

Institute of Land and Food Resources

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

Overview

The Institute of Land and Food Resources provides specialist education, research and training in the vital fields of agriculture and agribusiness; natural, environmental and resource management; forestry and forest science; food production, ornamental and amenity horticulture; and dairy and food technology, production and marketing. Across a diversity of disciplines and eight campuses, the institute equips students with the skills necessary to pursue a successful career in a wide variety of disciplines within the land and food industries.

The Institute of Land and Food Resources provides students with a focused but dynamic range of courses designed to meet the demands of distinctive careers across 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 institute 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 institute offers the potential to realise dreams of contributing to an environmentally sustainable future.

The campuses

The Institute 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 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.

Glennormiston 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

Glennormiston campus: +61 3 5557 8200

Longerenong campus: +61 3 5362 2222

McMillan campus: +61 3 5624 0217

Parkville campus: +61 3 8344 0276

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

Our vision

Our vision is for the Institute of Land and Food Resources to be an international leader serving the following industries and sectors:

- agribusiness
- dairying
- food production horticulture
- forest industries
- grains and oil seeds
- natural resource management
- ornamental horticulture.

Institute goals

The goals of the institute 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 institute'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.

Institute courses

Undergraduate

From 2001, the Institute of Land and Food Resources has offered a new higher education curriculum for undergraduate study in agriculture, resource management, horticulture, forest science and food science. This extensive and broad-ranging curriculum has been designed to combine the best of the former 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 2002:

- Bachelor of Agriculture
- Bachelor of Agriculture/Bachelor of Commerce
- Bachelor of Forestry
- Bachelor of Forestry/Bachelor of Commerce

- Bachelor of Forestry/Bachelor of Science
- Bachelor of Horticulture
- Bachelor of Resource Management
- Bachelor of Applied Science (Food Technology)
- Advanced Diploma of Agriculture*
- Advanced Diploma of Forestry Management
- Advanced Diploma of Horticulture

The following course will be available for honours entry in 2002:

- Bachelor of Applied Science (Food Science) (Honours)

The following courses are being progressively phased out and have no first year entry:

- Bachelor of Agricultural Science
- Bachelor of Agricultural Science/Bachelor of Commerce
- Bachelor of Forest Science
- Bachelor of Forest Science/Bachelor of Commerce
- Bachelor of Forest Science/Bachelor of Science
- Bachelor of Applied Science (Agriculture)
- Bachelor of Applied Science (Equine Management)
- Bachelor of Applied Science (Dairy Foods)
- Bachelor of Applied Science (Horticulture)
- Bachelor of Applied Science (Natural Resource Management)
- Bachelor of Applied Science (Rural Management)
- Advanced Diploma of Applied Science (Farm Management)*
- Advanced Diploma of Applied Science (Farm Production)
- Advanced Diploma of Applied Science (Horse Management)*
- Advanced Diploma of Equine Management*
- Diploma of Applied Science (Agricultural Services)
- Diploma of Applied Science (Horticulture)
- Diploma of Forestry

Postgraduate

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

- Graduate Certificate in Forest Industries
- Graduate Diploma in Forest Industries
- Graduate Certificate in Agricultural Extension
- Graduate Certificate in Dairy Technology
- Graduate Diploma in Dairy Technology
- Graduate Diploma in Horticulture
- Postgraduate Certificate in Food Science
- Postgraduate Diploma in Food Science
- Postgraduate Diploma in Forest Science
- Master of Agribusiness (by research)
- Master of Agribusiness (by coursework)
- Master of Agriculture (by research)
- Master of Food Science (by coursework)
- 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 Institute's Postgraduate Handbook, or on the institute's web site at <<http://www.land-food.unimelb.edu.au>>.

Vocational Education and Training programs

The Institute also offers Vocational Education and Training programs, which are designed for those who want to establish or extend their careers or business interests in the land and food industries.

The following courses have been developed in association with industry and business so that they closely match the needs of the market place. Delivery of the institute'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.

AGRICULTURE

Certificate IV/Diploma/Advanced Diploma of Agriculture

Campus location: Longerenong

A full-time program of up to two and a half years duration as a preparation for a career in farming and farm management and related fields including agricultural services, rural merchandising, technical sales, research assistant, agricultural contracting and sales agronomy.

Students are able to take out specific industry awards: grains, beef, pig production, poultry production, rural business management.

Certificate IV/Diploma/Advanced Diploma of Agriculture (Dairy)

Location: McMillan

A full-time program of up to two and a half years duration as a preparation for a career in dairy farming at supervisory and managerial levels. This program makes considerable use of workplace training under the guidance of leading dairy farmers in the region.

Certificate IV/Diploma of Agriculture (Animal Fibre Production)

Location: Longerenong

A new full-time program of up to two years duration (or equivalent by part-time study) for introduction in 2002.

The course will be delivered in a series of workshops, each workshop normally covering three to five days. Part-time students may complete individual workshops (minimum study unit) and full-time students will complete the full series.

Certificate IV/Diploma/Advanced Diploma of Agriculture

Location: Glenormiston

A part-time and flexibly delivered management education and training program for those already engaged in farming or the associated agricultural services sector. Flexible learning participants study at home and at their own pace using print and computer-based learning materials. Attendance at workshops may be required for some practical instruction and completion of some assessment tasks.

Certificate IV in Agriculture (Milk Harvesting)

Location: McMillan

A professional training course for milking machine technicians. The course provides the opportunity to specialise and achieve industry certification in machine testing, servicing and design and installation.

Certificates II-IV in Agriculture

Location: Glenormiston, McMillan, Longerenong

A workplace-based / part-time introductory program for new entrants, and existing employees wanting to advance their career in agriculture. These courses cater for the needs of agricultural apprentices/trainees.

HORTICULTURE

Diploma of Horticulture

Location: Part-time at Burnley, flexible delivery through Glenormiston

This program is designed for qualified horticulture supervisors as a preparation for advancement in their careers to managerial levels.

This program commenced with an arboriculture stream in 2000. Other streams (nursery, parks and gardens, landscaping and general horticulture) will be introduced in 2002 - subject to approval.

Diploma/Advanced Diploma of Horticulture (Production)

Location: Full-time/part-time at McMillan, flexible delivery through Glenormiston

This program prepares graduates for responsibilities as managers of production horticulture enterprises. Flexible delivery of the program commenced in 2000. The full-time/part-time study option will be introduced in 2002 - subject to approval.

Certificate IV in Horticulture

Location: Burnley

This two year full-time (or equivalent part-time) study program enables graduates to enter industry as horticulture supervisors and trainee managers. Students may choose to study general horticulture or specialise in landscaping, nursery, arboriculture or parks and gardens.

Certificate III in Horticulture

Location: Burnley, Glenormiston, McMillan

A workplace-based/part-time introductory program for new entrants, and existing employees wishing to advance their careers in both amenity and production horticulture. A full-time study option is available at McMillan. These courses cater for the needs of horticulture apprentices/trainees.

CONSERVATION AND LAND MANAGEMENT

Certificate IV/Diploma/Advanced Diploma of Conservation and Land Management

Location: full-time at Longerenong, flexible delivery through Glenormiston.

A new course for introduction in 2002 based on the National Conservation and Land Management Training Package (currently under development).

FORESTRY

Certificates in Forest and Forest Products (Forest Growing and Management)

Location: Creswick

A workplace-based/part-time introductory program for new entrants, and existing employees wishing to advance their career in establishing and managing forests. These courses cater for the needs of forest growing and management apprentices/trainees.

DAIRY FOODS PROCESSING AND TECHNOLOGY

Certificate IV/Diploma of Food Technology (Dairy)

Location: Gilbert Chandler

This two year full-time or part-time equivalent program (also available by flexible delivery) 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.

Certificates I-III in Food Processing (Dairy)

Location: Gilbert Chandler

A workplace-based/part-time introductory program for new entrants, and existing employees wishing to advance their careers in dairy food processing. These courses cater for the needs of food processing (dairy) apprentices/trainees.

VITICULTURE AND WINEMAKING

Diploma of Horticulture (Production) - Viticulture

Location: Dookie

This flexibly delivered course is designed for people who are seeking to advance their career in viticulture with an emphasis on supervision and management which builds on or includes the operational competencies acquired in the Certificates in Food Processing (Wine).

Diploma of Food Technology (Wine)

Location: Dookie

A new flexibly delivered program for introduction in 2002 - subject to approval. The course is designed for people who are seeking to advance their career in winemaking with an emphasis on supervision and management. This course builds on or includes the operational competencies acquired in the Certificates in Food Processing (Wine).

Certificates I-III in Food Processing (Wine)

Location: Dookie

A workplace-based/part-time introductory program for new entrants, and existing employees seeking a career in wine grape production and winemaking, and may include the opportunity to specialise in viticulture, winemaking, laboratory, bottling and packaging and cellar door sales. These courses cater for the needs of viticulture and winemaking apprentices/trainees.

