

# Advanced Diploma of Horticulture

## First-year subjects

### 202-151 Information Technology and Communication

See full subject details on page 1.

### 207-151 Plant Biology

**Credit points:** 12.5

**HECS-band:** 2

**Coordinator:** Dr Cassandra McLean

**Contact:** Practicals/tutorials: 36 hours. Residential workshop for flexible-delivery students (*Semester 1, repeat Summer*).

**Description:** This subject considers the importance of plant production and the ecological role of plants.

Topics include:

- the process of photosynthesis, its links with respiration and growth, the effect of light conditions and plant adaptations to these; photoperiodism;
- the manipulation of light in plant production; the photosynthesis-transpiration compromise, water uptake, osmotic potential, adaptations for water conservation; irrigation;
- waterlogging and salinity; climate; temperature as a moderating and limiting factor; soil, nutrients, nutrient cycling and soil biota; other growing media; pests, diseases and their control; competition, mycorrhizas; plant growth and development, vegetative propagation, tissue culture and plant variety rights
- sexual reproduction, its advantages, disadvantages and manipulation; Mendelian genetics; genetic engineering; and
- methods of establishing plants including site selection and preparation; dormancy and germination; natural ecosystems, disturbed ecosystems, various crops, permaculture and amenity parkland; case studies for a variety of plant production systems; and post-harvest issues.

**Assessment:** One mid-semester 1-hour written examination (theory) worth 20% of final marks, one mid-semester practical test worth 20% of final marks, one final 2-hour written examination worth 40% of final marks and one final practical test worth 20% of final marks.

**Prescribed texts:** K R Stern, *Introductory Plant Biology*, Wm C Brown, 1997.

### 207-152 Soil Management

**Availability:** Burnley campus.

**Credit points:** 12.5

**HECS-band:** 2

**Coordinator:** Mr Ross Hall

**Contact:** Twenty-four hours lectures, 24 hours laboratory sessions (*Semester 2*).

**Description:** The management of plants depends on a thorough knowledge and understanding of the way in which soil properties can influence plant growth. This subject aims to provide:

- background information on the chemistry basic to an understanding of soil and plant relationships including the nature of matter, atoms, molecules and bonding, stoichiometry and the chemistry of water
- an introduction to plant/soil relationships and the ways in which soils can be manipulated to influence and improve plant growth. It will describe the ways in which soil properties (physical, chemical and biological) can affect plant growth. It will describe the ways in which soils can be managed to maintain their productivity.

**Assessment:** One 2-hour written examination worth 40% of final marks, one 1-hour written test worth 20% of final marks, assignments and practical reports equivalent to 2500 words and worth 40% of final marks each.

### 207-153 Horticultural Plants

**Availability:** Burnley campus.

**Credit points:** 12.5

**HECS-band:** 2

**Coordinator:** Ms Leisa Armstrong

**Contact:** Twenty-four hours of lectures, 12 x 3-hour laboratory sessions (*Semester 1*).

**Description:** This subject covers:

- taxonomic approaches to plant description and morphology (roots, stems, leaves, flowers, fruits);
- plant habit and lifecycles, International Code of Botanical Nomenclature and Code for Cultivated Plants;
- use and application of plant recognition characters for identification; and

- study of horticultural plants in groups based on habit, life cycle and taxonomic approaches.

**Assessment:** Two 2-hour written examinations (one mid-semester and one final) each worth 25% of final marks, two written assignments/practical reports each equivalent to 2500 words and each worth 25% of final marks

### 207-154 Horticultural Technology

**Availability:** Burnley campus.

**Credit points:** 12.5

**HECS-band:** 2

**Coordinator:** Mr Ken James

**Prerequisites:** 207-158 Horticultural Practices I.

**Contact:** Thirty-six hours of lectures, 36 hours of practical classes and tutorials (*Semester 2*).

**Description:** This subject examines the range of machinery used in the management of horticultural sites, together with the principles of machinery operation and maintenance; health and safety techniques to identify hazards associated with machinery used, the assessment of risk and the control methods used to comply with current legislation; basic site surveying techniques that will enable the production of site plans and levelling details, for horticultural and irrigation applications; irrigation equipment such as micro, trickle and sprinkler systems as used in horticulture; and water management principles used in the design and management of irrigation systems, including the evaluation of the performance of irrigation systems.

