Bachelor of Horticulture

First-year subjects

202-103 Biology for Land and Food Resources

See full subject details on page 1.

650-141 Biology of Cells and Organisms

See full subject details on page 1.

202-104 Information Technology and Communication

See full subject details on page 1.

202-251 Quantitative Skills for Land and Food

Credit points: 12.5

Coordinator: Ms Robyn Price

Contact: As for 202-250 Quantitative Skills for Land and Food *(Semester 1, repeat 2, Summer).*

Description: As for 202-250 Quantitative Skills for Land and Food.

Assessment: As for 202-250 Quantitative Skills for Land and Food.

207-103 Ecology

See full subject details on page 1.

207-108 Horticultural Flora

Availability: Burnley

Credit points: 12.5

Coordinator: Mr James Will

Prerequisites: Nil

Corequisites: 202-103 Biology for Land and Food or 207-109 Landscape Design and Plant Establishment.

Contact: Forty-eight hours lectures, tutorials, practical sessions, 24 hours CAL exercises *(Semester 1).*

Description: The recognition, landscape use and systematic analysis of landscape plants used in south-eastern Australia. The objective of this subject is to extend the participants ability to:

- recognise landscape plants used in south-eastern Australia for restricted sites;
- demonstrate an understanding of plant selection for functional and site restrictions;
- develop an understanding of plant management within designed landscapes;
- understand basic plant taxonomy and systematic theory;
- understand characters for taxonomic variation; and
- demonstrate capabilities for the use of keys with selected plant genera.

The content includes:

- recognition of 150 landscape plants used in south-eastern Australia;
- use of the International Code of Botanical Nomenclature;
- the use of plants in designed landscapes;
- the selection of plants for severe/restricted edaphic and climatic conditions;
- plant systematic theory; and
- plant morphology and keys for identification in the context of four to six representative genera.

Assessment: Two 45-minute practical tests (each 15%), one 1000-word assignment (10%), continuously assessed computer-aided learning (20%), plant recognition tests and short-answer submissions totalling 1000 words (10%), and one 90-minute examination (30%).

Prescribed texts: W S Judd, C S Campbell, E A Kellogg, & P F Stevens, 1999, *Plant Systematics: A phylogenetic approach*, Sinauer Associates, Inc Sunderland, Massachusetts, USA. • Burnley Staff, *The Burnley Plant Directory 2002*, Melbourne University Press, Melbourne, Australia.

207-109 Landscape Design and Plant Establishment

Availability: Burnley

Credit points: 12.5

Coordinator: Mr Michael Green

Prerequisites: Nil

Contact: Twenty-four hours lectures, 24 hours practicals and field trips, 12 hours tutorials and seminars *(Semester 1).*

Description: This subject introduces students to the principles of landscape design, the roles and functions of different professionals within the design sector, and horticultural principles and practices essential to successful landscape plantings. Upon completion of the subject students should be able to:

- recognise the role of landscape design in public and private landscapes;
- describe the fundamental principles of design which inform landscape designers;
- describe the aesthetic value and design potential of plants used in urban landscapes;
- undertake a site analysis and propose a planting design scheme for a public and a private landscape;
- analyse planting sites and outline the requirements for successful plant establishment;
- identify and describe a selection of urban landscape plants used in commercial, institutional and private landscapes in Melbourne; and
- demonstrate suitable practices of planting and establishing woody and herbaceous plants.

Topics include:

- the influence of historical factors on contemporary private and public landscapes;
- the role of design professionals in the landscape industry;
- site analysis to identify the factors relevant to the design of a planting scheme;
- species selection for a planting design;
- planting practice for a range of plant types; and
- plant establishment techniques.

Assessment: A two-hour written examination (40%), a 2000-word assignment (20%), practical reports equivalent to a total of 2000 words (20%), two 50-minute plant identification tests (each 10%).

207-110 The Horticultural Environment

Availability: Burnley

Credit points: 12.5

Coordinator: Mr Geoff Connellan

Prerequisites: Nil

Contact: 24 hours lectures, 12 hours tutorials and 12 hours laboratory and field based exercises *(Semester 2).*

Description: Upon completion of this subject, students should be able to demonstrate an understanding of:

- climate and the nature of the urban environment including atmospheric processes;
- the role of urban landscapes in urban water management;
- the interaction between vegetation and the environment;
- the use and management of vegetation in modifying urban environments; and
- the principles and techniques available for the modification of plant microclimates.