EQUINE

Advanced Diploma in Horse Management

Location: Glenormiston

A new full-time program of up to two and a half years duration (and also available by flexible delivery) for introduction in 2002. This program will serve as a preparation for a management career in the horse industry.

Certificate IV in Horse Management

Location: Full-time/part-time at Glenormiston and McMillan, flexible delivery through Glenormiston.

A new program, for introduction in 2002, designed to enable graduates to enter the horse industry as supervisors and trainee managers.

Certificate IV in Racing (Standardbred) - Harness Driver/Harness Trainer Level 1

Location: McMillan

This one-year full-time course is for people seeking a career in the standardbred racing industry. The course is based on the National Racing Training Package and is designed to provide both theoretical and 'hands on' training in all aspects of managing, handling, feeding, training, driving and care of the horses, as well as training in the use of all the latest relevant technical equipment.

Certificate II in Horse Studies

Location: Glenormiston, McMillan

Flexibly delivered introductory course providing a comprehensive range of skills required by an employee entering the industry as a stud worker, a stable groom or strapper, a worker on a racecourse or general horse facility, horse transport driver or track rider.

This course is also available as a VCE/VET program.

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 degree. Please note that 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 institute 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 degree courses. However, credit is not granted for final-year subjects.

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

Internal transfers

The institute welcomes internal transfers of students already enrolled in a course at the University of Melbourne into any course of the Institute of Land and Food Resources. Application forms are available from student administration offices at each campus. Generally applications close at the end of November of each year. 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 institute 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).

Student information

The institute'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 institute. 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/undergrad/index.html>>.

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 are strongly urged to ensure that the University has an accurate and reliable mailing address and phone number for you. If you change your address, you should 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 should complete an application for special consideration form available from each campus student administration office. Students are strongly encouraged to carefully read the application form which details deadlines and grounds for applying.

Faculty awards and scholarships

Dean's Honour List

The Dean's Honour List recognises high-achieving students in the Institute of Land and Food Resources. Students on the Dean's Honour List receive a certificate and a book voucher or cheque from the Dean of the institute 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 any one year of 80% or more.

Institute 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: <<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 student financial aid office on 03 8344 6053. Please also regularly check information displayed on undergraduate notice boards, or check the Institute web site at <<http://www.landfood.unimelb.edu.au/courses/scholarships.html>>.

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.

Institute student progress rules

Students who pass 50 per cent or less of the points attempted in two consecutive semesters will be required to attend the Student Progress Committee for a determination of whether they will be permitted to continue in the course.

These progress rules will apply regardless of the year. Students will not normally be able to enrol in a subject more than twice. Failure for a second time normally results in a suspension from their course.

Progress rules for the 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 Institute 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.landfood.unimelb.edu.au/courses/undergrad/guide2002.pdf>>.

Undergraduate entry

Course prerequisites for 2002 are as follows.

Bachelor of Agriculture:

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 35 in further mathematics. Selection mode is ENTER and a two-stage process with a middle-band of approximately 20%. For middle-band selection, a study score of at least 25 in mathematical methods = an ENTER maximum 3 points higher. Consideration is also given to the full range of Year 12 studies and relevant work experience.

Bachelor of Forestry:

As for the Bachelor of Agriculture.

Bachelor of Horticulture:

As for the Bachelor of Agriculture.

Bachelor of Resource Management:

As for the Bachelor of Agriculture.

Bachelor of Agriculture/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 Forestry/Bachelor of Commerce:

As for the Bachelor of Agriculture/Bachelor of Commerce. Consideration will be given to relevant work experience in forestry-related fields.

Bachelor of Forestry/Bachelor of Science:

Units 3 and 4 - a study score of at least 25 in each of English (any), mathematical methods, and in two of biology, chemistry, an additional mathematics, physics. Consideration will be given to relevant work experience in forestry related fields.

Bachelor of Applied Science (Food Technology)

As for the Bachelor of Agriculture

Advanced Diploma of Agriculture:

There are no prerequisites.

Advanced Diploma of Horticulture:

There are no prerequisites.

Advanced Diploma of Forestry Management

There are no prerequisites.

Concurrent diplomas

The institute offers students who spend two or more years at Parkville 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 institute. Normally enrolling in a concurrent diploma adds an extra year to the duration of the course.

Planning an undergraduate course

The Bachelors of Agriculture, Horticulture, Resource Management and Applied Science (Food Technology) 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 Bachelor of Forestry is a four-year degree with honours awarded at the end of the fourth year based on marks from the third and fourth years.

The institute offers three combined degrees which are five years in length (or part-time equivalent): Bachelor of Agriculture/Bachelor of Commerce, Bachelor of Forestry/Bachelor of Commerce, and Bachelor of Forestry/Bachelor of Science. Honours in the agriculture or forestry component is awarded at the end of the fifth year, based on marks for the third, fourth and fifth years.

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

Students are advised to consult the relevant course coordinator when planning their course, as institute 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)

Dr Steve Read - Parkville campus: +61 3 8344 5048 & Creswick campus: +61 3 5321 4177

Course coordinators

Bachelor of Agriculture

Mr Chris Laird - Dookie campus: +61 3 5833 9200

Bachelor of Forestry

Dr Leon Bren - Creswick campus: +61 3 5321 4117

Bachelor of Horticulture

Dr Peter May - Burnley campus: +61 3 9250 6800

Bachelor of Resource Management

Dr Steve Hamilton - Dookie campus: +61 3 5833 9200

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

Bachelor of Applied Science (Food Technology)

Dr Hubert Roginski - Gilbert Chandler campus: +61 3 9217 5200

Advanced Diploma of Agriculture

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

Advanced Diploma of Forestry Management

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

Advanced Diploma of Horticulture

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

Degree courses

Bachelor of Agriculture

This course is offered at both the Dookie and Parkville campuses of the University. The campuses offer a common first year as well as part of the second year, with increasing specialisation thereafter so not all electives will be offered at both campuses. Parkville students will need to travel to Burnley campus for some subjects.

Agriculture is essentially the study of the management of resources for the production of food and fibre in a sustainable way. When you study agriculture you are taught the principles and applications of science, economics and management.

The Bachelor of Agriculture lends itself to degree specialisation in crop production, animal production, agribusiness, and various multi-disciplinary 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, plant and animal management and production;
- 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 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 or business consulting firms, international trade, food processing companies and farm management and extension positions.

Course outline

First year	Points
Semester 1	
202-101 Chemistry for Land and Food Resources (p.1)	12.5
202-103 Biology for Land and Food Resources (p.1)	12.5
208-109 Australian Agricultural Production Sys (p.2)	12.5
202-104 Information Technology and Communication (p.1)	12.5
or	
620-081 Preliminary Mathematics A (p.12)	12.5
Students entering without VCE Mathematical Methods or equivalent must take 620-081 - Preliminary Mathematics A.	
Semester 2	
202-106 Land Resources (p.1)	12.5
207-101 Economics of Resource Use (p.1)	12.5
Two electives*	25
<i>Sub-total</i>	<i>100.0</i>
Second year	Points
Semester 1	
202-201 Plant Function (p.2)	12.5
202-202 Experimental Design/Statistical Methods (p.2)	12.5
Semester 2	
202-203 Soil and Water Resources (p.2)	12.5
208-210 Financial Management for Resource Ind I (p.3)	12.5
Electives	
Four electives*	50.0
<i>Sub-total</i>	<i>100.0</i>
Third year	Points
Semester 1	
202-302 Human Resource Management (p.3)	12.5
Year long subjects	
202-001 Industry Placement# (p.3)	0
202-301 Industry Project (p.3)	25
Elective subjects	
Five electives*	62.5
<i>Sub-total</i>	<i>100.0</i>
Fourth year (honours)	Points
Year long subjects	
202-401 Industry/Research Project (p.4)	50
Elective subjects	
Four electives*	50.0
<i>Sub-total</i>	<i>100.0</i>

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

Selected discipline sequences - recommended electives

Students are not required to follow discipline sequences and may select a range of electives to provide a broader course.