**Assessment:** A 3-hour examination (50%), and two 3000-word assignments (each 25%).

### 207-155 Horticultural Practices II

**Availability:** Burnley campus

**Credit points:** 12.5

**HECS-band:** 2

**Coordinator:** Mr Brian Shields

**Contact:** Twenty-four hours of lectures, 36 hours of practical classes, 12 hours tutorials (*Semester 2*).

**Description:** This subject covers:

- the study of plant groups based on environmental tolerances, specialised uses and themes;
- horticultural issues in plant propagation, establishment and maintenance; and
- practical skills development activities in the areas of ornamental plant maintenance, horticultural machinery, garden and landscape materials and plant propagation.

**Assessment:** One final two-hour written examination worth 35% of final marks, one mid-semester 1-hour examination worth 15% of final marks and five practical reports worth 50% of final marks.

**Recommended texts:** Burnley College, University of Melbourne, Version 2.16, *Burnley Plant Directory (Database) 2002*, Burnley College, University of Melbourne.

### 207-158 Horticultural Practices I

**Availability:** Burnley campus.

**Credit points:** 12.5

**HECS-band:** 2

**Coordinator:** Mr John Delpratt

**Contact:** Thirty-six hours of lectures, 36 hours of practical classes (*Semester 1*).

**Description:** This subject covers introductory principles and practices in landscape and nursery production horticulture; including methods of and systems for propagating plants from seeds and cuttings; planting, establishing and maintaining plants in the landscape; critical environmental factors that influence the establishment and growth of plants in planted landscapes.

**Assessment:** Two 2-hour written examinations each worth 30% of final marks, and two written assignments/ practical reports equivalent to 2000 words and each worth 20% of final marks.

**Recommended texts:** Burnley College, University of Melbourne, Version 1.05, *Burnley Plant Directory (Database) 2000*, Burnley College, University of Melbourne.

### 208-161 Financial Management for Resource Ind I

See full subject details on page 2.

## Second-year subjects

### 202-051 Industry Placement#

See full subject details on page 2.

**207-252 Horticultural Practices III****Availability:** Burnley campus.**Credit points:** 12.5**HECS-band:** 2**Coordinator:** Mr Clive Sorrell**Contact:** Thirty-six hours of lectures and 36 hours of practical activities (*Semester 1*).**Description:** This subject covers:

- studies of horticultural plants based on garden styles and landscape themes;
- technical issues and practical activities in a specific horticultural industry sector:
  - *arboriculture*: safely climbing and pruning trees by utilising modern technologies and techniques;
  - *parks and gardens*: planting design, parks and gardens resource planning, development of standards and specifications, horticultural contracting, turf management;
  - *landscape construction*: landscape construction, concrete construction (slabs and footings), retaining and free standing walls, bricklaying, step and ramp construction; and
  - *nursery*: propagation and production management, growing media, micro-propagation, comparative irrigation systems

**Assessment:** One two-hour written examination worth 25% of final marks, two plant materials tests worth a total of 30% of final marks and practical assessments worth a total of 35% of total marks.**Prescribed texts:** Burnley College, University of Melbourne, Version 1.05, *Burnley Plant Directory (Database) 2000*, Burnley College, University of Melbourne.**207-253 Horticultural Practices IV****Availability:** Burnley campus.**Credit points:** 12.5**HECS-band:** 2**Coordinator:** Mr Ian Winstone**Contact:** Thirty-six hours of lectures and 36 hours of practical activities (*Semester 2*).**Description:** This subject includes:

- project studies of horticultural plants based on landscape evaluation and/or key taxonomic themes;
- technical, design, planning and management issues relating to a specific horticultural industry sector:
  - *arboriculture*: establishing, maintaining and managing trees that enhance urban and other human environments;
  - *parks and gardens*: parks and gardens planning and management, including heritage issues, park resources and facilities, horticultural therapy;
  - *landscape construction*: soil water movement and drainage construction, irrigation installation, rock and water in the landscape, ornamental pond construction; and
  - *nursery*: materials handling, production scheduling, production nursery design, trials organisation and management, specialist production enterprises, nursery retailing and marketing, greenhouse management issues. Includes an industry-focused sojourn of five days duration.

