Royal Horticultural Society

Sharing the best in Gardening

RHS Qualifications

RHS Level 3 Diploma in the Principles and Practices of Horticulture

Qualification Specification

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1. RHS Qualifications Contact Details

RHS Qualifications is the Awarding Organisation of the Royal Horticultural Society.

RHS Qualifications
RHS Garden Wisley
Woking
Surrey
GU23 6QB
UK

Tel: 01483 226500

Email: qualifications@rhs.org.uk

Approved Centre Web Portal: www.rhsq.org.uk

2. Equality and Diversity Policy Statement

RHS Qualifications is committed to policies that will promote equal opportunities in all its operations, regardless of age, disability, ethnic origin, gender, marital status, religion, sexual orientation or any other factor.

RHS Qualifications is committed to ensuring that there is no unfair discrimination in any of its operations and will take into account all current legislation in relation to the equality of opportunity.

RHS Qualifications will constantly monitor and review its policies and practices pertaining to equal opportunities, to ensure that they remain consistent with its equal opportunities objectives and continue to comply with all relevant legislation.

RHS Qualifications will strive to make awareness of and respect for equality and diversity, an integral part of the culture of the organisation.

A copy of the RHS Qualifications Equality and Diversity Policy is available on the Approved Centre Web Portal.

3. RHS Level 3 Diploma in the Principles and Practices of Horticulture

3.1 Introduction

This qualification provides a route to employment in professional horticulture by assessing knowledge of the principles underpinning horticultural practices, and a range of essential practical skills in horticulture.

It supports career development for those already working in professional horticulture by assessing knowledge of the principles underpinning horticultural practices and a range of essential practical skills in horticulture.

It provides a foundation for further learning or training in the field of horticulture

There are no pre-requisites for entry to the qualification.

The qualification is accredited within the Qualifications and Credit Framework.

Accreditation Number: 500/9785/4

3.2 Credit Value

The qualification has a credit value of 45**.**

This equates to 450 learning hours. Learning time is defined as the time taken by learners at the level of the qualification, on average, to complete the learning outcomes of the units to the standard determined by the assessment criteria.

3.3 Teaching Pattern

The qualification is designed to be studied on a part-time basis. No particular teaching pattern is specified, and centres offering courses leading to the qualification are free to define their own teaching structure and teaching hours.

3.4 Qualification Structure

The qualification will be awarded to those who gain the credits for the twelve mandatory units and one of the optional units:

RHS Ref	Unit	Credits	Level
R3101	Plant taxonomy, structure, and function Unit reference number F/601/0993	5	3
R3102	The root environment, plant nutrition and growing systems Unit reference number M/601/1007	5	3
R3103	The management of plant health Unit reference number M/601/1038	3	3
R3104	Understanding applied plant propagation Unit reference number A/601/1043	2	3
R3111	Understanding garden survey techniques and design principles Unit reference number T/601/3633	4	3
R3112	Understanding the selection and use of landscaping elements in the garden Unit reference number A/601/3794	4	3
R3113	Understanding the setting out and construction of landscaping elements in the garden Unit reference number D/601/3836	4	3
R3114	Understanding a range of specialist elements in the establishment of garden and urban plantings Unit reference number T/601/3857	3	3
R3121	Collecting and testing of soil samples and specifying adjustments for horticulture Unit reference number A/601/7683	2	3
R3122	Collecting, preparing and propagating from seed Unit reference number F/601/7684	4	3
R3123	Establishing and maintaining a range of plant types and forms Unit reference number Y/601/7688	3	3
R3124	Identification of a range of common garden plants, weeds, pests, diseases and disorders Unit reference number R/601/7690	3	3

	Optional Units (credit value 3)		
R3125	Planning, collecting, preparing and establishing propagation material Unit reference number Y/601/7691	3	3
R3125	Management of green spaces, landscaped areas, and ornamental gardens Unit reference number K/601/7694	3	3

3.5 Assessment

Each theory unit will be assessed by a separate written examination covering all learning outcomes specified in the unit.

Examinations must be taken in a centre approved by RHS Qualifications, or under arrangements for exceptional supervision agreed by RHS Qualifications.

Examinations must be conducted in accordance with the RHS Regulations for the Conduct of Examinations.

Theory examinations will be offered twice a year in February and June.

Assessment of the practical units will be conducted by the centre using RHS criteria. Assessment information and guidance documents can be found in the Guidance for Centres Delivering Practical Assessment

3.6 Language

Examinations will be offered in English.

3.7 Grading

Where a candidate receives credit with commendation in all eight theory mandatory units, and a pass in all the practical units the qualification will be awarded with commendation.

RHS Ref	Unit	Mark	Pass with Commendation	Pass
R3101	Plant taxonomy, structure, and function	100	70	50
R3102	The root environment, plant nutrition and growing systems	100	70	50
R3103	The management of plant health	60	42	30
R3104	Understanding applied plant propagation	40	28	20
R3111	Understanding garden survey techniques and design principles	80	56	40
R3112	Understanding the selection and use of landscaping elements in the garden	80	56	40
R3113	Understanding the setting out and construction of landscaping elements in the garden	80	56	40
R3114	Understanding a range of specialist elements in the establishment of garden and urban plantings	60	42	30

4. Approved Centres

Centres wishing to offer examinations leading to RHS qualifications must be approved by RHS Qualifications.

