YEAR 12 HORTICULTURE COURSE – 2011
STUDENT LEARNING OBJECTIVES – PERFORMANCE CRITERIA

YEAR 12 PRACTICAL HORTICULTURE 2011				
US 829 v3	Demonstrate knowledge of plant names	5	2	Internal
US 22174 v1	Demonstrate knowledge of soils & fertilizers	5	2	Internal
US 22177 v1	Demonstrate knowledge of the structure & function of plants	5	2	Internal
US 22183 v1	Plant out horticulture crops by hand	5	2	Internal
US 23781 v1	Grow & pot up plants from stem cuttings	5	2	Internal
US 22191 V1	Demonstrate knowledge of factors which influence plant growth	5	2	Internal (Assignment)
POSSIBLE TOTAL =		30		

US 829 v3	Demonstrate knowledge of plant names

Elements and performance criteria

Element 1

State how plant names are given or changed.

Performance criteria

1.1 Two codes for naming plants are given.

1.2 Reasons for re-naming a plant are listed.

Element 2

Use correct nomenclature for naming plants.

Range common name, generic name, specific or species name, subspecies, Māori name, cultivar, synonym, varieties, hybrid (interspecific or intergeneric).

Performance criteria

2.1 Thirty plants are named correctly.

2.2 Plant nomenclature is written according to International Code of Botanical Nomenclature.

Element 3

Identify four unfamiliar plants.

Performance criteria

3.1 Plant identification keys are used to identify four unfamiliar plants.

US 22174 v1	Demonstrate knowledge of soils & fertilizers

Elements and performance criteria

Element 1

Describe the composition of soil.

Performance criteria

1.1 Major components of soil are defined in terms of their composition, relative size, and proportions.

Range mineral particles, organic material, water, air.

1.2 Major components of soils are discussed with reference to their influence on plant growth.

Range mineral particles, organic material, water, air.

1.3 Main soil horizons are outlined in terms of their composition.

Range litter layer, topsoil, subsoil, parent material.

Element 2

Identify soil texture and structure.

Performance criteria

2.1 Soil aggregates are described in terms of their effects on plant growth.

Range aggregates – crumb, block, platy, fine;
descriptions must include appearance and size.

2.2 Major soil textural types are identified by feel and sight.

Range sand, sandy loam, silt loam, clay loam, clay.

2.3 Soil structure is described in terms of its affect on plant growth.

Element 3

Describe two soils using the New Zealand Soil Classification.

Range may include but are not limited to – volcanic loams, brown earths, coastal sands, organic soils, podzols, pumice soils, brown clays, and recent alluvial soils.

Performance criteria

3.1 The characteristics of the soils selected are described and compared according to their use.

Range drainage, parent material, structure, nutrient deficiencies, texture, potential for plant growth.

3.2 Soils selected are described in terms of how they are formed.

3.3 Soils selected are identified according to their location and use in New Zealand.

Element 4

Describe the role of fertiliser for plant health and growth.

Performance criteria

4.1 Macronutrients and micronutrients are defined in terms of how they affect plant growth.

4.2 Fertilisers and lime are identified in terms of how they influence plant growth.

Range lime, nitrogenous, phosphatic and potassic fertilisers.

4.3 Fertilisers and lime are discussed in terms of how they can be altered to affect plant growth.

Range soil testing, leaf analysis, monitoring of fertiliser applications, soil and plant deficiencies and toxicities.

US 22177 v1	Demonstrate knowledge of the structure & function of plants

Elements and performance criteria

Element 1

Demonstrate knowledge of plant structures and their functions.

Performance criteria

1.1 The cellular nature of plants is described in terms of cell structure, formation, and function.

1.2 Roots are described in terms of their structures and functions and importance to plant growth and stability.

1.3 Stems are described in terms of their structures and functions and importance to plant growth.

1.4 Leaves are described in terms of their structure and functions and importance to plant growth.

1.5 Flowers and fruits are described in terms of their structure and functions and importance to plant regeneration.

Element 2

Describe plant tissue structures and their functions.

Performance criteria

2.1 Vascular system and cambium tissue are described in terms of their importance to plant growth.

Range root cambium, stem cambium, xylem, phloem.

2.2 Meristem tissue is described in terms of its importance to plant growth.

2.3 Epidermal tissue is described in terms of its importance to plant growth.

2.4 Storage tissue is described in terms of its importance to plant growth.

Range stem and root tubers, corms, bulbs, roots.

2.5 Internal and external plant signs are explained, recognised and used to identify the age of particular shoots.

Range lateral growth rings, external rings on shoots.

2.6 Fruit buds and vegetative buds are identified and defined in terms of their significance at pruning time and for propagation.