Topics include:

- defining the environment, physical processes governing weather;
- effects of solar radiation, temperature, relative humidity on plant growth and development;
- principles of energy balance in urban context;
- role of landscape planning and vegetation in urban energy balance;
- measurement and modification of plant environments;
- utilisation of weather and climate data;
- environmental horticulture - urban heat islands, green-roof technology, enviroscaping;
- modification of plant environments; and
- urban water management, urban catchments and stormwater management.

Assessment: A two-hour written examination (50%), a 2000-word assignment (20%), practical reports equivalent to a total of 3000 words (30%).

207-111 Plant Propagation

Availability: Burnley

Credit points: 12.5

Coordinator: Mr John Delpratt

Prerequisites: 202-103 Biology for Land and Food

Contact: 24 hours of lectures, 12 hours of tutorials, 24 hours of practicals and field trips *(Semester 2).*

Description: This subject introduces the theory and practice of contemporary propagation systems and techniques for horticultural plants. On completion of this subject, students should be able to:

- explain the theory underlying the sexual and asexual propagation of plants;
- describe and demonstrate the propagation of horticultural plants from sexual and asexual techniques;
- describe critical characteristics of the propagation environment in field, greenhouse and in vitro propagation systems; and
- design and development of growing media for the propagation and production of container plants.

Topics include:

- sexual propagation from spore and seed and asexual propagation from cuttings, grafting, layering and division;
- the propagation environment - including field, greenhouse and in vitro (micropropagation) systems; and
- design and use of growing media for container plant production.

Assessment: Report on group project (1000 words, 20%), reports on practical tasks (equivalent to a total of 2000 words, 40%), 2-hour examination (40%).

Prescribed texts: K Handreck, and N Black, *Growing Media for ornamental plants and turf,* 3rd ed, NSW University Press, Kensington, NSW, 2002. • H T Hartmann, D E Kester, F T Davies, and R L Geneve, *Plant propagation: principles and practices,* 7th ed. Prentice Hall, Upper Saddle River, 2002.

207-112 Plant Growth, Nutrition and Chemistry

Availability: Burnley

Credit points: 12.5

Coordinator: Dr Cassandra McLean

Prerequisites: 202-103 Biology for Land and Food.

Corequisites: 207-110 The Horticultural Environment.

Contact: Twenty-four hours of lectures, 12 hours of tutorials, 24 hours of laboratory work *(Semester 2).*

Description: This subject is designed to familiarize students with modern concepts of plant growth, plant/soil interactions and plant nutrition, in the context of horticultural practice. Students will, as part of this study, develop their chemistry skills and knowledge.

At the completion of this subject students should be able to:

- identify the fundamentals of chemistry essential to the science of horticulture;
- recognise that biophysical processes depend upon chemical processes;
- discuss the elementary structure and function of the 'building blocks' of biophysical systems; and
- acknowledge the relationship between chemical processes in the soil and environment and plant growth.

Topics will include:

- introduction to chemistry: elements, atoms, ions and molecules; the periodic table, valency and bond formation; the mole concept, concentrations and stoichiometry; solubility, the solution state ions and hydration; acids, bases, neutralisation and salt formation; and
- chemical interactions between plants, soil and the environment: measurement and nature of plant growth; plant nutrients and pH, adaptations of native and exotic plants to drought and depauperate soils; redox reactions and redox potentials of plants in waterlogged soils; impact of pollutants on plant structure and physiology; chemical structure and effect of herbicides and pesticides on plants.

Assessment: End-of-semester examination (two hours, 40%), two in-semester tests (each 60 minutes, totalling 30%,) laboratory reports equivalent to 2000 words (30%).

Second-year subjects

202-206 Plant Function

Credit points: 12.5

Coordinator: Dr Marc Nicolas

Contact: As for 202-201 Plant Function *(Semester 1).*

Description: As for 202-201 Plant Function.

Assessment: As for 202-201 Plant Function.

202-207 Soil and Water Resources

Credit points: 12.5

Coordinator: Dr Robert Edis

Contact: As for 202-203 Soil and Water Resources *(Semester 2).*

Description: As for 202-203 Soil and Water Resources.

Assessment: As for 202-203 Soil and Water Resources.

202-208 Experimental Design/Statistical Methods

Credit points: 12.5

Coordinator: Mr Barry Harridge

Contact: As for 202-202 Experimental Design/Statistical Methods *(Semester 1).*

Description: As for 202-202 Experimental Design/Statistical Methods.

Assessment: As for 202-202 Experimental Design/Statistical Methods.

207-101 Land, Food and Resource Economics

See full subject details on page 2.