Animal management	Points
First year	
208-101 Farm Animal Biology (p.4)	12.5
208-105 Field Skills (p.4)	12.5

Animal management		Points
Second year		
208-201 Comparative Nutrition (p.5)		12.5
208-203 Ecology & Management of Grazing Systems (p.5)		12.5
208-207 Animal Management and Production I (p.6)		12.5
Third year		
202-304 Resource Mgt & Agric Systems Analysis (p.7)		12.5
208-303 Animal Management and Production II (p.8)		12.5
208-309 Dairy Production (p.9)		12.5
Animal science		Points
First year		
208-101 Farm Animal Biology (p.4)		12.5
600-142 Genetics & The Evolution of Life (p.1)		12.5
610-142 Chemistry (p.2)		12.5
Second year		
208-201 Comparative Nutrition (p.5)		12.5
208-202 Animal Physiology (p.5)		12.5
208-203 Ecology & Management of Grazing Systems (p.5)		12.5
Third year		
208-302 Molecular Biology, Genetics and Breeding (p.8)		12.5
208-304 Advanced Topics in Farm Animal Science (p.8)		12.5
Honours		
208-412 Advanced Topics in Genetics and Breeding (p.11)		12.5
Viticulture		Points
First year		
208-107 Vineyard & Winery Ops for Quality WP I (p.4)		12.5
Second year		
208-205 Australia in the Wine World (p.6)		12.5
208-206 Vineyard & Winery Ops for Quality WP II (p.6)		12.5
Third year		
208-316 Oenology (p.9)		12.5
208-329 Viticulture (p.10)		12.5
Crop Science		Points
First year		
600-142 Genetics & The Evolution of Life (p.1)		12.5
610-142 Chemistry (p.2)		12.5
Second year		
208-203 Ecology & Management of Grazing Systems (p.5)		12.5
208-208 Crop Production (p.6)		12.5
Third year		
207-320 Processes in the Soil Environment (p.7)		12.5
208-301 Crop and Pasture Physiology (p.8)		12.5
208-302 Molecular Biology, Genetics and Breeding (p.8)		12.5
208-307 Integrated Plant Protection (p.9)		12.5
Honours		
208-401 Plant Pathology (p.11)		12.5
208-402 Advanced Plant Breeding & Biotechnology (p.11)		12.5
Crop Management		Points
First year		
208-102 Field Engineering (p.4)		12.5
208-105 Field Skills (p.4)		12.5
Second year		
208-203 Ecology & Management of Grazing Systems (p.5)		12.5
Third Year		
202-304 Resource Mgt & Agric Systems Analysis (p.7)		12.5
207-320 Processes in the Soil Environment (p.7)		12.5
208-308 Irrigation and Water Management (p.9)		12.5
Honours		
207-401 Soil Management and Conservation (p.10)		12.5
208-401 Plant Pathology (p.11)		12.5
Agribusiness		Points
First year		
208-101 Farm Animal Biology (p.4)		12.5
208-105 Field Skills (p.4)		12.5
Second year		
207-201 Resource Industry Economics I (p.4)		12.5
208-212 Agribusiness Marketing (p.6)		12.5
Third year		
202-304 Resource Mgt & Agric Systems Analysis (p.7)		12.5
208-306 Agricultural Marketing (p.8)		12.5
Honours		
207-403 Resource Industry Economics II (p.10)		12.5
207-404 Agricultural Policy&International Trade (p.10)		12.5

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. All electives are not offered at all campuses.

First year	Points
208-101 Farm Animal Biology (<i>p.4</i>)	12.5
208-102 Field Engineering (<i>p.4</i>)	12.5
208-105 Field Skills (<i>p.4</i>)	12.5
208-107 Vineyard & Winery Ops for Quality WP I (<i>p.4</i>)	12.5
600-142 Genetics & The Evolution of Life (<i>p.1</i>)	12.5
610-142 Chemistry (<i>p.2</i>)	12.5

Second year	Points
202-104 Information Technology and Communication (<i>p.1</i>)	12.5
207-201 Resource Industry Economics I (<i>p.4</i>)	12.5
208-201 Comparative Nutrition (<i>p.5</i>)	12.5
208-202 Animal Physiology (<i>p.5</i>)	12.5
208-203 Ecology & Management of Grazing Systems (<i>p.5</i>)	12.5
208-205 Australia in the Wine World (<i>p.6</i>)	12.5
208-206 Vineyard & Winery Ops for Quality WP II (<i>p.6</i>)	12.5
208-207 Animal Management and Production I (<i>p.6</i>)	12.5
208-208 Crop Production (<i>p.6</i>)	12.5
208-212 Agribusiness Marketing (<i>p.6</i>)	12.5

Third year	Points
202-304 Resource Mgt & Agric Systems Analysis (<i>p.7</i>)	12.5
207-301 Global Env'ment & Sustain Prod Systems (<i>p.7</i>)	12.5
207-320 Processes in the Soil Environment (<i>p.7</i>)	12.5
207-327 Resource Industry Communication (<i>p.7</i>)	12.5
207-328 Working with Community Groups (<i>p.7</i>)	12.5
208-301 Crop and Pasture Physiology (<i>p.8</i>)	12.5
208-302 Molecular Biology, Genetics and Breeding (<i>p.8</i>)	12.5
208-303 Animal Management and Production II (<i>p.8</i>)	12.5
208-304 Advanced Topics in Farm Animal Science (<i>p.8</i>)	12.5
208-306 Agricultural Marketing (<i>p.8</i>)	12.5
208-307 Integrated Plant Protection (<i>p.9</i>)	12.5
208-308 Irrigation and Water Management (<i>p.9</i>)	12.5
208-309 Dairy Production (<i>p.9</i>)	12.5
208-316 Oenology (<i>p.9</i>)	12.5
208-318 Fruit and Vegetable Technology (<i>p.9</i>)	12.5
208-320 Fertiliser Management (<i>p.10</i>)	12.5
208-329 Viticulture (<i>p.10</i>)	12.5

Fourth year	Points
202-304 Resource Mgt & Agric Systems Analysis (<i>p.7</i>)	12.5
207-301 Global Env'ment & Sustain Prod Systems (<i>p.7</i>)	12.5
207-401 Soil Management and Conservation (<i>p.10</i>)	12.5
207-403 Resource Industry Economics II (<i>p.10</i>)	12.5
207-404 Agricultural Policy & International Trade (<i>p.10</i>)	12.5
207-413 Community Mgt Of Land & Natural Resource (<i>p.4</i>)	12.5
208-401 Plant Pathology (<i>p.11</i>)	12.5
208-402 Advanced Plant Breeding & Biotechnology (<i>p.11</i>)	12.5
208-409 Animal Welfare (<i>p.11</i>)	12.5
208-412 Advanced Topics in Genetics and Breeding (<i>p.11</i>)	12.5

Bachelor of Agriculture/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 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 in normal 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 specialist training in 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 and 200 from the Bachelor of Commerce and 75 are electives that students can choose from either faculties, or another faculty. Students may be awarded honours in agriculture at the end of fifth year. Honours in commerce requires an additional sixth year of study.

Agriculture points must include:

- nine institute core subjects including 202-401 Industry Research Project (207-101 Economics of Resource Use, and 202-202 Experimental Design/Statistical Methods are not required)
- six additional agricultural degree subjects (See BAg for a full listing)
- 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:

First year	Points
Semester 1	
202-101 Chemistry for Land and Food Resources (<i>p.1</i>)	12.5
202-103 Biology for Land and Food Resources (<i>p.1</i>)	12.5
208-109 Australian Agricultural Production Sys (<i>p.2</i>)	12.5
316-102 Introductory Microeconomics (<i>p.1</i>)	12.5
Semester 2	
208-101 Farm Animal Biology (<i>p.4</i>)	12.5
316-101 Introductory Macroeconomics (<i>p.1</i>)	12.5
316-130 Quantitative Methods 1 (<i>p.1</i>)	12.5
600-142 Genetics & The Evolution of Life (<i>p.1</i>)	12.5
<i>Sub-total</i>	<i>100.0</i>
Second year	Points
202-201 Plant Function (<i>p.2</i>)	12.5
208-201 Comparative Nutrition (<i>p.5</i>)	12.5
208-210 Financial Management for Resource Ind I (<i>p.3</i>)	12.5
316-201 Intermediate Macroeconomics (<i>p.1</i>) ¹	12.5
One of:	
316-205 Introductory Econometrics (<i>p.1</i>) or	12.5
316-206 Quantitative Methods 2 (<i>p.1</i>)	12.5
Elective subjects	
Three commerce electives	37.5
<i>Sub-total</i>	<i>100.0</i>
Third year	Points
202-203 Soil and Water Resources (<i>p.2</i>)	12.5
316-316 Basic Econometrics (<i>p.3</i>) ¹	12.5
or	
One commerce elective	
Elective subjects	
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 Institute of Land and Food Resources recommends that students take it as part of their combined degree program.

Fourth year		Points
202-302	Human Resource Management (p.3)	12.5
207-201	Resource Industry Economics I (p.4)	12.5
or		
208-306	Agricultural Marketing (p.8)	12.5
Elective subjects		
Four commerce electives		50.0
Two electives		25.0
<i>Sub-total</i>		<i>100.0</i>
Fifth year		Points
202-001	Industry Placement# (p.3)	0
202-401	Industry/Research Project (p.4)	50
207-403	Resource Industry Economics II (p.10)	12.5
or		
207-404	Agricultural Policy&International Trade (p.10)	12.5
Elective subjects		
Three electives		37.5
<i>Sub-total</i>		<i>100.0</i>

Bachelor of Forestry

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 Forestry degree aims to cover most aspects of forestry, from commercial forest management and conservation to soils and tree physiology. Students study the science of growing and managing forests to maintain a permanent supply of wood and to sustain and manage water, wildlife, recreational opportunities 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, 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 12 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 of Australian forest industries and the principal factors that determine location, environmental impact, sustainability, profitability and international cost-competitiveness;
- 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 forestry, forest industry and related environmental problems;
- 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 resources 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, principally 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 many opportunities for employment in private forestry, mainly with the pulp and paper companies, and in the larger firms in the wood-based industry, especially in resource planning, timber and harvesting management, reforestation and wood technology.

