

# Faculty of Land and Food Resources

<<http://www.landfood.unimelb.edu.au>>

## Overview

The Faculty of Land and Food Resources (LFR) provides specialist education, research and training in the vital fields of agriculture and agribusiness; natural, environmental and resource management; forestry and forest science; animal science, welfare and management; food production, ornamental and amenity horticulture; and dairy and food technology, production and marketing. Across a diversity of disciplines and eight campuses, the Faculty equips students with the skills necessary to pursue a successful career in a wide variety of disciplines within the land and food industries and offers the potential to realise dreams of contributing to an environmentally sustainable future.

The Faculty of Land and Food Resources provides students with a focused but dynamic range of courses designed to meet the demands of distinctive careers in the above fields of professional endeavour. Close association with industry and government ensures that courses provide training and skills valued by both graduates and employers. Practical and relevant work experience components develop students' skills and provide an insight into career options, and are an essential element of all courses. Graduates of the Faculty are well-equipped to work in the main employing industries, and career opportunities continue to grow.

Resources available to students include on-site accommodation, test farms, ornamental gardens, a demonstration forest, a pilot food-processing plant and state-of-the-art laboratories. All students have full access to the myriad of services and facilities offered by the University of Melbourne.

Students today are part of a dynamic educational environment inspired by academics of international reputation, leading-edge technology, an energetic and creative social and cultural network, and campuses equipped with educational, sporting and recreational facilities.

## The campuses

The Faculty of Land and Food Resources comprises eight campuses, five of which are located in rural areas of Victoria.

Parkville campus is the University of Melbourne's original site. The campus is set on 22.5 hectares about a five-minute tram journey north of the city of Melbourne.

Burnley campus is the University's specialist horticultural campus and is set on 13 hectares of historic gardens and field station, seven kilometres east of the Melbourne city centre.

Creswick campus is located 17 kilometres north of Ballarat and adjacent to 610 hectares of demonstration forest, and is an important teaching location for the Institute's forestry and forest science courses.

Dookie campus is situated in the Goulburn Valley region, 200 kilometres north of Melbourne, and has an established reputation in agricultural education. It has a 2240-hectare commercial farm and a large natural bush reserve.

Gilbert Chandler campus is located 25 kilometres south of Melbourne and is Australia's specialist education provider for the dairy and food technology industry.

Glenormiston campus is located close to Terang in Victoria's Western District. It has a 270-hectare farm and is equipped with modern facilities for dairying, mixed farming, and the horse industry, including an indoor equestrian complex and an artificial insemination program.

Longerenong campus is a leader of productivity improvements in intensive farming and is situated on a 1500-hectare property on the edge of Horsham.

McMillan campus is located near Warragul in the Gippsland region of Victoria. The National Milk Harvesting Centre is also based at this campus.

## Campus contacts

Burnley campus: +61 3 9250 6800

Creswick campus: +61 3 5321 4150

Dookie campus: +61 3 5833 9200

Gilbert Chandler campus: +61 3 9217 5200

Glenormiston campus: +61 3 5557 8200

Longerenong campus: +61 3 5362 2222

McMillan campus: +61 3 5622 6000

Parkville campus: +61 3 8344 0276

For more information about any of these campuses, visit the Faculty's web site at <<http://www.landfood.unimelb.edu.au>>.

## Our vision

### Faculty goals

The goals of the Faculty are to:

- provide relevant graduate, undergraduate and vocational education of the highest quality suitable for agribusiness and resource management in Australia and the rest of the world;
- contribute to agricultural and resource management and related education through research and scholarship;
- be highly valued as the source of information, training and education by industry and make information widely available;
- engage staff of the highest calibre with qualifications appropriate to their role in servicing research, teaching and outreach;
- manage our resources effectively and efficiently at the Faculty's teaching and research locations;
- be accountable to the industries and communities we serve.

### Distance education

Those courses marked by an asterisk (\*) are available by distance education (also called flexible delivery or external mode). The main advantages of studying by distance education are flexibility and convenience.

Students who study by distance education are able to schedule their study around their family and work commitments because they do not have to attend classes on a regular basis. Learning by distance education also enables people who live in remote areas to study.

Please contact the relevant campus to find out more information about enrolling as a distance education student.

## Faculty courses

### Undergraduate

The Faculty of Land and Food Resources offers a higher education curriculum for undergraduate study, which covers agricultural science, agriculture, animal science and management, resource management, horticulture, forest science, food science and rural business. This extensive and broad-ranging curriculum has been designed to combine the best curriculum with current and future needs of graduates, employers and industry. Inherent within each course is the need for the student to apply self-learning principles, to 'learn how to learn' and to apply problem-solving skills to the challenge of an ever-changing and developing workplace and environment.

The following courses will be available for first-year entry in 2005:

- Bachelor of Agricultural Science #
- Bachelor of Agriculture #
- Bachelor of Agricultural Science/Bachelor of Commerce
- Bachelor of Animal Science and Management
- Bachelor of Food Science #
- Bachelor of Forest Science #
- Bachelor of Forest Science/Bachelor of Science
- Bachelor of Horticulture #
- Bachelor of Resource Management #
- Bachelor of Rural Business
- Advanced Diploma in Agriculture
- Advanced Diploma in Forestry Management
- Advanced Diploma in Horticulture
- Advanced Diploma in Wood Products Management

The courses marked # are also available for Honours entry in 2005.

## Postgraduate

The Faculty of Land and Food Resources also offers the following postgraduate courses:

- Graduate Certificate in Agribusiness\*
- Graduate Certificate in Dairy Technology\*/Graduate Diploma in Dairy Technology\* (no intake for 2005)
- Graduate Certificate in Forest Industries/Graduate Diploma in Forest Industries
- Postgraduate Diploma in Agricultural Science
- Postgraduate Certificate/Postgraduate Diploma in Food Science
- Postgraduate Diploma in Forest Science
- Graduate Certificate/Diploma in Horticulture
- Graduate Certificate/ Diploma in Wine Technology and Viticulture
- Master of Agribusiness (by coursework)\*
- Master of Agribusiness (by research)
- Master of Agriculture (by research)
- Master of Animal Welfare (by research)
- Master of Food Science (by coursework)
- Master of Food Technology (by research)
- Master of Forest Industries (by coursework)\*
- Master of Forest Science (by research)
- Master of Horticulture (by research)
- Master of Natural Resource Management (by research)
- Master of Wood Science (by research)
- Doctor of Philosophy

Details of postgraduate courses are summarised in the Faculty's *Postgraduate Handbook*, or on the institute's web site at

<<http://www.landfood.unimelb.edu.au/courses/postgrad/>>

## Vocational Education and Training programs (TAFE)

The Faculty also offers Vocational Education and Training programs for those who wish to establish or extend their careers or business interests in the land and food industries.

The following courses have been developed in association with employers and industry representatives so that they align closely with industry needs. Delivery of the Faculty's courses is designed to be as flexible as possible, to enable the widest participation, ranging from school leavers seeking to establish a career, through to those already engaged in positions of responsibility in the land and food industries.

<<http://www.landfood.unimelb.edu.au>>

### AGRICULTURE

#### **RTE 40103 and RTE 60103 Certificate IV in Agriculture and Advanced Diploma of Agriculture**

Location: Longerenong campus

A combined program of two years duration full time. The student graduates with both qualifications on completion of the program.

This integrated program provides professional education and training in agriculture with a focus on cropping/grazing and intensive animal production and management

#### **RTE 50103 and RTE 60103 Diploma of Agriculture and Advanced Diploma of Agriculture**

Location: McMillan

A combined program of two and a half years duration full time. The student graduates with both qualifications on completion of the program.

This integrated program provides professional education and training in agriculture with a focus on dairy production and management

#### **RTE 50103 and RTE 60203 Diploma of Agriculture and Advanced Diploma of Rural Business Management**

Location: Glenormiston

A combined program of two and a half years duration full time incorporating diploma level studies in farm production management coupled with advanced diploma level studies in rural business management. The student graduates with both qualifications on completion of the program.

The purpose of this integrated program is to offer professional education and training in agriculture with a strong focus on marketing-oriented farm management, particularly as applied to the beef, wool and lamb producing industries.

#### **RTE 50103 Diploma of Agriculture**

Location: State-wide

Delivered flexibly throughout the State for those who are already working in the industry and wish to prepare for responsibilities as farm production managers. Participants may undertake specialised programs in dairying, beef/sheep and cropping. Study at home and in the workplace is supplemented by local workshops. The program is normally undertaken over two years.

#### **RTE 40603/RTE 50403 Certificate IV in Rural Business/Diploma of Rural Business Management**

Location: State-wide

Delivered flexibly throughout the State, this program is suited to the needs of those involved in agricultural and horticultural services, business administrators and farmers who wish to develop their skills and knowledge in rural business management.

Study at home and in the workplace is supplemented by local workshops. The program is normally undertaken over two years.

#### **RTE 20103 and RTE 40103 Certificate II in Agriculture and Certificate IV in Agriculture**

Location: Longerenong campus

A combined program of two years duration full time. The student graduates with both qualifications on completion of the program.

This integrated program provides training to skilled operator and supervisory levels across a range of agricultural industry sectors.

#### **RTE 20103/RTE 30103/RTE 40103 Certificates II/III/IV in Agriculture**

Location: State-wide

A program for new entrants and existing employees wishing to advance their career in agriculture. Participants may undertake specialised programs in dairying, cropping and grazing, beef and sheep production and intensive animal production. Learning occurs primarily in the workplace supplemented by off-the-job training.

These courses are suited to the needs of agricultural trainees.

Certificate level II courses are also accessed by part-time apprentices engaged in the New Apprenticeship in School Program.

#### **Certificate IV in Agriculture**

Location: Longerenong campus

This two-year full-time study program provides practical training in farming as well as related technologies and business studies.

### PRODUCTION HORTICULTURE

#### **RTE 50303 and RTE 60203 Diploma of Production Horticulture and Advanced Diploma of Rural Business Management**

Location: McMillan

A combined program of two and a half years duration full time incorporating diploma level studies in production horticulture coupled with advanced diploma level studies in rural business management. The student graduates with both qualifications on completion of the program.

This integrated program provides professional education and training in agriculture with a focus on vegetables, fruit and flower production and management.

#### **RTE 50303 Diploma of Production Horticulture**

Location: State-wide

Delivered flexibly throughout the State for those who are already working in the production horticulture industry and wish to prepare for responsibilities as enterprise and production managers. Study at home and in the workplace is supplemented by local workshops. The program is normally undertaken over two years.

#### **RTE 31603 Certificate III in Production Horticulture**

Location: Full-time at McMillan campus. Also State-wide where learning occurs primarily in the workplace supplemented by off-the-job training.

The full-time program is one year duration (or part-time equivalent).

The program is designed for new entrants and existing employees wishing to advance their career in production horticulture. The workplace-based option is suited to the needs of production horticulture trainees.

### CONSERVATION AND LAND MANAGEMENT

#### **RTD 50102 and RTD 60102 Diploma of Conservation and Land Management and Advanced Diploma of Conservation and Land Management**

Location: Longerenong campus

A combined program of two years duration incorporating diploma and advanced diploma-level studies in conservation and land management. Students graduate with the Advanced Diploma.

Students undertake a thorough preparation for the Advanced Diploma by completing nominated units from the Diploma in their first year. They then complete the Advanced Diploma in their second year.

The purpose of the program is to address the education and training needs of those who will assume positions of responsibility in conservation and land management.

**RTD 50102 Diploma of Conservation and Land Management**

Location: Full-time and part-time at Longerenong campus and at Daylesford campus. Also available State-wide by flexible delivery

The full time program is of one and a half years duration, or equivalent part-time.

The flexibly-delivered program involves study at home and in the workplace, supplemented by local workshops.

The program is for those working in or wishing to work in the expanding area of conservation and land management.

**RTD 20102/RTD 30102/RTD 40102 Certificates II/III/IV in Conservation and Land Management**

Location: State-wide

A program for new entrants and existing employees wishing to advance their careers in conservation and land management. Learning occurs primarily in the workplace supplemented by off-the-job training.

These courses are suited to the needs of conservation and land management trainees.

**FORESTRY**

**BSB 30504/BSB 41004/BSB 51004 Certificate III/Certificate IV/Diploma of Business (Frontline Management)**

Location: State-wide

This flexibly delivered program is designed to recognise and upgrade the skills and knowledge of those performing key roles in the forest and related industries as supervisors, forepersons, project managers, office coordinators and team leaders. Study at home and in the workplace is supplemented by local workshops.

**BSZ 40198 Certificate IV in Assessment and Workplace Training**

Location: State-wide

This course is intended to develop skills in training and assessing for employees, supervisors and managers working in the forest and related industries. Study at home and in the workplace is supplemented by local workshops.

**FPI 40199 Certificate IV in Forest and Forest Products (Forest Growing and Management)**

Location: State-wide

This flexibly delivered course is intended for forest industry technical field personnel who supervise work crews in the field. Learning occurs primarily in the workplace supplemented by off-the-job training.

**FPI 30199 Certificate III in Forest and Forest Products (Forest Growing and Management)**

Location: State-wide

A flexibly delivered program for forest industry personnel with some experience in the industry working as part of a crew or who may be a crew leader. Traineeships for new employees are also available at this level. Learning occurs primarily in the workplace supplemented by off-the-job training.

**FPI 20199 Certificate II in Forest and Forest Products (Forest Growing and Management)**

Location: State-wide

An introductory level program for new entrants into the forest industry. Learning occurs primarily in the workplace supplemented by off-the-job training. Traineeships are offered at this level for new employees.

**DAIRY FOODS PROCESSING AND TECHNOLOGY**

**FD 40103/FDF 50103 Certificate IV/Diploma in Food Processing - specialising in dairy food processing**

Location: State-wide

This flexibly delivered program focuses on developing the management competencies required in the food processing industry. Students also study optional and specialist units which cover the various work areas within the industry. Study at home and in the workplace is supplemented by residential workshops at Gilbert Chandler campus.

**11893 VIC Certificate IV in Food Technology - specialising in dairy food technology**

Location: State-wide

This flexibly delivered program, normally undertaken over two years, develops knowledge and skills in dairy product manufacture, the handling and processing of milk from farm to consumer, the maintenance of high standards of product quality and production efficiency in dairy factories, the safe and efficient operation of dairy factory equipment and the effective supervision of staff in a dairy food manufacture unit. Study at home and in the workplace is supplemented by residential workshops at Gilbert Chandler campus.

**11894 VIC Diploma of Food Technology - specialising in dairy food technology**

Location: State-wide

This flexibly delivered program, normally undertaken over two years, builds on studies in the 11893 VIC Certificate IV in Food Technology, and provides training to a level of competency required of a technical officer in the food industry, including competencies within dairy food specialisations. The program develops skills in science and technology areas of food and dairy product manufacture. The production procedures, efficiencies and production techniques within these dairy food specialisations are looked at in detail. Study at home and in the workplace is supplemented by residential workshops at Gilbert Chandler campus.

**FDF 10103/FDF 20103/FDF 30103 Certificates I/II/III in Food Processing - specialising in dairy food processing**

Location: State-wide

A program for new entrants and existing employees wishing to advance their career in dairy food processing. Learning occurs primarily in the workplace supplemented by off-the-job training. These courses are suited to the needs of dairy food processing trainees.

**PML30199 Certificate III in Laboratory Skills**

Location: State-wide

A program for new entrants, and existing employees providing a broad and flexible package of competencies which meets the needs of laboratory assistants, technicians and similar personnel. Learning occurs primarily in the workplace supplemented by off-the-job training.

**TDT20102/TDT30102 Certificates II & III In Transport & Distribution (Warehousing & Storage)**

Location: State-wide

A program for new entrants and existing employees developing the competencies required in the warehousing and storage functions of the transport and distribution industry. Learning occurs primarily in the workplace supplemented by off-the-job training.

**VITICULTURE AND WINEMAKING**

**RTE 50303 Diploma of Production Horticulture - specialising in viticulture**

Location: State-wide

A flexibly delivered program for those seeking to advance their career in viticulture with an emphasis on supervision and management. The program builds on or includes the operational competencies acquired in the Certificates in Food Processing (Wine). Study at home and in the workplace is supplemented by residential workshops at Dookie campus.

**21341 VIC Diploma of Wine Technology**

Location: State-wide

A flexibly delivered program for those seeking to advance their career in winemaking with an emphasis on supervision and management. The program builds on or includes the operational competencies acquired in the Certificates in Food Processing (Wine). Study at home and in the workplace is supplemented by residential workshops at Dookie campus.

**FDF 10403/FDF 20403/FDF 30403 Certificates I/II/III in Food Processing (Wine)**

Location: State-wide

A program for new entrants and existing employees seeking to advance their career in wine grape production and wine making. The program provides the opportunity to specialise in viticulture or cellar operations. Learning occurs primarily in the workplace supplemented by residential workshops at Dookie campus.

These courses are suited to the needs of viticulture and winemaking trainees.

**ORNAMENTAL HORTICULTURE**

**RTF 50203 Diploma of Horticulture (Arboriculture)**

Location: Burnley campus

A part-time program conducted over two years, designed for qualified arboriculture supervisors as a preparation for advancement in their careers to managerial levels.

**RTF 40103 Certificate IV in Horticulture**

Location: Burnley campus

This two year full-time (or equivalent part-time) study program in general horticulture with a landscaping emphasis, enables graduates to enter industry as amenity horticulture supervisors and trainee managers or independent contractors.

**RTF 40203 Certificate IV in Horticulture (Arboriculture)**

Location: Burnley campus

This program normally undertaken part-time over two and a half to three years enables graduates to enter industry as arboricultural supervisors and trainee managers.

**RTF 20103/RFT 30103 Certificate II/III in Horticulture**

Location: Burnley campus

A program for new entrants, and existing employees wishing to advance their career in amenity horticulture. Learning in the workplace is supplemented by regular off-the-job training at Burnley campus. These courses cater for the needs of horticulture trainees.

#### **RTF 20203/RTF 30203 Certificate II/III in Horticulture (Arboriculture)**

Location: Burnley campus

A program for new entrants and existing employees wishing to advance their careers in arboriculture. Learning in the workplace is supplemented by regular off-the-job training at Burnley. These courses cater for the needs of arboricultural apprentices/trainees.

#### **RTF 20103 Certificate II in Horticulture**

Location: McMillan campus

An introductory program for entry-level operators in the field of general horticulture. This course caters for the needs of horticulture trainees as well as those seeking to broaden their options during secondary schooling.

#### **HORSES**

##### **21294 VIC Advanced Diploma in Horse Management**

Location: Full-time at Glenormiston campus. Also available State-wide by flexible delivery.

The full-time program is of two years duration. The flexibly delivered program involves study at home and in the workplace, supplemented by residential workshops at Glenormiston campus.

The program is designed for those aspiring to manage horse enterprises such as studs, stables and service businesses.

##### **21292 VIC Certificate IV in Horse Management**

Location: Full-time at Glenormiston campus and at Cranbourne campus. Also available State-wide by flexible delivery.

The full-time program is of one year duration. The flexibly delivered program involves study at home and in the workplace, supplemented by workshops at regional locations and/or at Glenormiston campus.

The program is designed for those people seeking to establish or advance their career in horse enterprises such as studs, stables and service businesses.

##### **RGR 40302 Certificate IV in Racing (Advanced Harness Driver)**

Location: McMillan campus

This 12 month full-time course is designed to provide the skills and knowledge base for those wishing to pursue a career as a standardbred racing driver.

##### **RGR 40402 Certificate IV in Racing (Harness Driver)**

Location: McMillan

This 12 month full-time course is designed to provide the skills and knowledge base for those wishing to pursue a career as a harness race-horse trainer.

Note: RGR 40302 and RGR 40402 can be undertaken concurrently.

##### **RGR 30402 Certificate III in Racing (Harness Driver)**

Location: McMillan campus

This 12 month full-time course is designed to provide the skills and knowledge base for skilled workers in standardbred stables, who are wishing to become trackworker drivers.

##### **RGR 20102 Certificate II in Racing (Stablehand)**

Location: McMillan campus

This 3 month full-time course is designed to provide the skills and knowledge base for people to enter careers working in standardbred stables.

##### **21327 VIC Certificate II in Equine Industry**

Location: State-wide

A flexibly delivered introductory course made available over a 2-3 year period as a VCE/VET in Schools of VCAL Program.

##### **Equine Dentistry Course**

Location: Glenormiston campus

This course is designed to develop the skills and knowledge required by professional equine dentists.

#### **Articulation**

Articulation pathways have been established between courses at different levels which enable students with qualifications from other undergraduate courses or TAFE programs to gain credit towards a higher education advanced diploma or a degree. These arrangements provide eligibility for admission into the higher education course but they do not guarantee entry as students are selected on the basis of marks and/or relevant work experience.