Applications for approval should be sent to the Quality Assurance and Relationships Officer at the contact details in section 1.

5. Candidate Registration

Candidates should be registered for examinations in the units of the qualification through the RHS Qualifications Web Portal.

Approved Centres undertake to obtain on behalf of their learners a Unique Learner Number (ULN) and a learner record, unless the learner chooses not to have one.

If centres supply an email address for candidates at the time of registration, candidates will be invited to open an account on the RHS Qualifications Web Portal, and will be able to view their examination history, their current registrations, and their results when available.

6 Reasonable Adjustments and Special Consideration

RHS Qualifications is committed to ensuring fair assessment for all candidates, and will facilitate access to its qualifications through reasonable adjustments to assessment arrangements for candidates with an identified specific need. An example of a reasonable adjustment which could be made is the production of a modified examination paper for a candidate with a visual impairment.

Special consideration is given following the examination to candidates who are present for the examination but may have been disadvantaged by temporary illness, injury or adverse circumstances which arose at, or near, the time of examination**.**

Full guidance is provided in the document 'Guidance to Centres for Reasonable Adjustments and Special Consideration'. The document is available on the RHS website (www.rhs.org.uk), the RHS Qualifications Approved Centre Web Portal, or can be obtained from RHS Qualifications.

Applications for reasonable adjustments or special consideration must be made by the Approved Centre on behalf of the candidate. Application must be made within specified timescales.

7. Enquiry about Results service

The following service is available to candidates who have a query regarding their examination result:

Re-mark and Feedback

Re-marking of the examination paper by an independent examiner.
Feedback will be provided identifying areas of strength and weakness with constructive suggestions for improvement.

Candidates requesting a re-mark need to be aware that grades may go down as a result of the re-marking.

Applications for the 'Enquiry about Results Service' must be made through the Approved Centre where the candidate registered for the examination. This service will be available for 28 days from the date of release of the results to Approved Centres on the RHS webportal.

8. Examination Dates

For a full list of examination dates please see the Qualifications and Credit Framework Examination Dates**,** this document is available on the Qualifications page on the RHS website and on the RHS Webportal.

9. Fees

For a full list of fees please see the Qualifications and Credit Framework Fees Notice, this document is available on the Qualifications page on the RHS website and on the RHS Webportal.

All fees are payable prior to confirmation of service or entry for the examination.

Late Entries

RHS Qualifications publishes annually, and distributes to Approved Centres, the closing dates of entry for each examination for the following year.

Entries submitted after the published closing date will be subject to a late entry fee. The total fee charged for late entries is twice the standard examination fee for each unit

Replacement Certificate (if lost, damaged or destroyed)

The fee for a replacement certificate can be found on the Qualifications and Credit Framework Fees Notice. Please send your request to the Qualifications Department.

Re-mark & Feedback

The fee for a remark and feedback can be found on the Qualifications and Credit Framework Fees Notice.

If a re-mark results in an upgrade of the result, the fee paid will be refunded.

10. Exemptions

The 'Regulatory arrangements for the Qualifications and Credit Framework' allow exemptions to be granted for units based upon certificated achievement in other qualifications. RHS Qualifications will grant exemption from specified units in RHS QCF qualifications where a candidate has passed certain components of RHS qualifications in the National Qualifications Framework (current RHS qualifications).

- All requests for exemption will be reviewed on a case by case basis. Applications must be made to RHS Qualifications and an administration fee will be charged
- Candidates will need to have obtained 50% of the available marks for the NQF component (within the Paper/Module) in order to obtain exemption from the QCF unit
- All exemptions are treated as equivalent to a pass. No certificate or credit is awarded for units for which exception has been granted

Applications for exemptions must be made through the Approved Centre where the candidate is registered. The fee for applying for exemptions can be found on the Qualifications and Credit Framework Fees Notice.

RHS Qualification	Component unit	Exemption given for:
Level 3 Module A	Understanding of plant propagation	Understanding applied plant propagation
Level 3 Module A	Processes and application of soils, growing media and plant nutrition	The root environment, plant nutrition and growing systems
Level 3 Module B	Plant taxonomy, morphology and anatomy AND Processes of plant physiology 1	Plant taxonomy, structure and function
Level 3 Module B	Knowledge of plant health	The management of plant health

11. Appeals Procedure

An Appeals procedure exists to conduct appeals lodged by candidates against decisions made by RHS Qualifications, concerning their examination performance, the granting of an award and/or the closure of their entry to an award on academic grounds.

The procedure is also followed in cases where there is irregularity or malpractice in the conduct of examinations and where RHS Qualifications has imposed a penalty on a candidate, tutor or invigilator, and the Centre wishes to appeal against this decision after results are published.

A copy of the procedure is available on the RHS Qualifications Web Portal and on the RHS website.

12. Policy on Malpractice and Maladministration

Malpractice consists of those acts which undermine the integrity and validity of the assessment or examination, the certification of qualifications and/or damage the authority of those responsible for conducting the assessment, examination and certification.

RHS Qualifications does not tolerate actions or attempted actions of malpractice by learners or centres in connection with RHS qualifications. RHS Qualifications may impose penalties and/or sanctions on candidates or centres where incidents, or attempted incidents, of malpractice have been proven.

A copy of the full policy is available on the RHS Qualifications Web Portal and on the RHS website.