Graduates of the BFor course and combined degrees are eligible to become members of the Institute of Foresters of Australia.

Course outline

First year (Parkville)		Points
Semester 1		
202-101	Chemistry for Land and Food Resources (p.1)	12.5
or		
610-141	Chemistry (p.2)	12.5
202-103	Biology for Land and Food Resources (p.1)	12.5
202-104	Information Technology and Communication (p.1)	12.5
or		
620-081	Preliminary Mathematics A (p.12)	12.5
Students entering without VCE Mathematical Methods or equivalent must take 620-081 - Preliminary Mathematics A.		
207-106	Conservation of Australian Forests (p.1)	12.5
Semester 2		
207-101	Economics of Resource Use (p.1)	12.5
600-111	Biology of Australian Flora & Fauna (p.1)	12.5
600-142	Genetics & The Evolution of Life (p.1)	12.5
610-141	Chemistry (p.2)	12.5
or		
610-142	Chemistry (p.2)	12.5
<i>Sub-total</i>		<i>100.0</i>
Second year (Creswick)		Points
Semester 1		
202-201	Plant Function (p.2)	12.5
202-202	Experimental Design/Statistical Methods (p.2)	12.5
207-271	Forest Mensuration & Surveying (p.1)	12.5
Semester 2		
202-203	Soil and Water Resources (p.2)	12.5
207-270	Wood Science (p.1)	12.5
207-277	Forest Inventory and GIS (p.2)	12.5
Year long subjects		
207-275	Forest Ecology (p.1)	12.5
207-276	Field Studies and Dendrology (p.2)	12.5
<i>Sub-total</i>		<i>100.0</i>
Third year (Creswick)		Points
Semester 1		
207-307	Fire Ecology and Management (p.2)	12.5
207-311	Forest Products (p.2)	12.5
207-317	Native Forest Silviculture (p.3)	12.5
Semester 2		
207-309	Timber Management and Harvesting (p.2)	12.5
207-323	Plantation Silviculture (p.3)	12.5
207-331	Forest Entomology and Pathology (p.3)	12.5
Year long subjects		
207-329	Field Studies II (p.3)	12.5
207-334	Special Studies in Forestry (p.3)	12.5
<i>Sub-total</i>		<i>100.0</i>
Fourth year (Parkville)		Points
Semester 1		
202-302	Human Resource Management (p.3)	12.5
Semester 2		
207-406	Environmental Mngt Systems and Policy (p.4)	12.5
Year long subjects		
202-001	Industry Placement# (p.3)	0
Pass degree pathway		
202-301	Industry Project (p.3)	25
and		
Four electives*		50
Honours degree pathway		
202-401	Industry/Research Project (p.4)	50
and		
Two electives*		25
<i>Sub-total</i>		<i>100.0</i>

*Electives can be selected from the following list or from approved subjects from other courses:

Elective subjects

Insufficient enrolments may lead to an elective subject being suspended.

Fourth year	Points
202-104 Information Technology and Communication (p.1)	12.5
207-301 Global Env'ment & Sustain Prod Systems (p.7)	12.5
207-407 Parks and Recreation (p.4)	12.5
207-409 Commercial Forest Management (p.4)	12.5
207-410 Agroforestry (p.4)	12.5
207-411 Processes in Forest Ecosystems (p.4)	12.5
207-413 Community Mgt Of Land & Natural Resource (p.4)	12.5
208-412 Advanced Topics in Genetics and Breeding (p.11)	12.5

Bachelor of Forestry/Bachelor of Commerce

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 Forestry 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;
- have 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

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 Forestry and 200 from the Bachelor of Commerce. Typically students will spend third and fourth year at Creswick, but it is possible to spend second and third year at Creswick 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:

First year	Points
Semester 1	
202-101 Chemistry for Land and Food Resources (p.1)	12.5

First year	Points
or	
610-141 Chemistry (p.2)	12.5
202-103 Biology for Land and Food Resources (p.1)	12.5
316-102 Introductory Microeconomics (p.1)	12.5
One commerce elective (100 level)	12.5
Semester 2	
316-101 Introductory Macroeconomics (p.1)	12.5
316-130 Quantitative Methods 1 (p.1)	12.5
600-142 Genetics & The Evolution of Life (p.1)	12.5
610-141 Chemistry (p.2)	12.5
or	
610-142 Chemistry (p.2)	12.5
Sub-total	100.0

Second year	Points
207-106 Conservation of Australian Forests (p.1)	
316-201 Intermediate Macroeconomics (p.1) 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
Elective subjects	
Five commerce electives	50
Sub-total	100.0

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

Third year	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.2)	12.5
207-270 Wood Science (p.1)	12.5
207-271 Forest Mensuration & Surveying (p.1)	12.5
207-275 Forest Ecology (p.1)	12.5
207-276 Field Studies and Dendrology (p.2)	12.5
207-277 Forest Inventory and GIS (p.2)	12.5
Sub-total	100.0

Fourth year	Points
207-307 Fire Ecology and Management (p.2)	12.5
207-309 Timber Management and Harvesting (p.2)	12.5
207-311 Forest Products (p.2)	12.5
207-317 Native Forest Silviculture (p.3)	12.5
207-323 Plantation Silviculture (p.3)	12.5
207-329 Field Studies II (p.3)	12.5
207-331 Forest Entomology and Pathology (p.3)	12.5
207-334 Special Studies in Forestry (p.3)	12.5
Sub-total	100.0

Fifth Year	Points
202-001 Industry Placement# (p.3)	0
202-301 Industry Project (p.3)	25
207-406 Environmental Mngt Systems and Policy (p.4)	12.5

Elective subjects	
Five commerce electives	62.5
Sub-total	100.0

Bachelor of Forestry/Bachelor of Science

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 BFor 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 BFor 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.

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.

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 Forestry. Typically students will spend second and third year of their degrees at Creswick, as in the structure below, but it is possible to spend second year at Parkville taking 100 Science points, then spend third and fourth year at Creswick.

Forestry points must include:

- 19 institute subjects as below
- 25 points of 400 level subjects and 25 points towards 202-401 Industry Research Project.
- 12 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 Industry 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 ILFR 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 ILFR content of the degrees.

A typical course combination would appear as follows:

First year	Points
Semester 1	
207-106 Conservation of Australian Forests (<i>p.1</i>)	12.5
600-141 Biology of Cells and Organisms (<i>p.1</i>)	12.5
610-141 Chemistry (<i>p.2</i>)	12.5
One science elective	12.5
Semester 2	
207-101 Economics of Resource Use (<i>p.1</i>)	12.5
600-111 Biology of Australian Flora & Fauna (<i>p.1</i>)	12.5
600-142 Genetics & The Evolution of Life (<i>p.1</i>)	12.5
610-142 Chemistry (<i>p.2</i>)	12.5
<i>Sub-total</i>	<i>100.0</i>

Second year	Points
202-201 Plant Function (<i>p.2</i>)	12.5
202-203 Soil and Water Resources (<i>p.2</i>)	12.5
207-270 Wood Science (<i>p.1</i>)	12.5
207-271 Forest Mensuration & Surveying (<i>p.1</i>)	12.5
207-275 Forest Ecology (<i>p.1</i>)	12.5
207-276 Field Studies and Dendrology (<i>p.2</i>)	12.5
207-277 Forest Inventory and GIS (<i>p.2</i>)	12.5
620-160 Experimental Design & Data Analysis (<i>p.5</i>)	12.5
<i>Sub-total</i>	<i>100.0</i>
Third year	Points
207-307 Fire Ecology and Management (<i>p.2</i>)	12.5
207-309 Timber Management and Harvesting (<i>p.2</i>)	12.5
207-311 Forest Products (<i>p.2</i>)	12.5
207-317 Native Forest Silviculture (<i>p.3</i>)	12.5
207-323 Plantation Silviculture (<i>p.3</i>)	12.5
207-329 Field Studies II (<i>p.3</i>)	12.5
207-331 Forest Entomology and Pathology (<i>p.3</i>)	12.5
207-334 Special Studies in Forestry (<i>p.3</i>)	12.5
<i>Sub-total</i>	<i>100.0</i>
Fourth and fifth years	Points
202-001 Industry Placement# (<i>p.3</i>)	0
202-401 Industry/Research Project (<i>p.4</i>)	50
207-406 Environmental Mngt Systems and Policy (<i>p.4</i>)	12.5
Elective subjects	
One of:	
207-407 Parks and Recreation (<i>p.4</i>)	12.5
207-409 Commercial Forest Management (<i>p.4</i>)	12.5
207-410 Agroforestry (<i>p.4</i>)	12.5
207-411 Processes in Forest Ecosystems (<i>p.4</i>)	12.5
or	
208-412 Advanced Topics in Genetics and Breeding (<i>p.11</i>)	12.5
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>200.0</i>

Bachelor of Horticulture

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

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 the selected specialisation in environmental horticulture;
- an ability to develop strategies appropriate to the establishment, maintenance and management of the 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;
- an ability to demonstrate effective communication skills including appropriate numeracy, literacy skills and application of technology.