**Assessment:** One oral presentation incorporating a written synopsis to 1000 words (plant materials) worth 15% of final marks, one final 2-hour examination worth 35% of final marks, and practical assessment or two written assessments equivalent to 2000 words each, worth 50% of final marks.**Recommended texts:** Burnley College, University of Melbourne, Version 1.05, *Burnley Plant Directory (Database) 2000*, Burnley College, University of Melbourne.**207-263 Advanced Plant Biology****Note:** Study commitment for this subject is five hours per week**Availability:** Burnley campus.**Credit points:** 12.5**HECS-band:** 2**Coordinator:** Dr G M Moore**Contact:** Twenty-four hours lectures, 24 hours practicals, 12 hours tutorials (*Semester 1*).**Description:** The aims of this subject are to extend the student's ability to:

- apply the principles and units of chemical measurement and energy balances;
- describe the biochemistry of major plant physiological processes;
- identify the causes and effects of environmental stresses;
- describe the effects of the major plant hormones on plant growth and development;

- describe the role of natural selection and competition in plant biology;
- assess the effects of herbicides on plant metabolism, the environment and health;
- determine the physiological basis of plant responses to disease and decay; and
- identify responses of native plants to aspects of the Australian environment.

Content to be studied includes nutrient cycling, uptake and assays; photosynthesis; respiration; germination, growth, flowering and senescence; the biology of mycorrhizal fungi; competition, breeding and genetics; stress physiology; physiological plant pathology; hormone biology; mechanisms of herbicide action; plant pollutants; and the biology of native plants.

**Assessment:** One 1-hour mid-semester examination worth 20% of final marks, one final 2-hour examination worth 50% of final marks and three practical reports equivalent to 2000 words worth 30% of final marks.**207-265 Plant Management and the Environment****Credit points:** 12.5**HECS-band:** 2**Coordinator:** Mr John Brereton**Contact:** Twenty-four hours lectures and 36 hours practical work (*Semester 2*).**Description:** This subject includes:

- developing and utilising diagnostic skills and equipment in the management of plant health;
- case studies of managing pest, disease and weed problems (including damage thresholds and control strategies);
- integrated pest management programs in horticultural sectors (including design, planning, implementation and evaluation);
- sustainable water management practices in urban horticulture; and
- the relationships between edaphic factors and plant growth.

**Assessment:** One three-hour written examination worth 50% of final marks, two assignments equivalent to 2500 words and worth 25% of final marks each.**208-269 Managing Staff**

See full subject details on page 3.

**207-319 Plant Protection****Credit points:** 12.5**HECS-band:** 2**Coordinator:** Mr James Will**Contact:** Thirty-six hours lectures and 24 hours practical activities (*Semester 1, repeat 2*).**Description:** This subject includes:

- impact of stress on plants and invasion by pests and other parasitic organisms; the classification of pests;
- identification of common pest, disease and weed species;
- integrated pest control concepts;
- pest control measures;
- fate of chemicals in the environment; and
- legislation pertaining to pests, noxious weeds and environmental weeds.

**Assessment:** One final 2-hour written examination worth 50% of final marks, two pest identification assessments worth a total of 30% of final marks and written reports (plant protection record sheets) worth 20% of final marks.**Hurdle requirement:** Students must obtain a 40% pass mark for the final examination to pass the subject.**Recommended texts:** R Kerruish, *Plant Protection 1 - Methods of Disease, Pest and Weed Control*, Rootrot Press, 1990.**Elective subjects****202-250 Quantitative Skills for Land and Food**

See full subject details on page 3.

**207-251 Plant Technology****Availability:** Burnley campus.**Credit points:** 12.5**HECS-band:** 2**Coordinator:** Mr James Will**Contact:** Thirty-six hours of lectures, 24 hours of practical classes and site visits (*Semester 1*).**Description:** Topics include:

- clonal and non-clonal methods for producing plants for nursery and revegetation programs through tissue culture;
- the biological basis for plant tissue culture;

- the tissue culture and micropropagation process;
- in-vitro media and environments;
- seed processing technologies;
- laboratory testing for seed quality; and
- seed sowing techniques for nursery, field and revegetation.

