format or as verbal answers to questions asked during practical maintenance activities. For P15, learners are required to summarise the legal, environmental and safety aspects related to working with woody plants. Evidence could be in the form of an information pack or as a verbal or PowerPoint presentation.

For M1, learners are required to produce a maintenance plan for a successional annual bedding scheme and a newly planted herbaceous border. This must cover one year. This task could be linked to the beds and borders they have prepared, planted and maintained in P1, P2, and P3 and the evidence could be presented in the form of a tender document.

For M2, learners are required to explain plant selection for selected permanent and temporary decorative displays. This could be linked to the plans they have prepared for P4 and the evidence could be presented within a descriptive leaflet or legend attached to the plan it refers to.

For M3, learners need to demonstrate that they can discuss the advantages and disadvantages of the types of roses available. As a minimum learners must cover cost and availability, ornamental value, establishment, maintenance requirements, pest and disease resistance. Evidence could be presented in the same format as for P10 and P11.

For M4, learners are required to discuss the methods used for establishing trees, shrubs and hedges. This could be undertaken during practical activities, and linked with P12, and evidence could be assessed through questioning and observation and recorded on the observation sheets completed by the tutor.

For D1, learners need to produce a scheme of work and a Bill of Quantities which relate to the tasks for P3.

For D2, learners need to demonstrate that they understand how containers can be displayed for maximum visual impact. This can be demonstrated through observation of practical activities and linked with P5 and P6 and the evidence recorded using the same methods.

For D3, the establishment and maintenance of the different types of roses needs to be evaluated and recommendations for improvement made. Evidence for this could be in the format being used to present information for P10 and P11.

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, P3, M1, D1	Planning, Establishment and Maintenance of Annual and Herbaceous Borders	You are part of a gardening team and are to design and implement bedding and herbaceous border schemes in order to enhance the gardens and provide visual impact.	Written. Practical.

Criteria covered	Assignment title	Scenario	Assessment method
P4, P5, P6, P7, P8, P9, M2, D2	Planning, Establishment and Maintenance of Permanent and Temporary Containers	You are required to design a range of permanent and temporary containers to provide all-year-round colour. Also you are required to work as part of a team and design and build a show garden to a given theme.	Written. Practical.
PI0, PI1, M3, D3	Establishment and Maintenance of Rose Gardens	You work for a local parks department as a technical officer and you've been given the task to review the types of roses available, their uses, and correct maintenance procedures.	Written. Practical.
PI2, PI3, PI4, PI5, M4	Establishment and Maintenance of Trees and Shrubs	During practical activities you are required to identify, establish and maintain a range of trees, shrubs and hedges ensuring that health and safety controls are in place and that there is minimal environmental impact.	Written. Practical.

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
Participate in Propagation Techniques	L19 Create grassed and planted areas L22 Manage planted areas for their amenity value
Establish and Maintain Plants Outdoors	Undertake Identification, Selection and Use of Ornamental Plants
	Understand the Principles of Advanced Horticultural Science
	Manage Plant Propagation Activities
	Undertake Horticultural Production Techniques - Outdoors
	Undertake Horticultural Production Techniques – Protected
	Manage Advanced Nursery Stock Production
	Understand the Principles of Organic Crop Production

Essential resources

Learners will need access to the appropriate sites and facilities required for the practical activities. This will include access to appropriate tools, machinery, containers and materials, and the use of outdoor areas for the establishment and maintenance of the full range of plants required for this unit. In addition, there should be sufficient mature established areas for plant identification and to allow learners to carry out all the maintenance tasks for this unit. Learners will also need to access to a range of learning resources for research purposes including the internet, books and magazines. First aid and hand washing facilities should be available.

Employer engagement and vocational contexts

In order to deliver this unit it is essential that centres have close links with organisations and businesses involved with the establishment and maintenance of exterior plant displays. This will include local authorities/parks departments, National Trust, NCCPG, public and private garden owners, and the staff associated with their upkeep and maintenance, in order that visits can be arranged and guest speakers utilised

Centres will also need to create and develop relationships with professional organisations and decision makers involved with the establishment and maintenance of exterior plant displays.

In addition, a network of work experience providers should be available so learners can gain practical experience and cover any areas that may not be available at the delivery centre.