US 22183 v1	Plant out horticulture crops by hand

Elements and performance criteria

Element 1

Select plants for planting out.

Performance criteria

1.1 Plants are selected against pre-specified criteria in accordance with workplace procedures.

Range size, shape and form, maturity, condition.

1.2 Plants not selected are disposed of in accordance with workplace procedures.

Element 2

Prepare growing media.

Performance criteria

2.1 Growing media is prepared to meet the requirements of plant material.

Range bed preparation, nutrient application, weed control, moisture content.

2.2 Growing media is maintained to required condition for planting out in accordance with workplace procedures.

Element 3

Plant by hand.

Range 50 transplants consisting of plants, bulbs, corms, and tubers; minimum of five of each.

Performance criteria

3.1 Factors that influence layout requirements are described.

Range plant size, light, air circulation, cultivation, maintenance, and harvest access requirements.

3.2 Planting layout is established and maintained in accordance with workplace procedures.

3.3 Planting out procedures meet pre-defined requirements, and encourage maximum strike rates and plant development.

Range depth, orientation, placement and firming of media, media surface finish.

3.4 Techniques used are suitable for the planting situation.

Range direct to soil media, through weedmat barriers using moisture control materials.

Element 4

Maintain post planting care of plants.

Performance criteria

4.1 Techniques adopted in caring for crops and specimens planted out optimise plant development.

Range watering, nutrient application, cultivation, shelter provision, plant health, pest and disease protection.

4.2 Records are kept of plant growth and maintenance for three consecutive months, in accordance with workplace procedures.

Range weeding, watering, plant replacement, plant maintenance.

US 23781 v1	Grow & pot up plants from stem cuttings

Elements and performance criteria

Element 1

Identify the parts of plants relevant to stem cutting propagation.

Performance criteria

1.1 Plant parts relevant to stem cutting propagation are identified.

Range node, internode, terminal (or apical) bud, axillary (or lateral) bud, stem, petiole, lamina, midrib (or main vein).

1.2 Stem woodiness is identified.

Range softwood, semi-hardwood, hardwood.

Element 2

Propagate stem cuttings.

Performance criteria

2.1 Propagation material for stem cuttings is selected in accordance with industry practices.

Range healthy growth, pest and disease free, flower and fruit free.

2.2 20 tip and/or nodal stem cuttings are propagated in accordance with industry practices.

Range giving due consideration to – position of cuts, number of internodes, leaf removal, hormone treatment, cutting medium, labels.

2.3 Stem cuttings are monitored until well rooted in accordance with industry practices.

Range moisture levels, pest and disease free.

Element 3

Pot up, care for, and present stem cuttings.

Performance criteria

3.1 Stem cuttings are potted up in accordance with industry practices when roots are well formed.

Range may include but is not limited to – potting bags, pots, labels.

3.2 Potted up stem cuttings are monitored in accordance with industry practices.

Range moisture levels, pest and disease free.

3.3 Potted up stem cuttings are presented with evidence of at least three new internodes of growth on each cutting (growing on stage).

Range minimum of 12 cuttings.

Element 4

Keep a diary record of the plants propagated from stem cuttings.

Performance criteria

4.1 A record is kept of the procedures undertaken in the preparation of the stem cuttings for propagation.

4.2 A weekly record is kept describing care and maintenance of stem cuttings up until the potted cuttings reach the stage of three internodes of growth on each cutting.

Range may include but is not limited to – watering, plant and root growth, pests and diseases, other environmental conditions.

US 22191 V1	Demonstrate knowledge of factors which influence plant growth

Elements and performance criteria

Element 1

Identify environmental factors, which influence vegetative and fruit growth.

Performance criteria

1.1 Climatic factors are identified and how they affect vegetative and fruit growth is explained.

Range temperature, light, rainfall, wind, humidity.

1.2 Physical factors are identified and how they affect plant growth is explained.

Range soil type, topography, aspect, frost.

1.3 Environmental techniques are described in terms of how they can be manipulated to maximise plant growth.

Element 2

Identify other factors, which influence vegetative and fruit growth.

Performance criteria

2.1 Plant breeding is discussed in terms of how it can influence optimum plant growth.

2.2 Crop management techniques are discussed in terms of showing how they can maximise fruit and vegetative quality.

Range pest and disease control, pruning, thinning, plant support structures, fertilising and irrigation.

Element 3

Demonstrate knowledge of a specific crop, which is grown using techniques to improve plant production and crop quality.

Performance criteria

3.1 Factors that enhance a specific crop to achieve maximum vegetative and fruit growth are explained.

3.2 Techniques that enhance a specific crop to achieve maximum plant growth are explained.