Plant taxonomy, structure, and function

RHS reference number: R3101
Unit reference number: F/601/0993
Unit guided learning hours: 33
Unit Level: Level 3
Credit Value: 5

Unit purpose and aim(s): This unit will enable the learner to understand the principles of plant classification and nomenclature and to identify the role and function of higher plants' anatomical and morphological features. The unit also examines photosynthesis, respiration and movement of water through the plant, together with the regulation of plant growth.

Learning Outcomes The learner will:		**Assessment Criteria** The learner can:	
1.	Understand the Plant Kingdom and the taxonomic hierarchy.	1.1	Describe the major divisions of the Plant Kingdom, including ferns, conifers, flowering plants, monocotyledons and dicotyledons.
		1.2	State the basic hierarchical units and explain how and when they are used. To include: family, genus, species, subspecies, variety, forma, cultivar, group and trade designation; also interspecific, intergeneric and graft hybrids.
		1.3	Evaluate the importance of botanical and horticultural nomenclature.
		1.4	Explain how species names can indicate the origin, use, history, form, colour or habitat of a particular plant.
2.	Know the structure and function of different types of plant tissues.	2.1	Describe a range of plant tissues, and explain their function within the plant. To include: parenchyma, collenchyma, sclerenchyma (fibres and sclerids), secondary vascular tissues and secondary protective tissues.
		2.2	Describe the cell and tissue changes which occur during secondary thickening of the stem and root.
3.	Understand the role of flowers and fruit in the life of the plant.	3.1	Identify and describe types of inflorescence, including raceme, spike, umbel, corymb, cyme, panicle, capitulum and verticillaster.
		3.2	Describe the characteristics of monocotyledon and dicotyledon flowers.
		3.3	Describe specific adaptations for a range of pollinators (bee, moth, fly, butterfly).

		3.4	Identify and describe types of fruit, to include berry, drupe, pome, capsule, siliqua, achene, nut, legume and multiple fruits.
		3.5	Explain the meaning of the term parthenocarpy
4.	Understand photosynthesis and respiration in the metabolism of the plant.	4.1	Describe the process of photosynthesis, to include the chemical formula and dark and light reactions (no biochemical reactions are needed).
		4.2	Explain how environmental conditions in protected structures can be manipulated for photosynthetic efficiency.
		4.3	Differentiate between aerobic and anaerobic respiration, to include equations (no biochemical pathways are required).
		4.4	Describe the links between photosynthesis and respiration, to include compensation points.
5.	Understand the movement of water and solutes through the plant.	5.1	Explain how water and solutes enter, move through, and leave the plant. To include apoplast, symplast, endodermis, Casparian strip, transpirational pull, root pressure, capillary action, guttation and phloem transport hypotheses (active transport in outline only).
		5.2	Relate outdoor planting conditions to the efficiency of photosynthesis, respiration and transpiration.
6.	Understand the effects of tropisms and other plant movements.	6.1	Distinguish between tropisms and nastic movements
		6.2	Describe a range of positive and negative tropisms, to include phototropism, gravitropism (or geotropism) thigmotropism (or seismotropism) and nastic movements to include thermonasty, photonasty and thigmonasty (seismonasty).
		6.3	Describe how various tropisms and other plant movements influence horticultural practice.
7.	Understand the role of endogenous and synthetic regulators in plant growth.	7.1	Describe how endogenous growth regulators (auxin, gibberellins, cytokinins, abscisic acid, ethene) are responsible for cell division and enlargement, accelerating growth, tropisms, inducing and breaking dormancy, vernalisation and apical dominance.
		7.2	Describe how differing concentrations of auxins and gibberellins influence plant growth.
		7.3	Distinguish between endogenous and synthetic growth regulators.

The root environment, plant nutrition and growing systems

RHS reference number: R3102
Unit reference number: M/601/1007
Unit guided learning hours: 33
Unit Level: Level 3
Credit Value: 5

Unit purpose and aim(s): This unit provides the underpinning knowledge required for the management of soils, growing media and plant nutrition and an understanding of organic growing systems.

Learning Outcomes The learner will:		**Assessment Criteria** The learner can:	
1.	Understand the physical properties of soils and other growing media and their effects on plant growth.	1.1	Explain the process of soil formation and development.
		1.2	Describe the following UK soil types and their effects on plant growth: iron pan podzol, brown earth, rendzina, and gleys.
		1.3	Review the properties of soil organic matter, colloids, and mineral components, to include their buffering capacity.
		1.4	Critically compare the physical and chemical properties of a range of constituents used in growing media. To include peat, sand, loam, grit, coir, perlite, vermiculite and rockwool.
		1.5	Critically compare a range of soil structures and describe their effects on plant growth. To include crumb, blocky, prismatic, platy, massive and structureless.
2.	Understand the relationship between plant growth and air and water in soils and other growing media.	2.1	Describe the relationship between air and water content in the pore space of soils and growing media, including definitions of Air Filled Porosity, Saturation Point, Field Capacity, Temporary and Permanent Wilting Points and Available Water Content.
		2.2	Describe management techniques to help maintain soil moisture at appropriate levels.

