

Associate Degree in Environmental Horticulture

First-year subjects

Semester 1

202-151 Information Technology and Communication

Availability: Burnley campus

Credit points: 12.5

Coordinator: Mr Nick Bailey

Contact: Thirty-six hours of lectures and 36 hours of practicals/tutorials (*Semester 1, repeat Summer*).

Description: On completion of this subject, students should:

- have a working knowledge of, and basic competence in the use of, tools for communication and for accessing and managing information, particularly electronic and web-based technologies;
- understand the principles of effective communication at different levels (one-on-one, small group, large group etc.) and with audiences from different backgrounds and with different interests;
- have experience in written and oral communication for a range of audiences and be competent in both forms of communication, and also have experience in inter- and intra-team communication using electronic and web-based communication tools;
- have developed problem-solving and critical thinking skills to a level that will serve as a platform for further development of these capabilities throughout the course;
- have formally interacted with students completing this subject at other campuses, and developed an understanding of the learning environment of their peers at those campuses; and
- understand group dynamics, and the factors that lead to effective team work.

Assessment: Referenced abstract (20% of final marks), oral presentation (20% of final marks), three software projects (15% each of final marks), assessed team processes (15% of final marks).

207-151 Plant Biology

Availability: Burnley campus

Credit points: 12.5

Coordinator: Dr Cassandra McLean

Contact: Practicals/tutorials: 36 hours (*Semester 1*).

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.

207-153 Horticultural Plants

Availability: Burnley campus

Credit points: 12.5

Coordinator: Ms Leisa Armstrong

Contact: Twenty-four hours of lectures, 36 hours of laboratory sessions, tutorials, plant walks and field excursion (*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.

On completion of this subject students should be able to:

- recognise a group of plants commonly used in landscape horticulture; correctly write their botanical, common and family names and describe plant type and form;
- write plant names in accordance with the ICBN (International Code of Botanical Nomenclature) and the ICNCP (International Code of Nomenclature for Cultivated Plants);
- identify and describe the main morphological features of stems, leaves, flowers and fruits;
- determine the floral formula for a species; and
- use these plant recognition characters to identify a plant using a taxonomic key.

Assessment: Two 90-minute written examinations (one mid-semester and one final) each worth 20% of final marks; one written assignment equivalent to 2500 words and worth 25% of the final marks; exercises and practical work submitted during the semester equivalent to 3500 words and worth 35% of the final marks. Attendance at laboratory sessions, tutorials, plant walks and field excursions is compulsory.

207-158 Horticultural Practice I

Availability: Burnley campus

Credit points: 12.5

Coordinator: Mr John Delpratt

Contact: 24 hours of lectures, 48 hours of practical classes (*Semester 1*).

Description: This subject covers introductory principles and practices in nursery production and ornamental horticulture. It includes methods of and systems for propagating plants from seeds and cuttings and techniques for planting, establishing and maintaining plants in the landscape.

Assessment: Two 90-minute written examinations each worth 25% of final marks, and two written assignments/practical reports equivalent to 2000 words and each worth 25% of final marks.

Recommended texts: K Handreck & N Black, *Growing media for ornamental plants and turf, 3rd edn*, NSW University Press, Kensington, 2002. • H T Hartmann, D E Kester, F T Davies, & R L Geneve, 2002, *Hartmann and Kester's Plant Propagation: principles and practices, 7th edn*, Prentice-Hall International, Upper Saddle River.

Semester 2

207-152 Ecology, Soil and Plants

Availability: Burnley campus

Credit points: 12.5

Coordinator: Dr Peter May

Contact: Twenty-four hours lectures, 36 hours tutorials, laboratory work and/or field trips (*Semester 2*).

Description: This subject will describe the relationship between plant growth and the environment in which plants grow. Particular attention will be given to the ecology of plants and to the effect of soil conditions on plant growth. Where appropriate, the consequences of these relationships for horticultural plant management will be described. Specific content will include: soil composition, soil texture and structure, soil water and aeration, behaviour and management of plant nutrients elements in soil, manipulation of nutrient levels, assessment of plant and soil nutrient status, definition of ecology, populations, communities, ecosystems, homeostasis, energy flow, trophic structures, Australian plant communities, environmental factors, fire and human impact on vegetation.

Assessment: Two 90-minute written examinations (mid-semester and final) each 30% of final marks, assignments and practical reports equivalent to 2500 words and worth 40% of final marks.