#### **Credit policy**

The Faculty has a positive approach to the granting of credit for studies completed elsewhere and, on occasion, for work experience. It participated in the

TAFE/Higher Education Pathways Project and has agreed to grant specified credit for subjects completed in certain diplomas and advanced diplomas. Subjects completed at bachelor degree level in any recognised tertiary institution in Australia or overseas will be credited if they are judged to contain sufficient equivalence of content and standard to those required for the Faculty degree courses. However, credit is not granted towards final-year subjects.

Please refer to the Faculty's Undergraduate Academic Guidelines for more information regarding the Faculty's credit policy. The address is <<http://www.landfood.unimelb.edu.au/courses/>>.

#### **Internal transfers**

The Faculty welcomes internal transfers of students already enrolled in a course at the University of Melbourne into any course of the Faculty of Land and Food Resources. Students may apply for an internal transfer via the Student Information System <<https://sis.unimelb.edu.au/>>. Applications usually open in October and close in early December. Credit will be granted where appropriate and generally applicants will be notified by mid-January of the outcome of their application.

#### **Transfers from other institutions**

The Faculty welcomes applications for entry into any of our courses from interested students enrolled at other tertiary institutions. Applicants must apply through VTAC (Victorian Tertiary Admissions Centre).

#### **Planning an undergraduate course**

The Bachelors of Agricultural Science, Agriculture, Animal Science and Management, Food Science, Forest Science, Horticulture, Resource Management and Rural Business are three years in length (or part-time equivalent). A fourth-year honours program is available which involves coursework and the completion of a research project under the supervision of one or more staff members.

The Faculty offers three combined degrees which are five years in length (or part-time equivalent): Bachelor of Agricultural Science/Bachelor of Commerce, Bachelor of Forest Science/Bachelor of Commerce, and Bachelor of Forest Science/Bachelor of Science. Honours in the agriculture or forest science component are awarded at the end of the fifth year.

The Advanced Diplomas in Agriculture, Forestry Management, Horticulture and Wood Products Management are two years in length (or part-time equivalent), and in addition may require workplace placement.

Students are expected to undertake additional study (ie., outside the stated contact hours) of at least one hour for each hour of contact in all Faculty subjects within their course.

Students are advised to consult the relevant course coordinator when planning their course, as Faculty approval is required before elective subjects are chosen. The student administration officers and course coordinators are the reference point for all matters relating to enrolment and course advice.

#### **Associate Dean (Coursework)**

**Mr Rowan Reid - Parkville campus: +61 3 8344 5011**

#### **Course coordinators**

##### **Bachelor of Agricultural Science**

Dr Robert Edis - Parkville Campus: +61 3 8344 7131

##### **Bachelor of Agriculture**

Mr John Wellman - Dookie campus: +61 3 5833 9200

##### **Bachelor of Animal Science and Management**

Dr Brian Leury - Parkville campus: +61 3 8344 6341

##### **Bachelor of Food Science**

Dr Said Ajlouni - Gilbert Chandler campus: +61 3 9217 5200

##### **Bachelor of Forest Science**

Dr Chris Weston - Creswick campus: +61 3 5321 4103

##### **Bachelor of Horticulture**

Dr Cassandra McLean - Burnley campus: +61 3 9250 6800

##### **Bachelor of Resource Management**

Dr Tony Weatherley - Parkville campus: +61 3 8344 4642

##### **Bachelor of Rural Business**

Mr Frank Gilders - Dookie Campus: +61 3 5833 9200

##### **Advanced Diploma in Agriculture**

Ms Ros Gall - Dookie campus: +61 3 5833 9200

##### **Advanced Diploma in Forestry Management**

Mr Peter Shepherd - Creswick campus: +61 3 5321 4180

##### **Advanced Diploma in Horticulture**

Mr John Rayner - Burnley campus: +61 3 9250 6800

##### **Advanced Diploma in Wood Products Management**

Mr Peter Shepherd - Creswick campus: +61 5321 4180

## Student information

The Faculty's *Undergraduate Academic Guidelines* provides information on academic rules and guidelines, as well as providing other information that will assist students with their studies at the Faculty. Copies of the guidelines can be obtained from the campus student administration officers or can be viewed on the web at <http://www.landfood.unimelb.edu.au/courses/>.

The *Student Diary* provides information on rules, regulations, policy and statutes on enrolment, assessment, unsatisfactory progress and the use of the University computing facilities.

The *University Calendar* contains all the University's legislation including Acts, regulations and statutes. It can be accessed on <http://www.unimelb.edu.au/ExecServ/calendar/calendar.html>.

## Change of address

The University will frequently need to contact you. You must ensure that the University has an accurate and reliable mailing address and phone number for you. If you change your address, you must register your new address at your campus student administration office or at student administration in Parkville, or on the web at <http://sis.unimelb.edu.au/cgi-bin/address.pl>.

## Special consideration

Students whose studies have been substantially affected by illness or other circumstances may apply for special consideration online at <https://sis.unimelb.edu.au/cgi-bin/special-consideration.pl>. Students are strongly encouraged to read carefully the Guidelines for Submission, as these detail deadlines and grounds for applying.

## Faculty awards and scholarships

### Dean's Honour List

The Dean's Honour List recognises high-achieving students in the Faculty of Land and Food Resources. Students on the Dean's Honour List receive a certificate and a prize from the Dean of the Faculty at an annual presentation ceremony in April or May, and their achievement is also recorded on their academic transcript.

To be eligible for the Dean's Honour List, students must have completed at least 75 points of study during an academic year and must achieve an average over all subjects in that year of 80% or more.

### Faculty prizes

Numerous other prizes are awarded annually. These may be provided either by companies or bequests and may be awarded for academic excellence at a particular year level and in individual subjects. For information on these prizes please contact the student administration office at your campus or check the web site at <http://www.landfood.unimelb.edu.au>.

Some prizes include a substantial monetary element. All prize winners receive a certificate, a note on their academic transcript and are invited to an annual presentation ceremony.

### Scholarships and bursaries

There are a number of scholarships and bursaries available to students in certain courses according to academic merit, financial need or both. To find out if you may be eligible and for further information please contact the student administration office at your campus or the student financial aid office on 03 8344 6053. Please also regularly check information displayed on undergraduate notice boards, or check the Faculty web site at <http://www.landfood.unimelb.edu.au/courses/scholarships.html>.

## Course rules

Course rules specify the requirements that must be fulfilled by students during their progress through the courses in Land and Food Resources' curriculum. Students are individually responsible for ensuring that their sequence of subjects conforms to these rules. Students are encouraged to consult with their course coordinator in developing study plans. Variations from these rules may be approved by the Associate Dean (Coursework) on the recommendation of the relevant course coordinator. In each case, students must complete the requirements of the particular degree or advanced diploma in which they are enrolled before being permitted to graduate.

Students in the BAg, BAgSc, BAnScMan, BFoodSc, BForSc, BHort, BResMan and BRurBus, pass degrees:

- must achieve a minimum of 300 credit points
- must achieve at least 75 points of 300-level (or 400-level) subjects
- must pass all core subjects defined for the particular degree, and select electives from the appropriate electives list for that degree in the *University Handbook*

- may take up to two electives not on the approved elective list for that degree in the *University Handbook*, provided these are approved by the course coordinator
- must meet the defined work experience requirements.

Students in the BAg(Hons), BAgSc(Hons), BAnScMan(Hons), BForSc(Hons), BHort(Hons), BResMan(Hons) and BRurBus(Hons) degrees:

- must achieve a minimum of 400 credit points, with an Honours Grade Score of at least 65
- must pass all core subjects defined for the particular degree, and select electives from the appropriate electives list for that degree in the *University Handbook*
- may take up to four electives not on the approved elective list for that degree in the *University Handbook*, provided these are approved by the course coordinator
- must complete 202-401 Honours Research Project in an area approved by the course coordinator as being relevant to the particular degree undertaken (202-402 or 202-403 Honours Research Project may be substituted on approval of course co-ordinator)
- must meet the defined work experience requirements.

Students in the BFoodSc(Hons) degree and BForSc(Hons) 2005 Entry:

- must achieve a minimum of 100 credit points in addition to their undergraduate pass degree
- must pass the project subject, and electives from the approved elective list for that degree in the *University Handbook* or as approved by the course coordinator. A minimum mark of 70 must be obtained in each coursework elective, and 65 in the project subject, in order to be awarded Honours.

Students in the BFor pass and honours degrees:

- must achieve a minimum of 400 credit points
- must pass all core subjects defined for the degree, and select electives from the approved elective list for the degree in the *University Handbook*
- may take up to one elective (honours degree candidates) or two electives (pass degree candidates) not on the approved elective list for that degree in the *University Handbook*, with the approval of the course coordinator
- must meet the defined work experience requirements
- are awarded honours if 202-401 Honours Research Project is completed in an area approved by the course coordinator as being relevant to this particular degree, and an honours grade score of at least 65 is attained (202-402 or 202-403 Honours Research Project may be substituted on approval of course co-ordinator).

Students in the BFor/BSc and BForSc/BSc pass and honours degrees:

- must achieve a minimum of 500 credit points, made up of 237.5 Bachelor of Science points from the Bachelor of Science and 262.5 points from the Bachelor of Forestry or Bachelor of Forest Science. Science points must include between 75 and 125 Bachelor of Science points at 100 level, 50 science points of a prescribed science major at 300 level, and 25 points towards 202-401 or 202-402 Honours Research Project.
- must pass all core subjects defined for the forestry or forest science component of the degree, and select electives from the approved elective list for this degree in the *University Handbook* or as approved by the course coordinator
- must meet the defined work experience requirements
- are awarded honours in Forest Science if an honours score of at least 65 is attained.

Students in the BAg/BCom and BAgSc/BCom pass and honours degrees:

- must obtain a minimum of 500 credit points, made up of 200 points from the Bachelor of Commerce, 225 points from the Bachelor of Agriculture or Bachelor of Agricultural Science, and 75 points of electives from either Commerce or LFR or another faculty. Commerce points must include at least 50 points from 100-level subjects, at least 50 points from 300-level subjects, and compulsory subjects specified in the *University Handbook*
- must pass all core subjects defined for the agriculture component of the degree, and select electives from the approved elective list for that degree in the *University Handbook* or as approved by the course coordinator
- must meet the defined work experience requirements
- are awarded honours in Agriculture if 300 points are obtained from the Bachelor of Agriculture or Bachelor of Agricultural Science and an honours score of at least 65 is attained.

Students in the BFor/BCom and BForSc/BCom pass and honours degrees:

- must obtain a minimum of 500 credit points, made up of 200 points from the Bachelor of Commerce, and 300 points from the Bachelor of Forestry or Bachelor of Forest Science. Commerce points must include at least 50 points from 100-level subjects, at least 50 points from 300-level subjects, and compulsory subjects specified in the *University Handbook*
- must pass all core subjects defined for the forestry or forest science component of the degree

- must meet the defined work experience requirements
- are awarded honours in Forestry, if an honours score of at least 65 is attained.

Students in the AdvDipAg, AdvDipHort, AdvDipForMan and AdvDipWood-ProdMan:

- must achieve a minimum of 200 credit points
- must pass all core subjects defined for the advanced diploma, and select electives from the approved elective list for that advanced diploma in the University Handbook
- must meet the defined work experience requirements
- must complete the requirements of the particular advanced diploma before being permitted to graduate.

## Honours degrees

### Course Overview

The honours year in Bachelor of Agriculture, Bachelor of Agricultural Science, Bachelor of Forest Science, Bachelor of Horticulture, Bachelor of Resource Management, Bachelor of Rural Business, Bachelor of Animal Science and Management and Bachelor of Food Science comprises advanced coursework, and an individual research project designed to extend students' knowledge and skills in solving research problems. After successfully completing the program, students will be prepared either to enter the workforce and pursue a career or to pursue further research study through a Masters or Doctor of Philosophy degree.

### Duration and Commencement

These honours programs can be undertaken on a full-time or part-time basis. The program can commence either in February or July. February commencement concludes in November. July commencement concludes in June of the following year. Most students study full time and commence in February.

### Course Structure

The honours course is comprised of coursework and a research project. The coursework subjects consist of core subjects, and electives to be selected essentially from 400-level subjects offered by the Faculty of Land and Food Resources and other faculties of the University. They will enable students to gain sufficient familiarity with the fields relevant to their research project. Up to two subjects not appearing on the recommended list can be taken for credit, subject to course coordinator approval. Students may select two 300-level subjects for credit, subject to course coordinator approval. Applicants to the program will need to demonstrate the completion of appropriate prerequisite subjects in their undergraduate courses when selecting coursework subjects. Students will also be expected to participate in research discussion groups or 'journal clubs' and to attend the Faculty's research seminar series.

### Honours Research Project

Students will select a project from a list formulated by supervisors through the Honours Research Project subject coordinator. Some of these projects may be offered in collaboration with industry, and collaborating institutions. Project proposals detailing the experimental plan and a literature review will be presented before the Honours Panel for discussion and approval prior to commencing experimental work. Students will be required to present seminars on both their project proposal and the outcomes of their research. The expected length of the thesis (including references) will normally be limited to 20 000 words (approximately 50 A4 pages).

### Honours eligibility and honours scores in LFR degrees

1. Bachelor of Agricultural Science, Bachelor of Agriculture, Bachelor of Horticulture, Bachelor of Forest Science, Bachelor of Resource Management, Bachelor of Rural Business, Bachelor of Animal Science and Management, Bachelor of Food Science:

To be eligible for consideration for entry into honours in the above named degrees, applicants must have:

- achieved an average of 65 in the third year (300-level) subjects in their Faculty undergraduate degree; or
- completed an equivalent qualification to the Faculty undergraduate degree, this qualification being recognised by the Faculty, at a level of academic performance equivalent to that required in the point above.

On completion of the fourth (honours) year, the Faculty determines the award of honours degrees on the basis of average marks in third-year and fourth-year subjects. The third-year average mark is the weighted average of the seven best third-year subjects. The fourth-year average mark is the weighted average of all fourth-year subjects. These year averages are then weighted by multiplying the third-year average marks by 0.333 and the fourth-year aver-

age marks by 0.666. The resulting figures are summed to give the 'honours score'.

#### 2. Bachelor of Forestry:

On completion of fourth year, the Faculty determines the award of honours degrees on the basis of average marks in third-year and fourth-year subjects. The third-year average mark is the weighted average of the seven best third year subjects. The fourth-year average mark is the weighted average of all fourth-year subjects. These year averages are then weighted by multiplying the third-year average marks by 0.333 and the fourth year average marks by 0.666. The resulting figures are summed to give the 'honours score'.

#### 3. Combined degrees:

Calculation of honours scores for forestry, agriculture, forest science and agricultural science in the combined BFor/BSc, BFor/BCom, BAg/BCom, BForSc/BSc, BForSc/BCom, and BAgSc/BCom degrees occurs similarly to the respective single degree. Honours in commerce or science is awarded independently. The relevant LFR honours score is thus calculated by multiplying the third-year average mark by 0.333, the fourth-year average mark by 0.666, and summing the resulting figures to give the 'honours score'. The third year-average mark is the weighted average of the seven best 300-level LFR subjects. The fourth-year average mark is the weighted average of the 400-level LFR subjects given their full points value, and the 300-level science or commerce subjects (whichever is applicable) scaled down to total 100 minus the points value of the 400-level LFR subjects.

The above formulae for calculation of honours scores are phrased to produce the same scores as those derived from the School of Graduate Studies formulae for calculation of scholarship eligibility.

#### 4. Bachelor of Applied Science:

Entry to the various BAppSc honours degrees is determined on the basis of an application lodged by the student. Students must have obtained at least an average of third-class honours (H3) in the third-year subjects of their pass degree course. Students who have completed studies other than the BAppSc may be eligible to enrol in the BAppSc honours program provided that they have completed another approved course. The award of honours is determined on the basis of the weighted average mark of all subjects taken in the BAppSc honours program. Individual honours programs may have more specific requirements detailed in the University Handbook.

## Students-at-risk program

The students-at-risk program is designed to monitor student academic performance. Any student who fails two subjects or more in a semester will be asked to attend an interview. An academic staff member and a student adviser will discuss the situation with the student to find a cooperative solution to the problems that may be affecting their studies.

## Faculty student progress rules

Students who pass 50 per cent or less of the points attempted in two consecutive semesters, or who fail a subject twice, or who fail 202-107 Mathematics for Land and Food Resources in the first semester of their degree, will be required to attend an Faculty Student Progress Committee for a determination of whether they will be permitted to continue in the course.

Progress rules for combined courses are subject to discussion with the Faculties of Science or Economics and Commerce respectively. Students in these combined degrees come under the jurisdiction of the Faculty of Land and Food Resources for most assessment matters.

Please refer to the institute's Undergraduate Academic Guidelines for more information regarding the student progress rules at <<http://www.land-food.unimelb.edu.au/current/undergrad.html#handbook>>

## Undergraduate entry

Course prerequisites for 2005 are as follows:

### Bachelor of Agricultural Science

Units 3 and 4 - a study score of at least 25 in English (any) and either one of a study score of at least 25 in Mathematical Methods or a study score of at least 30 in Further Mathematics. Consideration is also given to relevant work experience.

### Bachelor of Agriculture

Units 1 and 2 - one of General Mathematics or Mathematical Methods.  
Units 3 and 4 - a study score of at least 25 in English (any). Consideration is also given to relevant work experience in a field related to the course.

### Bachelor of Animal Science and Management

As for the Bachelor of Agricultural Science.

### Bachelor of Food Science

As for the Bachelor of Agricultural Science.

### Bachelor of Forest Science

As for the Bachelor of Agricultural Science.

## Faculty of Land and Food Resources

### Bachelor of Horticulture

Units 3 and 4 - a study score of at least 25 in English (any). Consideration is also given to relevant work experience in a field related to the course.

### Bachelor of Resource Management

As for the Bachelor of Agricultural Science.

### Bachelor of Rural Business

As for the Bachelor of Agriculture.

### Bachelor of Agricultural Science/Bachelor of Commerce

Units 3 and 4 - a study score of at least 25 in each of English (any) and Mathematical Methods, and in one of Chemistry or Biology. Consideration will be given to relevant work experience in agriculture-related fields.

### Bachelor of Forest Science/Bachelor of Commerce

No first year intake for 2005.

### Bachelor of Forest Science/Bachelor of Science

Units 3 and 4 - a study score of at least 25 in each of English (any) and Mathematical Methods and in two of Biology, an additional mathematics, Physics or Chemistry. Consideration will be given to relevant work experience in forest science-related fields.

### Advanced Diploma in Agriculture

There are no prerequisites.

### Advanced Diploma in Forestry Management

There are no prerequisites.

### Advanced Diploma in Horticulture:

There are no prerequisites.

### Advanced Diploma in Wood Products Management

There are no prerequisites.

## Concurrent diplomas

The Faculty offers students who spend two or more years at Parkville campus the opportunity to enrol in the Diploma in Modern Languages, the Diploma in Music (Practical), the Diploma in Arts, the Diploma in Creative Arts or the Diploma in Information Systems concurrently with their degree studies at the Faculty. Enrolling in a concurrent diploma adds an extra year to the duration of the course.

## Combined degrees with Bachelor of Public Policy and Management

All LFR degrees can be combined with the Bachelor of Public Policy and Management (BPPM). This will require two further years of study at Parkville campus. See entry under Faculty of Arts for details.

## Degree courses

### Bachelor of Agricultural Science

This course is offered at the Parkville campus of the University. Students may need to travel to Burnley campus for some subjects.

Agricultural Science is essentially the study of the science and management of systems for the production of food and fibre in a sustainable way. When you study agricultural science you are taught the principles and applications of science, economics, social science and management.

The Bachelor of Agricultural Science lends itself to degree specialisation in crop production, animal production, agribusiness, and various multidisciplinary packages such as systems analysis and management.

### Course objectives

Students who have completed this course should have acquired:

- an ability to demonstrate a broad knowledge of fundamental scientific precepts across a range of disciplines, with a high level of achievement in one or more of the disciplines of agricultural science relating to soils, plants and animals in production systems;
- an understanding of the structures of agriculture and related industries and the principal factors that determine location, environmental impact, sustainability, profitability and international trade competitiveness;
- the capacity to apply scientific knowledge to the definition, analysis, and solution of agricultural and environmental problems;
- the ability to design and conduct scientific enquiries;
- an understanding of principles of sound practice in relation to health, safety, animal welfare and the environment in agriculture and related industries;
- a capacity for the exchange, acquisition and dissemination of scientific and industry information and for technology transfer.