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.

Course outline

First year	Points
Semester 1	
202-101 Chemistry for Land and Food Resources (<i>p.1</i>)	12.5

First year

202-103	Biology for Land and Food Resources (p.1)	Points	12.5
202-104	Information Technology and Communication (p.1)		12.5
or			
620-081	Preliminary Mathematics A (p.12)		12.5

Students entering without VCE Mathematical Methods or equivalent must take 620-081 - Preliminary Mathematics A.

207-104	Horticulture I (p.1)		12.5
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Semester 2

202-106	Land Resources (p.1)		12.5
207-101	Economics of Resource Use (p.1)		12.5
207-102	Plant Health (p.1)		12.5
207-105	Horticulture II (p.1)		12.5

Sub-total 100.0

Second year

Semester 1

202-201	Plant Function (p.2)	Points	12.5
202-202	Experimental Design/Statistical Methods (p.2)		12.5
207-201	Resource Industry Economics I (p.4)		12.5
207-212	The Horticulture of Australian Plants (p.2)		12.5

Semester 2

202-203	Soil and Water Resources (p.2)		12.5
207-217	Horticultural Engineering (p.2)		12.5
Two of:			
207-208	Production Of Cultivated Plants (p.1)		12.5
207-210	Open Space Management (p.2)		12.5
207-205	Human Dimensions of Natural Resource Mgt (p.1)		12.5

Sub-total 100.0

Third year

Semester 1

202-302	Human Resource Management (p.3)	Points	12.5
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Year long subject

202-001	Industry Placement# (p.3)		0
202-301	Industry Project (p.3)		25

Electives

Five electives*			62.5
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Sub-total 100.0

Fourth year (honours)

Year long subjects

202-401	Industry/Research Project (p.4)	Points	50
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Electives

Four electives*			50.0
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Sub-total 100.0

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

Discipline sequences - recommended electives

Urban landscape management

		Points	
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Second year

207-205	Human Dimensions of Natural Resource Mgt (p.1)		12.5
207-210	Open Space Management (p.2)		12.5

Third year

207-304	Ecophysiology and Phytogeography (p.3)		12.5
207-305	Revegetation and Landscape Restoration (p.2)		12.5
207-306	Environmental and Resource Management (p.3)		12.5
207-308	Turfgrass Science and Management I (p.3)		12.5
207-312	Garden History and Contemporary Design (p.4)		12.5
207-313	Graphic Studies (p.4)		12.5
207-315	Landscape Construction (p.4)		12.5
207-316	Landscape Studies (p.5)		12.5
207-318	Management of Heritage Landscapes (p.5)		12.5
207-333	Amenity Tree Assessment and Management (p.6)		12.5

Plant production

		Points	
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Second year

207-208	Production Of Cultivated Plants (p.1)		12.5
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Third year

207-303	Advanced Plant Production (p.2)		12.5
207-310	Horticultural Reproduction Technology (p.3)		12.5
207-321	Protected Cropping (p.5)		12.5
208-302	Molecular Biology, Genetics and Breeding (p.8)		12.5

Honours

208-402	Advanced Plant Breeding & Biotechnology (p.11)		12.5
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Elective subjects

Insufficient enrolments may lead to a subject being suspended.

Second year

		Points	
207-205	Human Dimensions of Natural Resource Mgt (p.1)		12.5
207-208	Production Of Cultivated Plants (p.1)		12.5
207-210	Open Space Management (p.2)		12.5

Third year

		Points	
202-104	Information Technology and Communication (p.1)		12.5
207-303	Advanced Plant Production (p.2)		12.5
207-304	Ecophysiology and Phytogeography (p.3)		12.5
207-305	Revegetation and Landscape Restoration (p.2)		12.5
207-306	Environmental and Resource Management (p.3)		12.5
207-308	Turfgrass Science and Management I (p.3)		12.5
207-310	Horticultural Reproduction Technology (p.3)		12.5
207-312	Garden History and Contemporary Design (p.4)		12.5
207-313	Graphic Studies (p.4)		12.5
207-314	Social Research Methods (p.4)		12.5
207-315	Landscape Construction (p.4)		12.5
207-316	Landscape Studies (p.5)		12.5
207-318	Management of Heritage Landscapes (p.5)		12.5
207-321	Protected Cropping (p.5)		12.5
207-322	Irrigation for Intensive Horticult Mgt (p.5)		12.5
207-332	Arboriculture (p.6)		12.5
207-333	Amenity Tree Assessment and Management (p.6)		12.5

Fourth year

		Points	
207-301	Global Env'ment & Sustain Prod Systems (p.7)		12.5
208-302	Molecular Biology, Genetics and Breeding (p.8)		12.5
207-413	Community Mgt Of Land & Natural Resource (p.4)		12.5
208-402	Advanced Plant Breeding & Biotechnology (p.11)		12.5

Bachelor of Resource Management

The first year of the Bachelor of Resource Management is offered at both the Parkville and the Dookie campuses of the University. The second year is offered at the Parkville campus only, and the location of subsequent years depends on the electives chosen. Parkville students will need to travel to the Burnley campus for a few 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 the social and economic framework of land resource development and use, including the structure of 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 the tools and mechanisms by which land resource managers can influence human behaviour;
- 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.

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	
Semester 1			
202-101	Chemistry for Land and Food Resources (p.1)		12.5

Institute of Land and Food Resources

First year

	Points
202-103 Biology for Land and Food Resources (p.1)	12.5
202-104 Information Technology and Communication (p.1)	12.5
or	
620-081 Preliminary Mathematics A (p.12)	12.5

Students entering without VCE Mathematics Methods or equivalent must take 620-081 - Preliminary Mathematics A.

208-109 Australian Agricultural Production Sys (p.2)	12.5
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Semester 2

202-106 Land Resources (p.1)	12.5
207-101 Economics of Resource Use (p.1)	12.5
207-103 Ecology (p.1)	12.5
One elective*	12.5
<i>Sub-total</i>	<i>100.0</i>

Second year

Semester 1

202-201 Plant Function (p.2)	12.5
202-202 Experimental Design/Statistical Methods (p.2)	12.5
207-201 Resource Industry Economics I (p.4)	12.5
207-205 Human Dimensions of Natural Resource Mgt (p.1)	12.5

Semester 2

202-203 Soil and Water Resources (p.2)	12.5
207-202 Australian Flora (p.1)	12.5
207-203 Techniques of Resource Assessment (p.1)	12.5
207-211 Australian Fauna (p.1)	12.5
<i>Sub-total</i>	<i>100.0</i>

Third year

Semester 1

202-302 Human Resource Management (p.3)	12.5
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Year long subject

202-001 Industry Placement# (p.3)	0
202-301 Industry Project (p.3)	25

Electives

Five electives*	62.5
<i>Sub-total</i>	<i>100.0</i>

Fourth year (honours)

Year long subjects

202-401 Industry/Research Project (p.4)	50
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Elective subjects

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.

Discipline sequences - recommended electives

Protected area management

	Points
207-305 Revegetation and Landscape Restoration (p.2)	12.5
207-314 Social Research Methods (p.4)	12.5
207-318 Management of Heritage Landscapes (p.5)	12.5
207-325 Aquatic Ecology (p.2)	12.5
207-326 Wildlife Conservation and Management (p.2)	12.5
207-402 Management of Plant & Animal Invasions (p.3)	12.5
207-407 Parks and Recreation (p.4)	12.5

Catchment and land management

	Points
207-305 Revegetation and Landscape Restoration (p.2)	12.5
207-314 Social Research Methods (p.4)	12.5
207-318 Management of Heritage Landscapes (p.5)	12.5
207-330 GIS and Remote Sensing (p.2)	12.5
207-335 Resource Management Policy and Action (p.3)	12.5
207-401 Soil Management and Conservation (p.10)	12.5
207-410 Agroforestry (p.4)	12.5
207-413 Community Mgt Of Land & Natural Resource (p.4)	12.5

Elective subjects

Insufficient enrolments may lead to an elective subject being suspended.