207-154 Horticultural Technology

Availability: Burnley campus

Credit points: 12.5

Coordinator: Mr Ken James

Prerequisites: 207-158 Horticultural Practices I.

Contact: Twenty-four hours of lectures, 24 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: One 2000-word assignment (20%) and two 2-hour examinations (40% each).

207-155 Horticultural Practice II

Availability: Burnley campus

Credit points: 12.5

Coordinator: Mr Brian Shields

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

Description: This subject builds on the development of horticultural principles and practices in ornamental horticulture and nursery production. It includes methods for and systems of propagating plants by grafting and root-stock production, assessing critical environmental factors that influence the establishment and growth of plants in the planted landscapes and, turf and ornamental plant establishment and maintenance.

Assessment: One final 2-hour written examination worth 30% of final marks, two 1-hour tests held during semester worth 20% of final marks and two written assessments equivalent to 2000 words each, worth 50% of final marks.

Recommended texts: K Handreck & N Black, *Growing media for ornamental plants and turf*, 3rd edn, NSW University Press, Kensington, 2002. • D S Ingram, D Vince-Prue & P J Gregory, *Science and the Garden*, Blackwell Pub., Oxford, UK, 2002. • Burnley College, University of Melbourne, Version 2.16, *Burnley Plant Directory (Database) 2002*, Burnley College, University of Melbourne.

207-173 Plant Protection

Availability: Burnley campus

Credit points: 12.5

Coordinator: Mr James Will

Contact: 36 hours lectures and 24 hours practical activities (*Semester 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 1-hour written mid-semester examination worth 20% of final marks, one final 90-minute written examination worth 30% 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.

Prescribed texts: J S Brereton, *Entomology notes for higher education*, Burnley Campus, The University of Melbourne. • Goodwin (ed.), *Pests, diseases, disorders and beneficials in ornamentals: field identification guide*, NSW Agriculture, Gosford NSW, 2000.

202-051 Industry Placement#

Note: This subject is a hurdle requirement for the completion of the Advanced Diploma of Agriculture and Horticulture.

Availability: Burnley campus

Coordinator: Mr Rowan Reid

Contact: At least eight weeks practical experience in an industry workplace, arranged by the student in consultation with the campus coordinator. The eight-week requirement must include one placement of at least four weeks duration, unless a variation is negotiated. Placements are normally completed during vacation breaks. Students may also be required to complete formal

training in workplace occupational health and safety, risk assessment, and practical skills acquisition, delivered in block courses (*Year long*).

Description: Work experience is a feature of all LFR degree and advanced diploma courses. On completion of Industry Placement, students should have:

- direct experience of employment and of employer-employee relationships in a range of workplaces in the relevant land and food industries;
- improved inter-personal and vocational skills;
- broader understanding of the diversity of workplaces and professional roles in the relevant land and food industries;
- greater appreciation of the practical application of the content taught during their course; and
- improved practical skills relevant to the management and operation of businesses in the land and food industries.

Industry placements may be undertaken in a range of businesses in the relevant land and food industries. These include commercial farm, equine, horticulture or forest operations, service industries including financial institutions, government departments and agencies, processing and marketing companies. Formal training in workplace occupational health and safety, risk assessment, and practical skills may be provided in block courses to give students an appreciation of safe working practices.

Assessment: A written report (1000 words) is submitted on one period of industry placement and is marked as pass/fail only. A journal must be kept for all placements and be made available for review by campus coordinator. Host employers will complete evaluation forms assessing the standards of performance and participation achieved by students while on placement.

Second-year subjects

Semester 1

207-263 Advanced Plant Biology

Note: Study commitment for this subject is five hours per week.

Availability: Burnley campus

Credit points: 12.5

Coordinator: Dr Cassandra McLean

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.

207-297 Plants for Designed Landscapes

Credit points: 12.5

Prerequisites: 207-153 Horticultural Plants, 207-155 Horticultural Practice 2

Contact: Twenty-four hours of lectures, 24 hours of practicals/excursions (*Semester 1*).

Description: This subject seeks to produce students who can recognise, identify and select plants for a range of designed landscapes in south-eastern Australia. The content will include discussion of plants in thematic lists and the study of representative landscapes and case studies. The topics will include designed plantings based on aesthetic outcomes (e.g. architectural foliage and form, heritage garden themes, herbaceous display, etc.) and functional outcomes (restored wetlands, coastal landscapes, streetscapes, interior landscapes, roof gardens and elevated plantings, shrub massing, screening).