207-204 Engineering and Irrigation

Note: Not available in 2004

Availability: Burnley

Credit points: 12.5

Coordinator: Mr Ken James

Prerequisites: 207-110 The Horticultural Environment.

Contact: Twelve hours lectures, 12 hours laboratory exercises and field trips, 12 hours tutorials and seminars *(Semester 1).*

Description: Upon completion of this subject, students should be able to:

- demonstrate an understanding of the use of machinery in the management of horticultural resources
- demonstrate an understanding of site surveying and levelling techniques; and
- identify and discuss the different types of irrigation systems used in horticulture, their operating principles and the evaluation of the performance of irrigation systems.

Topics include:

- types of machinery and principles of operation of machinery used in the management of horticultural resources including parklands, sports turf, nurseries and urban landscapes;
- selection and evaluation of horticultural equipment including tractors, sprayers, earthwork equipment and maintenance machinery, power unit performance, occupational health and safety;
- site surveying for horticultural applications including plane surveying, levelling, field work, drawing of plans and levels for irrigation, landscape and drainage works;
- types of irrigation systems used in horticulture, irrigation components and equipment - characteristics and performance of pressurised irrigation systems, hydraulic performance, selection of appropriate irrigation techniques and methods to evaluate the performance of irrigation system;
- management of irrigation systems to match plant and crop and site needs; and
- control and automation of irrigation technology.

Assessment: One 2000 word assignments (20%), two written two hour examinations (40% each).

207-206 Management of Urban Vegetation

Note: Not available in 2004

Availability: Burnley

Credit points: 12.5

Coordinator: Dr Peter May

Prerequisites: Completion of first year.

Contact: Twenty-four hours lectures, 24 hours practicals and field trips, 12 hours tutorials and seminars *(Semester 1).*

Description: Upon completion of this subject, students should be able to:

- recognise the need to utilise both ecological and technological principles in the development of sustainable urban horticulture systems;
- demonstrate understanding of the principles and practices involved in establishing and managing vegetation in a variety of naturally-occurring and 'built' environments;
- demonstrate an understanding of the relationship between design, implementation and after-use of selected landscape elements; and
- identify, and discuss the management of, a range of plants used in urban landscapes.

Topics include:

- the development of sustainable urban horticulture systems;
- water and weed control as case studies of sustainability;
- the use of plant selection as a tool in landscape design and management;
- the specific management of a range of urban landscape element such as trees, ground cover and shrub mass, turf, seasonal colour plantings, natural and nature-like plantings;

- specialist applications of horticultural techniques such as roof gardens, indoor landscapes, wetlands and the development of contaminated sites; and
- plant material for urban landscapes.

Assessment: A two-hour written examination (40%), a 2000-word assignment (20%), practical reports equivalent to a total of 2000 words (20%), two 50-minute plant identification tests (each 10%).

207-207 Plant Health

Note: Not available in 2004

Availability: Burnley

Credit points: 12.5

Coordinator: Dr Cassandra Mclean

Prerequisites: 202-103 Biology for Land and Food Resources.

Contact: 36 hours lectures and 24 hours practicals *(Semester 2).*

Description: The content includes:

- factors affecting the health of plants, impact of stress on plants and methods of diagnosis;
- the concept of plant disease nature and cause;
- understanding of the disease cycle, environmental factors influencing disease, the classification and recognition of plant disease causing organisms and plant affecting insects and related pests;
- identification of selected symptoms and signs of disease/pests affecting horticultural crops and plants in the urban environment; and
- selection of control measures for a range of pest and disease problems, integrated pest and disease management, plant quarantine and disease resistance management.

Assessment: One 2-hour examination (50%), one practical examination - 2 hours (30%), one 2500-word assignment (20%).

Prescribed texts: C J Alexopolous, C W Mims and M Blackwell, *Introductory Mycology*, 4th edn, John Wiley and Sons, 1996.

207-208 Production of Cultivated Plants

Availability: Burnley campus.

Credit points: 12.5

Coordinator: Ms Leisa Armstrong

Prerequisites: 207-211 Plant Propagation.

Contact: Five hours per week. Twenty-four hours of lectures, 36 hours of practical sessions and field work *(Semester 2).*

Description: The objective of this subject is to extend the participant's knowledge of a range of nursery production systems for cultivated crops through a combintion of lecture material, nursery based practical activities and site visits. Students will participate in the development of production schedules and the manipulation of crop growth using physical and chemical means.