		2.3	Describe how factors including soil texture, soil structure, organic matter content, soil moisture deficit, irrigation and precipitation relate to the soil terms listed in 2.1.
3.	Understand the role of living organisms in soil processes.	3.1	Summarise the biological activity that takes place in soils and growing media during the production of humus from organic matter.
		3.2	Describe the carbon and nitrogen cycles and summarise the role of nitrogen-fixing organisms.
		3.3	Explain why knowledge of the carbon: nitrogen ratio is important when adding organic matter to the soil.
		3.4	Compare the roles of the rhizosphere and mycorrhizal associations in aiding healthy plant growth.
4.	Understand the chemistry of soils and other growing media.	4.1	Define the terms anion and cation, and explain the significance of cation exchange in soils and growing media.
		4.2	Compare liming materials which can be used to raise pH for optimum growing conditions.
5.	Understand the role of nutrients in plant growth.	5.1	Explain the factors that affect the availability of plant nutrients in soils and growing media, to include pH, texture, soil organisms, temperature, oxygen and water availability and leaching.
		5.2	Describe the symptoms of nutrient deficiencies, to include N, P, K, Mg, Ca, Fe and Mn.
		5.3	Describe a range of fertiliser formulations; to include straight, compound, mixtures, controlled release, slow release and frits.
		5.4	Explain the selection of appropriate fertilisers and application rates for the optimisation of plant growth.
6	Understand the philosophy of organic growing.	6.1	Explain the requirements of UK certification schemes for organic status.
		6.2	Explain the difference between non-organic and organic soil management, with reference to water use, nutrients and soil health.
		6.3	Describe the range of organic soil management techniques, including ‘no-dig’ systems, green manuring and control of weeds.

6.4 Describe a range of fertilisers suitable for organic growing.

6.5 Describe methods of controlling pests and diseases in organic systems.

The management of plant health

RHS reference number: R3103
Unit reference number: M/601/1038
Unit guided learning hours: 20
Unit level: Level 3
Credit Value: 3

Unit purpose and aim(s): This unit provides the underpinning knowledge of pest and disease life cycles and plant disorders. It provides knowledge of control methodology and sources of information on relevant legislation.

Learning Outcomes The learner will	**Assessment Criteria** The learner can:
1. Know the characteristics of a range of pests, diseases and disorders of horticultural significance.	1.1 Describe symptoms and damage caused by a range of pests, diseases and disorders as listed below. Pests: glasshouse whitefly, two-spotted spider mite, peach potato aphid, horse chestnut leaf miner, vine weevil, capsid bug, mealy bug, lily beetle, thrips, scale, solomon's seal sawfly, rodents. Diseases: grey mould, powdery mildew, damping off, honey fungus, rose black spot, rust, Phytophthora ramorum and P.kernoviae; canker, coral spot, clematis wilt. Disorders: fasciation, reversion, rose balling, environmental stress, high/low temperature damage.
	1.2 Describe the life cycles of a range of plant pests and diseases (peach potato aphid, vine weevil, scale, rust) with an emphasis on survival, spread and transmission.
	1.3 State a range of appropriate methods of control (to include chemical, cultural, biological and integrated control, and partial sterilisation of soils and media) for each of the pests, diseases and disorders listed in 1.1.
	1.4 State how pests and diseases develop resistance to chemical control.
	1.5 Describe how biosecurity measures, to include phytosanitary legislation, plant passports and codes of practice, are intended to prevent the distribution of pests and diseases through trade and plant movement.

2.	Be able to review the requirements and regulations that deal with storage, handling and safe use of chemicals used for plant protection.	2.1 Identify sources of information on current pesticide legislation and on statutory requirements relating to health and safety and to substances hazardous to health.
		2.2 Identify necessary competences in dealing with pesticides.

Understanding applied plant propagation

RHS reference number: R3104
Unit reference number: A/601/1043
Unit guided learning hours: 13
Unit level: Level 3
Credit Value: 2

Unit purpose and aim(s): This unit provides an understanding of the relevance of plant anatomy and physiology to applied propagation by seed, spores and vegetative methods. The management of the associated equipment and aftercare is also covered.

Learning Outcomes The learner will:	**Assessment Criteria** The learner can:
1. Understand the relevance of anatomy, physiology and environmental factors to seed propagation.	1.1 Describe the importance of a range of anatomical features in the development of germinating seeds.
	1.2 Describe the main physiological processes involved in the successful germination of seed, to include the role of hormones.
	1.3 Describe the effects of hygiene, storage and germination conditions on the viability of seeds.
	1.4 Explain a range of techniques for sowing seeds with different light and temperature requirements.
	1.5 Describe the sowing of fern spores.
2. Understand the relevance of anatomy, physiology and environmental factors to vegetative propagation.	2.1 Explain the importance of the cambium, node, petiole, stem, leaf, root and axillary bud to vegetative propagation.
	2.2 Explain the importance of the physiological processes of transpiration, respiration and photosynthesis to successful vegetative propagation.
	2.3 Describe the propagation of a range of plants, using a range of techniques to include stem, leaf and root cuttings, layering, division, bulbs, grafting and budding.

3.	Understand the use of a range of growing media and propagation equipment.	3.1 Describe appropriate rooting media and propagation facilities (propagators, mist units, cold frames and low polythene tunnels) for the propagation techniques listed in 1.4, 1.5 and 2.3 above.
		3.2 Describe the aftercare (up to and including weaning) of the plants raised by the methods described above in 1.4, 1.5 and 2.3 above.

Understanding garden survey techniques and design principles

RHS reference number: R3111
Unit reference number: T/601/3633
Unit guided learning hours: 26
Unit Level: Level 3
Credit Value: 4

Unit purpose and aim(s): This unit will provide an understanding of garden styles, site appraisal and survey techniques, and the principles that underpin garden design.