## Career opportunities

Agricultural Science graduates have the skills to take up a career in a wide variety of areas including research and development organisations, financial institutions and banks, marketing and journalism, environmental and business consulting firms, international trade, food processing companies and farm management and extension positions. Graduates are also well equipped to pursue careers in non-agricultural sectors

## Course outline

First year	Points
<b>Semester 1</b>	
202-101 Chemistry for Land and Food Resources ( <i>p.1</i> )	12.5
or	
610-141 Chemistry A ( <i>p.2</i> )	12.5
Students with a VCE score of 25 or greater in Chemistry or equivalent should enrol in 610-141 Chemistry A	
202-103 Biology for Land and Food Resources ( <i>p.1</i> )	12.5
or	
650-141 Biology of Cells and Organisms ( <i>p.1</i> )	12.5
Students with a VCE score of 25 or greater in Biology make take 650-141 Biology of Cells and Organisms.	
202-104 Information Technology and Communication ( <i>p.1</i> )	12.5
or	
202-107 Mathematics for Land and Food Resources ( <i>p.1</i> )	12.5
Students entering without VCE Mathematical Methods or equivalent must enrol in 202-107 Mathematics for Land and Food Resources	
208-109 Australian Agriculture ( <i>p.1</i> )	12.5
<b>Semester 2</b>	
202-106 Land Resources ( <i>p.2</i> )	12.5
207-101 Land, Food and Resource Economics ( <i>p.2</i> )	12.5
650-142 Genetics & The Evolution of Life ( <i>p.1</i> )	12.5
One elective*	12.5
<i>Sub-total</i>	100.0
<b>Second year</b>	Points
<b>Semester 1</b>	
202-201 Plant Function ( <i>p.2</i> )	12.5
202-202 Experimental Design/Statistical Methods ( <i>p.2</i> )	12.5
<b>Semester 2</b>	
202-203 Soil and Water Resources ( <i>p.3</i> )	12.5
208-210 Agricultural Management Economics ( <i>p.3</i> )	12.5
<b>Electives</b>	
Four electives*	50.0
<i>Sub-total</i>	100.0
<b>Third year</b>	Points
<b>Semester 1</b>	
202-302 Human Resource Management ( <i>p.3</i> )	12.5
<b>Year-long subjects</b>	
202-001 Industry Placement# ( <i>p.4</i> )	0
<b>Elective subjects</b>	
Seven electives*	87.5
<i>Sub-total</i>	100.0
<b>Fourth year (honours)</b>	Points
<b>Semester 1</b>	
208-411 Research Philosophies and Statistics ( <i>p.4</i> )	12.5
<b>Semester 2</b>	
202-404 Emerging Issues in Land Resources ( <i>p.4</i> )	12.5
<b>Year-long subjects</b>	
202-401 Honours Research Project ( <i>p.5</i> )	50
202-401 Honours Research Project (50 points, year-long) may be replaced by 202-402 Honours Research Project (50 points, Semester 1 or Semester 2) or 202-403 Honours Research Project (50 points, mid-year entry).	
<b>Elective subjects</b>	
Two electives*	25
<i>Sub-total</i>	100.0

\*Electives can be selected from the following lists or from approved subjects from other courses.

### Elective subjects

Electives may be selected from the following list and a limited number may be selected from approved subjects from other courses. Insufficient enrolments may lead to an elective subject being suspended. Not all electives are offered at all campuses.

<b>First year</b>		Points
<b>Semester 2</b>		
207-103	Ecology ( <i>p.1</i> )	12.5
208-101	Farm Animal Biology ( <i>p.5</i> )	12.5
208-107	Vineyard and Winery Operations I ( <i>p.5</i> )	12.5
610-141	Chemistry A ( <i>p.2</i> )	12.5
610-142	Chemistry B ( <i>p.2</i> )	12.5
<b>Second year</b>		
<b>Semester 1</b>		
202-104	Information Technology and Communication ( <i>p.1</i> )	12.5
208-202	Animal Physiology ( <i>p.6</i> )	12.5
208-203	Ecology & Management of Grazing Systems ( <i>p.6</i> )	12.5
208-206	Vineyard and Winery Operations II ( <i>p.6</i> )	12.5
521-211	Biochemistry & Molecular Biology Part A ( <i>p.1</i> )	12.5
526-201	Principles of Microbiology & Immunology ( <i>p.1</i> )	12.5
<b>Semester 2</b>		
208-201	Comparative Nutrition ( <i>p.5</i> )	12.5
207-201	Resource Management Economics ( <i>p.2</i> )	12.5
208-207	Animal Management and Production ( <i>p.7</i> )	12.5
208-208	Crop Production ( <i>p.7</i> )	12.5
208-306	Agricultural Marketing ( <i>p.8</i> )	12.5
451-312	GIS & Remote Sensing for Enviro Science ( <i>p.7</i> )	12.5
521-212	Biochemistry & Molecular Biology Part B ( <i>p.2</i> )	12.5
<b>Summer Semester</b>		
208-205	Australia in the Wine World ( <i>p.6</i> )	12.5
<b>Third year</b>		Points
<b>Year-long subject</b>		
202-301	Industry Project ( <i>p.4</i> )	25
202-301 Industry Project (25 points, year-long) may be replaced by 202-303 Industry Project (25 points, Semester 1 or Semester 2)		
<b>Semester 1</b>		
207-301	Global Environment and Sustainability ( <i>p.3</i> )	12.5
207-328	Working with Community Groups ( <i>p.7</i> )	12.5
207-401	Soil Management and Conservation ( <i>p.10</i> )	12.5
207-410	Agroforestry ( <i>p.5</i> )	12.5
208-301	Crop and Pasture Physiology ( <i>p.8</i> )	12.5
208-302	Molecular Biology and Breeding ( <i>p.8</i> )	12.5
208-303	Animal Production Systems ( <i>p.8</i> )	12.5
208-307	Plant Pathology ( <i>p.9</i> )	12.5
208-308	Irrigation and Water Management ( <i>p.9</i> )	12.5
208-329	Viticulture ( <i>p.4</i> )	12.5
208-339	Genetics and Animal Breeding ( <i>p.3</i> )	12.5
207-330	GIS and Remote Sensing ( <i>p.3</i> )	12.5
<b>Semester 2</b>		
202-304	Agricultural Systems Analysis ( <i>p.7</i> )	12.5
208-304	Advanced Topics in Animal Science ( <i>p.8</i> )	12.5
208-306	Agricultural Marketing ( <i>p.8</i> )	12.5
208-316	Oenology ( <i>p.4</i> )	12.5
208-320	Fertiliser Management ( <i>p.9</i> )	12.5
208-337	Plant Protection Systems ( <i>p.9</i> )	12.5
451-312	GIS & Remote Sensing for Enviro Science ( <i>p.7</i> )	12.5
<b>Fourth year (honours)</b>		Points
<b>Semester 1</b>		
207-301	Global Environment and Sustainability ( <i>p.3</i> )	12.5
207-401	Soil Management and Conservation ( <i>p.10</i> )	12.5
207-410	Agroforestry ( <i>p.5</i> )	12.5
207-414	Social Research Methods ( <i>p.10</i> )	12.5
208-402	Advanced Plant Breeding and Improvement ( <i>p.10</i> )	12.5
208-407	Genetics and Animal Breeding ( <i>p.4</i> )	12.5
208-409	Animal Welfare ( <i>p.10</i> )	12.5
<b>Semester 2</b>		
202-304	Agricultural Systems Analysis ( <i>p.7</i> )	12.5
207-404	Agricultural Policies and Trade ( <i>p.10</i> )	12.5
207-413	Community Natural Resource Management ( <i>p.6</i> )	12.5

## Bachelor of Agricultural Science/Bachelor of Commerce

This combined course is taught at the Parkville campus of the University. The course takes five years of full-time study. This course has been developed in response to the demand for agricultural science to be combined with a more specialist training in economics and commerce than is possible in the Bachelor of Agricultural Science degree. Students can choose a combination of

economics, business information systems, econometrics, accounting, finance and management subjects in order to design a course which fits an intended career path.

### Course objectives

Students who complete this course should have acquired:

- an understanding of the components of the agricultural sector of the Australian economy and the importance of that sector to the economy;
- an understanding of Australian economic institutions and policy, including industry and trade policy;
- an appreciation of the recent changes in the Australian economy, especially in relation to developments in the Asia-Pacific region;
- mastery of the necessary theoretical concepts and tools, from economics, agricultural sciences, business management and marketing, for analysing and solving problems in agribusiness activities, natural resource use or agricultural policy, and skill in communicating the results;
- an appreciation of the implications for agricultural business operations of the biological nature of agricultural production processes;
- awareness of the institutional and regulatory environment within which agricultural businesses function;
- an understanding of the behaviour of international markets for the products of the agricultural sector;
- practical experience in some part of the agricultural sector.

### Career opportunities

The combined degree offers careers for people wanting to work in any of the agricultural fields, combined with economics and commerce, rural finance, international trade, extension work, marketing, journalism, and resource management.

### Course outline

To be eligible to graduate students must obtain 500 credit points. Of these, 225 must be from the Bachelor of Agricultural Science, 200 from the Bachelor of Commerce, and 75 from electives that students can choose from any faculty.

Agricultural Science points must include:

- 125 points from Bachelor of Agricultural Science core subjects, namely: 202-101 Chemistry for Land and Food Resources, 202-103 Biology for Land and Food Resources, 650-142 Genetics and the Evolution of Life, 202-201 Plant Function, 202-203 Soil and Water Resources, 208-411 Research Philosophies and Statistics and 202-401/2/3 Industry/Research Project
- eight additional Bachelor of Agricultural Science subjects (to attain a minimum of 225 points from the Bachelor of Agricultural Science, chosen from the remaining core and elective subjects)
- at least 100 points from 300- and/or 400-level subjects
- 202-001 Industry Placement.

To be eligible for honours in Agricultural Science, students must complete 300 points of Bachelor of Agricultural Science subjects, taken from that program's subject list or approved by the course coordinator and these must include 202-404 Emerging Issues in Land Resources. Students may be awarded honours in Agricultural Science at the end of the fifth year. Honours in Commerce requires an additional sixth year of study.

The following subjects are not available for credit to students in this program: 207-101 Land, Food and Resource Economics (material covered in 316-102 Introductory Microeconomics), 202-202 Experimental Design/Statistical Methods (material covered in 316-130 Quantitative Methods 1) and 202-301/3 Industry Project (202-401/2/3 Research Project is taken instead by all students).

Commerce points must include:

- at least 50 points from 100-level subjects
- at least 50 points from 300-level subjects
- compulsory subjects: 316-101 Introductory Macroeconomics, 316-102 Introductory Microeconomics, 316-130 Quantitative Methods 1, 325-201 Organisational Behaviour (1) and 316-205 Introductory Econometrics or 316-206 Quantitative Methods 2. 316-316 Basic Econometrics is recommended by the Faculty of Land and Food Resources to be included in the Commerce component of the program.

(1) Students who commenced the Bachelor of Agricultural Science/Bachelor of Commerce degree prior to 2005 are not required to complete this subject.

## Bachelor of Agriculture

This course is offered at the Parkville and Dookie campuses of the University. From 2004 onwards intake will only occur at Dookie campus.

## Faculty of Land and Food Resources

Agriculture is essentially the study of the management of resources for the sustainable production of food and fibre. When you study agriculture you are taught the principles and applications of science, economics and management, animal production, agribusiness, catchment management and various multidisciplinary packages such as systems analysis and management.

### Career opportunities

Agriculture graduates have the skills to take up a career in a wide variety of areas including research and development organisations, catchment management authorities, financial institutions and banks, marketing and journalism, environmental or business consulting firms, international trade, food processing companies and farm management and extension positions.

### Information for students commencing from 2004

#### Course objectives

Students who have completed this course should have acquired:

- basic practical skills required to manage a farm enterprise and supervise workers;
- a 'systems-thinking' approach to agricultural production and land management, including an understanding of the structures of agriculture-related industries; the principal factors that determine their location, environmental impact, sustainability, profitability and international trade competitiveness; and the biophysical, economic and social factors that affect production systems;
- an understanding how agriculture and other land uses influence the landscape;
- appropriate knowledge and the ability to critically evaluate knowledge gained from a range of scientific, economic and social sources;
- the ability to disseminate scientific and industry information;
- skills to effectively analyse, and scientifically evaluate agricultural and environmental problems and reach appropriate solutions;
- effective communication skills in a variety of media;
- the capacity for initiating cooperative relationships with colleagues, employers and clients;
- appropriate group facilitation skills;
- the ability to collect and interpret agricultural and environmental data for interpretation;
- an understanding of the research methodologies necessary to design and interpret small experiments;
- a commitment to the highest standards of academic and intellectual integrity and an acceptance of the community responsibilities of citizenship befitting their professional standing.

#### Course outline

First year	Points
<b>Semester 1</b>	
202-109 Biology for Land and Food Resources ( <i>p.1</i> )	12.5
202-108 Information Technology and Communication ( <i>p.1</i> )	12.5
or	
202-250 Quantitative Skills for Land and Food ( <i>p.3</i> )	12.5
Students entering without Year 11 Mathematical Methods or equivalent must enrol in 202-250 Quantitative Skills for Land and Food	
202-110 Land Resources ( <i>p.1</i> )	12.5
208-113 Production Systems I ( <i>p.1</i> )	12.5
<b>Semester 2</b>	
202-102 Chemistry for Land and Food Resources ( <i>p.1</i> )	12.5
208-115 Production Systems II ( <i>p.1</i> )	12.5
208-116 Environmental Engineering ( <i>p.1</i> )	12.5
One Elective	12.5
<b>Total</b>	<b>100</b>
<b>Second year</b>	Points
<b>Semester 1</b>	
202-205 Experimental Design/Statistical Methods ( <i>p.2</i> )	12.5
208-120 Accounting for Rural Enterprises ( <i>p.1</i> )	12.5
208-211 Plant Communities in Action ( <i>p.2</i> )	12.5
One Elective	12.5
<b>Semester 2</b>	
207-114 Land, Food and Resource Economics ( <i>p.2</i> )	12.5
208-230 Soils, Water and Catchment Dynamics ( <i>p.2</i> )	12.5
208-231 Management of Rural Enterprises ( <i>p.2</i> )	12.5
One Elective	12.5
<b>Total</b>	<b>100</b>

Third year	Points
<b>Semester 1</b>	
202-308 Human Resource Management ( <i>p.2</i> )	12.5
208-328 Biodiversity and Genetics ( <i>p.2</i> )	12.5
One Elective	12.5
<b>Semester 2</b>	
202-304 Agricultural Systems Analysis ( <i>p.7</i> )	12.5
Two Electives	25
<b>Year-long subjects</b>	
202-005 Industry Placement# ( <i>p.3</i> )	0
202-307 Industry Project ( <i>p.3</i> )	25
202-307 Industry Project (25 points, Year-Long) may be replaced by 202-309 Industry Project (25 points, Semester 1 or Semester 2)	

**Total 100**

#### Fourth year (honours) Points

<b>Semester 1</b>	
208-415 Research Philosophies and Statistics ( <i>p.3</i> )	12.5
<b>Semester 2</b>	
202-417 Emerging Issues in Land Resources ( <i>p.3</i> )	12.5

<b>Year-long</b>	
202-410 Honours Research Project ( <i>p.3</i> )	50
202-410 Honours Research Project (50 points year-long) may be replaced by 202-413 Honours Research Project (50 points, Semester 1 or Semester 2) or 202-416 Honours Research Project (50 points, mid-year entry)	

<b>Elective Subjects</b>	
Two electives	25

**Total 100**

#### Elective subjects

First year	Points
<b>Semester 2</b>	
208-107 Vineyard and Winery Operations I ( <i>p.5</i> )	12.5
208-121 Farm Animal Biology ( <i>p.3</i> )	12.5

#### Second year Points

<b>Summer Semester</b>	
208-244 Australia in the Wine World ( <i>p.4</i> )	12.5
<b>Semester 1</b>	
208-206 Vineyard and Winery Operations II ( <i>p.6</i> )	12.5
208-243 Ecology & Management of Grazing Systems ( <i>p.3</i> )	12.5
208-246 Crop Production ( <i>p.4</i> )	12.5

<b>Semester 2</b>	
208-245 Animal Management and Production ( <i>p.3</i> )	12.5

#### Third year Points

<b>Summer Semester</b>	
208-338 Special Studies ( <i>p.4</i> )	12.5

<b>Semester 1</b>	
207-328 Working with Community Groups ( <i>p.7</i> )	12.5
207-415 Soil Management and Conservation ( <i>p.5</i> )	12.5
208-308 Irrigation and Water Management ( <i>p.9</i> )	12.5
208-329 Viticulture ( <i>p.4</i> )	12.5
208-336 Production Horticulture ( <i>p.5</i> )	12.5
208-340 Plant Pathology ( <i>p.5</i> )	12.5
208-342 Animal Production Systems ( <i>p.5</i> )	12.5

<b>Semester 2</b>	
208-212 Agribusiness Marketing ( <i>p.4</i> )	12.5
208-316 Oenology ( <i>p.4</i> )	12.5
208-341 Fertiliser Management ( <i>p.5</i> )	12.5

#### Fourth year (honours) Points

<b>Semester 1</b>	
207-415 Soil Management and Conservation ( <i>p.5</i> )	12.5
<b>Semester 2</b>	
207-413 Community Natural Resource Management ( <i>p.6</i> )	12.5
207-414 Social Research Methods ( <i>p.10</i> )	12.5
208-413 Biological Systems Analysis ( <i>p.5</i> )	12.5
208-414 Directed Reading in Land Resources ( <i>p.6</i> )	12.5

### Information for students commencing prior to 2004

#### Course objectives

Students who have completed this course should have acquired:

- an ability to demonstrate a broad knowledge of fundamental scientific precepts across a range of disciplines, with a high level of achievement in

one or more of the disciplines of agricultural and environmental science relating to soils, plant and animal management and production;

- an understanding of the structures of agriculture, catchment management and related industries and the principal factors that determine location, environmental impact, sustainability, profitability and international trade competitiveness and the maintenance of biodiversity;
- the capacity to apply scientific knowledge to the definition, analysis, and solution of agricultural and environmental problems;
- the ability to design and conduct scientific enquiries;
- an understanding of principles of best management practice in relation to health, safety, animal welfare and the environment in agriculture and related industries;
- a capacity for the exchange, acquisition and dissemination of scientific and industry information and for technology transfer;
- the ability to work as part of a multidisciplinary team and serve as a team leader.

#### Course outline

Third Year	Points
<b>Semester 1</b>	
202-308 Human Resource Management (p.2)	12.5
<b>Year long subjects</b>	
202-005 Industry Placement# (p.3)	0
202-307 Industry Project (p.3)	25
202-307 Industry Project (25 points, year-long) may be replaced by 202-309 Industry Project (25 points, Semester 1 or Semester 2)	
<b>Elective subjects</b>	
Five electives *	62.5
<b>Total</b>	<b>100</b>
<b>Fourth year (honours)</b>	
<b>Semester 1</b>	
208-415 Research Philosophies and Statistics (p.3)	12.5
<b>Semester 2</b>	
202-417 Emerging Issues in Land Resources (p.3)	12.5
<b>Year-long subjects</b>	
202-410 Honours Research Project (p.3)	50
202-410 Honours Research Project (50 points, year-long) may be replaced by 202-413 Honours Research Project (50 points, Semester 1 or Semester 2) or 202-416 Honours Research Project (50 points mid-year entry)	
<b>Elective subjects</b>	
Two electives	25
<b>Total</b>	<b>100</b>

\* Electives can be selected from the following lists or from approved subjects from other courses.

#### Elective subjects

Electives may be selected from the following list and a limited number may be selected from approved subjects from other courses. Insufficient enrolments may lead to an elective subject being suspended. Not all electives are available at all campuses.