Alternative nursery irrigation systems will be demonstrated along with methods of collecting and treating leachate run-off for reuse. Nutritional requirements of nursery crops will be described and the use of nutrition as a crop management tool will be investigated. Students will examine current technologies for the manipulation of the physical growing environment and understand the effect of this on crop scheduling and plant growth. The development and introduction of novel nursery crops is also described. Students will gain an appreciation that maintaining plant quality throughout the production cycle is intimately linked to establishment and performance of those crops in the landscape.

Assessment: All articles of assessment are compulsory. Assignment and practical reports submitted during the semester - equivalent to 4000 words (60%). A 2-hour end of semester examination (40%).

Third-year subjects

202-003 Industry Placement#

Coordinator: Mr Rowan Reid

Contact: As for 202-001 Industry Placement# *(Year long).*

Description: As for 202-001 Industry Placement#

Assessment: As for 202-001 Industry Placement#

202-310 Industry Project

Credit points: 25

Coordinator: Mr Rowan Reid

Contact: As for 202-301 Industry Project *(Year long).*

Description: As for 202-301 Industry Project.

Assessment: As for 202-301 Industry Project.

202-302 Human Resource Management

See full subject details on page 3.

202-311 Industry Project

Credit points: 25

Coordinator: Mr Rowan Reid

Contact: As for 202-303 Industry Project *(Semester 1, repeat 2).*

Description: As for 202-303 Industry Project.

Assessment: As for 202-303 Industry Project.

207-336 Project Planning

Availability: Burnley

Credit points: 12.5

Coordinator: Mr Nicholas Bailey

Prerequisites: 202-202 Experimental Design and Statistics, and completion of second-year core subjects.

Contact: Eight hours lectures, 52 hours project work and seminars *(Semester 1).*

Description: Upon completion of this subject, students should be able to:

- understand the importance of ethics in research;
- identify sources of knowledge;
- identify the important components of a horticultural problem;
- work as part of a group to investigate a problem;
- collect information relevant to the problem and write a literature review related to the problem;
- plan an investigation to test hypotheses related to the problem; and
- initiate a program of investigation into the problem.

Groups of students will select a problem to be studied during the course of this subject. Appropriate literature and other resources will be consulted to provide a background to the problem and a plan of action will be formulated to begin investigating the problem.

Assessment: Literature review of 2000 words (50%); seminar (15%); assessed input to project management (35%).

Fourth-year subjects (honours)

202-405 Honours Research Project

Availability: Burnley campus

Credit points: 75

Coordinator: Prof Roger Cousens

Prerequisites: Eligibility for honours degree.

Contact: There will be some formal contact in the early stages of this subject, followed by frequent and less formal contact with the nominated supervisor. Contact/time commitment: 12 hours of lectures, plus supervisor contact and seminars as arranged *(Year long).*

Description: This research project and thesis will introduce students to the theory and practise of research through the conception, design, implementation, analysis and reporting of a research project. The project will be developed in close collaboration between student, academic and industry advisers, where appropriate. Project definition is completed two weeks after commencement of the semester of enrolment in the subject, and requires approval from the subject coordinator based on input from academic and industry advisors, taking into account the student's preparation through previous selection of elective or stream subjects. Logistic assistance for projects is coordinated on a case-by-case basis. Each student will be assessed individually on a written proposal (5-8 pages) presented orally project proposal, which is peer-reviewed, as well as a) to be assessed by academic and industry advisers. A more detailed oral presentation is presented on the final results of the project to an audience of Faculty and industry staff. It is expected that students successfully completing this subject will have cognitive, analytic and problem-solving skills, Intellectual curiosity and creativity, including understanding of the philosophical and methodological bases of research activity, the ability to plan work, manage projects and to use time effectively, capacity for independent critical thought, rational inquiry and self-directed learning and strongly developed communication skills Assessment:

Assessment: Written project proposal (10%), thesis of 15 000 words maximum (75%), final oral presentation (15%).

202-408 Honours Research Project

Credit points: 50

Coordinator: Prof Roger Cousens

Contact: As for 202-401 Honours Research Project *(Year long).*

Description: As for 202-401 Honours Research Project.

Assessment: As for 202-401 Honours Research Project.

202-411 Honours Research Project

Credit points: 50

Coordinator: Prof Roger Cousens

Contact: As for 202-402 Honours Research Project *(Semester 1, repeat 2).*

Description: As for 202-402 Honours Research Project.

Assessment: As for 202-402 Honours Research Project.

202-414 Honours Reseach Project (MYE)

Credit points: 50

Coordinator: Prof Roger Cousens

Contact: As for 202-403 Honours Research Project (MYE) *(Semester 1, repeat 2).*

Description: As for 202-403 Honours Research Project (MYE)

Assessment: As for 202-403 Honours Research Project (MYE)

Elective subjects

Note: Insufficient enrolments may lead to a subject being suspended.