Assessment: Two written plant recognition and identification tests, each 60 minutes duration (one mid-semester, one end-semester) 50%, one written assignment equivalent to 3000 words (end-semester) 50%.

Prescribed texts: CDRom Version 1, *The Burnley Plant Directory (database)*, The University of Melbourne.

207-206 Management of Urban Vegetation

See full subject details on page 2.

Semester 2

208-269 Managing Staff

Availability: Burnley campus

Credit points: 12.5

Coordinator: Mr Peter McSweeney

Contact: Twenty-four hours of lectures and 24 hours of tutorials (*Semester 2*).

Description: The subject comprises:

- the role and functions of management, supervision and leadership;
- how work is organised in terms of organisational structures and job design;
- the elements of productivity, quality and goal achievement and the supervisor's role in ensuring this achievement;
- the factors that influence individual and group behaviour as a basis for motivating staff, managing conflict and change, and leading teams;
- proper procedures for human resource management functions; and
- the obligations of employers and supervisors resulting from laws and regulations.

The subject covers areas of:

- the role and function of management, supervision and leadership;
- skill development for supervisors; work organisation, job design and organisational structures;
- supervisor's role in quality, productivity and goal achievement;
- motivating staff;
- managing conflict and change;
- human resource management functions, recruitment and selection, induction, performance appraisal, compensation, training and development, OHS;
- disciplinary and grievance procedures; and
- business legal obligations in relation to contracts, consumer law, law of tort, employment law, payroll obligations.

Assessment: One two-hour written examination worth 40% of final marks, two assignments equivalent to 2500 words and worth 30% of final marks each.

Prescribed texts: K Cole, *Supervision: The Theory and Practice of First Line Management*, Prentice-Hall, Sydney, 2001.

Elective subjects (Second-year semester 1)

208-161 Financial Management I

Availability: Burnley campus

Credit points: 12.5

Coordinator: Mr Peter McSweeney

Contact: Twenty-four hours of lectures (2 hours per week) and twenty-four hours of tutorials (2 hours per week) (*Semester 1*).

Description: Topics include:

- financial management (principles and responsibilities);
- financial recording/reporting of information systems;
- analysis and interpretation of accounting/financial information;
- business structure;
- financial statements (profit, cashflow, balance sheets);
- budgets and planning;
- costing methods;

- computer business applications;
- debt finance;
- leasing decisions;
- direct taxes;
- indirect taxes; and
- taxation planning issues.

Assessment: One 2.5-hour written examination worth 40% of final marks, two assignments equivalent to 3000 words and worth 30% of final marks each.

207-291 Garden Design and Management

Credit points: 12.5

Coordinator: Mr John Rayner

Contact: Twenty-four hours of lectures, 36 hours practical of activities/field trips (*Semester 1*).

Description: This subject aims to equip students with skills in the design and management of gardens and garden plantings. The content in this subject will include an overview of garden design, the design process, planting design, design principles, garden history and styles, garden planning and scheduling. Case-studies will be used to demonstrate aspects of garden design and management.

Assessment: A garden management portfolio, equivalent to 3000 words 50% (due mid-semester) and a written assignment based on garden history of 3000 words 50% (due end of the semester)..

207-292 Landscape Construction I

Availability: Burnley campus

Credit points: 12.5

Coordinator: Mr Ian Winstone

Prerequisites: 207-155 Horticultural Practice II

Contact: Forty hours of lectures and tutorials, eight hours of field trips (*Semester 1*).

Description: This subject aims to provide students with a broad knowledge of a range of built elements, their application in the landscape, design, performance and method of construction.

The areas of study include:

- urban soils and their relevance to built structures
- earthworks and earthmoving equipment
- water infiltration, movement and retention in urban soils and soil drainage
- concrete, masonry structures and pavements
- walls, fences and retaining walls
- field rock placement
- formal and free form water features
- plant selection, planting and establishment

Site visits and case studies will be used to demonstrate the application of different elements and construction methods and the aesthetic contribution of the various elements will be discussed.

Assessment: One two-hour written examination 70% (due end of the semester) and one project report of 3000 words 30% (due end of the semester).

