

Bachelor of Horticulture

First year subjects

202-101 Chemistry for Land and Food Resources

See full subject details on page 1.

202-103 Biology for Land and Food Resources

See full subject details on page 1.

202-104 Information Technology and Communication

See full subject details on page 1.

202-106 Land Resources

See full subject details on page 1.

207-101 Economics of Resource Use

See full subject details on page 1.

207-102 Plant Health

Availability: Burnley campus.

Credit points: 12.5

HECS-band: 2

Coordinator: Mr John Brereton

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%).

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

207-104 Horticulture I

Availability: Burnley campus

Credit points: 12.5

HECS-band: 2

Coordinator: Mr James Will

Contact: 36 hours of lectures 24 hours of practicals (*Semester 1*).

Description: Topics include:

- the theories and practice of plant manipulation, including those for plant propagation, plant transplantation and landscape maintenance;
- types of landscape plants used in environmental horticulture;
- sites, growing media and an introduction to soils;
- the use of horticultural chemicals and necessary safety factors;
- the range of equipment/machinery used in environmental horticulture; the concept of plant quality;
- systems theory and its application to environmental horticulture; and
- the influence of key climatic phenomena on the growth of horticultural plants.

Assessment: Examination- 2 hours (40%), assignment of 2500 words (20%), practical participation and report of 1000 words (10%), plant materials tests - 2 hours (30%).

Recommended texts: H T Harmann, D E Kester, F T Davies and R Geneve, *Plant Propagation: Principles and Practices, 6th ed.*, Prentice Hall International, 1997. • K A Handreck and N D Black, *Growing Media for Ornamental Plants and Turf, rev. ed.*, NSW University Press, 1994. • J Kellow (ed.), *Landscape Plant Manual Vol. 1*, Burnley College, The University of Melbourne, 1999.

207-105 Horticulture II

Availability: Burnley campus.

Credit points: 12.5

HECS-band: 2

Coordinator: Mr John Delpratt

Prerequisites: 207-104 Horticulture I.

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

Description: Topics include:

- the physical and chemical properties of growing media and their components, options available for nutrition of horticultural crops, and principles of protected crop production;
- understanding of cultural techniques and management of a wide range of plant types used in horticulture, including sources of plant material, techniques for analysing the conditions of a landscape site, and an overview of systems for landscape maintenance;
- plant performance and selection issues associated with specialised environments; and
- the study of plant groups based on environmental tolerances, specialized uses and themes.

Assessment: Examination - 2 hours (40%), plant maintenance report - 2000 words (20%), a practical report of 1000 words (10%), plant materials tests - 2 hours (30%).

Prescribed texts: K A Handreck and N D Black, *Growing Media for Ornamental Plants and Turf*, rev. ed., NSW University Press, 1994. • J Kellow (ed.), *Landscape Plant Manual Vol. 1*, Burnley College, The University of Melbourne, 1999.

620-081 Preliminary Mathematics A

See full subject details on page 12.

Second year subjects

202-201 Plant Function

See full subject details on page 2.

202-202 Experimental Design/Statistical Methods

See full subject details on page 2.

202-203 Soil and Water Resources

See full subject details on page 2.

207-201 Resource Industry Economics I

See full subject details on page 4.

207-205 Human Dimensions of Natural Resource Mgt

See full subject details on page 1.

207-208 Production Of Cultivated Plants

Availability: Burnley campus.

Credit points: 12.5

HECS-band: 2

Coordinator: Mr Ross Hall

Prerequisites: 207-212 The Horticulture of Australian Plants.

Contact: 36 hours of lectures, 24 hours of laboratory and field work (*Semester 2*).

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

- propagate a range of cultivated plants including Australian native plants, fruit crops, vines, revegetation crops and ornamentals;
- describe and perform techniques associated with the production of cultivated plants in Australia;
- manipulate crops using plant growth regulators, modified environmental conditions or by varying crop nutrition;
- appreciate that crop production systems are intimately linked to establishment and performance of those crops in the landscape; and
- identify and describe 200 plants used in Australian horticulture.