207-201 Resource Management Economics

See full subject details on page 2.

207-205 Human Dimensions of Resource Management

See full subject details on page 2.

207-210 Open Space Management

Availability: Burnley campus.

Credit points: 12.5

Coordinator: Mr John Rayner

Prerequisites: 207-212 Horticulture of Australian Plants.

Contact: Twenty-four hours lectures and 24 hours field work *(Semester 2).*

Description: The objective of this subject is to extend the participant's ability to:

- define the professional role that environmental horticulture plays in the management of landscape and open space;
- describe the role of public open space management in satisfying the diverse recreational needs of a contemporary society;
- outline planning processes and organisational structures in the provision of public open space;
- describe systems of management for public open space, including cost effective horticultural and landscape maintenance practices;
- describe the role of interpretation in public open space;
- evaluate the use, selection and management of landscape plants in public open space.

The content includes:

- current levels and types of public open space provision in relation to society's needs;
- design and planning in public open space and the role of environmental horticulture in this process;
- principles of vegetation management in public open space; and
- case studies of management in specific open space locations (including nature-like landscapes, playgrounds, small urban parks, etc);
- maintenance-management systems and processes;
- interpretation in public open space;
- organisations and agencies involved in public open space; evaluation and quality of public open space; and
- study and evaluation of landcape plants using key selection criteria.

Assessment: A two-hour examination (50% of total marks) and a written assignment equivalent to 4000 words (50% of total marks).

207-301 Global Environment and Sustainability

See full subject details on page 3.

207-303 Advanced Plant Production

Availability: Burnley campus.

Credit points: 12.5

Coordinator: Mr John Delpratt

Prerequisites: 207-208 Nursery Production Horticulture II.

Contact: Twenty-four hours of lectures, 10 x 3-hour lab sessions/site visits *(Semester 1).*

Description: Upon completion of this unit the student should be able to:

- schedule and grow high quality nursery crops;
- demonstrate the capacity to manage the production of greenhouse ornamental crops; and
- describe the processes involved in the introduction of new ornamental crops into the Australian market.

The content includes:

- the scheduling, propagation, production and management of quality ornamental crops;
- the introduction of new nursery crops to the Australian market;
- growing techniques for a range of alternative crops; and
- the management of large scale ornamental crops.

Assessment: One 2-hour written examination worth 50% of final marks, and two assignments each equivalent to 3000 words and each worth 25% of final marks.

207-305 Revegetation and Landscape Restoration

See full subject details on page 3.

207-308 Turfgrass Science and Management

Availability: Burnley campus.

Credit points: 12.5

Coordinator: Dr David Aldous

Contact: Thirty-six hours lectures and 24 hours practical sessions *(Semester 1).*

Description: The objectives of this subject are to extend participants' ability to:

- use conventional and vegetative taxonomic keys in identifying different turfgrasses;
- identify and describe the major sport and amenity grasses;
- describe the physiology of turfgrass growth and development;
- describe the techniques by which turfgrass can be established;
- describe the post-maintenance care of juvenile turf;
- test for turfgrass seeds and vegetative material;
- describe the principles and practices of turfgrass nutrition and fertilisers;
- describe the principles and practices associated with turfgrass irrigation and drainage;
- describe the principles and practices of equipment and machinery used for mowing, aeration, dethatching, and topdressing;
- 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.

The content includes:

- turfgrass identification and selection using appropriate classification systems;
- the physiology and ecological characteristics of turfgrass growth and development;
- cultural, environmental, and technical requirements for successful propagation of turfgrass from seed and vegetative sources; and
- post-establishment of juvenile turf, revegetation, soils and root zone modification, turfgrass nutrition and fertilisers, soil water - irrigation and drainage, mowing principles and practices, turfgrass machinery and equipment application, turfgrass weeds, diseases, weeds, nematodes and insects and their control, plan and schedule a turfgrass maintenance program.

Assessment: One 3-hour written examination worth 50% of final marks, and two assignments each equivalent to 3000 words and each worth 25% of final marks.

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

207-310 Horticultural Reproduction Technology

Availability: Burnley campus.

Credit points: 12.5

Coordinator: Mr James Will

Prerequisites: 202-103 Biology for Land and Food Resources.