First year

	Points
208-105 Field Skills (p.4)	12.5
600-142 Genetics & The Evolution of Life (p.1)	12.5

Third year

	Points
202-104 Information Technology and Communication (p.1)	12.5
207-305 Revegetation and Landscape Restoration (p.2)	12.5
207-314 Social Research Methods (p.4)	12.5

Third year

	Points
207-318 Management of Heritage Landscapes (p.5)	12.5
207-325 Aquatic Ecology (p.2)	12.5
207-326 Wildlife Conservation and Management (p.2)	12.5
207-327 Resource Industry Communication (p.7)	12.5
207-328 Working with Community Groups (p.7)	12.5
207-330 GIS and Remote Sensing (p.2)	12.5
207-335 Resource Management Policy and Action (p.3)	12.5

Fourth year

	Points
202-304 Resource Mgt & Agric Systems Analysis (p.7)	12.5
207-301 Global Env'ment & Sustain Prod Systems (p.7)	12.5
207-401 Soil Management and Conservation (p.10)	12.5
207-402 Management of Plant & Animal Invasions (p.3)	12.5
207-407 Parks and Recreation (p.4)	12.5
207-410 Agroforestry (p.4)	12.5
207-413 Community Mgt Of Land & Natural Resource (p.4)	12.5

Bachelor of Applied Science (Food Technology)

The first year of the Bachelor of Applied Science (Food Technology) is offered at the Parkville and Dookie Campuses, while subsequent years are offered at the Parkville campus using the laboratory and factory facilities available at the Gilbert Chandler campus and aims to produce graduates for professional roles in the food industry. The course comprises three years full-time study or equivalent part-time study.

Articulating students may begin the course after completing a Diploma of Food Technology or another equivalent diploma qualification. Such students will normally be granted a block credit of 100 points.

Students transferring from another degree program may be granted up to 100 credit points on the basis of their previous degree studies being accepted by their course coordinator.

Course objectives

Students who have completed this course should have acquired:

- a broad knowledge of scientific principles underpinning the manufacturing technology of food products;
- an ability to apply and analyse the problems and issues facing food processing industry and propose appropriate solutions;
- understanding of the structure and organisation of the food processing industry;
- skills to manage the physical, financial and human resources of a food processing plant;
- 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 the operation of food processing plants;
- a capacity and motivation for continuing independent learning;
- understanding of the rights, privileges and responsibilities conferred with the degree and memberships of professional associations.

Career opportunities

Graduates can expect to find employment in positions such as production managers, quality assurance managers, product development technologists, or marketing managers for food manufacturing organisations.

Course outline

First year

Semester 1

	Points
202-101 Chemistry for Land and Food Resources (p.1)	12.5
202-103 Biology for Land and Food Resources (p.1)	12.5
202-104 Information Technology and Communication (p.1)	12.5

or

620-081 Preliminary Mathematics A (p.12)	12.5
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Students entering without VCE Mathematics Methods or equivalent must take 620-081 - Preliminary Mathematics A.

One Elective*	12.5
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Semester 2

202-106 Land Resources (p.1)	12.5
207-101 Economics of Resource Use (p.1)	12.5
208-106 Food Science (p.1)	12.5

First year		Points
One elective*		12.5
<i>Sub-total</i>		<i>100.00</i>
Second year		Points
Semester 1		
208-210 Financial Management for Resource Ind I (p.3)		12.5
208-216 Food Microbiology (p.1)		12.5
208-218 Production Management (p.1)		12.5
208-311 Engineering Applications (p.2)		12.5
Semester 2		
Four electives*		50.0
Year long subject		
208-224 Industry Placement II (p.1)		0
<i>Sub-total</i>		<i>100.0</i>
Third year		Points
Semester 1		
202-302 Human Resource Management (p.3)		12.5
208-305 Production and Management Techniques (p.2)		12.5
208-310 Analytical Techniques (p.2)		12.5
208-314 Food Technology I (p.3)		12.5
Semester 2		
208-312 Biochemistry and Fermentation Technology (p.2)		12.5
208-313 Food Industry Policy and Planning (p.2)		12.5
208-315 Research Project (p.3)		12.5
208-319 Food Technology II (p.3)		12.5
<i>Sub-total</i>		<i>100.0</i>

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

Electives		Points
First year		
202-104 Information Technology and Communication (p.1)		12.5
208-101 Farm Animal Biology (p.4)		12.5
208-107 Vineyard & Winery Ops for Quality WP I (p.4)		12.5
208-109 Australian Agricultural Production Sys (p.2)		12.5
600-142 Genetics & The Evolution of Life (p.1)		12.5
610-142 Chemistry (p.2)		12.5
Second year		
208-206 Vineyard & Winery Ops for Quality WP II (p.6)		12.5
208-209 Meat Production and Processing (p.3)		12.5
208-220 Fermented Milk Products (p.3)		12.5
208-221 Frozen and Fat Products (p.4)		12.5
208-222 Concentrated and Dried Dairy Products (p.4)		12.5
208-223 Liquid Products and Membrane Technology (p.4)		12.5
208-316 Oenology (p.9)		12.5
208-317 Cereals and Baked Products (p.4)		12.5
208-318 Fruit and Vegetable Technology (p.9)		12.5

Enrolment in elective studies is dependent on subject availability.

Bachelor of Applied Science (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 will be 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 Institute 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 obtain a minimum mark of 70 per cent in each of their coursework subjects and 65 per cent for the research project.

Advanced diploma courses

Advanced Diploma of Agriculture

This two-year full-time course is available at Dookie campus, and also part-time by distance education.

Course objectives

The Advanced Diploma of Agriculture has as its objectives that graduates have:

- the ability to successfully organise operate and develop a business plan;
- 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;
- the ability to communicate effectively with employees, employers, clients and professional services in their industries;
- a wide range of practical farming skills;
- an understanding of the biological and ecological aspects of farming systems that lead to sustainable agriculture;
- the financial skills that will enable them to run a medium sized business related to agriculture or its service industries;
- 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.

Career opportunities

The career opportunities depend on the area of specialisation each student adopts. Graduates normally aim for 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. It is expected that many graduates will become self employed.

Course outline

First year		Points
Semester 1		
202-151 Information Technology and Communication (p.1)		12.5

	Points
First year	
207-151 Plant Biology (p.1)	12.5
208-153 Skills Acquisition (p.1)	12.5
208-157 Animal Science I (p.1)	12.5
Semester 2	
207-274 Agricultural Economics and Policy (p.2)	12.5
208-156 Crop Production And Management (p.1)	12.5
208-161 Financial Management for Resource Ind I (p.1)	12.5
208-163 Farm Management (p.2)	12.5
<i>Sub-total</i>	<i>100.0</i>
Second year	Points
Semester 1	
208-152 Agricultural Technology (p.2)	12.5
208-261 Pastures and Grazing Management (p.3)	12.5
207-272 Water and Land Management (p.3)	12.5
One of:	
208-162 Agribusiness Marketing (p.4)	12.5
208-259 Animal Science II (p.4)	12.5
208-266 Crop Improvement (p.5)	12.5
208-267 Financial Management for Resource Ind II (p.5)	12.5
Semester 2	
208-269 Managing Staff (p.3)	12.5
Three electives chosen from:*	
208-204 Special Studies (p.4)	12.5
208-260 Intensive Animal Management (p.5)	12.5
208-264 Livestock Management (p.5)	12.5
208-265 Integrated Pest and Weed Management (p.5)	12.5
207-101 Economics of Resource Use (p.1)	12.5
208-164 International Agribusiness (p.4)	12.5
208-268 Farm Management II (p.6)	12.5
208-272 Commodity Marketing (p.6)	12.5
Year long subject	
202-051 Industry Placement# (p.2)	0
<i>Sub-total</i>	<i>100.0</i>

*Insufficient enrolments may lead to an elective being suspended.

Advanced Diploma of 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

The Advanced Diploma of Forestry Management has as its objectives that graduates are able 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;
- 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>.

	Points
First year	
Semester 1	
202-151 Information Technology and Communication (p.1)	12.5
207-156 Sustainable Outputs From Forested Lands (p.1)	12.5
207-161 Fire and Water Management (p.1)	12.5
207-163 Silviculture (p.1)	12.5
Semester 2	
207-160 Forest Botany & Ecology (p.1)	12.5

	Points
First year	
207-162 Forest Surveying and Measurement (p.1)	12.5
208-161 Financial Management for Resource Ind I (p.1)	12.5
Year long subject	
207-166 Forestry Work Skills I (p.1)	12.5
<i>Sub-total</i>	<i>100.0</i>
Second year	Points
Semester 1	
207-279 Forest Policy (p.2)	12.5
207-285 Wildlife, Soil & Cultural Conservation (p.2)	12.5
Semester 2	
208-269 Managing Staff (p.3)	12.5
Year long subject	
207-287 Forestry Work Skills II (p.2)	12.5
Electives	
Four of:	
207-280 Silviculture of Native Forests (p.2)	12.5
207-282 Plantation and Farm Silviculture (p.2)	12.5
207-284 Protected Area Management (p.3)	12.5
207-286 Plant and Animal Pests (p.3)	12.5
207-289 Fire Suppression (p.3)	12.5
<i>Sub-total</i>	<i>100.00</i>

Advanced Diploma of Horticulture

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

Course objectives

The Advanced Diploma of Horticulture 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.