The anatomical and physiological basis for a range of plant propagation techniques will be described and students will be exposed to a number of specific plant propagation techniques. Nursery production techniques for a number of crops, including fruit trees, vines, exotic and Australian ornamentals, revegetation crops and 'bush tucker' plants will be described and students will participate in nursery crop production activities. Crops will be manipulated using plant growth regulators as well as by management of nutrition and environmental modification. Alternative nursery irrigation systems will be demonstrated along with methods of collecting and treating leachate run-off for reuse. Techniques for improving the establishment of nursery crops into the landscape, orchard or vineyard will be investigated. Nutritional requirements of nursery crops will be described and nutrition will be used as a crop man-

agement tool. The content also includes the study of plant groups based on key horticultural and Australian genera and themes.

Assessment: A two-hour examination (40%), a two thousand word assignment (20%), practical reports equivalent to 2000 words (20%) and two plant tests of 60 minutes duration each (20%).

207-210 Open Space Management

Availability: Burnley campus.

Credit points: 12.5

HECS-band: 2

Coordinator: Dr Ruth Beilin

Prerequisites: 207-212 Horticulture of Australian Plants.

Contact: 36 hours lectures and 24 hours tutorials/field work (*Semester 2*).

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

- demonstrate understanding of the professional role of the environmental horticulturist in the design and management of landscape;
- describe the role of public open space management in satisfying the diverse recreational needs of a contemporary society;
- describe planning processes in the provision of public open space;
- describe the maintenance-management systems that assist in the efficient management of public open space;
- demonstrate understanding of principles of the cost effective management of urban vegetation;
- describe the specialised management requirements of turf as an element of public open space;
- recognise the role of interpretation in the management of public open space; and
- identify and describe 200 plants used in Australian horticulture.

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;
- case studies of vegetation management in specific open space locations;
- the maintenance management process;
- interpretation in public open space; and
- evaluation and quality of public open space;
- study of plant groups based on key horticultural and Australian genera and themes.

Assessment: A two-hour examination (40%), assignment of 2000 words (20%), practical reports (20%), two plant tests of 60 minutes duration each (20%).

207-212 The Horticulture of Australian Plants

Availability: Burnley campus.

Credit points: 12.5

HECS-band: 2

Coordinator: Dr Peter May

Prerequisites: 207-105 Horticulture II and 202-103 Biology for Land and Food Resources.

Contact: 36 hours lectures, 24 hours laboratory and field work (*Semester 1*).

Description: The object of this subject is to extend the participants ability to:

- demonstrate an understanding of ecology and biology of Australian plant groups and the importance of this knowledge in the horticulture of plants;
- describe and perform the skills involved in propagation and cultivation of Australian plants as nursery and floriculture species;
- demonstrate an understanding of the role of Australian plants in the urban landscape and of the specialised management of these plants; and
- identify and describe the cultural requirements of up to 200 plant species.

The content includes:

- the history of cultivation and use of Australian plants in Australia and overseas;
- environmental adaptations in Australian flora and how this knowledge is used in horticulture;
- propagation of Australian plants with emphasis on nursery production and direct landscape establishment - seed, cuttings, grafting and micropropagation;
- nursery production of Australian plants: nutrition (including specialised root systems and associations), container production scheduling for different end uses;
- use of Australian plants in urban landscapes (street and open space trees, shrubs, groundcover, grasses and forbs);
- selection and breeding of Australian plants for landscape use;

- floriculture of Australian species - selection, breeding and cultivation - a case study of commercial development;
- bushfoods, extraction of bioactive compounds and other applications; and
- identification and cultural requirements of 150-200 native plant species.

Assessment: A 2hour examination (40%), two 45-minute plant tests (each 10%), practical reports equivalent of 2000 words (20%), assignment of 2000 words (20%).

207-217 Horticultural Engineering

Availability: Burnley campus.

Credit points: 12.5

HECS-band: 2

Coordinator: Mr Ken James

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

Description: On completion of this subject students should:

- gain an understanding of the machinery used in the management of horticulture resources, including principles of operation and maintenance; and
- develop an understanding of site surveying techniques and basic structural principles used in managing horticultural sites including landscapes, parklands and gardens.