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

Description: The objective of this subject is to extend the participant's ability to:

- understand and research the reproductive biology of horticultural plants;

- describe the major biological and environmental factors affecting a plant's capacity to produce, disperse and regenerate from seed;
- understand floral morphology and cytogenetics as appropriate to plant breeding;
- apply Mendelian genetics to plant breeding;
- describe and demonstrate the theory of plant incompatibility systems;
- describe and demonstrate specified seed testing procedures; and
- recommend and describe effective techniques for germinating seed and establishing plants from seed under nursery, field and revegetation conditions.

The content includes:

- evolution of genes and plant genomes;
- breeding systems and strategies of angiosperms;
- Mendelian inheritance;
- incompatibility systems in plants;
- F1 and pedigree breeding systems;
- pollen: stigma interactions;
- cytogenetics and cytogenetic techniques important in plant breeding;
- seed development, dispersal germination and establishment and environmental influences on these processes;
- the technology applicable to commercial seed production;
- seed testing; and
- effective techniques for sowing, germinating and establishing seed.

Assessment: A two-hour examination (45%), a mid-semester test (25%), and two practical reports equivalent to 2000 words (each worth 15%).

Prescribed texts: H T Hartmann, D E Kester, F T Davies and R L Geneve, *Plant Propagation: Principles and Practices*, 6th edn, Prentice Hall International, Upper Saddle River, 1997. • A J Richards, *Plant Breeding Systems*, 2nd edn, Chapman and Hall, London, 1997.

207-312 Garden History and Contemporary Design

Availability: Burnley campus.

Credit points: 12.5

Coordinator: Dr Ruth Beilin

Contact: Thirty-six hours lectures *(Semester 1)*.

Description: The objectives of this unit are intended to extend the participant's ability to:

- apply design principles to small scale landscapes;
- identify design styles of historical and contemporary garden landscapes and their relationships;
- demonstrate an understanding of colour, form and texture in planting design;
- demonstrate and describe the garden design process; and
- demonstrate an understanding of the maintenance implications of different landscape styles and detailing.

The content includes:

- design theory for small-scale landscapes includes classical and contemporary examples of garden design;
- an overview of historical garden design provides a stepping stone to 20th century design;
- contemporary designers presentation of their work;
- familiarisation with design principles and application of these to a small design project; and
- presentation of a design brief, site analysis and planning, hard and soft material selection and planting design.

Assessment: A major report equivalent to 4000 words, 40% of final marks, a mid-semester theory test, 30% of final marks, and three tutorial assessments, 10% each of final marks.

Prescribed texts: R Alexander and K A Batstone, *A Handbook for Garden Designers*, Ward Lock, 1994.

207-313 Graphic Studies

Availability: Burnley campus.

Credit points: 12.5

Coordinator: Mr Michael Green

Contact: Forty-eight hours tutorials *(Semester 2)*.

Description: The objectives of this unit are intended to extend the participant's ability to:

- experience the range of graphic materials and methods used in producing landscape drawings and recommend their uses;
- demonstrate basic competency in the use of the more common drawing tools and graphic media;
- prepare a series of drawings for a small scale landscape;
- demonstrate competency in basic elements of design work presentation; and
- produce drawings suitable for client presentation.

The topics covered in this unit include:

- all facets of the drawing and design process associated with a small-scale landscape project; and
- exercises teaching basic skills in reading the scale, lettering, concept drawing, site inventory and analysis, preliminary plans, section elevations, shade and shadowing, using colour media and basic perspective drawing.

Assessment: A major design study equivalent to 5000 words, worth 50% of final marks and five studio assignments equivalent to a total of 5000 words totalling 50% of final marks.

Prescribed texts: G W Reid, *Landscape Graphics*, Architectural Press, 1987.

207-315 Landscape Construction

Availability: Burnley campus.

Credit points: 12.5

Coordinator: Mr Ian Winstone

Contact: Thirty-two hours lectures, 8 hours tutorials, 8 hours field trips *(Semester 1)*.

Description: The aim of this subject is to extend the participant's ability to:

- describe urban soil conditions and their relevance to built structures in the urban landscape;
- describe fundamental design and construction principles for, and functional roles of, a range of hard landscape construction elements including concrete and masonry structures and pavements;
- describe water infiltration, movement and retention in urban soils and how this relates to the management of water in the urban landscape;
- describe the basic construction techniques used for formal and free form water features, and the placement of field rock in the landscape; and
- describe the basic role and structure (including specifications, tendering and administration) of contracts as applied to landscape construction project.