Prescribed texts: K A Handreck and N D Black, *Growing Media for Ornamental Plants and Turf*, New South Wales University Press, Kensington, NSW, 2002. • K McIntyre and B Jakobsen, *Drainage for Sportsturf and Horticulture*, Horticultural Engineering Consultancy, Kambah, ACT, 1998. • G S Thomas, *Landscape Construction Notes*, Royal Australian Institute of Architects, Melbourne, Australia, 1999.

207-293 Propagation of Ornamental Plants

Credit points: 12.5

Coordinator: Mr Brian Shields

Prerequisites: 207-155 Horticultural Practice II

Contact: Twenty-four hours of lectures, 24 hours of tutorials/practical sessions (*Semester 1*).

Description: This subject will describe a range of propagation methods for ornamental and cultivated plants. Students will apply specific plant propagation methods and techniques for the multiplication of cultivated plants in containers and field environments. Content includes principles and practices of propagating plants by seed, cuttings, grafting, division, layering and micro-propagation.

Assessment: One two-hour written examination (40%), two written assignments equivalent to 5000 words 60% (one due mid-semester, one at the end of the semester).

Prescribed texts: K A Handreck and N D Black, *Growing Media for Ornamental Plants and Turf*, 3rd edn, NSW University Press, 2002. • H T Hartmann, D E Kester, F Davies and R L Geneve, *Hartmann and Kester's Plant*

Propagation Principles and Practices, 7th edn, Prentice-Hall Inc, Upper Saddle River, New Jersey, 2002.

Elective subjects (Second-year semester 2)

207-294 Graphics for Garden Design

Credit points: 12.5

Coordinator: Mr Michael Green

Prerequisites: 207-291 Garden Design and Management

Contact: Twelve hours of lectures, 24 hours of practical sessions and 12 hours of tutorials (*Semester 2*).

Description: This subject equips students with the drawing skills necessary for the development of a small-scale design and with the graphic skills necessary to illustrate and document the design to a concept design stage. Sketch design skills will be developed through a series of class graphics exercises. These individual skills will be incorporated into a full graphic presentation of a small-scale design.

Assessment: Practical graphic exercises - the equivalent of five A3 drawings completed during the semester (50%), one major assignment (a design portfolio) due at the end of the semester (50%). Hurdle requirement - to pass the subject students must receive a pass grade in the major assignment.

Prescribed texts: G Reid, *Landscape Graphics*, Watson Guptill Publications, 2002.

207-295 Landscape Construction II

Availability: Burnley campus

Credit points: 12.5

Coordinator: Mr Ian Winstone

Prerequisites: 207-292 Landscape Construction I

Contact: Seventy-two hours of practical activities (*Semester 2*).

Description: This subject aims to provide students with the skills and knowledge necessary to construct a range of landscape elements. These elements include pavement, concrete and masonry structures, water features and soil drainage. Practical exercises are undertaken in each of these areas of construction.

Assessment: A one-hour written examination at the end of the semester (20%), a written assignment at the end of the semester of 1500 words (15%), and practical assessment tasks conducted over the whole of the semester (65%).

Prescribed texts: G S Thomas, *Landscape Construction Notes*, Royal Australian Institute of Architects, Melbourne Australia.

207-296 Urban Tree Management

Credit points: 12.5

Contact: Twenty-four hours of lectures, 20 hours of practicals/seminars and 4 hour field trip (*Semester 2*).

Description: This subject aims to provide students with a thorough understanding of the care and management of trees in urban settings. The content will include tree anatomy and structure, tree growth and function, tree selection principles and examples, tree root systems, tree pathology and health, methods of tree assessment and evaluation, tree protection strategies, planning and management issues and case-studies (including surveys, location mapping, inventories and protection strategies) and an introduction to safe arboricultural work practices.

Assessment: One written assignment equivalent to 3000 words (50%) due mid-semester, a seminar presentation of 10 minutes duration due during the semester (20%), and two reports equivalent to 1000 words (30%).

Prescribed texts: R W Harris, J R Clark and N P Mathony, *Arboriculture: Integrated Management of Landscape Trees Shrubs and Vines*, Prentice-Hall, 2004.

207-265 Sustainable Horticultural Management

Availability: Burnley campus

Credit points: 12.5

Coordinator: Mr Geoff Connellan

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.

207-208 Production of Cultivated Plants

See full subject details on page 3.