Second year	Points
<b>Summer Semester</b>	
208-244 Australia in the Wine World (p.4)	12.5
<b>Semester 1</b>	
202-108 Information Technology and Communication (p.1)	12.5
208-206 Vineyard and Winery Operations II (p.6)	12.5
208-243 Ecology & Management of Grazing Systems (p.3)	12.5
521-211 Biochemistry & Molecular Biology Part A (p.1)	12.5
526-201 Principles of Microbiology & Immunology (p.1)	12.5
<b>Semester 2</b>	
207-201 Resource Management Economics (p.2)	12.5
208-212 Agribusiness Marketing (p.4)	12.5
208-229 Comparative Nutrition (p.3)	12.5
208-245 Animal Management and Production (p.3)	12.5
208-246 Crop Production (p.4)	12.5
208-306 Agricultural Marketing (p.8)	12.5
521-212 Biochemistry & Molecular Biology Part B (p.2)	12.5
<b>Third year</b>	
<b>Semester 1</b>	
207-301 Global Environment and Sustainability (p.3)	12.5
207-328 Working with Community Groups (p.7)	12.5
207-415 Soil Management and Conservation (p.5)	12.5
208-301 Crop and Pasture Physiology (p.8)	12.5
208-302 Molecular Biology and Breeding (p.8)	12.5

Third year	Points
208-308 Irrigation and Water Management (p.9)	12.5
208-336 Production Horticulture (p.5)	12.5
208-340 Plant Pathology (p.5)	12.5
208-342 Animal Production Systems (p.5)	12.5
<b>Semester 2</b>	
202-304 Agricultural Systems Analysis (p.7)	12.5
207-201 Resource Management Economics (p.2)	12.5
208-212 Agribusiness Marketing (p.4)	12.5
208-304 Advanced Topics in Animal Science (p.8)	12.5
208-306 Agricultural Marketing (p.8)	12.5
208-316 Oenology (p.4)	12.5
208-341 Fertiliser Management (p.5)	12.5
<b>Fourth year</b>	
<b>Semester 1</b>	
207-301 Global Environment and Sustainability (p.3)	12.5
207-415 Soil Management and Conservation (p.5)	12.5
207-414 Social Research Methods (p.10)	12.5
208-402 Advanced Plant Breeding and Improvement (p.10)	12.5
208-407 Genetics and Animal Breeding (p.4)	12.5
208-409 Animal Welfare (p.10)	12.5
207-410 Agroforestry (p.5)	12.5
<b>Semester 2</b>	
202-304 Agricultural Systems Analysis (p.7)	12.5
207-404 Agricultural Policies and Trade (p.10)	12.5
207-413 Community Natural Resource Management (p.6)	12.5
208-413 Biological Systems Analysis (p.5)	12.5
208-414 Directed Reading in Land Resources (p.6)	12.5

## Bachelor of Animal Science and Management

This course, offered at the Parkville campus, provides an understanding of animals, their biology and ecology, their management in natural and farm production systems and as companions to humans. The course provides grounding in the technical, ethical and welfare considerations attached to human-animal interactions.

### Course objectives

Students who have completed this course should have acquired:

- the scientific knowledge required to care for and manage animals across a range of disciplines;
- a high level of understanding and appreciation in a more specialised area of the animal sciences as applied in animal industries, companion animal management and animal models for scientific studies;
- an ability to work within and contribute to the development of ethical practices in all human-animal interactions;
- enhanced skills in communication, teamwork, group leadership, IT and the gathering, management, analysis and reporting of information.

### Career opportunities

Graduates in animal science and management may find employment in a wide range of animal production, biomedical, environmental and service industries, community organisations concerned with animal welfare as well as advising and consulting. Students graduating with honours from this course will be well prepared for continuing studies and research in the animal sciences, including the specialised areas of genetics, physiology, nutrition, animal welfare and animal production.

### Course outline

#### Pass degree:

A total of 300 points must be obtained comprising:

- 125 points of core subjects
- 50 points of subjects taken in the third year of study toward a chosen focus area:
  - **animal production and management systems**

The aim of this focus area is to develop the student's understanding of the principles and practice of managing animals for economic gain. This knowledge can be applied to extensive and intensive farm animal production (for example, in the sheep meat, wool, beef, dairy and pig industries), as well as other animal enterprises and industries such as horse rearing or deer farming. Students selecting this area would be expected to take subjects such as Animal Production Systems, Advanced Topics in Animal Science, Applied Animal Reproduction, and Advanced Animal Management Systems.

- animal welfare and behaviour**  
 The aim of this focus area is to develop the student's knowledge, and ability to apply knowledge of animal behaviour, of animal-animal and human-animal interactions in diverse natural and managed environments for conservation and production purposes. Students selecting this area would be expected to take subjects such as Applied Animal Behaviour, Animal Welfare, Animal Production Systems, and Advanced Topics in Animal Science.
- animal physiology and nutrition**  
 The aim of this focus area is to develop the student's knowledge, and ability to apply knowledge, of physiological processes underlying animal function and performance, considering also responses to climatic environment, nutritional conditions and stressors. Physiology and nutrition will be developed on a comparative basis from general principles to the specific function for a wide array of animal species. Students selecting into this area would be expected to take subjects such as Exercise and Environmental Physiology, Advanced Topics in Animal Science, Applied Animal Reproduction and Special Studies in Animal Science.
- animal genetics and breeding**  
 The aim of this focus area is to develop the student's understanding of how differences in genes at the molecular level evolve, how these differences affect traits relevant to animal production, ecology and disease, and how these genetic differences can be managed for the benefit of animal owners and for genetic conservation. The use of selection, crossbreeding and biotechnology will be covered. Students selecting this area would be expected to take subjects such as Molecular Biology Breeding and Biotechnology, Advanced Topics in Animal Science, Genetics and Animal Breeding, and Applied Animal Reproduction.
- equine management**  
 The aim of this focus area is to develop the student's knowledge of principles and practices in management and care of horses for best welfare and performance in the human-animal interactions of sport and leisure. Students selecting this area would be expected to take subjects such as Equine Management Systems, Animal Welfare, Exercise and Environmental Physiology and Applied Animal Reproduction.

**Honours degree requirements:**

A total of 400 points must be obtained comprising:

- completion of the requirements for the three-year degree
- a 50-point Industry Research Project
- four electives as specified below

Students will be selected into the honours program on the basis of their performance in all 300-level subjects. Course planning will in all years take into account the preferred progression path and any prerequisites required in that progression.

**Note:** Students intending to attempt to transfer to the BVetSc degree should consult the section of the Undergraduate Handbook dealing with entry requirements for that degree and discuss BAnScMan subject selection with the BAnScMan course coordinator. Selection of first-year subjects will be on the basis of individual counselling.

<b>First year</b>	Points
<b>Semester 1</b>	
208-108 Animals in Society (p.1)	12.5
202-103 Biology for Land and Food Resources (p.1)	12.5
or	
650-141 Biology of Cells and Organisms (p.1)	12.5
202-101 Chemistry for Land and Food Resources (p.1)	12.5
or	
610-141 Chemistry A (p.2)	12.5
Students with a VCE score of 25 or greater in Chemistry or equivalent are advised to enrol in 610-141 Chemistry A.	
Students without VCE Mathematical Methods or equivalent take:	
202-107 Mathematics for Land and Food Resources (p.1)	12.5
Students with VCE Mathematical Methods or equivalent choose one elective from:	
202-104 Information Technology and Communication (p.1)	12.5
208-109 Australian Agriculture (p.1)	12.5
640-121 Physics A (Adv) (p.2)	12.5
640-141 Physics A (p.2)	12.5
640-161 Physics: Principles & Applications A (p.3)	12.5
<i>Sub-total</i>	<i>50.0</i>
<b>Semester 2</b>	
208-111 Working with Animals (p.1)	12.5
650-142 Genetics & The Evolution of Life (p.1)	12.5

<b>First year</b>		Points
610-141 Chemistry A (p.2)		12.5
or		
610-142 Chemistry B (p.2)		12.5
Students with a pass in 610-141 Chemistry A, or a very good pass in 202-101 Chemistry for Land and Food Resources, take 610-142 Chemistry B.		
Choose one elective from:		
640-122 Physics B (Adv) (p.2)		12.5
640-142 Physics B (p.3)		12.5
640-162 Physics: Principles & Applications B (p.3)		12.5
650-111 Biology of Australian Flora & Fauna (p.1)		12.5
207-101 Land, Food and Resource Economics (p.2)		12.5
<i>Sub-total</i>		<i>50.0</i>
<b>Total</b>		<b>100.0</b>
<b>Second year</b>		Points
<b>Semester 1</b>		
208-202 Animal Physiology (p.6)		12.5
202-202 Experimental Design/Statistical Methods (p.2)		12.5
654-204 Ecology: Individuals and Populations (p.2)		12.5
Plus one elective from below		
<b>Semester 2</b>		
208-201 Comparative Nutrition (p.5)		12.5
208-215 Animal Health and Epidemiology (p.1)		12.5
Plus two electives from below		
<b>Semester 1 electives</b>		
208-203 Ecology & Management of Grazing Systems (p.6)		12.5
521-211 Biochemistry & Molecular Biology Part A (p.1)		12.5
526-201 Principles of Microbiology & Immunology (p.1)		12.5
<b>Semester 2 electives</b>		
521-212 Biochemistry & Molecular Biology Part B (p.2)		12.5
208-207 Animal Management and Production (p.7)		12.5
208-242 Companion Animal Biology and Management (p.2)		12.5
208-247 Biotechnology for Land and Food (p.3)		12.5
654-202 Vertebrate Structure and Function (p.1)		12.5
<b>Total</b>		<b>100.0</b>
<b>Third year</b>		Points
<b>Core subjects</b>		
202-001 Industry Placement# (p.4)		0
<b>Electives</b>		
100 points of subjects must be chosen, with a total of 50 points according to combinations recommended for a focus area of study		
<b>Year-long subject</b>		
202-301 Industry Project (p.4)		25
202-301 Industry Project (25 points, Year-long) may be replaced by 202-303 Industry Project (25 points, Semester 1 or Semester 2)		
<b>Semester 1</b>		
202-302 Human Resource Management (p.3)		12.5
208-303 Animal Production Systems (p.8)		12.5
208-302 Molecular Biology and Breeding (p.8)		12.5
208-326 Exercise and Environmental Physiology (p.3)		12.5
208-339 Genetics and Animal Breeding (p.3)		12.5
<b>Semester 2</b>		
208-323 Equine Management Systems (p.2)		12.5
208-324 Applied Animal Behaviour (p.2)		12.5
208-325 Applied Animal Reproduction (p.3)		12.5
208-304 Advanced Topics in Animal Science (p.8)		12.5
Other subjects: A maximum of two other LFR or Science Faculty 200-level or 300-level subjects not on this list may be selected. In addition, entry may be granted to a maximum of two LFR 400-level subjects (except 202-401 and the one Special Studies subject) with approval of the Associate Dean (Coursework). One of these subjects can be counted towards the 50-point load for a student's selected focus area of study.		
<b>Total</b>		<b>100.0</b>
<b>Fourth year (not offered in 2005)</b>		Points
<b>Core subject</b>		
202-401 Honours Research Project (p.5)		50
202-401 Honours Research Project (50 points, year-long) may be replaced by 202-402 Honours Research Project (50 points, Semester 1 or Semester 2) or 202-403 Honours Research Project (50 points, mid-year entry)		
<b>Electives: choose four subjects</b>		
208-405 Advanced Animal Management Systems (p.4)		12.5

<b>Fourth year (not offered in 2005)</b>		Points
208-406	Advanced Topics in Equine Systems ( <i>p.4</i> )	12.5
208-408	Special Studies in Animal Science ( <i>p.4</i> )	12.5
208-409	Animal Welfare ( <i>p.10</i> )	12.5
or one 300-level subject from LFR or science approved by the Associate Dean (Coursework) on the advice of the course coordinator.		
<b>Total</b>		<b>100.0</b>

## Bachelor of Food Science

The first year of this course is offered at the Parkville campus. During subsequent years specialist subjects may be taught using laboratory and pilot plant facilities available at the Gilbert Chandler campus. Graduates from this course will have an understanding of food production as a system that functions within limits of a regulatory environment and is influenced by international trade issues and consumer needs. Graduates will also understand emerging issues such as the use of new processing technologies (their potential benefits and possible risks) and the potential impact of new technologies on food production systems (such as genetic manipulation, nanobiotechnology, etc.).

The course comprises three years full-time study or equivalent part-time study.

### Course objectives

Students who have completed this course should have acquired:

- a detailed knowledge of scientific principles underpinning the conversion of raw agricultural products into safe, nutritious and interesting food;
- an ability to understand the context of food production from different perspectives, including: the regulatory environment governing the supply of safe and high quality food, international trade; agricultural production and supply chain management; biotechnological innovation and food production;
- skills to understand and analyze major emerging issues facing food production and the trends in processing science and technology being developed to solve emerging problems;
- an understanding of the structure and organisation of the food processing industry and where this abuts agricultural production;
- technical and leadership skills in the development of new processes and products;
- skills to exchange, acquire and disseminate scientific information for the benefit of the food industry;
- understanding of environmental issues relevant to food production and the technology needed to address these issues across the production chain;
- a capacity and motivation for continuing independent learning; and
- understanding of the rights, privileges and responsibilities conferred with the degree and memberships of professional associations.

### Career opportunities

Career choices are vast and growing. They range from a research and development officer for food processing companies to monitoring quality assurance standards of food products in the interests of public health; from developing functional food to managing food waste products; from a microbiologist for a multinational corporation to developing packaging for products sold in supermarkets.

Graduates can expect to find employment in food processing companies, the major supermarket conglomerates, government regulatory and research agencies (such as government departments and CSIRO) plus importing and exporting companies engaged in global food supply chains.

### Course outline

<b>First year</b>		Points
<b>Semester 1</b>		
202-101	Chemistry for Land and Food Resources ( <i>p.1</i> )	12.5
or		
610-141	Chemistry A ( <i>p.2</i> )	12.5
Students with a VCE score of 25 or greater in Chemistry or equivalent may enrol in 610-141 Chemistry A		
202-103	Biology for Land and Food Resources ( <i>p.1</i> )	12.5
or		
650-141	Biology of Cells and Organisms ( <i>p.1</i> )	12.5
Students with a VCE score of 25 or greater in Biology may enrol in 650-141 Biology of Cells and Organisms		
202-104	Information Technology and Communication ( <i>p.1</i> )	12.5
or		
202-107	Mathematics for Land and Food Resources ( <i>p.1</i> )	12.5

<b>First year</b>		Points
Students entering without Mathematical Methods or equivalent must take 202-107 Mathematics for Land and Food Resources		
208-109	Australian Agriculture ( <i>p.1</i> )	12.5
<i>Sub-total</i>		<i>50.0</i>
<b>Semester 2</b>		
650-142	Genetics & The Evolution of Life ( <i>p.1</i> )	12.5
207-101	Land, Food and Resource Economics ( <i>p.2</i> )	12.5
208-106	Introduction to Food Science ( <i>p.1</i> )	12.5
One elective from:		
202-106	Land Resources ( <i>p.2</i> )	12.5
208-101	Farm Animal Biology ( <i>p.5</i> )	12.5
208-107	Vineyard and Winery Operations I ( <i>p.5</i> )	12.5
610-141	Chemistry A ( <i>p.2</i> )	12.5
610-142	Chemistry B ( <i>p.2</i> )	12.5
<i>Sub-total</i>		<i>50.0</i>
<b>Total</b>		<b>100.0</b>

Enrolment in elective studies is dependent on subject availability.

<b>Second year</b>		Points
<b>Semester 1</b>		
202-202	Experimental Design/Statistical Methods ( <i>p.2</i> )	12.5
208-225	Food Chemistry, Biology and Nutrition ( <i>p.1</i> )	12.5
526-201	Principles of Microbiology & Immunology ( <i>p.1</i> )	12.5
One elective from:		
208-202	Animal Physiology ( <i>p.6</i> )	12.5
208-206	Vineyard and Winery Operations II ( <i>p.6</i> )	12.5
521-211	Biochemistry & Molecular Biology Part A ( <i>p.1</i> )	12.5
or other approved subjects from LFR or Science courses		
<i>Sub-total</i>		<i>50.0</i>
<b>Semester 2</b>		
208-216	Food Microbiology ( <i>p.1</i> )	12.5
208-226	Food Structure and Function ( <i>p.2</i> )	12.5
Two electives from:		
521-212	Biochemistry & Molecular Biology Part B ( <i>p.2</i> )	12.5
521-220	Techniques in Protein & Gene Technology ( <i>p.2</i> )	12.5
207-201	Resource Management Economics ( <i>p.2</i> )	12.5
208-201	Comparative Nutrition ( <i>p.5</i> )	12.5
208-207	Animal Management and Production ( <i>p.7</i> )	12.5
208-210	Agricultural Management Economics ( <i>p.3</i> )	12.5
208-218	Production Management ( <i>p.2</i> )	12.5
208-227	Molecular Biology of Food Microorganisms ( <i>p.2</i> )	12.5
208-228	Waste Management and Use ( <i>p.3</i> )	12.5
208-247	Biotechnology for Land and Food ( <i>p.3</i> )	12.5
208-316	Oenology ( <i>p.4</i> )	12.5
or other approved LFR subjects		
<i>Sub-total</i>		<i>50.0</i>
<b>Total</b>		<b>100.0</b>

<b>Third year</b>		Points
<b>Semester 1</b>		
208-314	Technology of Food Processing ( <i>p.3</i> )	12.5
208-310	Analytical Techniques ( <i>p.3</i> )	12.5
202-302	Human Resource Management ( <i>p.3</i> )	12.5
or other approved LFR or science subject		
208-321	Food Safety, Quality and Regulation ( <i>p.4</i> )	12.5
<i>Sub-total</i>		<i>50.0</i>
<b>Semester 2</b>		
208-319	Trends in Food Science and Nutrition ( <i>p.3</i> )	12.5
208-322	Food Production Chain Management ( <i>p.4</i> )	12.5
208-343	Food Science Project ( <i>p.4</i> )	12.5
One approved elective from LFR or Science subjects		
<i>Sub-total</i>		<i>50.0</i>
<b>Total</b>		<b>100.0</b>

## Bachelor of Food Science (Honours)

### Course overview

The honours year in food science is a very valuable year of study. It comprises advanced coursework and an individual research project designed to extend students' knowledge and skills in solving food industry research problems. After successfully completing the program, students will be prepared to either enter the workforce pursuing a career with food and dairy companies, or enrol for further research study through applying for a masters or doctor of philosophy degree.

## Admission requirements

All applicants must satisfy the following two requirements.

- Applicants must hold a bachelors level degree in any of the following areas: agricultural science, biological science (preferred majors in biochemistry or microbiology), chemistry, engineering or food science.
- The minimum entry requirement is an average mark of at least 70 per cent during the second and third year of the degree.

## Duration and commencement

This honours program can only be undertaken on a full-time basis. The program commences in February and concludes in November.

## Course structure

The honours course is comprised of coursework (three subjects, 37.5 per cent) and a research project (62.5 per cent). The three coursework subjects will be selected from those offered at graduate certificate, graduate diploma and advanced undergraduate levels, by the Faculty of Land and Food Resources and other faculties of the University. They will enable students to gain sufficient familiarity with the fields relevant to their research project. Applicants to the program will need to demonstrate the completion of appropriate prerequisite subjects in their undergraduate courses when selecting coursework subjects. Final subject choice will be approved by the research project supervisor. Students will also be expected to participate in research discussion groups or 'journal clubs' and attend the department's research seminar series.

## Honours research project

Students will select a project from a list formulated by supervisors. Some of these projects may be offered in collaboration with food or agricultural companies, and collaborating institutions such as Food Science Australia. Project proposals detailing the experimental plan and a literature review will be presented before the departmental Honours Panel for discussion and approval prior to commencing experimental work. Students will be required to present seminars on both their project proposal and the outcomes of their research. The expected volume of the thesis (including references) will normally be limited to 20 000 words (approximately 50 A4 pages).

## Assessment

Assessment of subjects constituting the coursework component of the program will be conducted as stipulated in the subject outlines published in the *University Handbook*. The overall grade for the honours year will be a weighted average of results achieved in the subjects making up the coursework and the mark obtained for the research thesis. In order to be awarded the honours qualification, students must achieve an overall weighted average of at least 65 per cent for their honours studies.

## Bachelor of Forest Science

### Information for students commencing from 2005

The first and second years of this course are offered at the Parkville campus, and the third at the Creswick campus.

Forest and woodland ecosystems cover about a fifth of Australia and are under increasing pressure with land degradation reducing forest area and complexity. Forests continue to be the focus of vigorous community debate including concern for the management of fire in forests, their role and significance in greenhouse gas mitigation, and the management of forests for threatened flora and fauna.

The Bachelor of Forest Science will provide graduates with the skills to manage Australia's forests and to articulate the complex concepts concerning forest management to the community. As a degree in forest ecology and management, the course comprehensively addresses the biology and use of forests, from soils, flora and fauna to tree physiology and water management. An understanding of the social and economic aspects of forest management is developed throughout the course.

Students do practical laboratory and field work, while excursions to forests in Victoria and other Australia states provide opportunities to supplement, by personal observation and informal discussion, knowledge gained in lectures.

Students also complete (during vacations) a total of 12 weeks work experience with approved organizations; this is coordinated by the Faculty and provides students with a unique learning opportunity as well as paid employment.

### Course objectives

Students who complete this course should have acquired:

- an understanding of the biology and diversity of forest ecosystems;
- an understanding of Australian forest management and conservation;

- the capacity to apply scientific knowledge to the definition, analysis and solution of problems in forestry, forest conservation, forest industry and related environmental issues;
- an ability to design and conduct scientific enquiries;
- essential skills in the acquisition and interpretation of forest data;
- an understanding of principles of sound practice in relation to health, safety, ethical issues, and the environment in forestry and forest industries;
- a capacity for the exchange, acquisition and dissemination of scientific and industry information and for technology transfer;
- a capacity and motivation for continuing independent learning.