The content covered in this subject includes:

- the principles of soil mechanics and their relevance to built structures;
- soil water retention and movement and the effect of landscape construction on drainage;
- surface and subsurface drainage systems;
- earthworks earth moving equipment and calculation of volumes;
- construction techniques for retaining walls concrete slabs and footings;
- pavement and steps for vehicular and pedestrian use;
- construction of formal and free-form water features; and
- placement of field rock.

Assessment: A two-hour written examination (50% of total marks) and two project reports each equivalent to 2500 words (each 25% of total marks).

Prescribed texts: G Davis, *Landscape Surveying*, Lorien Landscapes, 1990. • K A Handreck and N D Black, *Growing Media for Ornamental Plants and Turf*, New South Wales University Press, 2002. • K McIntyre and B Jakobsen, *Drainage for Sportsturf and Horticulture*, Horticultural Engineering Consultancy, 1998.

207-316 Landscape Studies

Availability: Burnley campus.

Credit points: 12.5

Coordinator: Dr Kathryn Williams

Contact: Twenty-four hours lectures, 24 hours practical work *(Semester 2)*.

Description: The objectives of this unit are intended to extend the participant's ability to:

- identify the conflicts inherent in the management of urban fringe and rural landscapes;
- consider the principles and practices of managing vegetation, land and water in these landscapes with emphasis on production, conservation and recreation values;
- describe techniques for the physical repair and management of degraded primary production landscapes;
- analyse policy and planning objectives affecting site management; and
- analyse the socioeconomic implications for effective site management within the context of the wider landscape.

The subject includes the theoretical and philosophical basis for managing large-scale landscape values such as in national parks and agricultural areas. The characteristics of the urban-fringe, vegetation corridors, roadside conser-

vation, and waterways management affecting these areas will be studied. Conflicting use patterns will be analysed and potential solutions proffered with regard to revegetation and management of agricultural lands, coastal zones, national parks and mined landscapes. Students are involved in a hands-on urban-fringe project. There is a three-day tour of the Western district of Victoria.

Assessment: A two-hour examination worth 40% of final marks, two assignments (poster 30% of final marks and community information brochure 20% of final marks) and a semester journal, 10% of final marks.

207-322 Irrigation for Intensive Horticultures

Availability: Burnley campus.

Credit points: 12.5

Coordinator: Mr Geoff Connellan

Contact: Twenty-four hours lectures and 36 hours tutorials/practical sessions *(Semester 1).*

Description: On completion of this subject students should gain an understanding of the nature of:

- water sources available for irrigation and the role of catchment management on the quantity and quality of water available;
- the methods for the estimation of plant water use;
- the range of irrigation systems available for horticultural applications;
- the selection of the most appropriate water application equipment; and
- the hydraulics of water delivery systems and the efficient management of soil water including surface and subsurface drainage techniques.

The content includes:

- the water sources for horticulture including surface and groundwater supplies;
- the hydrology of catchments and water courses;
- the impact of vegetation management on catchment performance;
- quality of water for horticulture;
- climate factors influencing plant water use;
- evapotranspiration;
- plant processes and water use;
- techniques to estimate plant water use including evaporative and climate modelling methods;
- soil water behaviour and properties;
- water movement in soils;
- infiltration and percolation of irrigated soils;
- types of irrigation including pressurised and non-pressurised systems;
- selection of applicators and delivery method;
- types of pipes and fittings, pipeline hydraulics, flow control equipment, pumping systems, selection of pumps, irrigation control equipment, soil moisture sensors and weather stations;
- system performance evaluation techniques; and
- drainage techniques and drainage systems.

Assessment: A two-hour examination (25%), a mid-semester test (25%) and one assignment 3000 words (25%).

207-332 Arboriculture

Availability: Burnley campus.

Credit points: 12.5

Coordinator: Dr Greg Moore

Contact: Thirty-six hours lectures, 24 hours practical, 12 hours-web based *(Semester 1).*

Description: The objectives of the subject are to extend the students' abilities to:

- describe the anatomy of trees, the nature of branch attachment and the structure of tree roots;
- identify the components of the compartmentalisation system that exists within the tree;
- implement proper tree management strategies;
- relate root development to the soils in which they grow and root management practices;
- relate tree growth to plant propagation and the method of tree planting;
- climb trees safely using various ropes and harness techniques and tie the necessary knots;
- use appropriate tools safely in tree maintenance, both on the ground and in the tree;
- develop tree management strategies and replacement procedures for trees growing in cities;
- evaluate the monetary value of amenity trees using accepted methods and the Burnley method;
- use the relevant laws that apply to trees growing in urban and amenity contexts;
- use the latest technology to assess the vigour, condition and soundness of trees;
- quote the costs of arboricultural procedures; and
- implement specialist arboricultural techniques.