Learning Outcomes The learner will:		**Assessment Criteria** The learner can:	
1.	Understand the historical development of garden design styles.	1.1	Describe representative characteristics of the following garden design styles: Moghul, Moorish, Medieval, Renaissance (Italian, French and Dutch), English Landscape, Victorian, Edwardian, Japanese, Modernist, Contemporary.
2.	Understand how to conduct a site appraisal and interpret the results	2.1	State the main factors to be assessed for an overall site appraisal.
		2.2	Review the advantages and limitations which site factors may impose on garden planning and layout, to include accessibility for disabled users.
3.	Know how to develop a client brief	3.1	Identify the information which needs to be gathered from the client, to include: likes and dislikes, aspirations, functional requirements (e.g. utility, play area for children, restricted mobility), ornamentation, relaxation, entertaining or food production, degree of maintenance and budget.
		3.2	Describe how to record relevant data using a client questionnaire, audio and visual methods.
4.	Know a range of basic survey techniques	4.1	Describe the linear surveying of a site using appropriate equipment to include tapes and automatic levels.
		4.2	Describe the surveying of a site to record variation in levels using automatic level and staff.
		4.3	Interpret survey measurements from standard documentation.
		4.4	Produce scale drawings using survey data, including the correct use of graphic symbols, scale and nomenclature.

5.	Understand how site characteristics may influence garden design.	5.1	Explain the influence of the following on choice of design: altitude, orientation, aspect, changes in level, pollution, soil type, soil depth, soil pH, soil water content, views, screening, degree of exposure or shade, microclimate.
		5.2	Explain how a given design may be used to enhance the attributes and offset the limitations imposed by the site.
6.	Understand the principles and elements of design.	6.1	Explain the principles and elements of design: to include movement, rhythm, scale, balance, form, texture, space, colour, proportion, harmony, unity, symmetry and asymmetry, focal point, borrowed landscape.
		6.2	Describe examples of the application of the elements in 6.1 to the design process.

Understanding the selection and use of landscaping elements in the garden

RHS reference number: R3112
Unit reference number: A/601/3794
Unit guided learning hours: 26
Unit Level: Level 3
Credit Value: 4

Unit purpose and aim(s): This unit provides an understanding of the contribution of hard and soft landscape features to the design and function of ornamental gardens.

Learning Outcomes The learner will:		**Assessment Criteria** The learner can:
1.	Understand the contribution made by hard landscaping features to design and function.	1.1 Evaluate how a range of hard landscaping features contribute to the design and function of an ornamental garden. To include paths, patios, driveways, walls, fences, pergolas, ramps and steps.
		1.2 Evaluate the range of hard landscape materials for horizontal and vertical uses in the ornamental garden.
		1.3 Evaluate a range of surface materials for use in children's play areas.
		1.4 Evaluate the suitability of hard landscaping materials and structures for the use of people with mobility restrictions and visual impairments.
		1.5 Evaluate a range of materials for use in rock gardens, water features and containers.
		1.6 Review how considerations of safety may influence the choice of structures and materials used in the garden.
		1.7 Review how considerations of sustainability may influence the choice of structures and materials used in the garden.
2.	Understand the function of drainage systems in the garden.	2.1 Evaluate the range of drainage systems available for use in a domestic garden, to include intercept or French drains, pipe drains and soakaways.

3.	Understand the contribution made by soft landscaping features to design and function.	3.1	Evaluate the contribution of a range of soft landscaping features to the overall design and function of a garden, to include hedges, beds, borders, trees, ground cover, rock and water features and containers.
		3.2	Describe the use of planting plans for beds and borders.
		3.3	State details of the decorative merits, height, spread and site requirements of a selection of plants to include: alpine; aquatic and marginal; herbaceous; woody plants; climbers; ground cover; plants for seasonal display; plants for sensory impact.
		3.4	Describe a range of plants to ensure continuity of interest in the garden.
		3.5	Describe a range of plants to cope with permanently arid and permanently wet soils.
		3.6	Describe five plants suitable for each of the following difficult situations: north-facing walls, dry shade, shallow chalk, heavy clay, coastal areas.
		3.7	Describe a range of calcifuge plants.
4.	Understand the contribution made by turf to the design and function of a garden.	4.1	Describe the design possibilities of grassed areas (including mowing effects and heights, turf mazes).
		4.2	Describe a range of seed mixtures suitable for a utility lawn, fine turf and shady areas, and wildflower meadow.
		4.3	Describe the annual maintenance routines for a utility lawn, a fine turf lawn, a shady lawn and a wildflower meadow, including the appropriate equipment.
		4.4	Describe plant alternatives to grass for lawn areas.

Understanding the setting out and construction of landscaping elements in the garden

RHS reference number: R3113
Unit reference number: D/601/3836
Unit guided learning hours: 26
Unit level: Level 3
Credit Value: 4

Unit purpose and aim(s): This unit provides an understanding of the principles of setting out and constructing hard-landscape features in gardens.