**Assessment:** One 2-hour written examination (50%), two written assignments each equivalent to 2000 words (25%).

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### 207-254 Horticultural Project Management

**Availability:** Burnley campus.

**Credit points:** 12.5

**HECS-band:** 2

**Coordinator:** Mr Mike Green

**Prerequisites:** 207-152 Soil Management; 207-252 Horticultural Management I; 208-161 Financial Management for Resource Industries I.

**Contact:** Twelve hours lectures, 12 hours tutorials, 48 hours practical and project classes (*Semester 2*).

**Description:** This subject includes:

- project design;
- planning and management;
- contract administration and management;
- presentation skills;
- report styles and writing;
- access, analysis and presentation of horticultural information; and
- project studies relating to a specific horticultural activity.

**Assessment:** One written assignment (project report) equivalent to 5000 words (75%) and one oral presentation (25%).

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### 207-258 Sports Turf Management

**Availability:** Burnley campus

**Credit points:** 12.5

**HECS-band:** 2

**Coordinator:** Dr David Aldous

**Semester:** Semester 1

**Description:** Areas for this subject have been designed to extend the student's ability to:

- describe the benefits, values, location, and distribution of the national and international turfgrass industry;
- describe basic turfgrass function, physiology, inflorescence, and seed development;
- describe the major cool, transitional, and warm-season turfgrasses, and alternatives;
- describe specialist sowing/planting/instant lawn and after-care practices;
- describe important turf fertilisers and conditioners for turf performance;
- describe the components of surface playing quality;
- describe the agronomic factors influencing surface playing quality;
- describe the performance requirements for different grassed surfaces;
- measure and assess the playing quality of a range of grass surfaces;
- describe the practices associated with efficient and effective irrigation and drainage application;
- describe the practices associated in the use and care of turfgrass machinery and equipment for maintenance and renovation;
- recommend control methods and strategies for weeds, insects, nematodes, and diseases of turfgrass; and
- develop a works program and schedule for fine and coarse turf maintenance.

**Assessment:** One 3-hour common examination (50%) (short-answer, or essay), one web assignment of 2500 words (25%) (analysis of an industry topic), and two workshop reference exercises of 1000 words (25%).

**Prescribed texts:** D E Aldous (ed.), *International Turf Management Handbook*, Butterworth-Heinemann, 1999.

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### 207-261 Landscape Design and Graphics

**Availability:** Burnley campus

**Credit points:** 12.5

**HECS-band:** 2

**Coordinator:** Mr Mike Green

**Contact:** Twenty-four hours lectures and 36 hours practicals (*Semester 1*).

**Description:** Upon completing this subject the student should be able to:

- demonstrate basic graphic design and technical drafting skills;
- describe the principle components of the design process;
- demonstrate an ability to interpret client requirements; and
- draw basic landscape plans for small projects in park, garden or turf facilities.

The content includes:

- the theory of design both contemporary and historic, site analysis techniques;
- developing and interpreting a brief;
- use of graphic symbols to communicate;
- use of scale perspective;
- planting plans; and
- colour media.

**Assessment:** One oral presentation worth 15% of final marks, one written assignment equivalent to 2500 words worth 25% of final marks, and four design studio assignments worth a total of 60% of final marks.

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### 207-269 Vegetation Management

**Availability:** Burnley campus.

**Credit points:** 12.5

**HECS-band:** 2

**Coordinator:** Mr John Rayner

**Contact:** Thirty-six hours lectures, 24 hours practical classes and site visits (*Semester 2*).

**Description:** Topics include:

- vegetation classification schemes;
- Australian vegetation communities and factors of influence;
- ecological terms and definitions;
- global issues in vegetation management; vegetation surveying techniques;
- management of remnant urban vegetation (including restoration planning, revegetation techniques, habitat construction);
- management of specific vegetation types (grasslands, ornamental herbaceous plantings, ground covers, shrub plantings);
- management issues in amenity trees (tree establishment, transplanting, tree hazard assessment);
- development of maintenance standards for horticultural works; and
- agencies and organisations involved in urban vegetation management.

**Assessment:** One two-hour written examination worth 50% of final marks, one assignment equivalent to 4000 words worth 50% of final marks.

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### 207-333 Amenity Tree Assessment and Management

See full subject details on page 5.