The topics to be studied in the subject are:

- anatomy of trees, branch attachment and tree root systems;
- the components of the compartmentalisation systems within trees;
- root development, soils and methods of irrigation and fertilising and root management practices;
- tree growth, plant propagation and the method of tree planting;
- introduction to climbing trees safely using ropes and harness techniques and knots;
- development of tree management and replacement strategies for trees growing in cities;
- wound response, pruning techniques, tree selection criteria;
- tools - safety and use; tree climbing;
- safety in the tree;
- tree replacement strategies; tree evaluation;
- trees in cities, trees and the law;
- costing and contracts; tree surveys; tree pests and diseases;
- evaluating the monetary value of amenity trees using accepted valuation methods;
- the relevant laws that apply to trees growing in urban and amenity contexts; and
- using technology to assess the vigour, condition and soundness of trees.

Assessment: One 3-hour examination worth 50% of final marks, two assignments equivalent to 2500 words in total and worth 20% each of final marks, and a practical assignment worth 10% of final marks.

207-333 Amenity Tree Assessment and Management

Availability: Burnley campus.

Credit points: 12.5

Coordinator: Ms Denise Johnstone

Contact: Eighteen hours lectures, 42 hours practical, 12 hours seminars *(Semester 2).*

Description: The aim of the subject is to provide students with a thorough understanding of the assessment and management of individual and groups of trees in urban settings. Students will evaluate and compare methods of tree assessment. Students should gain an appreciation of the complexities of tree management for amenity sites.

Topics to be studied are:

- the evaluation and comparison of methods of tree assessment including the visual tree assessment (VTA) method;
- the evaluation and comparison of methods for the detection of decay and structural defects in trees;
- an appraisal of the management of amenity trees for different purposes, for example, street trees, historically significant trees, trees on private properties, trees in various other types of public open spaces;
- an appraisal of the management of amenity trees with different structural forms and anatomy, for example dicotyledonous trees versus monocotyledonous trees, decurrent versus excurrent trees;
- an appraisal of the management and protection of the roots of trees with different structural forms and tolerances;
- an evaluation of tree pathology and tree health problems in a wide range of amenity trees and sites;
- tree selection principles as applied to street trees, private properties and public open spaces;
- an appraisal of safe arboricultural work practices and advanced techniques for gaining access to the canopies of trees, and rescuing workers from trees; and
- determining the safest and most efficient method of removing inappropriate trees.

Assessment: Major assignment 50% (maximum 5000 words), seminar presentation 20%, practical reports 30%.

Prescribed texts: R W Harris, J R Clark and N P Mathony, *Arboriculture: Integrated Management of Landscape Trees Shrubs and Vines*, Prentice Hall, 1999.

207-338 Open Space Management

Note: Not available in 2004

Availability: Burnley

Credit points: 12.5

Coordinator: Mr John Rayner

Prerequisites: 207-212 Horticulture of Australian Plants

Contact: 24 hours of lectures, 24 hours field work *(Semester 2).*

Description: The objective of this subject is to extend the participant's ability to:

- define the professional role that environmental horticulture plays in the management of landscape and open space;
- describe the role of public open space management in satisfying the diverse recreational needs of a contemporary society;
- outline planning processes and organisational structures in the provision of public open space;
- describe systems of management for public open space, including cost effective horticultural and landscape maintenance practices;
- describe the role of interpretation in public open space; and
- evaluate the use, selection and management of landscape plants in public open space.

The content includes:

- current levels and types of public open space provision in relation to society's needs;
- design and planning in public open space and the role of environmental horticulture in this process;
- principles of vegetation management in public open space; and
- case studies of management in specific open space locations (including nature-like landscapes, playgrounds, small urban parks, etc);
- maintenance-management systems and processes;
- interpretation in public open space;
- organisations and agencies involved in public open space; evaluation and quality of public open space;
- study and evaluation of landcape plants using key selection criteria.

Assessment: A two-hour examination (50% of total marks) and a written assignment equivalent to 4000 words (50% of total marks).

207-401 Soil Management and Conservation

See full subject details on page 10.

207-402 Management of Plant and Animal Invasions

See full subject details on page 3.

207-413 Community Natural Resource Management

See full subject details on page 6.

207-414 Social Research Methods

See full subject details on page 10.

208-302 Molecular Biology and Breeding

See full subject details on page 8.

208-402 Advanced Plant Breeding and Improvement

See full subject details on page 10.

220-407 Parks and Recreation

See full subject details on page 6.