Career opportunities

Graduates will be able to find employment as landscape contractors, garden designers, sports turf supervisors, nursery production managers, arborists, parks and gardens supervisors, and nursery propagators.

Course outline

	Points
First year	
Semester 1	
202-151 Information Technology and Communication (p.1)	12.5
207-151 Plant Biology (p.1)	12.5
207-153 Horticultural Science (p.1)	12.5
207-158 Horticultural Practices I (p.1)	12.5
Semester 2	
207-152 Soil Management (p.1)	12.5
207-154 Horticultural Technology (p.1)	12.5
207-155 Horticultural Practices II (p.1)	12.5
208-161 Financial Management for Resource Ind I (p.1)	12.5
<i>Sub-total</i>	<i>100.0</i>
Second year	Points
Semester 1	
207-252 Horticultural Management I (p.1)	12.5
207-263 Advanced Plant Biology (p.2)	12.5
207-319 Plant Protection (p.2)	12.5
One of	
207-251 Plant Technology (p.2)	12.5
207-258 Sports Turf Management (p.2)	12.5
207-269 Vegetation Management (p.3)	12.5
Semester 2	
207-253 Horticultural Management II (p.1)	12.5
207-265 Plant Management and the Environment (p.2)	12.5
208-269 Managing Staff (p.3)	12.5
One of:	

Second year	Points
207-254 Horticultural Project Management (p.2)	12.5
207-261 Landscape Design and Graphics (p.3)	12.5
207-333 Amenity Tree Assessment and Management (p.6)	12.5
Year long subject	
202-051 Industry Placement# (p.2)	0
<i>Sub-total</i>	<i>100.0</i>

Courses being phased out (degrees)

Bachelor of Agricultural Science

There has been no first year entry into this course from 2001 onwards. Please refer to the details for the new course Bachelor of Agriculture. The information below only applies to continuing students.

The aim of the BAgSc is to educate students to the best international standards and to prepare them for a great variety of careers in professional work and research. Agricultural science graduates are able to apply the principles and knowledge of science, economics and management to the use and management of natural resources for agricultural purposes. However, they can also apply science in many areas besides agriculture, greatly expanding the range of potential career opportunities.

An important feature of the BAgSc is that it allows the concept of **disciplinary sequences**. These are concentrations of subjects in a common area of study which provide a depth of knowledge in that area while at the same time providing the opportunity to obtain a sound grasp of scientific principles across a range of disciplines.

The BAgSc offers disciplinary sequences in:

- agricultural economics and business;
- animal management and production science;
- crop and pasture science.

These sequences are built on prerequisite core subjects. Provided prerequisite requirements are met, students will be permitted to choose from among 300 and 400-level subjects in either year.

In addition to core subjects at both 300 and 400-level, students may construct a course appropriate to a disciplinary sequence and their interests by selecting subjects from a range of disciplines within the electives offered by the institute, together with approved subjects offered within other faculties of the University.

Throughout the course, students undertake practical work in the laboratory and in the field. Excursions are arranged to enable them to supplement, by personal observation, knowledge gained in lectures and practical work. Some of these excursions may take place during vacations.

Additionally, students must complete a total of 12 weeks practical work experience during vacations. This is a hurdle requirement of the course and completion in the course will not be granted until work experience requirements are fully met.

Course objectives

The Bachelor of Agricultural Science course has as its objectives that graduates:

- can 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, plant and animal management and production;
- understand the structures of agricultural and related industries and the principal factors that determine location, environmental impact, sustainability, profitability and international trade competitiveness;
- have a capacity to apply scientific knowledge to the definition, analysis and solution of agricultural and environmental problems;
- have an ability to design and conduct scientific enquiries;
- understand principles of sound practice in relation to health, safety, animal welfare and the environment in agricultural and related industries;
- have a capacity for the exchange, acquisition and dissemination of scientific and industry information and for technology transfer;
- 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.

Careers for agricultural graduates

Agricultural scientists develop and assist in the adoption of new technologies, improved management techniques and sustainable farming methods which are necessary to ensure an economically and environmentally sound future for Australian agriculture. Through research and development work in government, university and commercial laboratories and field stations, agricultural

scientists make a substantial contribution to many aspects of changing technology. They also play key roles in spreading new ideas and facilitating the flow of information to assist farmers and land managers to make better decisions. Beyond the farm gate, many agricultural chemical, food processing and farm machinery firms employ graduates, initially as field representatives and later as administrators or managers.

The breadth of training received by agricultural science students opens up a wide range of professional options, and graduates make careers in non-traditional areas such as banks, insurance companies and journalism.

Graduates of the BAgSc course are eligible to become members of the Australian Institute of Agricultural Science and Technology.

Undergraduate subjects

Insufficient enrolments may lead to an elective subject being suspended.

Third year	Points
212-313 Vacation Work(Practical Experience) 1 (p.1)	2
620-032 Design & Analysis of Experiments (p.2)	10
212-304 Plant Production (p.1)	18
212-306 Processes in the Soil Environment (p.1)	15
either	
212-411 Animal Management and Production (p.4)	16
or	
212-358 Animal Physiology (p.2)	15
either	
212-314 Genetics and Breeding (p.1) and	5
212-315 Molecular Biology & Biotechnology (p.2)	5
or	
212-305 Communicating Ag & Environ Technology (p.1)	10
2 electives	
Elective Subjects	
212-323 Agricultural Policy & Internat.Trade (p.2)	15
212-316 Resource Economics & Management (p.2)	15
212-410 Agricultural Business Mgt & Marketing (p.2)	16

One 15-point elective may be chosen from another faculty instead of the above list, subject to prerequisites being met and institute approval being given.

Fourth year	Points
212-413 Vacation Work (Practical Experience) 2 # (p.3)	4
Electives	
Six electives chosen from the following fourth-year subjects:	
207-301 Global Env'ment & Sustain Prod Systems (p.7)	16
207-410 Agroforestry (p.4)	16
208-412 Advanced Topics in Genetics and Breeding (p.11)	16
212-411 Animal Management and Production (p.4)	16
212-404 Animal Welfare (p.3)	16
212-406 Crop & Pasture Physiology (p.3)	16
212-407 Applied Plant Breeding & Biotechnology (p.3)	16
212-408 Advanced Topics in Farm Animal Science (p.3)	16
212-409 Plant Pathology (p.4)	16
212-410 Agricultural Business Mgt & Marketing (p.2)	16
212-412 Social Research Methods (p.4)	16
212-416 Resource Economics & Management (p.4)	16
212-423 Agricultural Policy & Internat.Trade (p.4)	16
212-424 Project In Agricultural Science (p.4)	16
212-433 Resource Mgt & Agric Systems Analysis (p.4)	16

Up to 32 points (two 16 point subjects) of approved subjects may be chosen from other faculties, subject to prerequisites being met and institute approval being given.

Commonly chosen elective subjects from other faculties include:

421-423 River Hydraulics (p.11)	8
521-301 Protein Structure, Design & Engineering (p.3)	8
521-302 Functional Genomics (p.3)	8
521-303 Molecular Aspects of Cell Biology (p.3)	8
521-304 Hormone & Neurotransmitter Biochemistry (p.3)	8
521-305 Biochemistry of Metabolism & Nutrition (p.3)	8
521-306 Plant Biochemistry & Biotechnology (p.4)	8
521-321 Gene Technology & Protein Expression (p.4)	8

Discipline sequences - core subjects

Agricultural economics and business discipline sequence

212-323 Agricultural Policy & Internat.Trade (p.2)
212-416 Resource Economics & Management (p.4)

Animal sciences discipline sequence

212-358 Animal Physiology (p.2)
212-408 Advanced Topics in Farm Animal Science (p.3)

Crop and pasture science discipline sequence

Discipline sequences - core subjects

- 212-406 Crop & Pasture Physiology (p.3)
- 212-407 Applied Plant Breeding & Biotechnology (p.3)
- 212-409 Plant Pathology (p.4)

Bachelor of Forest Science

There has been no first year entry into this course from 2001 onwards. Please refer to the details for the new course Bachelor of Forestry. The information below only applies to continuing students.

The aim of the BForSc course is to educate students of forest science to the best international standards and to prepare them for careers in professional and industrial work, research and public service.