### Career opportunities

Graduates are in demand for a wide range of occupations relating to the management of forests and other natural resources. Forest estates cover large areas and their management relies on competence and training in forest biology, hydrology, engineering, remote sensing, soils, flora and fauna, and tree physiology. Forest science graduates are employed by government authorities including state forest services and fire management authorities, protected area management agencies involved with wildlife and water supply, planning agencies dealing with environmental management, and increasingly across a wide spectrum of private forestry enterprises. Graduates also find employment in private and non-government conservation efforts in many parts of the world. As graduates qualify for professional accreditation they may work in a wide variety of ecosystems and land management agencies globally.

### Course outline

First year (Parkville)		Points
<b>Semester 1</b>		
202-101	Chemistry for Land and Food Resources ( <i>p.1</i> )	12.5
or		
610-141	Chemistry A ( <i>p.2</i> )	12.5
Students with a VCE score of 25 or greater in Chemistry or equivalent may enrol in 610-141 Chemistry A		
202-103	Biology for Land and Food Resources ( <i>p.1</i> )	12.5
or		
650-141	Biology of Cells and Organisms ( <i>p.1</i> )	12.5
Students with a VCE score of 25 or greater in Biology may enrol in 650-141 Biology of Cells and Organisms		
202-104	Information Technology and Communication ( <i>p.1</i> )	12.5
or		
202-107	Mathematics for Land and Food Resources ( <i>p.1</i> )	12.5
Students without VCE Mathematics Methods or equivalent must take 202-107 Mathematics for Land and Food Resources. Students with VCE Mathematics Methods or equivalent take 202-104 Information Technology and Communication but may substitute this with 625-101 Earth Sciences: The Global Environment with the course coordinator's approval.		
207-113	Australian Rural Landscapes ( <i>p.1</i> )	12.5
<i>Sub-total</i>		50.0
<b>Semester 2</b>		
202-106	Land Resources ( <i>p.2</i> )	12.5
or		
610-141	Chemistry A ( <i>p.2</i> )	12.5
or		
610-142	Chemistry B ( <i>p.2</i> )	12.5
207-101	Land, Food and Resource Economics ( <i>p.2</i> )	12.5
207-103	Ecology ( <i>p.1</i> )	12.5
650-142	Genetics & The Evolution of Life ( <i>p.1</i> )	12.5
<i>Sub-total</i>		50.0
<b>Total</b>		<b>100.0</b>
<b>Second year (Parkville)</b>		Points
<b>Semester 1</b>		
202-201	Plant Function ( <i>p.2</i> )	12.5
202-202	Experimental Design/Statistical Methods ( <i>p.2</i> )	12.5
220-213	Trees and Forests ( <i>p.1</i> )	12.5
654-207	Australian Wildlife Biology ( <i>p.2</i> )	12.5
or		
654-204	Ecology: Individuals and Populations ( <i>p.2</i> )	12.5
or		
625-101	Earth Sciences - The Global Environment ( <i>p.1</i> )	12.5
<i>Sub-total</i>		50.0
<b>Semester 2</b>		
202-203	Soil and Water Resources ( <i>p.3</i> )	12.5
207-201	Resource Management Economics ( <i>p.2</i> )	12.5
207-203	Techniques of Resource Assessment ( <i>p.1</i> )	12.5
220-201	Native Forest Ecosystems & Biodiversity ( <i>p.1</i> )	12.5

<b>Second year (Parkville)</b>	Points
<i>Sub-total</i>	50.0
<b>Total</b>	<b>100.0</b>
<b>Third year (Creswick)</b>	Points
<b>Summer</b>	
220-301 Forestry Field Camp (p.3)	0
<i>Sub-total</i>	0
<b>Semester 1</b>	
220-302 Tree Growth and Ecophysiology (p.3)	12.5
220-303 Forest Inventory (p.3)	12.5
220-307 Fire Ecology and Management (p.4)	12.5
<i>Sub-total</i>	37.5
<b>Semester 2</b>	
220-311 Forest Values, Landscapes and Society (p.4)	12.5
220-331 Forest Health and Restoration (p.5)	12.5
220-304 Silviculture (p.3)	12.5
<i>Sub-total</i>	37.5
<b>Year-long subjects</b>	
202-004 Industry Placement# (p.3)	0
202-306 Industry Project (p.3)	25
202-306 Industry Project (25 points, year-long) may be replaced by 202-312 Industry Project (25 points, Semester 1 or Semester 2)	
<i>Sub-total</i>	25.0
<b>Total</b>	<b>100.0</b>

### Information for students commencing prior to 2005

The first and fourth years of this course are offered at the Parkville campus, and the second and third years are at the Creswick campus. The course takes four years of full-time study to complete.

The Bachelor of Forest Science degree aims to cover the biology and use of forests, including forest management and conservation, soils, flora and fauna, and tree physiology. Students study the science of growing and managing forests to sustain and manage water, wildlife, recreational opportunities, wood and forest products for the community.

Such an education requires a comprehensive understanding of the biology of forest ecosystems, as well as an understanding of economics, engineering, politics of forest use, wood science and sociology.

Students do practical laboratory and fieldwork throughout the course. Excursions are arranged to provide opportunities to supplement, by personal observation, knowledge gained in lectures and practical work. Sometimes they take place during vacations.

Students must also complete a total of 16 weeks forestry work experience with approved organisations during vacations. The subject 202-001 Industry Placement is a hurdle requirement for the degree.

### Course objectives

Students who have completed this course should have acquired:

- an understanding of forest biology, diversity and ecosystems;
- an understanding of the structures underlying Australian forest management and conservation and the principal factors that determine the environmental impact, sustainability, profitability and international cost-competitiveness of forestry;
- essential factual knowledge and an understanding of the principles appropriate to each stage of the educational process;
- the capacity to apply scientific knowledge to the definition, analysis and solution of problems in forestry, forest conservation, forest industry and related environmental issues;
- an ability to design and conduct scientific enquiries;
- essential skills in the acquisition and interpretation of forestry data;
- an understanding of principles of sound practice in relation to health, safety, ethical issues, and the environment in forestry and forest industries;
- a capacity for the exchange, acquisition and dissemination of scientific and industry information and for technology transfer;
- a capacity and motivation for continuing independent learning; and
- an understanding of the rights, privileges and responsibilities conferred with the degree and with membership of professional associations and learned societies.

### Career opportunities

Graduates are well suited to a wide range of occupations relating to the management of forest estates and the environment. Most forest estates cover several hundred thousand hectares and the management of such large scale enterprises draws continually on training in forest biology (including ecology,

genetics and physiology), hydrology, engineering, remote sensing and economics. Some forestry graduates are employed by government authorities, sometimes with the state forest services but also with land care, national parks, wildlife, water supply and country fire authorities as well as environmental management and planning agencies. There are also many opportunities for employment in private forestry. Traditionally this has been in the larger firms in the wood-based industry, especially in resource planning, timber and harvesting management, reforestation and wood technology. However, increasingly graduates are being employed in private and non-governmental conservation efforts in many parts of the world.

Graduates of the BForSc course and combined degrees are eligible to become members of the Institute of Foresters of Australia, and can gain accreditation as Registered Foresters.

### Course outline

<b>Third year (Creswick)</b>	Points
<b>Semester 1</b>	
220-307 Fire Ecology and Management (p.4)	12.5
220-317 Applied Native Forest Ecology (p.4)	12.5
220-334 Trees, Genes and Environment (p.5)	12.5
<b>Semester 2</b>	
220-309 Forest Management and Access Systems (p.4)	12.5
220-323 Plantations and Farm Forests (p.4)	12.5
220-331 Forest Health and Restoration (p.5)	12.5
<b>Year-long subjects</b>	
220-329 Field Studies II (p.4)	12.5
220-311 Forest Values, Landscapes and Society (p.4)	12.5
<i>Sub-total</i>	100.0
<b>Fourth year (Parkville)</b>	Points
<b>Semester 1</b>	
202-302 Human Resource Management (p.3)	12.5
220-406 International Forest Policy (p.5)	12.5
<b>Year-long subject</b>	
202-001 Industry Placement# (p.4)	0
<b>Pass degree pathway</b>	
202-301 Industry Project (p.4)	25
202-301 Industry Project (25 points, year-long) may be replaced by 202-303 Industry Project (25 points, Semester 1 or Semester 2)	
and	
Four electives*	50
<b>Honours degree pathway</b>	
202-401 Honours Research Project (p.5)	50
202-401 Honours Research Project (50 points, year-long) may be replaced by 202-402 Honours Research Project (50 points, Semester 1 or Semester 2) or 202-403 Honours Research Project (50 points, mid-year entry)	
and	
Two electives*	25
<i>Sub-total</i>	100.0
*Electives can be selected from the following list or from approved subjects from other courses:	
<b>Elective subjects</b>	
Insufficient enrolments may lead to an elective subject being suspended.	
<b>Fourth year</b>	Points
<b>Summer Semester</b>	
220-411 Processes in Forest Ecosystems (p.7)	12.5
<b>Semester 1</b>	
202-104 Information Technology and Communication (p.1)	12.5
220-213 Trees and Forests (p.1)	12.5
207-301 Global Environment and Sustainability (p.3)	12.5
207-339 Hydrology and Catchment Management (p.2)	12.5
207-410 Agroforestry (p.5)	12.5
207-414 Social Research Methods (p.10)	12.5
<b>Semester 2</b>	
220-407 Parks and Recreation (p.6)	12.5
220-409 Commercial Forest Management (p.7)	12.5
207-413 Community Natural Resource Management (p.6)	12.5
207-201 Resource Management Economics (p.2)	12.5

## Bachelor of Forest Science (Honours)

### Course Description

The Bachelor of Forest Science (Honours) comprises advanced coursework and an individual research project designed to extend students' knowledge and skills in solving problems. After successfully completing the program, students will be prepared to either:

- enter the workforce pursuing a career in forest science and related environmental management industries; or to
- pursue further research study through Masters or Doctor of Philosophy degrees.

### Admission requirements

To be eligible for consideration for entry into honours, applicants must have:

- achieved an average of 65 in the third year (300-level) subjects of their Bachelor of Forest Science degree; or
- completed an equivalent qualification to the Bachelor of Forest Science degree, this qualification being recognised by the Faculty, at a level of academic performance equivalent to that required in the point above.

### Duration and commencement

This honours program can be undertaken on a full-time or part-time basis. The program can commence either in February or July. February commencement concludes in November. July commencement concludes in June of the following year.

### Course structure

The honours course is comprised of coursework (four subjects, 50 per cent) and a research project (50 per cent). The four coursework subjects consist of two core subjects (220-406 International Forest Policy and 220-403 Forest Planning and Business Management), and two electives to be selected from approved 300- and 400-level subjects offered by the Faculty of Land and Food Resources. They will enable students to gain sufficient familiarity with the fields relevant to their research project. Up to two subjects not appearing on the recommended list can be taken for credit, subject to course coordinator approval. Applicants to the program will need to demonstrate the completion of appropriate prerequisite subjects in their undergraduate courses when selecting coursework subjects. Students will also be expected to participate in research discussion groups and to attend Faculty research seminars.

### Honours research project

Students select an Honours Research Project (202-401) from a list formulated by supervisors through the Honours Research Project subject coordinator at each campus. Project proposals detailing the experimental plan and a literature review will be presented before the Honours Panel for discussion and approval prior to commencing experimental work. Students will be required to present seminars on both their project proposal and the outcomes of their research. The expected length of the thesis (including references) is normally limited to 20 000 words.

### Assessment

Assessment of subjects constituting the coursework component of the program will be conducted as stipulated in the subject outlines published in the *University Handbook*. The overall grade for the honours year will be a weighted average (by credit points) of results achieved in the subjects making up the coursework and the mark obtained for the research/industry project during their honours course. In order to be awarded the honours qualification, students must pass every subject and obtain a minimum weighted average mark of 65 per cent.

Honours is awarded at 4 levels dependent upon calculated Honours score: H3 (65-69%), H2B (70-74%), H2A (75-79%) and H1 (80% and above). Honours is not awarded for calculated Honours scores less than 65%.

### Course outline

**Fourth year (Honours). Students can be located at Parkville or Creswick campuses depending on project and elective choice.** Points

<b>Semester 1, 2 or Year-long</b>		Points
202-401	Honours Research Project (p.5)	50
202-401 Honours Research Project (50 points, year-long) may be replaced by 202-402 Honours Research Project (50 points, Semester 1 or Semester 2) or 202-403 Honours Research Project (50 points, mid-year entry).		
<i>Sub-total</i>		50
<b>Semester 1</b>		
220-406	International Forest Policy (p.5)	12.5
220-401	Conservation Biology of Treed Landscapes (p.5)	12.5

**Fourth year (Honours). Students can be located at Parkville or Creswick campuses depending on project and elective choice.** Points

or		
207-410	Agroforestry (p.5)	12.5
or		
207-414	Social Research Methods (p.10)	12.5
or		
202-302	Human Resource Management (p.3)	12.5
<i>Sub-total</i>		25.0
<b>Semester 2</b>		
220-403	Forest Planning and Business Management (p.6)	12.5
220-402	Wood and Timber Products (p.6)	12.5
or		
220-407	Parks and Recreation (p.6)	12.5
or		
207-413	Community Natural Resource Management (p.6)	12.5
or		
207-339	Hydrology and Catchment Management (p.2)	12.5
<b>Note:</b> Students must take one of 220-401 Conservation of Treed Landscapes, and 202-402 Wood and Timber Products.		
<i>Sub-total</i>		25.0
<b>Elective subjects</b>		
Students may be able to choose up to two subjects from the following 300-level subjects:		
220-307	Fire Ecology and Management (p.4)	12.5
220-309	Forest Management and Access Systems (p.4)	12.5
220-311	Forest Values, Landscapes and Society (p.4)	12.5
220-317	Applied Native Forest Ecology (p.4)	12.5
220-323	Plantations and Farm Forests (p.4)	12.5
220-331	Forest Health and Restoration (p.5)	12.5
220-334	Trees, Genes and Environment (p.5)	12.5
<b>Total</b>		<b>100.0</b>

## Bachelor of Forest Science/Bachelor of Commerce

**There will be no first-year intake into this course in 2005. The information below applies to continuing students only.**

This combined course is offered at the Parkville and Creswick campuses of the University. It takes five years of full-time study to complete.

The course provides students with the opportunity to combine more specialist training in economics and commerce with their Bachelor of Forest Science degree. Students can choose a combination of economics, business information systems, econometrics, accounting, finance and management subjects in order to design a course which fits an intended career path.

### Course objectives

Students who have completed this course should have acquired:

- an understanding of forest biology, diversity and ecosystems;
- an understanding of the basic concepts, institutional and regulatory arrangements operating in the Australian economy and the Australian forest industries, including principal factors that determine location, environmental impact, sustainability, profitability, and international cost-competitiveness in forest industries;
- an ability to communicate effectively on matters of commerce and forestry and have a capacity for commercial advice and technology transfer;
- skills in applying basic quantitative methods and scientific knowledge to the study of economy, commerce and forestry;
- skills in analysing and solving problems and in the acquisition and interpretation of data in commerce and forestry;
- a critical understanding of the economy and business and of the need to manage the economy for all groups in society;
- an understanding of principles of sound practice in relation to health, safety, ethical issues, and the environment in forestry and forest industries;
- a capacity for the exchange, acquisition and dissemination of scientific and industry information and for technology transfer;
- a capacity and motivation for continuing independent learning;
- an understanding of the rights, privileges and responsibilities conferred with the degree and with membership of professional associations and learned societies.

## Career opportunities

Career opportunities exist for those graduates who wish to specialise in the commerce and business aspects of forestry and wood-based industries. Graduates could expect to find employment in international aid programs, industrial forestry and pulp and paper companies, and within land management agencies.

## Course outline

To be eligible to graduate students must obtain 500 credit points. Of these, 300 must be from Bachelor of Forest Science and 200 from the Bachelor of Commerce. Typically students will spend third and fourth year at Creswick campus, but it is possible to spend second and third year at Creswick campus instead.

Forestry points must include:

- 22 institute subjects as below.
- 25 credit point 202-301 Industry Project.
- 12 weeks of compulsory work experience - 202-001 Industry Placement.

Commerce points must include:

- at least 50 points from 100-level subjects
- at least 50 points from 300-level subjects
- compulsory subjects: 316-101 Introductory Macroeconomics, 316-102 Introductory Microeconomics, 316-130 Quantitative Methods 1 and 316-205 Introductory Econometrics or 316-206 Quantitative Methods 2 (or approved equivalent subjects in mathematics/statistics).

A typical combined degree structure is as follows:

<b>Second year</b>	Points
316-201 Intermediate Macroeconomics (p.1) <sup>1</sup>	12.5
207-113 Australian Rural Landscapes (p.1)	12.5
or	
One commerce elective	
One of:	
316-205 Introductory Econometrics (p.1)	12.5
or	
316-206 Quantitative Methods 2 (p.1)	12.5
<b>Elective subjects</b>	
Five commerce electives	50
<b>Sub-total</b>	<b>100.0</b>

1. This subject is not required as part of the Bachelor of Commerce but the Faculty of Land and Food Resources recommends that students take it as part of their combined degree program.

<b>Third year</b>	Points
202-201 Plant Function (p.2)	12.5
202-202 Experimental Design/Statistical Methods (p.2)	12.5
202-203 Soil and Water Resources (p.3)	12.5
220-270 Wood Science (p.1)	12.5
220-271 Forest Mensuration and Surveying (p.2)	12.5
220-275 Processes in Forest Ecology (p.2)	12.5
220-276 Field Studies and Dendrology (p.2)	12.5
220-303 Forest Inventory (p.3)	12.5
<b>Sub-total</b>	<b>100.0</b>

<b>Fourth year</b>	Points
220-307 Fire Ecology and Management (p.4)	12.5
220-309 Forest Management and Access Systems (p.4)	12.5
220-311 Forest Values, Landscapes and Society (p.4)	12.5
220-317 Applied Native Forest Ecology (p.4)	12.5
220-323 Plantations and Farm Forests (p.4)	12.5
220-329 Field Studies II (p.4)	12.5
220-331 Forest Health and Restoration (p.5)	12.5
220-334 Trees, Genes and Environment (p.5)	12.5
<b>Sub-total</b>	<b>100.0</b>

<b>Fifth Year</b>	Points
202-004 Industry Placement# (p.3)	0
202-306 Industry Project (p.3)	25
202-306 Industry Project (25 points, year-long) may be replaced by 202-312 Industry Project (25 points, Semester 1 or Semester 2)	
220-406 International Forest Policy (p.5)	12.5
<b>Elective subjects</b>	
Five commerce electives	62.5
<b>Sub-total</b>	<b>100.0</b>

## Bachelor of Forest Science/Bachelor of Science

### Career opportunities

The combined degree offers career prospects in research or management in forestry or conservation areas. Graduates can be employed in areas such as forest botany, wildlife ecology, biotechnology, computing and biometrics.

### Information for students commencing from 2005

This combined degree takes five years of full-time study - the first three years at Parkville campus, the fourth at Creswick campus. The fifth year can be at Creswick or Parkville depending on subject and project choice.

The course enables students to combine specialist forest science subjects with a wide range of science subjects including genetics, biochemistry, earth science, anatomy and cell biology.

While students will have the option to pursue any science discipline for which they have the prerequisites, the environmental science major within the BSc course may provide an excellent complement to BForSc studies that will enable students both to broaden and deepen their studies in forest ecosystem management. Similarly, biotechnology in the BSc course provides an excellent complement to BForSc students for those pursuing careers in tree breeding.

### Course objectives

Students who have completed this course should have acquired:

- a broad knowledge of science across a range of disciplines, with a higher level of understanding in one or more of these disciplines;
- an appreciation of the historical background and evolution of scientific concepts;
- an understanding of the biology and diversity of forest and woodland ecosystems, and the history, values and uses of forests and forest trees;
- an appreciation of the principles and practices of forest management and conservation;
- an understanding of the environmental impact, sustainability, social impact, profitability and international cost-competitiveness of forestry and forest-related businesses;
- an appreciation of principles of sound practice in relation to health, safety and ethics in relation to forest management and forest industries;
- when solving scientific problems, the ability to apply appropriate knowledge and access relevant information, an understanding of the principles of project and experimental design, a capacity to apply practical skills and technology, and an ability to communicate the results of their studies in both written and oral form;
- the knowledge, skill and attitude to enable adaptation to scientific, technological and social change, a sense of intellectual curiosity, a desire for lifelong learning, and a capacity to be creative and innovative.
- an understanding of the rights, privileges and responsibilities conferred with the degree and with membership of professional associations and learned societies.

### Course outline

To be eligible to graduate students must obtain 500 credit points. A minimum of 237.5 science points must be achieved and the remaining 262.5 points will be taken from the Bachelor of Forest Science.

Forest Science subjects must include:

- core Faculty subjects as below
- 25 points of 400-level subjects and 25 points towards 202-401 or 202-402 Honours Research Project
- 16 weeks of compulsory work experience - 200-004 Industry Placement.