This subject covers:

- the machinery used in the management of horticultural resources including parklands, sports turf, nurseries, and urban landscapes;
- principles of machinery operation and maintenance and the management of machinery resources in horticultural enterprises such as local councils;
- site surveying and levelling for horticultural applications, including field work, drawing of plans, boundaries and levels for irrigation and drainage works; and
- design principles of horticultural structures including greenhouses, pergolas and light timber structures.

Assessment: Student assignment on machinery management issues (2000 words) (40%) and two written examinations (each 1 hour) (60%).

Third year subjects

202-001 Industry Placement#

See full subject details on page 3.

202-301 Industry Project

See full subject details on page 3.

202-302 Human Resource Management

See full subject details on page 3.

Fourth year subjects

202-401 Industry/Research Project

See full subject details on page 4.

Elective subjects

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

207-301 Global Env'ment & Sustain Prod Systems

See full subject details on page 7.

207-303 Advanced Plant Production

Availability: Burnley and Dookie campuses.

Credit points: 12.5

HECS-band: 2

Coordinator: Mr Ross Hall

Prerequisites: 207-208 Nursery Production Horticulture II.

Contact: 24 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: Two 3000-word assignments (25%), two project reports each equivalent to 2500 words (each 20%), and continuous assessment of project management (10%).

207-304 Ecophysiology and Phytogeography

Availability: Burnley campus.

Credit points: 12.5

HECS-band: 2

Coordinator: Dr Greg Moore

Contact: 36 hours lectures, 24 hours practicals and 12 hours tutorials (*Semester 2*).

Description: The objectives of the subject are to extend the student's ability to:

- define species and describe the processes of speciation and hybridisation;
- relate the concepts of continental drift to the evolution of the global and Australian flora;
- describe the types of natural selection including r- and k- selection;
- trace the origin of the Australian flora and assess the influence of humans upon the flora;
- discuss the major tenets of modern evolution theory;
- evaluate the status of fossils and their formation;
- relate the concepts of evolution to those of ecology and natural resource management;
- describe the major steps of human evolution;
- relate floral distribution to evolutionary, physiological and anatomical concepts;
- apply phytogeographical concepts to plant selection and horticultural management; and
- match plants to the landscape using their physiological and ecological adaptations.

The topics to be studied in the subject are:

- types of fossil formation, origins of life, the Precambrian, the first land plants, the fossil record of vascular plants, natural selection, r- and k-selection, species and speciation, continental drift and plate tectonics, Gondwana and the Glossopterids, the Carboniferous, the origins of the Australian flora, hybrids, isolating mechanisms, the Angiosperms, origin of plant parts, the Permian, the Gymnosperms, human evolution, speciation and hybridization;
- the relationship between continental drift and floral evolution;
- types of natural selection;
- matching plants to the environment and the environment to plants - management strategies and their scientific bases;
- flowering biology, hormones, stress, nutrients, ripening, senescence; and
- the effects of humans on the Australian flora; the relationship between the concepts of evolution and natural resource management.

Assessment: A three-hour final examination (55%), a mid-semester test (25%) and an assignment equivalent to 2000 words (20%).

207-305 Revegetation and Landscape Restoration

See full subject details on page 2.

207-306 Environmental and Resource Management

Availability: Burnley and Dookie campuses.

Credit points: 12.5

HECS-band: 2

Coordinator: Dr Greg Moore

Contact: 36 hours lectures, 36 hours practicals/field excursions (*Semester 1*).

Description: The objectives of the subject is to extend the student's ability to:

- undertake environmental assessment based on selected criteria;
- use scientific methods to collect data and information on the environmental factors under investigation;
- use current technology available for environmental investigation, monitoring and evaluation at both regional and local levels;
- develop sustainable solutions to environmental issues studied, based on scientific data collected on the environment;
- complete an environmental assessment based on selected criteria;
- have a knowledge of current technology used in collecting scientific information on the environment studied; and
- be able to present data and information as part of a total environmental strategy.