Learning Outcomes The learner will:	**Assessment Criteria** The learner can:
1. Understand the practical procedures for setting out a site to scale plans and drawings.	1.1 Describe how scale drawings are interpreted to set out the major features of a design on the ground.
	1.2 Describe how to set out the required levels on site.
	1.3 Describe the sequence of works involved in the realisation of a design.
2. Understand the reasons for correct soil movement and storage during construction works.	2.1 Describe the correct handling, storage and re-instatement of soil during site construction; to include separation, angle of repose and maintenance of soil quality during storage.
	2.2 Describe the procedures required to reinstate the soil to the levels specified in the design.
	2.3 Describe how biosecurity measures are used to prevent the distribution of pests and diseases through soil handling/storage and reinstatement.
3. Understand the factors which determine the type of drainage system required in various situations.	3.1 Describe the construction of an intercept or French drain to collect run-off, a pipe drain system to lower the water table and a soakaway to drain a localised wet area.
4. Know materials and construction procedures for paths, patios and driveways for parking and light use.	4.1 Define the terms ‘flexible’, ‘rigid’ and ‘permeable’ in relation to paving.
	4.2 Describe a range of appropriate surface materials for paths, patios and driveways for parking and light use. To include: concrete, gravel, bricks, block paving, natural and artificial stone and paving.

		4.3 Specify appropriate foundations for (i) a concrete path, (ii) an aggregate driveway (iii) a slab or natural stone patio (iv) a permeable hard-standing area.
		4.4 Outline the procedures for preparing the site and laying foundations for the situations mentioned in 4.3.
		4.5 Outline the procedures for laying the surface materials mentioned in 4.2.
		4.6 Specify appropriate edging materials for the situations outlined in 4.3 and describe their installation.
		4.7 Describe the construction of an area of permeable hard standing (to include reinforced grass and permeable paving).
5.	Know materials and construction procedures for steps and ramps.	5.1 Specify appropriate foundations for one step and one ramp.
		5.2 Specify two appropriate materials for a step and two for a ramp.
		5.3 Describe the construction of one type of step and one type of ramp.
6.	Know materials and construction procedures for low garden walls, retaining walls, fences and pergolas.	6.1 Specify materials suitable for the construction of the following: (i) a single-skin garden wall; (ii) a double-skinned or retaining garden wall; (iii) a low wall for a raised bed; (iv) one modular fence; (v) one non-modular fence and (vi) a pergola.
		6.2 Outline procedures for erecting: (i) a retaining garden wall; (ii) a low wall for a raised bed; (iii) a fence; (iv) a pergola.
		6.3 Specify foundations (where appropriate) for each of the constructions named in 6.1.
7.	Know materials and construction procedures for a water feature.	7.1 Specify suitable materials for the construction of (i) a formal pond (ii) an informal pond.
		7.2 Outline the procedures for constructing (i) a formal pond (ii) an informal pond.

8.	Know materials and construction procedures for a rock garden.	8.1	Specify a range of materials suitable for the construction of a rock garden.
		8.2	Specify an appropriate method for the construction of a rock garden.
9.	Understand risk assessments.	9.1	Determine the elements of risk in operations associated with this unit.

Understanding a range of specialist elements in the establishment of garden and urban plantings

RHS reference number: R3114
Unit reference number: T/601/3857
Unit guided learning hours: 20
Unit level: Level 3
Credit Value: 3

Unit purpose and aim(s): This unit provides an understanding of the opportunities that exist for the use of specialist elements in the planting of a variety of gardens, including urban and amenity green spaces.

Learning Outcomes The learner will:	Assessment Criteria The learner can:
1. Understand the design principles and practices of using amenity bedding schemes.	1.1 Describe the design principles and practices used in amenity bedding schemes.
	1.2 Review the spacing requirements of spring and summer bedding plants including bulbs.
	1.3 Produce a work schedule covering a 12-month period for a situation in 1.1.
	1.4 Describe specialist forms of bedding scheme, including carpet, three-dimensional and subtropical.
2. Know the typical components of a range of specialist garden areas.	2.1 Describe the typical elements (including plants) of the following specialist areas: woodland; wildlife; sensory; low maintenance amenity; grass or steppe (prairie); and potager.
	2.2 Describe the annual maintenance of the areas listed in 2.1.
3. Understand specialist pruning for effect.	3.1 Describe the use of pruning to produce decorative forms of ornamental trees and shrubs, including pollarding, pleaching, topiary, cloud pruning and wall-training.
	3.2 Describe the use of pruning to produce specialist decorative forms suitable for fruit growing, including fan, espalier, cordon, stepover and festoon.
4. Know a range of options available for urban gardening.	4.1 Describe a range of options available in an urban situation, to include small front gardens; courtyards; container gardens; roof gardens; living walls; street plantings; conservatories and community gardens.
	4.2 Identify any specific establishment and maintenance issues associated with the options in 4.1

5.	Understand how water sustainability can be built into a garden.	5.1	Describe how modern gardens can be adapted to conserve water and reduce run-off, including green roofs; water collection, storage and recycling; permeable surfaces; and mulches.

Collecting and testing of soil samples and specifying adjustments for horticulture

RHS reference number: R3121
Unit reference number: A/601/7683
Unit guided learning hours: 13
Unit level: Level 3
Credit Value: 2

Unit purpose and aim(s): This unit provides the learner with the knowledge and skills to collect and test soil samples and to specify adjustments for horticulture.