Science points must include:

- between 75 and 125 science points at 100-level
- 50 science points of a prescribed science major at 300-level

202-401, 202-402 or 202-403 Honours Research Project for combined degree students will be a project with a significant science orientation, and will be supervised jointly by Faculty of Science and Faculty of LFR staff. The credit points for this project will contribute 25 points of the required 237.5 science points. The other 25 points will be credited towards the LFR Faculty content of the degree.

A typical course combination would appear as follows:

<b>First year (Parkville campus)</b>	Points
<b>Semester 1</b>	
207-113 Australian Rural Landscapes (p.1)	12.5
610-141 Chemistry A (p.2)	12.5
650-141 Biology of Cells and Organisms (p.1)	12.5

## Faculty of Land and Food Resources

### First year (Parkville campus)

BSc subject	Points
	12.5
<i>Sub-total</i>	50.0

#### Semester 2

207-101 Land, Food and Resource Economics (p.2)	12.5
610-142 Chemistry B (p.2)	12.5
620-160 Experimental Design & Data Analysis (p.7)	12.5
650-142 Genetics & The Evolution of Life (p.1)	12.5
<i>Sub-total</i>	50.0

#### Total

100.0

### Second year (Parkville campus)

#### Semester 1

606-201 Plant Structure and Function (p.1)	Points	12.5
220-213 Trees and Forests (p.1)		12.5
Two BSc subjects		25.0
<i>Sub-total</i>		50.0

#### Semester 2

202-203 Soil and Water Resources (p.3)	12.5
207-203 Techniques of Resource Assessment (p.1)	12.5
606-204 Ecology: Communities and Ecosystems (p.1)	12.5
BSc subject	12.5
<i>Sub-total</i>	50.0

#### Total

100.0

### Third year (Parkville campus)

#### Semester 1

Four BSc subjects	Points	50.0
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#### Semester 2

207-201 Resource Management Economics (p.2)	12.5
220-201 Native Forest Ecosystems & Biodiversity (p.1)	12.5
Two BSc subjects	25.0
<i>Sub-total</i>	50.0

#### Total

100.0

### Fourth year (Creswick campus)

#### Summer

220-301 Forestry Field Camp (p.3)	Points	0
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#### Semester 1

220-307 Fire Ecology and Management (p.4)	12.5
220-302 Tree Growth and Ecophysiology (p.3)	12.5
220-303 Forest Inventory (p.3)	12.5
<i>Sub-total</i>	37.5

#### Semester 2

220-311 Forest Values, Landscapes and Society (p.4)	12.5
220-331 Forest Health and Restoration (p.5)	12.5
220-304 Silviculture (p.3)	12.5
<i>Sub-total</i>	37.5

#### Year-long subjects

202-004 Industry Placement# (p.3)	0
202-306 Industry Project (p.3)	25
202-306 Industry Project (25 points, year-long) may be replaced by 202-312 Industry Project (25 points, Semester 1 or Semester 2)	

#### Total

100.0

### Fifth year

#### Semester 1

220-406 International Forest Policy (p.5)	Points	12.5
One elective		12.5

#### Semester 2

220-403 Forest Planning and Business Management (p.6)	12.5
One elective	12.5

#### Year-long subject

202-401 Honours Research Project (p.5)	50
202-401 Honours Research Project (50 points, year-long) may be replaced by 202-402 Honours Research Project (50 points, Semester 1 or Semester 2) or 202-403 Honours Research Project (50 points, mid-year entry).	

#### Total

100.0

### Elective subjects

#### Semester 1

One of:	
202-302 Human Resource Management (p.3)	12.5
207-410 Agroforestry (p.5)	12.5
207-414 Social Research Methods (p.10)	12.5
220-401 Conservation Biology of Treed Landscapes (p.5)	12.5

#### Semester 2

### Elective subjects

One of:		Points
207-339 Hydrology and Catchment Management (p.2)		12.5
220-407 Parks and Recreation (p.6)		12.5
207-413 Community Natural Resource Management (p.6)		12.5
220-402 Wood and Timber Products (p.6)		12.5

### Information for students commencing prior to 2005

This combined degree takes five years of full-time study to complete and is offered at the Parkville and Creswick campuses. Typically students spend their first, fourth and fifth years at Parkville, and spend their second and third years at Creswick.

The course enables students to combine specialist forestry subjects with a wide range of science subjects including genetics, biochemistry, earth science, anatomy and cell biology.

While students will have the option to pursue any science discipline for which they have the prerequisites, the environmental science major within the BSc course may provide an excellent complement to BForSc studies that will enable students both to broaden and deepen their studies as a preparation for careers that relate more to the environmental aspects of forest and park management, such as ecosystem management or environmental pollution management. Similarly, biotechnology in the BSc course provides an excellent complement to BForSc students for those pursuing careers in tree breeding.

### Course objectives

Students who complete this course should have acquired:

- an ability to demonstrate a broad knowledge of fundamental scientific precepts across a range of disciplines, with a higher level of achievement in one or more of the biological, chemical, earth, mathematical and physical sciences;
- an understanding of forest biology, diversity and ecosystems;
- an understanding of the structures of Australian forest industries and the principal factors that determine location, environmental impact, sustainability, profitability, and international cost-competitiveness;
- an ability to relate the scientific knowledge gained to the technical and vocational aspects of the students chosen discipline;
- an ability to organise knowledge and ideas systematically, discriminate among relevant data, and generalise safely;
- an ability to demonstrate skills in problem definition and solution, in decision making and in program design and implementation;
- an ability to design and conduct scientific enquiries, both on an individual basis and as part of a team through application of scientific method and hypothesis teaching;
- an ability to demonstrate initiative and the interpersonal skills necessary for the conduct of such inquiries;
- essential skills in the acquisition and interpretation of forestry data;
- an understanding of principles of sound practice in relation to health, safety, ethical issues, and the environment in forestry and forest industries;
- a capacity for the exchange, acquisition, and dissemination of scientific and industry information and technology transfer;
- an ability to demonstrate leadership skills and an ability to interact effectively with professional colleagues, individuals and the general community;
- have a capacity and motivation for continuing independent learning;
- understand the rights, privileges and responsibilities conferred with the degree and with membership of professional associations and learned societies.

### Course outline

To be eligible to graduate students must obtain 500 credit points. A minimum of 237.5 science points must be achieved and the remaining 262.5 points will be taken from the Bachelor of Forest Science. Typically students will spend second and third year of their degrees at the Creswick campus, as in the structure below, but it is possible to spend second year at the Parkville campus taking 100 science points, and then spend third and fourth year at Creswick.

Forestry points must include:

- core Faculty subjects as below
- 25 points of 400-level subjects and 25 points towards 202-401 or 202-402 Honours Research Project
- 16 weeks of compulsory work experience - 202-001 Industry Placement

Science points must include:

- Between 75 and 125 science points at 100-level
- 50 science points of a prescribed science major at 300-level

202-401, 202-402 or 202-403 Honours Research Project for combined degree students will be a project with a significant science orientation, and will be supervised jointly by Faculty of Science and LFR staff. The credit points for this project will contribute 25 points of the required 237.5 science points. The other 25 points will be credited towards the LFR content of the degrees. 202-202 Experimental Design/Statistical methods is equivalent to 620-160 Experimental Design and Data Analysis and contributes to science points.

A typical course combination would appear as follows:

	Points
<b>Third year</b>	
220-307 Fire Ecology and Management ( <i>p.4</i> )	12.5
220-309 Forest Management and Access Systems ( <i>p.4</i> )	12.5
220-311 Forest Values, Landscapes and Society ( <i>p.4</i> )	12.5
220-317 Applied Native Forest Ecology ( <i>p.4</i> )	12.5
220-323 Plantations and Farm Forests ( <i>p.4</i> )	12.5
220-329 Field Studies II ( <i>p.4</i> )	12.5
220-331 Forest Health and Restoration ( <i>p.5</i> )	12.5
220-334 Trees, Genes and Environment ( <i>p.5</i> )	12.5
<i>Sub-total</i>	<i>100.0</i>
<b>Total</b>	<b>100.0</b>
<b>Fourth and fifth years</b>	
	Points
202-001 Industry Placement# ( <i>p.4</i> )	0
202-401 Honours Research Project ( <i>p.5</i> )	50
202-401 Honours Research Project (50 points, year-long) may be replaced by 202-402 Honours Research Project (50 points, mid-year entry)	
220-406 International Forest Policy ( <i>p.5</i> )	12.5
<b>Elective subjects</b>	
One of:	
220-407 Parks and Recreation ( <i>p.6</i> )	12.5
220-409 Commercial Forest Management ( <i>p.7</i> )	12.5
207-410 Agroforestry ( <i>p.5</i> )	12.5
220-411 Processes in Forest Ecosystems ( <i>p.7</i> )	12.5
<b>and</b>	
125 (10 x 12.5 subjects) science credit points (50 points at 300 level in a particular science discipline)	125
<i>Sub-total</i>	<i>200</i>
<b>Total</b>	<b>200.0</b>

## Bachelor of Horticulture

This course is offered at the Burnley campus of the University. Students will need to travel to Parkville campus for some subjects.

The Bachelor of Horticulture is designed to enable students to major in different areas of the horticultural industry, which can include landscape management, landscape construction, wholesale and retail nursery management, flower production, sports turf management, and arboriculture.

### Career opportunities

This course is designed to prepare graduates for careers in landscape management, horticultural commerce, research and development, horticultural enterprise management and the media.

### Information for students commencing from 2004

#### Course objectives

On completion of the program, graduates should be able to:

- demonstrate an understanding of, and apply, scientific, technological, managerial and social principles related to the environmental horticultural industries of Australia;
- interpret the roles and inter-relationships of plants, soil, water, air and micro-organisms and apply them to the interpretation, assessment or prediction of problems and solutions in environmental horticulture systems;
- demonstrate analytical, quantitative and interpretive skills in the context of environmental horticulture;
- integrate theory, formal study and industry practices at a professional level relevant to environmental/ornamental horticulture;
- develop strategies appropriate to the establishment, maintenance and management of landscapes, public and private open space, and plant production systems;
- research, analyse and present, both orally and in written form, data and concepts relevant to the industries associated with environmental/ornamental horticulture;
- demonstrate an understanding of the dynamic nature of the industries associated with environmental/ornamental horticulture;
- demonstrate relevant practical horticultural skills at an acceptable level of competence.

### Course outline

	Points
<b>First year</b>	
<b>Semester 1</b>	
202-103 Biology for Land and Food Resources ( <i>p.1</i> )	12.5
or	
650-141 Biology of Cells and Organisms ( <i>p.1</i> )	12.5
Students with a VCE score of 25 or greater in Biology may enrol in 650-141 Biology of Cells and Organisms	
207-108 Horticultural Flora ( <i>p.1</i> )	12.5
207-109 Landscape Design and Plant Establishment ( <i>p.1</i> )	12.5
202-104 Information Technology and Communication ( <i>p.1</i> )	12.5
or	
202-251 Quantitative Skills for Land and Food ( <i>p.1</i> )	12.5
Students entering without Year 11 Mathematical Methods or equivalent must enrol in 202-251 Quantitative Skills for Land and Food	
<b>Semester 2</b>	
207-103 Ecology ( <i>p.1</i> )	12.5
207-110 The Horticultural Environment ( <i>p.1</i> )	12.5
207-111 Plant Propagation ( <i>p.1</i> )	12.5
207-112 Plant Growth, Nutrition and Chemistry ( <i>p.2</i> )	12.5
<b>Total</b>	<b>100</b>
<b>Second year</b>	
<b>Semester 1</b>	
202-206 Plant Function ( <i>p.2</i> )	12.5
202-208 Experimental Design/Statistical Methods ( <i>p.2</i> )	12.5
207-204 Engineering and Irrigation ( <i>p.2</i> )	12.5
207-206 Management of Urban Vegetation ( <i>p.2</i> )	12.5
<b>Semester 2</b>	
202-207 Soil and Water Resources ( <i>p.2</i> )	12.5
207-101 Land, Food and Resource Economics ( <i>p.2</i> )	12.5
207-207 Plant Health ( <i>p.3</i> )	12.5
207-208 Production of Cultivated Plants ( <i>p.3</i> )	12.5
<b>Total</b>	<b>100</b>
<b>Third year</b>	
<b>Semester 1</b>	
202-302 Human Resource Management ( <i>p.3</i> )	12.5
207-336 Project Planning ( <i>p.3</i> )	12.5
Two electives	25
<b>Semester 2</b>	
Two electives	25
<b>Year long</b>	
202-003 Industry Placement# ( <i>p.3</i> )	0
202-310 Industry Project ( <i>p.3</i> )	25
202-310 Industry Project (25 points, Year long) may be replaced by 202-311 Industry Project (25 points, Semester 1 or Semester 2)	
<b>Total</b>	<b>100</b>
<b>Fourth year (honours)</b>	
<b>Semester 1 and 2</b>	
Two electives (chosen from 300/400 level subjects across LFR)	25
<b>Year-long subjects</b>	
202-405 Honours Research Project ( <i>p.3</i> )	75
202-405 Honours Research Project (75 points, year-long) may be replaced by 202-407 Honours Research Project (75 points, mid-year entry)	
<b>Total</b>	<b>100</b>
<b>Electives</b>	
<b>Third and Fourth years</b>	
<b>Semester 1</b>	
207-303 Advanced Plant Production ( <i>p.4</i> )	12.5
207-308 Turfgrass Science and Management ( <i>p.4</i> )	12.5
207-312 Garden History and Contemporary Design ( <i>p.5</i> )	12.5
207-315 Landscape Construction ( <i>p.5</i> )	12.5
207-322 Irrigation for Intensive Horticultures ( <i>p.6</i> )	12.5
207-332 Arboriculture ( <i>p.6</i> )	12.5
<b>Semester 2</b>	
207-201 Resource Management Economics ( <i>p.2</i> )	12.5
207-305 Revegetation and Landscape Restoration ( <i>p.3</i> )	12.5
207-310 Horticultural Reproduction Technology ( <i>p.4</i> )	12.5
207-313 Graphic Studies ( <i>p.5</i> )	12.5
207-316 Landscape Studies ( <i>p.5</i> )	12.5
207-333 Amenity Tree Assessment and Management ( <i>p.6</i> )	12.5
207-338 Open Space Management ( <i>p.7</i> )	12.5

## Faculty of Land and Food Resources

Other LFR subjects are also available as electives within the Bachelor of Horticulture.

Other Electives	Points
207-301 Global Environment and Sustainability (p.3)	12.5
207-401 Soil Management and Conservation (p.10)	12.5
207-402 Management of Plant and Animal Invasions (p.3)	12.5
207-413 Community Natural Resource Management (p.6)	12.5
207-414 Social Research Methods (p.10)	12.5
208-302 Molecular Biology and Breeding (p.8)	12.5
208-402 Advanced Plant Breeding and Improvement (p.10)	12.5
220-407 Parks and Recreation (p.6)	12.5

In addition to these subjects, electives may also be drawn from other faculties, subject to the approval of the faculty concerned and the course coordinator. By appropriate subject choice students in the Bachelor of Horticulture will be able to build on the general education they receive in the first two years of the program to develop specialised knowledge in particular horticulture disciplines. For example, production horticulture students might take 207-303, -310 and -321. Landscape management students might take 207-305, -315 and -332.

### Information for students commencing prior to 2004

#### Course objectives

Students who complete this course should have acquired:

- an understanding of integrated approaches to environmental horticulture;
- an understanding of the individual roles and inter-relationships of plants, soil, water, air and micro-organisms in order to identify assess/predict problems and solutions in the horticultural growing systems;
- an ability to describe and apply scientific principles appropriate to environmental horticulture;
- an ability to demonstrate a broad knowledge of technology and practical competence appropriate to a selected specialisation in environmental horticulture;
- an ability to develop strategies appropriate to the establishment, maintenance and management of landscapes;
- a broad knowledge of the principles of plant production systems and their practical management;
- an ability to demonstrate analytical, quantitative and interpretative skills in the context of environmental horticulture; and
- an ability to demonstrate effective communication skills including appropriate numeracy, literacy skills and application of technology.

#### Course outline

Third year	Points
<b>Semester 1</b>	
202-302 Human Resource Management (p.3)	12.5
<b>Year-long subject</b>	
202-003 Industry Placement# (p.3)	0
202-310 Industry Project (p.3)	25
202-310 Industry Project (25 points, year-long) may be replaced by 202-311 Industry Project (25 points, Semester 1 or 2)	
<b>Electives</b>	
Five electives*	62.5
<i>Sub-total</i>	100.0
<b>Fourth year (honours)</b>	Points
<b>Year-long subjects</b>	
202-408 Honours Research Project (p.3)	50
202-408 Honours Research Project (50 points, year-long) may be replaced by 202-411 Honours Research Project (50 points, Semester 1 or 2) or 202-414 Honours Research Project (50 points, mid-year entry)	
<b>Electives</b>	
Four electives*	50.0
<i>Sub-total</i>	100.0

\*Electives can be selected from the following lists or from approved subjects from other courses.

#### Elective subjects

Insufficient enrolments may lead to a subject being suspended.

Second year	Points
<b>Semester 1</b>	
207-205 Human Dimensions of Resource Management (p.2)	12.5
<b>Semester 2</b>	
207-208 Production of Cultivated Plants (p.3)	12.5
207-210 Open Space Management (p.4)	12.5

Third year	Points
<b>Semester 1</b>	
202-104 Information Technology and Communication (p.1)	12.5
207-303 Advanced Plant Production (p.4)	12.5
207-308 Turfgrass Science and Management (p.4)	12.5
207-312 Garden History and Contemporary Design (p.5)	12.5
207-315 Landscape Construction (p.5)	12.5
207-322 Irrigation for Intensive Horticultures (p.6)	12.5
207-332 Arboriculture (p.6)	12.5
<b>Semester 2</b>	
207-305 Revegetation and Landscape Restoration (p.3)	12.5
207-310 Horticultural Reproduction Technology (p.4)	12.5
207-313 Graphic Studies (p.5)	12.5
207-316 Landscape Studies (p.5)	12.5
207-333 Amenity Tree Assessment and Management (p.6)	12.5
<b>Fourth year</b>	Points
<b>Semester 1</b>	
207-301 Global Environment and Sustainability (p.3)	12.5
207-414 Social Research Methods (p.10)	12.5
208-302 Molecular Biology and Breeding (p.8)	12.5
208-402 Advanced Plant Breeding and Improvement (p.10)	12.5
<b>Semester 2</b>	
207-413 Community Natural Resource Management (p.6)	12.5

## Bachelor of Resource Management

The Bachelor of Resource Management is offered at the Parkville campus of the University. Students will need to travel to the Burnley campus for some subjects.

Resource Management includes the sustainable management of our natural resources such as flora, fauna, landscapes, soil, water and air.

#### Course objectives

Students who have completed this course should have acquired:

- an understanding of natural resources, and how land, flora, fauna and water systems function;
- an understanding of the important land resource values and their underlying attributes;
- an understanding of the types of human activities that can affect these values and how the effects occur;
- knowledge of sustainable development in relation to land related industries;
- an ability to demonstrate a broad knowledge of the ways in which human behaviours can be influenced to improve outcomes in land resource management;
- an understanding of and ability to utilise the tools of land resource assessment;
- an ability to demonstrate a knowledge of the legal and administrative framework in which land resource management operates;
- an understanding of integral approaches to land resource management;
- an ability to demonstrate a broad knowledge of technology and practical competence appropriate to their specialisation;
- a clear understanding of the concept of sustainable development and the interrelationship between the environment and social and economic constructs.

#### Career opportunities

Graduates can expect to find employment in careers within the key areas of catchment and land management, biodiversity and land rehabilitation management and in the utilisation and management of soil, land, and water. Such careers are found in both public and private sectors, and often involve communication and liaison with a wide range of stakeholders, the ability to use technology in a management and planning context, such as land spatial information, and the ability to develop and implement policy.