Indicative reading for learners

Textbooks

Beckett K. A – *R.H.S Encyclopaedia of House Plants* (Colour Library Books, 1995) ISBN 978-1858334861

Bell B and Cousins S – *Machinery for Horticulture, Second Edition* (Old Pond Publishing, 1997)
ISBN 978-0852363699

Brickell C – *Royal Horticultural Society Gardeners' Encyclopedia of Plants and Flowers* (Dorling, Kindersley, 2006) ISBN 978-1858334868

Buczacki S and Harris K – *Pests Diseases and Disorders* (HarperCollins, 2000) ISBN 978-0002200635

Dury P – *Grounds Maintenance: Managing Outdoor Sport and Landscape Facilities* (Thorogood, 1997)
ISBN 978-1854180438

Ekin M – *Wooden Garden Structures: A Complete Guide* (The Crowood Press Ltd, 2006)
ISBN 978-1861268372

Langdon D – *Spon's External Works and Landscape Price Book* (Taylor and Francis, 2007)
ISBN 978-0415393843

Mitchell A and Wilkinson J – *Trees of Britain and Northern Europe, Second Edition* (A and C Black Publishers, 2007) ISBN 978-0713672382.

Starr C – *Woodland Management: A Practical Guide* (The Crowood Press, 2005) ISBN 978-1861267894

Stevens D, Huntingdon L and Key R – *The Complete Book of Garden Design Construction and Planning* (Ward Lock, 1994) ISBN 0-7063-7234-4

Waite R – *RHS Container Gardening* (Reed International Books Ltd, 1992) ISBN 978-1857329007

Journals

Horticulture Week

The Garden – RHS

The New Plantsman

Vegetable Grower Magazine

Websites

www.defra.gov.uk

Department for Environment, Food and Rural Affairs

www.environment-agency.gov.uk

Environment Agency

www.hdc.org.uk

Horticulture Development Committee

www.hsa.gov.uk

Health and Safety Executive

www.hta.gov.uk

Horticultural Trades Association

www.lantra.co.uk

Lantra Sector Skills Council

www.nationaltrust.org.uk

National Trust

www.nccpg.org.uk

National Council for the Conservation of Plants and Gardens

www.pestmanagement.co.uk

Integrated Pest Management Resource Centre

www.rhs.org.uk

Royal Horticulture Society

www.saps.plantsci.cam.ac.uk

Science and Plants for Schools

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 ...
Independent enquirers	assessing, evaluating and surveying sites for planting completing risk assessments
Creative thinkers	producing plans producing health and safety leaflets creating a show garden
Reflective learners	presenting information to other learners through presentations creating show gardens and receiving feedback from judges and the general public
Team workers	working with others when planning and creating planting schemes
Self-managers	programming maintenance schedules, writing specifications and Bills of Quantities undertaking practical activities
Effective participators	discussing and debating and reaching conclusions during practical activities.

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	researching information using the internet
Creative thinkers	undertaking practical activities and trying out new techniques and ideas
Reflective learners	evaluating their performance during practicals
Team workers	working with other learners whilst undertaking practical activities
Self-managers	organising time and resources and prioritising actions in relation to assignments
Effective participators	discussing and debating with tutor and other learners, during timetabled sessions.

● 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 portable ICT technology to gather and record information using the internet to research and gather information using computers to record and evaluate information
Use ICT to effectively plan work and evaluate the effectiveness of the ICT system they have used	
Manage information storage to enable efficient retrieval	
Follow and understand the need for safety and security practices	
Troubleshoot	
ICT – Find and select information	
Select and use a variety of sources of information independently for a complex task	
Access, search for, select and use ICT-based information and evaluate its fitness for purpose	
ICT – Develop, present and communicate information	
Enter, develop and format information independently to suit its meaning and purpose including: <ul style="list-style-type: none"> • text and tables • images • numbers • records 	
Bring together information to suit content and purpose	
Present information in ways that are fit for purpose and audience	using IT systems for PowerPoint presentations
Select and use ICT to communicate and exchange information safely, responsibly and effectively including storage of messages and contact lists	

Skill	When learners are ...
Mathematics	
Understand routine and non-routine problems in a wide range of familiar and unfamiliar contexts and situations	calculating size of areas and number of plants for planting.
Identify the situation or problem and the mathematical methods needed to tackle it	
Select and apply a range of skills to find solutions	
Use appropriate checking procedures and evaluate their effectiveness at each stage	
Interpret and communicate solutions to practical problems in familiar and unfamiliar routine contexts and situations	
Draw conclusions and provide mathematical justifications	