Learning Outcomes The learner will**:**		**Assessment Criteria** The learner can**:**	
1	Understand potential hazards and risks	1.1	Define the hazards associated with soil to include (a) foreign objects (b) animal waste (c) diseases
		1.2	Assess the risks of working with soil and the tools used for collecting soil samples
2	Be able to select and use appropriate personal protective equipment and clothing	2.1	Select and use appropriate personal protective equipment and clothing
3	Understand reasons for soil testing	3.1	Explain why soil texture testing is carried out
		3.2	Explain why pH testing is carried out
4	Be able to collect and prepare a soil sample for laboratory testing	4.1	Collect a representative soil sample from a given site using the 'ADAS' method
		4.2	Prepare a soil sample for testing
5	Be able to accurately measure by weight the constituent components of different soil samples	5.1	Separate particle sizes using appropriate laboratory equipment
		5.2	Accurately measure by weight the constituent components of two distinctly different soil samples
		5.3	Interpret the data from 5.2 and use a soil texture chart to classify soil type

6	Be able to measure the pH of soil	6.1	Perform a series of pH tests using an industry standard soil testing kit
		6.2	Interpret the results to accurately identify the pH of different soil samples
7	Be able to specify suitable materials to amend the PH value of soils	7.1	Specify a suitable material to a) raise the pH of the soil b) lower the pH of the soil
8	Be able to measure the area of a given site and make calculations	8.1	Perform calculations to estimate the material requirements to alter the pH of the area
		8.2	Perform calculations to estimate the fertiliser requirements of the area
9	Be able to diagnose nutrient deficiencies and recommend remedial action	9.1	Correctly diagnose nutrient deficiencies from pictures and samples
		9.2	Specify materials to correct nutrient deficiencies

Collecting, preparing and propagating from seed

RHS reference number: R3122
Unit reference number: F/601/7684
Unit guided learning hours: 20
Unit level: Level 3
Credit Value: 3

Unit purpose and aim(s): This unit will provide learners with the skills, knowledge and understanding required for planning and managing the propagation of plants from seed.

Learning Outcomes The learner will**:**	**Assessment Criteria** The learner can:
1. Be able to plan seed propagation	1.1 Prepare a programme of work activities to maximise the success of the operation
	1.2 Calculate and collect the quantities of seed and growing medium required
2. Be able to implement seed propagation	2.1 Prepare the growing medium in accordance with the requirements of the programme
	2.2 Check, store and handle seeds in a way that minimises damage and maximises viability
	2.3 Sow seeds evenly, accurately and at the correct depth and density for the species
	2.4 Provide immediate aftercare to encourage rapid germination
3. Be able to monitor germination of seeds	3.1 Identify problems with germination and take the appropriate remedial action
	3.2 Remove and hygienically dispose of unwanted seedlings
	3.3 Accurately identify seedlings suitable for the next stage of the production process
	3.4 Provide suitable post propagation aftercare conditions
	3.5 Ensure the following records are completed accurately: (i) propagation activities (ii) success rates

4. Be able to maintain and use equipment during seed propagation	4.1 Ensure equipment is prepared, used and maintained in a safe and effective condition
5. Be able to promote health and safety and environmental good practice	5.1 Work in a way which promotes health and safety, is consistent with relevant legislation, codes of practice and any additional requirements
	5.2 Ensure work is carried out in a manner which minimises environmental damage
	5.3 Manage and dispose of waste in accordance with legislative requirements and codes of practice
	5.4 Maintain effective working relations with all relevant people

Establishing and maintaining a range of plant types and forms

RHS reference number: R3123
Unit reference number: Y/601/7688
Unit guided learning hours: 26
Unit level: Level 3
Credit Value: 4

Unit purpose and aim(s): This unit provides the learner with the knowledge and skills to plant a tree; to carry out maintenance pruning and training on a range of plants; and to provide aftercare to promote growth and fruition.

Learning Outcomes The learner will**:**	**Assessment Criteria** The learner can:
1. Understand the potential hazards and risks associated with establishing and maintaining plants	1.1 Define the hazards associated with soil
	1.2 Define the hazards associated with the growing medium
	1.3 Define the risks of working with tools, equipment and material used for establishing and maintaining plants
	1.4 Assess the hazards associated from working with plants
	1.5 Assess the hazard from working at height
2. Be able to select and use appropriate personal protective equipment and clothing	2.1 Select and use appropriate personal protective equipment and clothing
3. Be able to select and use effectively a range of tools and equipment	3.1 Select and use a range of tools and equipment effectively
	3.2 Clean and appropriately store tools, equipment and materials after use
4. Be able to plant, stake and tie a tree	4.1 Prepare a planting pit (square or round) with appropriate dimensions
	4.2 Evaluate the condition of the tree, prune appropriately, plant, stake and tie one tree (a) container tree (10 – 15 litre) (b) bareroot tree (light standard)
	4.3 Protect and mulch the planted tree appropriately

5.	Understand the principles of pruning	5.1	Define the term 3 D's associated operations and the order in which they should be carried out
		5.2	Define pruning terminology
6.	Be able to carry out maintenance pruning and training on a range of plants	6.1	Evaluate the maintenance requirements for a range of plants
		6.2	Carry out pruning and maintenance in a safe and competent manner
		6.3	Dispose of all arisings in an environmentally aware manner leaving the site clean and tidy
7.	Be able to provide aftercare to promote growth and fruition	7.1	Provide appropriate aftercare
		7.2	Respond to changes in plant health

Identification of a range of common garden plants, weeds, pests, diseases and disorders

RHS reference number: R3124
Unit reference number: R/601/7690
Unit guided learning hours : 20
Unit level: Level 3
Credit Value: 3

Unit purpose and aim(s): This unit provides the learner with the knowledge required to identify and describe a range of common garden plants, weeds, seeds, pests, diseases and disorders.