#### Course outline

First year	Points
<b>Semester 1</b>	
202-101 Chemistry for Land and Food Resources (p.1)	12.5
or	
610-141 Chemistry A (p.2)	12.5
Students with a VCE score of 25 or greater in Chemistry or equivalent may enrol in 610-141 Chemistry A	
202-103 Biology for Land and Food Resources (p.1)	12.5
or	

<b>First year</b>	Points
650-141 Biology of Cells and Organisms ( <i>p.1</i> )	12.5
Students with a VCE score of 25 or greater in Biology may enrol in 650-141 Biology of Cells and Organisms	
202-104 Information Technology and Communication ( <i>p.1</i> )	12.5
or	
202-107 Mathematics for Land and Food Resources ( <i>p.1</i> )	12.5
Students entering without VCE Mathematics Methods or equivalent must take 202-107 Mathematics for Land and Food Resources	
207-113 Australian Rural Landscapes ( <i>p.1</i> )	12.5
<b>Semester 2</b>	
202-106 Land Resources ( <i>p.2</i> )	12.5
207-101 Land, Food and Resource Economics ( <i>p.2</i> )	12.5
207-103 Ecology ( <i>p.1</i> )	12.5
One elective*	12.5
<i>Sub-total</i>	<i>100.0</i>
<b>Second year</b>	
<b>Semester 1</b>	
202-201 Plant Function ( <i>p.2</i> )	12.5
202-202 Experimental Design/Statistical Methods ( <i>p.2</i> )	12.5
207-205 Human Dimensions of Resource Management ( <i>p.2</i> )	12.5
202-302 Human Resource Management	12.5
or	
One elective*	
<b>Semester 2</b>	
202-203 Soil and Water Resources ( <i>p.3</i> )	12.5
207-202 Australian Flora ( <i>p.1</i> )	12.5
207-203 Techniques of Resource Assessment ( <i>p.1</i> )	12.5
207-211 Australian Fauna ( <i>p.2</i> )	12.5
<i>Sub-total</i>	<i>100.0</i>
<b>Third year</b>	
<b>Semester 1</b>	
207-339 Hydrology and Catchment Management ( <i>p.2</i> )	12.5
202-302 Human Resource Management	12.5
or	
One elective*	
<b>Year-long subjects</b>	
202-001 Industry Placement# ( <i>p.4</i> )	0
202-301 Industry Project ( <i>p.4</i> )	25
202-301 Industry Project (25 points year-long) may be replaced by 202-303 Industry Project (25 points, Semester 1 or Semester 2)	
<b>Electives</b>	
Four further electives*	50.0
<i>Sub-total</i>	<i>100.0</i>
<b>Fourth year (Honours)</b>	
<b>Year-long subjects</b>	
202-401 Honours Research Project ( <i>p.5</i> )	50
202-401 Honours Research Project (50 points Year-Long) may be replaced by 202-402 Honours Research Project (50 points, Semester 1 or Semester 2) or 202-403 Honours Research Project (50 points, mid-year entry)	
<b>Elective subjects</b>	
Four electives*	50.0
<i>Sub-total</i>	<i>100.0</i>
*Electives may be chosen from the following list or from approved subjects from other courses.	
<b>Note:</b> 202-302 is a core subject but may be completed in either second or third year.	

## Elective subjects

Insufficient enrolments may lead to an elective subject being suspended.

<b>First year</b>	Points
<b>Semester 2</b>	
650-142 Genetics & The Evolution of Life ( <i>p.1</i> )	12.5
or a subject approved by the course co-ordinator	
<b>Second Year</b>	
<b>Semester 1</b>	
121-018 Geomorphology ( <i>p.3</i> )	12.5
121-021 Environmental Politics and Management ( <i>p.3</i> )	12.5
202-104 Information Technology and Communication ( <i>p.1</i> )	12.5
220-213 Trees and Forests ( <i>p.1</i> )	12.5
625-101 Earth Sciences - The Global Environment ( <i>p.1</i> )	12.5

<b>Third year</b>	Points
<b>Semester 1</b>	
207-301 Global Environment and Sustainability ( <i>p.3</i> )	12.5
207-328 Working with Community Groups ( <i>p.7</i> )	12.5
207-330 GIS and Remote Sensing ( <i>p.3</i> )	12.5
207-401 Soil Management and Conservation ( <i>p.10</i> )	12.5
207-410 Agroforestry ( <i>p.5</i> )	12.5
208-308 Irrigation and Water Management ( <i>p.9</i> )	12.5
220-307 Fire Ecology and Management ( <i>p.4</i> )	12.5
<b>Semester 2</b>	
207-201 Resource Management Economics ( <i>p.2</i> )	12.5
207-305 Revegetation and Landscape Restoration ( <i>p.3</i> )	12.5
207-416 Management of Australia's Fauna ( <i>p.3</i> )	12.5
207-402 Management of Plant and Animal Invasions ( <i>p.3</i> )	12.5
<b>Fourth year</b>	
<b>Semester 1</b>	
207-301 Global Environment and Sustainability ( <i>p.3</i> )	12.5
207-401 Soil Management and Conservation ( <i>p.10</i> )	12.5
207-410 Agroforestry ( <i>p.5</i> )	12.5
207-414 Social Research Methods ( <i>p.10</i> )	12.5
208-411 Research Philosophies and Statistics ( <i>p.4</i> )	12.5
<b>Semester 2</b>	
207-402 Management of Plant and Animal Invasions ( <i>p.3</i> )	12.5
207-413 Community Natural Resource Management ( <i>p.6</i> )	12.5
207-416 Management of Australia's Fauna ( <i>p.3</i> )	12.5
220-407 Parks and Recreation ( <i>p.6</i> )	12.5

## Bachelor of Rural Business

This course, offered at the Dookie campus, has a strong core of business. It combines an understanding of business systems with an overview of biological and production systems, communication and information skills and incorporates science, management and information technology in the context of problem solving. It develops knowledge and skills in accounting, finance, management, economics, information technology, business law, markets and marketing, policy and human resource management, in the context of an understanding of business practices and operating environments thereby allowing entry into business management and professional services.

Australia has seen the introduction of new industries in regional areas, many of which have a value adding and/or processing component. In addition, there are Government initiatives to address environmental issues such as water availability and rights, salinity, global warming and environmental accountability. To equip graduates with the skills needed in this new rural business environment the Bachelor of Rural Business is strongly focused on the modern business operating environment. The degree provides a comprehensive understanding of business operation, markets and competition, post farm gate activities, value adding, international trade, economic growth, environmental and resource sustainability issues and rural development.

Students will analyse and evaluate businesses and develop innovative management practices and solutions to enhance such businesses. They will be able to specialise in:

- Agribusiness
- Regional Development
- Rural Management or
- Small to Medium Enterprise Management.

## Course objectives

Students who have completed this course should have acquired:

- essential business management skills;
- an understanding of the theory and principles of business practices and business tools;
- a high level of understanding of the issues facing rural and regional businesses;
- an understanding of the application of business practices and skills to the issues facing such businesses;
- effective communication skills applicable in a variety of situations;
- a capacity for initiating cooperative relationships with colleagues, employers and clients; and
- an appreciation of the economic, political and social influences in rural and regional communities, with the ability to respond appropriately.

## Career opportunities

Graduates will be fully prepared to take up a career in areas such as research and development organisations, financial institutions and banks, marketing, journalism, environmental or business consulting firms, biotechnology, gov-

## Faculty of Land and Food Resources

ernment and policy agencies, international trade and export, food processing and value adding companies, extension, agriculture, agronomy, as well as farm management.

### Course Outline

A total of 300 points must be successfully completed, including:

- 162.5 points of compulsory core subjects (12 subjects including 25-point Industry Project);
- 75 points of subjects (6 subjects) from one of the specialisation areas of Agribusiness, Regional Development, Rural Management and/or Small-to-Medium Enterprise Management; and
- 62.5 points (5 subjects) of an approved sequence of electives to complement the 'stream' subjects. These electives can include subjects from the Bachelor of Agriculture.

At least 75 points must be completed at the 300-level. The course has an industry placement requirement.

#### • Agribusiness

The aim of this stream is to introduce students to the unique facets of agribusiness management so they can adapt and apply traditional business management tools, or develop new tools, for use in managing such businesses. Subjects are: 208-236 Introduction to Agribusiness, 208-212 Agribusiness Marketing, 208-237 Business Finance, 208-238 Business Law II, 208-330 Business Risk Management, and 208-334 Supply Chain Management.

#### • Regional Development

The aim of this stream is to introduce students to the dynamics of rural and regional communities and their interactions with the business community, so they can integrate this knowledge into their management processes. Subjects are: 208-238 Business Law II, 208-331 Community Change Management, 208-332 Entrepreneurship, 208-235 Regional Development, 208-240 Regional Policy, and 207-328 Working with Community Groups.

#### • Rural Management

The aim of this stream is to introduce students to the dynamics of rural and regional communities and their interactions with the business community, so they can integrate this knowledge into their management processes. Subjects are: 208-238 Business Law II, 208-331 Community Change Management, 208-332 Entrepreneurship, 208-235 Regional Development, 208-240 Regional Policy, and 207-328 Working with Community Groups.

#### • Small-to-Medium Enterprise Management

The aim of this stream is to introduce students to the dynamics of rural and regional communities and their interactions with the business community, so they can integrate this knowledge into their management processes. Subjects are: 208-238 Business Law II, 208-331 Community Change Management, 208-332 Entrepreneurship, 208-235 Regional Development, 208-240 Regional Policy, and 207-328 Working with Community Groups.

First year	Points
<b>Semester 1</b>	
208-113 Production Systems I (p.1)	12.5
208-119 Principles of Management (p.1)	12.5
208-120 Accounting for Rural Enterprises (p.1)	12.5
202-108 Information Technology and Communication (p.1)	12.5
or	
202-250 Quantitative Skills for Land and Food (p.3)	12.5
Students entering without Year 11 Mathematical Methods or equivalent must enrol in 202-250 Quantitative Skills for Land and Food	
<i>Sub-total</i>	50
<b>Semester 2</b>	
207-114 Land, Food and Resource Economics (p.2)	12.5
208-117 Macroeconomics (p.1)	12.5
208-118 Principles of Marketing (p.1)	12.5
208-231 Management of Rural Enterprises (p.2)	12.5
<i>Sub-total</i>	50
<b>Total</b>	<b>100</b>
<b>Second year</b>	Points
<b>Semester 1</b>	
208-232 Business Data Analysis (p.1)	12.5
208-233 Introduction to Business Law (p.1)	12.5
Two electives	25
<i>Sub-total</i>	50
<b>Semester 2</b>	
Four electives	50

<b>Second year</b>	Points
<i>Sub-total</i>	50
<b>Total</b>	<b>100</b>
<b>Third year (not offered in 2005)</b>	Points
<b>Semester 1</b>	
202-308 Human Resource Management (p.2)	12.5
<b>Year-long subjects</b>	
202-005 Industry Placement# (p.3)	0
202-307 Industry Project (p.3)	25
202-307 Industry Project (25 points Year-Long) may be replaced by 202-309 Industry Project (25 points, Semester 1 or 2).	
<b>Semester 2</b>	
Five electives	62.5
<b>Total</b>	<b>100</b>
<b>Fourth Year (Honours) (not offered in 2005)</b>	Points
<b>Semester 1 and 2</b>	
208-415 Research Philosophies and Statistics (p.3)	12.5
One elective (chosen from 300/400 level subjects across LFR)	12.5
<b>Year-long subjects</b>	
202-418 Honours Research Project (p.2)	75
202-418 Honours Research Project (75 points year long) may be replaced by 202-420 Honours Research Project (75 points, mid-year entry).	
<b>Total</b>	<b>100</b>
<b>Electives</b>	Points
<b>Year 2, Summer Semester</b>	
208-244 Australia in the Wine World (p.4)	12.5
<b>Year 2, Semester 1</b>	
208-206 Vineyard and Winery Operations II (p.6)	12.5
208-234 Accounting for Rural Business (p.2)	12.5
208-235 Regional Development (p.2)	12.5
208-236 Introduction to Agribusiness (p.2)	12.5
208-237 Business Finance (p.2)	12.5
<b>Year 2, Semester 2</b>	
208-107 Vineyard and Winery Operations I (p.5)	12.5
208-212 Agribusiness Marketing (p.4)	12.5
208-238 Business Law II (p.2)	12.5
208-239 Planning and Budgeting (p.3)	12.5
208-240 Regional Policy (p.3)	12.5
208-241 Corporate and Commercial Law (p.3)	12.5
208-246 Crop Production (p.4)	12.5
208-271 Animal Management (p.4)	12.5
<b>Year 3, Semester 1</b>	
207-328 Working with Community Groups (p.7)	12.5
208-330 Business Risk Management (p.3)	12.5
208-335 International Business Strategies (p.4)	12.5
<b>Year 3, Semester 2</b>	
202-304 Agricultural Systems Analysis (p.7)	12.5
208-331 Community Change Management (p.3)	12.5
208-332 Entrepreneurship (p.3)	12.5
208-334 Supply Chain Management (p.3)	12.5

## Advanced Diploma courses

### Advanced Diploma in Agriculture

This two-year full-time course is available at Dookie campus, and also part time by distance education. Students intending to study by distance mode should note that some subjects have a compulsory residential workshop.

On-campus students are expected to spend a time at least equivalent to the formal contact time, in study, tutorial preparation, revision and completion of assignments. Off-campus students should be prepared to devote approximately ten hours a week to each subject.

### Course objectives

Students who have completed this course should have acquired:

- a wide range of practical farming skills;
- an understanding of the biological and ecological aspects of farming systems that lead to sustainable agriculture;
- an understanding of the main issues facing the world of agriculture, as well as their responsibilities and roles as farmers and agribusiness operators within the wider community and national economy;
- the financial skills that will enable them to run a medium sized business related to agriculture or its service industries;

- the ability to recognise alternatives and opportunities, and have a capacity for imaginative thinking, sound judgement, problem solving and decision making;
- the ability to act ethically in their approach to the performance of duties relevant to industry standards;
- the ability to perform a leadership role within their industry and community; and
- the ability to communicate effectively with employees, employers, clients and professional services in their industries.

### Career opportunities

The career opportunities depend on the area of specialisation each student adopts. Graduates normally achieve positions as junior and middle managers in enterprises such as dairying, cropping/grazing, poultry, piggery and production horticulture industries. Employment can be found as technical assistants, operating agricultural businesses, providing advice to farmers and in areas such as domestic and international traders, stock and station agencies and rural journalism. Many graduates will become self-employed.

### Course outline

First year	Points
<b>Semester 1</b>	
202-154 Introductory Biology for Land and Food (p.1)	12.5
202-156 Information Technology and Communication (p.1)	12.5
207-171 Sustainable Catchment Management (p.1)	12.5
208-151 Production Systems and Skills I (p.2)	12.5
<b>Semester 2</b>	
207-170 Applied Ecology in the Rural Environment (p.1)	12.5
207-172 Rural Economics (p.2)	12.5
208-154 Production Systems and Skills II (p.2)	12.5
208-165 Financial Management I (p.2)	12.5
<i>Sub-total</i>	<i>100.0</i>
<b>Second year</b>	Points
<b>Semester 1</b>	
207-278 Resource Management (Soil and Water) (p.2)	12.5
Three electives chosen from the following:*	
202-250 Quantitative Skills for Land and Food (p.3)	12.5
208-251 Rural Community Development (p.3)	12.5
208-263 Animal Science and Nutrition (p.4)	12.5
208-253 Pasture Management (p.4)	12.5
208-265 Integrated Pest and Weed Management (p.4)	12.5
<b>Semester 2</b>	
208-273 Managing Staff (p.3)	12.5
Three electives chosen from the following:*	
208-152 Agricultural Technology (p.3)	12.5
208-162 Agribusiness Marketing (p.3)	12.5
208-271 Animal Management (p.4)	12.5
208-252 Production Horticulture (Fruits & Vines) (p.3)	12.5
208-255 Crop Management (p.4)	12.5
<b>Year long subject</b>	
202-052 Industry Placement# (p.2)	0
<i>Sub-total</i>	<i>100.0</i>

\* At least two of the following electives must be taken:

208-263 Animal Science and Nutrition, 208-271 Animal Management, 208-253 Pasture Management and 208-255 Crop Management.

Insufficient enrolments may lead to an elective being suspended.

202-250 Quantitative Skills for Land and Food may also be taken as a Summer Semester subject.

## Advanced Diploma in Forestry Management

This two-year full-time course (or part-time equivalent) is offered at the Creswick campus of the University. The course offers potential specialisation in area such as fire and water management, wildlife, soil and cultural conservation, plant and animal pests, forest botany and ecology, policy and legislation, silviculture and financial management.

### Course objectives

Students who have completed this course should have acquired the ability to:

- successfully organise, operate and manage forest operations;
- recognise alternatives and opportunities, and have a capacity for imaginative thinking, sound judgement, problem solving and decision making;
- act ethically in their approach to the performance of duties relevant to industry standards;

- perform a leadership role within their industry and community; and
- communicate effectively with employees, employers, clients and professional services in their industries.

### Career opportunities

Graduates develop the management skills and technical understanding necessary for them to be able to find employment as supervisors, junior level managers or rangers within the forest management, resource conservation and forest based industries.

### Course outline

Mid-year entry is also possible. For further details contact Robyn Price: +61 3 5321 4140; <robynmp@unimelb.edu.au>.

First year	Points
<b>Semester 1</b>	
202-155 Information Technology and Communication (p.1)	12.5
220-156 Sustainable Outputs from Forested Lands (p.1)	12.5
220-161 Fire and Water Management (p.1)	12.5
220-163 Silviculture (p.2)	12.5
<b>Semester 2</b>	
208-166 Financial Management I (p.1)	12.5
220-160 Forest Botany and Ecology (p.1)	12.5
220-162 Forest Surveying and Measurement (p.1)	12.5
<b>Year-long subject</b>	
220-166 Forestry Work Skills I (p.2)	12.5
<i>Sub-total</i>	<i>100.0</i>
<b>Second year</b>	Points
<b>Semester 1</b>	
220-279 Forest Policy (p.2)	12.5
220-285 Wildlife, Soil and Cultural Conservation (p.2)	12.5
<b>Semester 2</b>	
208-274 Managing Staff (p.2)	12.5
<b>Year long subject</b>	
220-287 Forestry Work Skills II (p.2)	12.5
<b>Electives</b>	
Four of the following:	
202-252 Quantitative Skills for Land and Food (p.3)	12.5
208-267 Financial Management for Resource Ind II (p.4)	12.5
220-273 Tree, Water and Land Planning (p.3)	12.5
220-280 Silviculture of Native Forests (p.3)	12.5
220-282 Plantation and Farm Silviculture (p.3)	12.5
220-284 Protected Area Management (p.3)	12.5
220-286 Plant and Animal Pests (p.3)	12.5
220-289 Fire Suppression (p.4)	12.5
<i>Sub-total</i>	<i>100.00</i>
202-252 Quantitative Skills for Land and Food may also be taken as a Summer Semester subject.	

## Advanced Diploma in Horticulture

This course is a two-year full-time course (or equivalent part-time) offered at the Burnley campus of the University. The course is designed to provide vocational outcomes in the area of arboriculture, nursery management, landscape construction, and urban parks and gardens management.

### Course objectives

Students who have completed this course should have acquired the ability to:

- successfully organise, operate and develop a business plan;
- recognise alternatives and opportunities, and have a capacity for imaginative thinking, sound judgement, problem solving and decision making;
- act ethically in their approach to the performance of duties relevant to industry standards;
- perform a leadership role within their industry and community; and
- communicate effectively with employees, employers, clients and professional services in their industries.

### Career opportunities

Graduates will be able to find employment as garden and landscape contractors, garden designers, nursery supervisors, arborists, parks technical officers, and nursery propagators.

### Course outline

First year	Points
<b>Semester 1</b>	
202-151 Information Technology and Communication (p.1)	12.5
207-151 Plant Biology (p.1)	12.5
207-153 Horticultural Plants (p.1)	12.5
207-158 Horticultural Practice I (p.2)	12.5
<b>Semester 2</b>	
207-152 Soil Management (p.1)	12.5
207-154 Horticultural Technology (p.1)	12.5
207-155 Horticultural Practice II (p.1)	12.5
207-173 Plant Protection (p.2)	12.5
<i>Sub-total</i>	100.0
<b>Second year</b>	Points
<b>Semester 1</b>	
207-252 Horticultural Practice III (p.2)	12.5
207-263 Advanced Plant Biology (p.3)	12.5
208-161 Financial Management I (p.3)	12.5
One of	
202-251 Quantitative Skills for Land and Food (p.1)	12.5
207-251 Plant Technology (p.3)	12.5
207-261 Landscape Design and Graphics (p.4)	12.5
207-258 Sports Turf Management (p.4)	12.5
<b>Semester 2</b>	
207-253 Horticultural Practice IV (p.2)	12.5
207-265 Plant Management and the Environment (p.3)	12.5
208-269 Managing Staff (p.3)	12.5
One of:	
207-254 Horticultural Project Management (p.4)	12.5
207-333 Amenity Tree Assessment and Management (p.6)	12.5
207-269 Vegetation Management (p.4)	12.5
<b>Year long subject</b>	
202-051 Industry Placement# (p.2)	0
<i>Sub-total</i>	100.0
202-251 Quantitative Skills for Land and Food Resources may be taken as a Summer subject.	

### Advanced Diploma in Wood Products Management

This two-year full-time course (or part-time equivalent) is offered at the Creswick campus of the University. The course offers specialisations in Enterprise Management and Timber Pest Management.

#### Course objectives

Students who have completed this course should have acquired:

- an understanding of fundamental wood science (knowledge of wood as a raw material) and applied technology relevant to the selected stream;
- an understanding of the theory and principles of business practices and business tools;
- an understanding of the application of business practices and skills to the issues facing such businesses;
- effective communication skills applicable in a variety of situations; and
- a capacity for initiating cooperative relationships with colleagues, employers and clients.