The topics to be studied in the subject include:

- environmental assessment based on selected criteria and use of scientific methods to collect data and information on the environmental factors under investigation;
- use of current technology available for environmental investigation, monitoring and evaluation at both regional and local levels;
- develop sustainable solutions to environmental issues studied, based on scientific data collected on the environment;
- complete an environmental assessment based on selected criteria;
- current technology used in collecting scientific information on the environment studied; and
- present data and information as part of a total environmental strategy.

Assessment: A three-hour examination (50%), a 3000-word assignment (25%) and a practical test or assignment (25%).

207-308 Turfgrass Science and Management I

Availability: Burnley campus.

Credit points: 12.5

HECS-band: 2

Coordinator: Dr David Aldous

Contact: 36 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: A three-hour examination of one hour (50%), one assignment of 3000 words (25%), a turfgrass plant collection (25%).

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

HECS-band: 2

Coordinator: Mr James Will

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

Contact: 24 hours lectures and 24 hours practicals/tutorials (*Semester 1*).

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 ed., Prentice Hall International, Upper Saddle River, 1997. • A J Richards, *Plant Breeding Systems*, 2nd ed., Chapman and Hall, London, 1997.

207-312 Garden History and Contemporary Design

Availability: Burnley campus.

Credit points: 12.5

HECS-band: 2

Coordinator: Dr Ruth Beilin

Contact: 36 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 present their work;
- students will become familiar with design principles and apply 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%), a mid-semester theory test (30%), and three tutorial assessments.

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

207-313 Graphic Studies

Availability: Burnley campus.

Credit points: 12.5

HECS-band: 2

Coordinator: Mr Michael Green

Contact: 48 hours tutorials (*Semester 1*).

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 report equivalent to 5000 words (50%) and studio assignments (totalling 50%).

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

207-314 Social Research Methods

Availability: Burnley campus.

Credit points: 12.5

HECS-band: 2

Coordinator: Dr Kathryn Williams

Prerequisites: 202-202 Experimental Design/Statistical Methods.

Semester: Semester 1

Description: This subject develops understanding and skills in social research in rural and industry settings with a focus on social research methods relevant to human use of natural resources and the environment.

Topics include:

- quantitative and qualitative methods in social and market research;
- theory of social measurement; measurement of beliefs and attitudes;
- surveys as a form of data collection;
- the appropriateness of different research techniques for given social or market research problems;
- sampling procedures;
- sampling and measurement error;
- interviewing techniques for individual and group settings;
- communication skills relevant to interviewing; group dynamics;
- data coding, processing and analysis;
- social and psychological bases of responses to land degradation problems;
- influencing human behaviour related to the environment; and
- market research and consumer behaviour. New issues in social research methodology.

Assessment: A three-hour examination 3000 words (50%), an assignment, a field project, class exercises and seminar, written and practical tests (totalling 50%).

Prescribed texts: D A de Vaus, *Surveys in Social Research*, 4th ed., Allen and Unwin, 1995. • C Robson, *Real World Research*, Blackwell, 1993. • G T Gardner and P C Stern, *Environmental Problems and Human Behaviour*, Allyn and Bacon, 1996.

207-315 Landscape Construction

Availability: Burnley campus.

Credit points: 12.5

HECS-band: 2

Coordinator: Mr Ian Winstone

Contact: 36 hours lectures, 24 hours tutorials (*Semester 1*).

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

- understand the fundamental principles of soil mechanics and the relevance to built structures in the urban landscape;
- understand the functional roles and fundamental design and construction principles for a range of hard landscape construction elements including concrete and masonry structures and pavements;
- understand water infiltration, movement and retention in urban soils and how this relates to the management of water in the urban landscape; and
- understand the application and construction methods for understand the fundamental construction techniques of formal and free form-water features and field rock in the landscape.

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 examination (40%) and three project reports equivalent to 2500 words (each 20%).

Prescribed texts: G Davis, *Landscape Surveying*, Lorient Landscapes, Ryde, 1990. • K A Handreck and N D Black, *Growing Media for Ornamental Plants and Turf*, New South Wales University Press, Kensington NSW, 1989. • K McIntyre and B Jakobsen, *Drainage for Sportsturf and Horticulture*, Horticultural Engineering Consultancy, Kambah ACT, 1998.