Learning Outcomes The learner will:	**Assessment Criteria** The learner can:
1. Be able to identify a range of plants and know their characteristics and decorative merits	1.1 Identify a range of plants by botanical name from each of the following categories and describe their characteristics and decorative merits. a) deciduous and evergreen trees b) conifers c) deciduous shrubs d) evergreen shrubs e) non-woody herbaceous plants f) climbing plants/wall shrubs g) rock garden and alpine plants h) aquatic plants
2. Be able to identify a range of weeds by botanical name and know their characteristics and methods of control	2.1 Identify a range of weeds by botanical name and describe their characteristics and cultural and chemical methods of control
3. Be able to identify a range of seeds	3.1 Identify a range of seeds by botanical name
4. Be able to identify a range of pests and diseases and know their characteristics and methods of control	4.1 Identify a range of pests and diseases by common name and describe their characteristics and methods of prevention and cultural, biological and chemical control
5. Be able to identify disorders and describe appropriate treatment	5.1 Identify a range of disorders and describe appropriate methods of treatment

Planning, Collecting, Preparing and Establishing Propagation Material

RHS reference number: R 3125
Unit reference number: Y/601/7691
Unit guided learning hours: 20
Unit level: Level 3
Credit Value: 3

Unit purpose and aim(s): This unit provides the learner with the knowledge and skills to collect, prepare and establish propagation material in a growing environment.

Learning Outcomes The learner will**:**	**Assessment Criteria** The learner can**:**
1. Be able to plan the collection of propagation material	1.1 Plan the timing of the collection of propagation material to maximise the success of the operation and to fit in with the production programme
	1.2 Determine the source of the propagation material and the method of collection in accordance with the needs of the plant species and the propagation method
2. Be able to collect propagation material	2.1 Correctly identify plants from which material is to be collected
	2.2 Handle plant material in a manner which minimises damage and wastage
	2.3 Select and use suitable facilities for the storage of collected material
	2.4 Provide clear and accurate information for recording purposes
3. Be able to prepare propagation material	3.1 Handle plant material in a manner which minimises damage and wastage, and optimises growth
	3.2 Select and use a suitable propagation method
	3.3 Prepare and treat propagation materials appropriately
	3.4 Provide clear and accurate information for recording purposes

4.	Establish propagation material in a growing environment	4.1	Identify and source the materials for preparing a suitable rooting medium
		4.2	Prepare a suitable environment to establish the propagation material
		4.3	Position propagation material correctly in the growing medium and place in a suitable environment
		4.4	Promote and sustain plant development after propagation
5.	Be able to maintain and use relevant equipment	5.1	Ensure equipment is prepared, used and maintained in a safe and effective condition
6.	Be able to promote health and safety and environmental good practice	6.1	Work in a way which promotes health and safety, is consistent with relevant legislation, codes of practice and any additional requirements
		6.2	Ensure work is carried out in a manner which minimises environmental damage
		6.3	Manage and dispose of waste in accordance with legislative requirements and codes of practice

Management of green spaces, landscaped areas, and ornamental gardens

RHS reference number: R3126
Unit reference number: K/601/7694

Unit level: Level 3
Credit Value: 3

Unit purpose and aim(s): This unit provides the learner with the knowledge and skills to assess the management requirements of horticultural areas; to produce management and maintenance plans for specified periods of time; and to monitor and maintain the health, safety and security of the work area.

Learning Outcomes The learner will**:**	**Assessment Criteria** The learner can**:**
1. Be able to carry out site surveys	1.1 Carry out a site survey to assess the condition of a the following (a) hard landscape features (vertical and horizontal elements) (b) accessories (c) soft landscape features (plants)
2. Be able to assess the management requirements of horticultural areas	2.1 Evaluate the management requirements of (a) hard landscape features (vertical and horizontal elements) (b) accessories (c) soft landscape features (plants)
3. Be able to produce management and maintenance plans for specified periods of time	3.1 Describe the factors to consider in developing a 5 year management plan for a specified area. 3.2 Produce an annual maintenance programme for a specified area to include (a) preparation and cleaning of hard landscape features (vertical and horizontal elements) (b) preparation and cleaning of accessories (c) pruning, feeding, weeding and watering of soft landscape features (plants) 3.3 Provide verbal advice to clients in respect of managing and maintaining the area specified in 3.2

4.	Understand the importance of biosecurity in protecting horticultural areas	4.1	Explain the meaning of biosecurity and its importance in preventing the spread of diseases or invasive plants to established horticultural areas.
5.	Understand how to monitor and maintain the health, safety and security of the work area	5.1	Explain the legal and organisational responsibilities in relation to health, safety and security covering: (i) people (ii) equipment and materials (iii) the work area
		5.2	Explain the importance of carrying out risk assessments for all work activities including assessing risks from new and non-routine activities
		5.3	Describe how to carry out and evaluate a risk assessment
		5.4	Explain the hierarchy of measures to control risks
6.	Be able to monitor and maintain the health, safety and security of the work area	6.1	Carry out risk assessments in accordance with relevant legal and organisational requirements
		6.2	Evaluate the risks which have been identified and implement appropriate control measures