#### Career opportunities

The course will develop in students an increase in the level of technical expertise, innovation and enterprise management required by the Australian timber industry. This includes a need for business planning and human resource skills as well as the core technical skills.

#### Course outline

The Advanced Diploma in Wood Products Management is provided in detail below. Students require 200 points to graduate. The course can be taken full-time (2 years) or part-time (4 years) and is taught in block mode or by a mix of block teaching and flexible learning (distance education).

There are two specialisations. These are Enterprise Management and Timber Pest Management. Both have a number of subjects in common with each other and with the existing Advanced Diploma in Forest Management as indicated below.

### Enterprise Management stream

First year	Points
<b>Semester 1</b>	
202-155 Information Technology and Communication (p.1)	12.5
220-150 Leadership and Working in Teams (p.1)	12.5
220-152 Wood Processing and Products (p.1)	12.5
<b>Semester 2</b>	
208-166 Financial Management I (p.1)	12.5
220-153 Occupational Health and Safety (p.1)	12.5
220-154 Wood Science (p.1)	12.5
220-155 Timber Resources (p.2)	12.5
<b>Year long subject</b>	
220-166 Forestry Work Skills I (p.2)	12.5
<i>Sub-total</i>	100.0
<b>Second Year</b>	Points
<b>Semester 1</b>	
220-250 Project Management (p.2)	12.5
220-251 Service Quality (p.2)	12.5
220-252 Improving Asset Reliability (p.2)	12.5
220-253 Evaluating Process Effectiveness (p.3)	12.5
<b>Semester 2</b>	
208-274 Managing Staff (p.2)	12.5
220-254 Wood Products Marketing (p.3)	12.5
<b>Year-long subject</b>	
220-287 Forestry Work Skills II (p.2)	12.5
<b>Electives</b>	
202-252 Quantitative Skills for Land and Food (p.3)	12.5
or	
220-157 Wood Biodeteriorating Agents (p.4)	12.5
or other approved Advanced Diploma elective	12.5
<i>Sub-total</i>	100.0

### Timber Pest Management stream

First year	Points
<b>Semester 1</b>	
202-155 Information Technology and Communication (p.1)	12.5
220-150 Leadership and Working in Teams (p.1)	12.5
220-152 Wood Processing and Products (p.1)	12.5
220-157 Wood Biodeteriorating Agents (p.4)	12.5
<b>Semester 2</b>	
208-166 Financial Management I (p.1)	12.5
220-153 Occupational Health and Safety (p.1)	12.5
220-154 Wood Science (p.1)	12.5
<b>Year-long subject</b>	
220-166 Forestry Work Skills I (p.2)	12.5
<b>Total</b>	<b>100.0</b>
<b>Second year</b>	Points
<b>Semester 1</b>	
220-250 Project Management (p.2)	12.5
220-251 Service Quality (p.2)	12.5
220-255 Remedial Treatment of Timber In-Service (p.3)	12.5
<b>Semester 2</b>	
208-274 Managing Staff (p.2)	12.5
220-256 Timber Pest Management (p.4)	12.5
<b>Year-long subject</b>	
220-287 Forestry Work Skills II (p.2)	12.5
<b>Electives</b>	
Two of:	
202-252 Quantitative Skills for Land and Food (p.3)	12.5
220-254 Wood Products Marketing (p.3)	12.5
or	
220-155 Timber Resources (p.2)	12.5
or other approved Advanced Diploma electives	
<i>Sub-total</i>	100.0
<b>Total</b>	<b>100.0</b>

### Courses being phased out (degrees)

#### Bachelor of Agriculture/Bachelor of Commerce

There will be no first-year intake into this course from 2004. Please refer to the new Bachelor of Agricultural Science/Bachelor of Commerce.

The information below applies to continuing students only.

This combined course is taught at the Parkville campus of the University. The course takes five years of full-time study.

This course has been developed in response to the demand for agriculture to be combined with a more specialist training in economics and commerce than is possible in the BAg degree. Students can choose a combination of economics, business information systems, econometrics, accounting, finance and management subjects in order to design a course which fits an intended career path.

## Course objectives

Students who complete this course will have acquired:

- an understanding of the components of the agricultural sector of the Australian economy and the importance of that sector to the economy;
- an understanding of Australian economic institutions and policy, including industry and trade policy;
- an appreciation of the recent changes in the Australian economy, especially in relation to developments in the Asia-Pacific region;
- mastery of the necessary theoretical concepts and tools, from economics, agricultural sciences, business management and marketing, for analysing and solving problems in agribusiness activities, natural resource use or agricultural policy, and skill in communicating the results;
- an appreciation of the implications for agricultural business operations of the biological nature of agricultural production processes;
- awareness of the institutional and regulatory environment within which agricultural businesses function;
- an understanding of the behaviour of international markets for the products of the agricultural sector;
- practical experience in some part of the agricultural sector.

## Career opportunities

The combined degree offers careers for people wanting to work in any of the agricultural fields, combined with economics and commerce, rural finance, international trade, extension work, marketing, journalism, and resource management.

## Course outline

To be eligible to graduate students must obtain 500 credit points. Of these, 225 must be from the Bachelor of Agriculture, 200 from the Bachelor of Commerce and 75 from electives that students can choose from any faculty. Students may be awarded honours in Agriculture at the end of the fifth year. Honours in Commerce requires an additional sixth year of study.

Agriculture points must include:

- 112.5 points from Bachelor of Agriculture core subjects including 202-401 Industry Research Project and 207-101 Land, Food and Resource Economics. 202-202 Experimental Design/Statistical Methods and 202-201 Industry Project are not available for credit to students in this program.
- six additional agricultural degree subjects
- at least 100 points from 300 and/or 400 level subjects
- 202-001 Industry Placement.

Commerce points must include:

- at least 50 points from 100-level subjects
- at least 50 points from 300-level subjects
- compulsory subjects: 316-101 Introductory Macroeconomics, 316-102 Introductory Microeconomics, 316-130 Quantitative Methods 1 and 316-205 Introductory Econometrics or 316-206 Quantitative Methods 2.

A typical combined degree structure is as follows:

Third year	Points
202-203 Soil and Water Resources (p.3)	12.5
316-316 Basic Econometrics (p.4) <sup>1</sup>	12.5
or	
One commerce elective	
<b>Elective subjects</b>	
Three commerce electives	37.5
Three electives (See BAg for complete listing)	37.5
<i>Sub-total</i>	<i>100.0</i>

1. This subject is not required as part of the Bachelor of Commerce but the Faculty of Land and Food Resources recommends that students take it as part of their combined degree program.

Fourth year	Points
202-001 Industry Placement# (p.4)	0
202-302 Human Resource Management (p.3)	12.5
or	

Fourth year	Points
207-201 Resource Management Economics (p.2)	12.5
208-306 Agricultural Marketing (p.8)	12.5
<b>Elective subjects</b>	
Four commerce electives	50.0
Two electives	25.0
<i>Sub-total</i>	<i>100.0</i>

Fifth year	Points
202-401 Honours Research Project (p.5)	50
202-401 Honours Research Project (50 points, year-long) may be replaced by 202-402 Honours Research Project (50 points, Semester 1 or Semester 2) or 202-403 Honours Research Project (50 points, mid-year entry)	
207-404 Agricultural Policies and Trade (p.10)	12.5
<b>Elective subjects</b>	
Three electives	37.5
<i>Sub-total</i>	<i>100.0</i>

## Bachelor of Forestry

See Bachelor of Forest Science ( *Bachelor of Forest Science (p.13)*). This course has been re-named Bachelor of Forest Science from 2004.

## Bachelor of Forestry/Bachelor of Commerce

See Bachelor of Forest Science/ Bachelor of Commerce ( *Bachelor of Forest Science/Bachelor of Commerce (p.15)*). This course has been re-named Bachelor of Forest Science/Bachelor of Commerce from 2004..

## Bachelor of Forestry/Bachelor of Science

See Bachelor of Forest Science/ Bachelor of Science ( *Bachelor of Forest Science/Bachelor of Science (p.16)*). This course has been re-named Bachelor of Forest Science/Bachelor of Science.

## Bachelor of Applied Science (Horticulture) (Honours)

The honours year is designed to introduce the student to advanced research topics within the discipline of horticulture, and to original, supervised scientific research in a horticulture related field. The objectives of the program are to provide experience in research; increase competence in the design, conduct and analysis of experimental work; and to extend understanding within a specialised discipline.

## Admission requirements

All students accepted into the Bachelor of Applied Science (Honours) must have obtained third-class honours or better in the third-year subjects of their pass degree course. Students who have completed studies other than the Bachelor of Applied Science may be eligible to enrol in the Bachelor of Applied Science (Hons) program provided they have completed another approved course which, in the opinion of the Selection Committee, provides an appropriate background training for the Bachelor of Applied Science (Hons) degree.

## Duration

The course is normally taken over one year on a full-time basis but may be taken over two years part-time.

## Course structure

The main component of the honours year will be an individual research project carried out under the supervision of an appropriately qualified member of academic staff of the Faculty. Project topics will be drawn from research areas identified as being of strategic importance to the Faculty Research Policy. The research project will be supported by coursework designed to provide up to 100 hours of advanced tuition in relevant disciplines, and may include subjects offered within the BAgSc and BForSc programs such as Research Methods and Statistics. Special coursework and reading programs may be designed as appropriate.

## Assessment

The research component of the honours year will be assessed by thesis and normally carry a weighting of 87.5 per cent. Coursework will carry the remaining 12.5 per cent. Candidates will also be required to present a seminar detailing their work at the conclusion of their course. While the presentation of this seminar will not be assessed, the satisfactory completion of this component it is a prerequisite for completion of the course.

## Courses being phased out (diplomas)

### Advanced Diploma in Equine Management

There has been no new intake of students into this course from 2002. The following information applies to continuing students.

This two-year full-time course (or part-time equivalent) is offered at the Glenormiston campus of the University. The course develops the knowledge, skills and attitudes of students required to carry out and supervise horse stud and stable establishments. It is also available by distance education.

#### Course objectives

The Advanced Diploma of Equine Management has as its objectives that graduates are able to:

- successfully organise, operate and develop a business plan;
- recognise alternatives and opportunities, and have a capacity for imaginative thinking, sound judgement, problem solving and decision making;
- act ethically in their approach to the performance of duties relevant to industry standards;
- perform a leadership role within their industry and community;
- communicate effectively with employees, employers, clients and professional services in their industries;
- set, work towards, and achieve objectives relevant to professionals in the horse industries;
- obtain relevant technical information efficiently and judge correctly its relevance to horse management;
- recognise and adapt to the changes required for the rapidly developing equine sectors.

#### Career opportunities

The increase in the level of activity in the industry has led to a greater need for skilled and educated workers, supervisors and managers. Together with horse stud and stable managers, they need training in horse breeding and business management. Careers in the horse industry are mainly in the stud and stable management area; however, employment is also found in areas such as race track administration, horse training, journalism, blood stock agents, and riding instruction.

#### Course outline

Second year	Points
<b>Semester 1</b>	
204-251 Horse Health and Genetics ( <i>p.1</i> )	12.5
204-252 Equine Training ( <i>p.1</i> )	12.5
207-278 Resource Management (Soil and Water) ( <i>p.2</i> )	12.5
209-255 Equine Management ( <i>p.2</i> )	12.5
<b>Semester 2</b>	
204-253 Equine Systems ( <i>p.1</i> )	12.5
204-263 Equine Project ( <i>p.1</i> )	12.5
208-269 Managing Staff ( <i>p.3</i> )	12.5
One of:	
208-255 Crop Management ( <i>p.4</i> )	12.5
208-161 Financial Management I ( <i>p.3</i> )	12.5
<b>Year long subject</b>	
204-254 Industry Experience (Horse) ( <i>p.1</i> )	0
<i>Sub-total</i>	<i>100.0</i>

### Postgraduate awards

#### Graduate Certificate in Agribusiness

The Graduate Certificate in Agribusiness is a full-fee paying course offered on-line. The course will broaden the learner's understanding of the industry in which they operate and enhance the analytical skills they bring to bear on problems faced in the day-to-day work environment. Successful applicants will benefit from a focused learning environment involving international university partners, interacting regularly with other students, academic staff, and industry mentors and from active, extensive networking through the annual residential program and electronic assignments, tutorials and 'chat' exchanges.

#### Graduate Certificate in Dairy Technology (no intake for 2005)

The Graduate Certificate in Dairy Technology is designed for those graduates in disciplines other than dairy/food technology who seek employment in lower and middle level management positions in the dairy industry. The shorter duration of this course when compared with the Graduate Diploma in

Dairy Technology can be advantageous to those candidates who seek more immediate employment as well as to those industry employees who want to further their understanding of dairy technology without studying the management aspects. The course may be completed in a minimum time of one year part-time study. The course is available by external study.

#### Graduate Certificate in Forest Industries

The Graduate Certificate in Forest Industries provides advanced training for staff employed in the forest industry who are normally graduates in related fields. The program consists of one compulsory subject and two elective subjects from forest products or forest harvesting specialisation. The course takes one semester to complete (full-time) and candidates who achieve satisfactory results may transfer to the graduate diploma, with credit for subjects completed.

#### Postgraduate Diploma in Agricultural Science

The Postgraduate Diploma in Agricultural Science is a one-year (full-time) coursework award with minor research assignments in some subjects. Students enrol for a total of six subjects over two semesters.

#### Graduate Diploma in Dairy Technology (no intake for 2005)

The Graduate Diploma in Dairy Technology is a postgraduate course for those wishing to obtain specialised training in dairy science and technology to supplement the knowledge and skills acquired during their initial tertiary training. The course is designed to provide a sound educational base in dairy technology for graduates from a range of disciplines undertaking employment in the dairy processing and manufacturing industry. The course aims to develop analytical and decision-making skills associated with the application of dairy science and technology in the practical factory environment. The course has been developed with the assistance of representatives of major companies and the dairy industry. The course comprises one year full-time study or two years part-time study. The course is available by external study.

#### Postgraduate Certificate/Diploma in Food Science

The Postgraduate Certificate and Diploma in Food Science are directed at students who are interested in focusing their further study on food industry problems in product or process development, as well as practical applications of food science in processing and production systems. The diploma consists of eight subjects (100 credit points) and is equivalent to the first two semesters of the Master of Food Science by coursework and minor dissertation. The first semester of the diploma constitutes the Postgraduate Certificate in Food Science, which consists of four subjects (50 credit points).

#### Graduate Diploma in Forest Industries

Candidates for the Graduate Diploma in Forest Industries must normally be graduates in related fields and working in forest industries. The course, which consists of two compulsory subjects and four electives from forest products or forest harvesting specialisation, takes a minimum of one academic year on a full-time basis. Successful completion provides eligibility for Master of Wood Science candidature.

#### Postgraduate Diploma in Forest Science

The Postgraduate Diploma in Forest Science offers advanced training for professional staff who are graduates in forest science or in related fields, and who work (or seek to work) in forest management, research, education or planning. It takes a minimum of one year full-time or two years part-time. Students who perform at a satisfactory level in the diploma course may be offered the opportunity to transfer their candidature to the Master of Forest Science program.

#### Graduate Certificate/Diploma in Horticulture

The Graduate Certificate and Graduate Diploma in Horticulture are offered as a postgraduate fee-paying program designed to fulfil the needs and demands of those who have qualifications in disciplines other than horticulture and who wish to emphasise the study of the horticultural systems from a technological, sociological and management perspective. The course comprises one year full-time study or equivalent part-time study. The course is not available by external study.

#### Graduate Certificate/Diploma in Wine Technology and Viticulture

The Graduate Certificate and Graduate Diploma in Wine Technology and Viticulture have been developed for employees in the viticulture and/or oenology sectors of the wine industry or people who are establishing or operating their own vineyard and/or winery. Students are introduced to the science of viticulture and wine, as well as reviewing the Australian wine industry's position in the world wine scene. An integrated approach to viticulture and oenol-

ogy exposures students to all operations undertaken throughout the yearly cycle on a vineyard and in a winery. The graduate certificate comprises one year distance education-based study including residential workshops, and the graduate diploma is two years study. The graduate certificate comprises the first four of the eight graduate diploma subjects.

### Master of Agribusiness (by coursework)

The study of agribusiness is the study of decision-making within the context of the food and fibre business, from input supplies to primary producers to wholesalers, processors and retailers in a competitive consumer-directed market. The Master of Agribusiness by coursework (electronically delivered) takes two years of part-time study. The course is designed for professionals with work experience beyond an undergraduate degree, interested in combining science training with management applications. Undergraduate training could be in agriculture, horticulture, forest science, business, economics or commerce.

### Master of Agribusiness (by research)

The Master of Agribusiness is designed for professionals working in areas such as food and fibre production; risk analysis and management; banking and insurance; chemical, fertilisers and other input industries; domestic and international marketing; and forest industries. This course is distinctive because it integrates business management and marketing with science and technology.

### Master of Agriculture (by research)

The Master of Agriculture degree requires at least a year of advanced studies and research after completion of the bachelor degree or the Postgraduate Diploma in Agricultural Science. Candidates may also be accepted from those admitted to a degree the institute recognises as appropriate. Current institute research includes work in agricultural extension, agroforestry, animal behaviour, animal genetics and breeding, animal nutrition, application of computers to agriculture, biotechnology, genetics and plant breeding, plant pathology, crop physiology, soil science (including soil erosion), agricultural economics, resource economics, farm management, and agricultural marketing and trade.

### Master of Animal Welfare (by research)

The objective of this research-based masters is to provide an opportunity for students to receive research training and to undertake research and study in the field of animal welfare. A coursework component may be required, based on assignment(s) developed at postgraduate level and building on the 400 undergraduate-level subject Animal Welfare (12.5 points): this subject will be required for those students who have not undertaken this 400 undergraduate-level subject in LFR or another relevant undergraduate subject on animal welfare.

### Master of Food Science (by coursework)

Offered at the Gilbert Chandler campus, the Master of Food Science program has been developed for graduates holding a science or engineering degree seeking specialist training enabling them to pursue a career within the food manufacturing industry. Each student completes a tailored program of coursework subjects incorporating key core study areas and electives, in addition to a research project in an approved area of food science.

### Master of Food Technology (by research)

The key disciplines of the Master of Food Technology include dairy foods production and quality; food and dairy chemistry; food and dairy microbiology; food process engineering; food product development and processing; and industrial fermentations. The degree is awarded for research presented by thesis (or other material), or by publication.

### Master of Forest Industries (by coursework)

The Master of Forest Industries is specifically designed to facilitate part-time, advanced study for professional staff involved in the forest industries sector. Delivered through on-line and distance education modes, the course requires two years part-time enrolment, with a combination of core and elective subjects available each year. Some short, intensive residential subjects are also provided at the Creswick campus. Two streams are available, in forest management and forest technologies. The former concentrates on policy, economics, financial and leadership issues; the latter on wood and timber products, processing and preservation. Candidates can select from a wide pool of elective subjects common to both streams.

### Master of Forest Science (by research)

The Master of Forest Science requires at least a year of advanced studies and practical work. Normally the Bachelor of Forestry degree or the Postgraduate Diploma in Forest Science are prerequisites, although candidates with another degree recognised as appropriate by the institute may be admitted. The main

areas of forestry research in the institute at present are in agroforestry, biotechnology, conservation, fire management, forest economics, forest engineering, forest measurement, forest protection, forest soils, silviculture and wood science.

### Master of Horticulture (by research)

The objectives of the Master of Horticulture are to allow candidates to undertake original and supervised research in specialised areas of horticulture; to make a distinct contribution to horticultural science or horticultural management; and to improve research skills and advance appropriate research methodology.

### Master of Natural Resource Management (by research)

The objectives of the Master of Natural Resource Management are to allow candidates to undertake original and supervised research in specialised areas of natural resource management; and to improve their research skills and advance appropriate research methodology. The areas of specialisation include catchment and land management, remnant vegetation, and wildlife research and management.

### Master of Wood Science (by research)

The Master of Wood Science was established to provide advanced research training in wood science. Admission to candidature for the Master of Wood Science requires successful completion of a bachelors degree in forestry or the Graduate Diploma of Forest Industries, or equivalent.

### Doctor of Philosophy

To be eligible for admission to candidature for the degree of Doctor of Philosophy an applicant shall have qualified, at a sufficiently meritorious level, for the award of a degree or equivalent qualification, or be able to demonstrate other relevant experience which is deemed a suitable preparation for the work for degree of Doctor of Philosophy. Previous experience will be taken into account in assessing suitability for candidature.

### For more information

<<http://www.landfood.unimelb.edu.au/courses/postgrad/>>

**NOTE:** The information in this Handbook relating to the Faculty of Land and Food Resources was correct at the time of printing.