207-316 Landscape Studies

Availability: Burnley campus.

Credit points: 12.5

HECS-band: 2

Coordinator: Dr Ruth Beilin

Contact: 24 hours lectures, 36 hours practical work (*Semester 1*).

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 socio-economic 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 conservation, 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.

Assessment: A three-hour examination (60%), and two assignments equivalent to 2500 words (20% each).

207-318 Management of Heritage Landscapes

Availability: Burnley campus.

Credit points: 12.5

HECS-band: 2

Coordinator: Dr Jan Schapper

Prerequisites: 207-105 Horticulture II or 207-205 Human Dimensions of Natural Resource Management.

Semester: Semester 1

Description: At the conclusion of the subject the student should be able to demonstrate:

- a critical understanding of the theory and tools for assessing cultural significance;
- skill in preparing appropriate conservation policies; and
- an understanding of suitable management and interpretation plans for significant natural and cultural landscapes.

The content includes:

- the theory of cultural significance, including an understanding of aesthetic, historic, scientific and social value;
- relevance of the Burra Charter and its use in the assessment of heritage significance;
- organisations involved in the assessment and management of landscape heritage;
- development of conservation policies and management plans;
- interpretation and use of landscapes judged to be of heritage significance; and
- legal and planning processes relevant to landscape heritage policy and management.

Assessment: An individual assignment equivalent to 4000 words. (60%), and a group assignment equivalent to 2000 words (40%).

207-320 Processes in the Soil Environment

See full subject details on page 7.

207-321 Protected Cropping

Availability: Burnley campus.

Credit points: 12.5

HECS-band: 2

Coordinator: Mr Geoff Connellan

Contact: 36 hours lectures and 24 hours tutorials (*Semester 1*).

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

- the design principles appropriate to the establishment of greenhouse facilities;
- the processes influencing the greenhouse climate and the interrelationships between crops and greenhouse environment;
- the technology and processes available to modify greenhouse environments;
- the techniques appropriate to the sizing and selection of environmental control systems; and
- the management of greenhouse facilities to achieve optimum use of the facilities.

This subject covers:

- the analysis of potential greenhouse facility sites;
- functional and structural design details of greenhouse buildings;
- layout and materials handling considerations;
- materials available and their properties;
- types of covering materials and properties and selection of coverings;
- the environmental requirements of selected greenhouse crops;
- the processes involved in determining the greenhouse climate;
- energy balance of the greenhouse;
- psychrometrics processes;
- environmental modification techniques including light, temperature, relative humidity, carbon dioxide and air movement modification;
- environmental control technologies;
- the selection and sizing of heating, cooling and ventilation systems;
- computer based controller systems;
- alternative energy sources including passive and active solar design; and
- greenhouse irrigation and greenhouse operation and management strategies.

Assessment: A two-hour examination (40%), one major assignment 4000 words (40%) and one minor assignment 2000 words (20%).

207-322 Irrigation for Intensive Horticult Mgt

Availability: Burnley and Dookie campuses.

Credit points: 12.5

HECS-band: 2

Coordinator: Mr Geoff Connellan

Contact: 24 hours lectures and 36 hours tutorials/practical sessions (*Semester 1*).

Description: On completion of this subject students will 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**HECS-band:** 2**Coordinator:** Dr Greg Moore**Contact:** 36 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: A three-hour examination (50%), two assignments equivalent to 2500 words (20% each), and a practical assignment (10%).**207-333 Amenity Tree Assessment and Management****Availability:** Burnley campus.**Credit points:** 12.5**HECS-band:** 2**Coordinator:** Ms Denise Johnstone**Contact:** 18 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 will 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, New Jersey, 1999.**208-302 Molecular Biology, Genetics and Breeding**

See full subject details on page 8.

207-413 Community Mgt Of Land & Natural Resource

See full subject details on page 4.

208-402 Advanced Plant Breeding & Biotechnology

See full subject details on page 11.