The course provides a broad-based education that will give students the necessary knowledge and thinking skills to care for and manage forest lands for purposes such as the sustainable production of timber, water and other forest products, recreation and the conservation of flora and fauna.

Such an education requires a comprehensive understanding of the biology of forest ecosystems, as well as an understanding of economics, engineering, 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 organizations during vacations. The subject 211-442 Work Experience is a hurdle requirement for the degree.

Course objectives

The Bachelor of Forest Science course has as its objectives that graduates:

- understand the structures of Australian forest industries and the principal factors that determine location, environmental impact, sustainability, profitability and international cost-competitiveness;
- have the essential factual knowledge and an understanding of principles appropriate to each stage of the educational process;
- have a capacity to apply scientific knowledge to the definition, analysis and solution of forestry, forest industry and related environmental problems;
- have an ability to design and conduct scientific enquiries;
- have essential skills in the acquisition and interpretation of forestry data;
- understand principles of sound practice in relation to health, safety, ethical issues and the environment in forestry and the forest industries;
- have a capacity for the exchange, acquisition and dissemination of scientific and industry information and for technology transfer;
- 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.

Careers for forestry graduates

Graduates are well suited to a wide range of occupations, in particular relating to the management of forest resources 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. Many forest science graduates are employed by government authorities, principally 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 opportunities for employment in private forestry, mainly with the pulp and paper companies, and in the larger firms in the wood-based industry, especially in resource planning, timber and harvesting management, reforestation and wood technology.

Graduates of the BForSc course and combined degrees are eligible to become members of the Institute of Foresters of Australia.

Undergraduate subjects

Third year (taught at the Creswick campus)	Points
207-307 Fire Ecology and Management (p.2)	12.5
207-309 Timber Management and Harvesting (p.2)	12.5
207-311 Forest Products (p.2)	12.5
207-317 Native Forest Silviculture (p.3)	12.5
207-323 Plantation Silviculture (p.3)	12.5
207-329 Field Studies II (p.3)	12.5
207-331 Forest Entomology and Pathology (p.3)	12.5

Third year (taught at the Creswick campus)	Points
207-334 Special Studies in Forestry (p.3)	12.5
<i>Sub-total</i>	<i>100.0</i>

Fourth year	Points
207-406 Environmental Mngt Systems and Policy (p.4)	12.5
211-442 Forestry Work Experience# (p.1)	0
212-416 Resource Economics & Management (p.4)	12.5

plus at least two of:

207-409 Commercial Forest Management (p.4)	12.5
207-410 Agroforestry (p.4)	12.5
207-407 Parks and Recreation (p.4)	12.5

Electives*	Points
any others from the above not already taken, plus	
207-411 Processes in Forest Ecosystems (p.4)	12.5
207-413 Community Mgt Of Land & Natural Resource (p.4)	12.5
208-412 Advanced Topics in Genetics and Breeding (p.11)	12.5
211-423 Project In Forest Science 1 (p.1)	25
211-445 Project In Forest Science 2 (p.1)	25

Up to 50 points of other subjects from this or other faculties may be approved.
Sub-total *100.0*
 *Insufficient enrolments may lead to an elective subject being suspended.

Bachelor of Agricultural Science/Bachelor of Commerce

There has been no first year entry into this course from 2001 onwards. Please refer to the details for the new course Bachelor of Agriculture/Bachelor of Commerce. The information below only applies to continuing students.

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

This combined course takes five years of full-time study, during which students must obtain 500 study points. Of these, 300 must be from agricultural science and 200 from commerce.

Agriculture points must include:

- all first and second year and subjects for the BAAGSc degree (except for the first-year elective, 620-031 and 620-032 Statistics subjects, 212-207 Field Experimentation);
- 212-403 Agricultural Policies and International Trade;
- 212-410 Agricultural Business Management and Marketing;
- Vacation Work Parts 1 and 2 (12 weeks of compulsory work experience).

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 at least one of 316-205 Introductory Econometrics, 316-206 Quantitative Methods 2, 325-210 Managerial Decision Analysis or 325-212 Market Research.

Course objectives

The Bachelor of Agricultural Science/Bachelor of Commerce course has as its objectives that graduates:

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

- have a capacity and motivation for further learning.

A typical combined degree course

Third year (eight subjects)

- 606-023 Agricultural Botany
- 272-220 Animal Science 1
- 212-201 Soil Resources
- Commerce electives

Fourth year (eight subjects)

- 212-410 Agricultural Business Management and Marketing
- Three 300-level agriculture electives
- 212-313 Vacation Work Part 1
- Commerce electives

Fifth year (eight subjects)

- Agricultural Policies and International Trade
- Social Research Methods
- Two 400-level agricultural science electives
- 212-413 Vacation Work Part 2
- Commerce electives

Honours

- BCom(Hons) requires a sixth year
- Honours in BAgSc is based on results in 300 and 400-level subjects

Bachelor of Forest Science/Bachelor of Commerce

There has been no first year entry into this course from 2001 onwards. Please refer to the details for the new course Bachelor of Forestry/Bachelor of Commerce. The information below only applies to continuing students.

The combined Bachelor of Forest Science/Bachelor of Commerce course is intended to offer an increased choice of subjects and an increased opportunity for students to specialise in areas of interest to them or to diversify their education. Students will be able to pursue any commerce stream for which they have the prerequisites. The course will be a useful preparation for careers in commercial forestry and the forest industries. Students must obtain 500 study points to complete this combined course. Of these, 300 must be from forest science and 200 from commerce.

Forest science points must include:

- all first year subjects for the BForSc degree except that 620-160 Experimental Design and Data Analysis is replaced by 316-130 Quantitative Methods 1, and 207-106 Conservation of Australian Forests may be replaced by a commerce elective.
- all second and third year subjects for the BForSc degree, except 211-257 Economics and Financial Management;
- 207-406 Environmental Management Systems and Policy;
- 211-442 Forestry Work Experience (16 weeks of compulsory work experience - no points).

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 at least one of 316-205 Introductory Econometrics, 316-206 Quantitative Methods 2, 325-210 Managerial Decision Analysis or 325-212 Market Research.

Course objectives

The Bachelor of Forest Science/Bachelor of Commerce course has as its objectives that graduates:

- understand the basic concepts, institutional and regulatory arrangements operating in the Australian economy and the Australian forest industries, including the principal factors that determine location, environmental impact, sustainability, profitability and international cost-competitiveness in the forest industries;
- are able to communicate effectively on matters of commerce and forestry and have a capacity for commercial advice and technology transfer;
- have developed skills in applying basic quantitative methods and scientific knowledge to the study of the economy, commerce and forestry;
- have acquired skills in analysing and solving problems and in the acquisition and interpretation of data in commerce and forestry;
- have a critical understanding of the economy and business and of the need to manage the economy for the benefit of all groups in society;

- understand principles of sound practice in relation to health, safety, ethical issues and the environment in forestry and the forest industries;
- have a capacity and motivation for continued learning;
- understand the rights, privileges and responsibilities conferred with the combined degree and membership of relevant professional associations and learned societies.

A typical combined degree course

Third year

- As for second year BFor, excepting 202-202 Experimental Design/Statistical Methods

Fourth year

- As for third year BForSc

Fifth year

- 207-406 Environmental Management Systems and Policy
- 211-442 Forestry Work Experience
- One other subject from 212-416, 207-410, 208-412, 211-401 or 207-407
- Six commerce electives

Honours

- BCom(Hons) requires a sixth year
- Honours in BForSc is based on results in 300 and 400-level subjects

Bachelor of Science/Bachelor of Forest Science

There has been no first year entry into this course from 2001 onwards. Please refer to the details for the new course Bachelor of Forestry/Bachelor of Science. The information below only applies to continuing students.

The combined BSc/BForSc course is intended to offer an increased choice of subjects and an opportunity for students to specialise in discipline areas of interest to them or to diversify their education.

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

The Bachelor of Science/Bachelor of Forest Science course has as its objectives that graduates:

- can 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;
- understand the structures of Australian forest industries and the principal factors that determine location, environmental impact, sustainability, profitability and international cost-competitiveness;
- can relate the scientific knowledge gained to the technical and vocational aspects of the student's chosen discipline(s);
- can organise knowledge and ideas systematically, discriminate among relevant data, and generalise safely;
- can demonstrate skills in problem definition and solution, in decision-making and in program design and implementation;
- can design and conduct scientific enquiries, both on an individual basis and as part of a team through application of scientific method and hypothesis testing;
- can demonstrate initiative and the interpersonal skills necessary for the conduct of such enquiries;
- have essential skills in the acquisition and interpretation of forestry data;
- understand principles of sound practice in relation to health, safety, ethical issues and the environment in forestry and the forest industries;
- have a capacity for the exchange, acquisition and dissemination of scientific and industry information and for technology transfer;
- have a capacity and motivation for continuing independent learning;
- can demonstrate leadership skills and an ability to interact effectively with professional colleagues, individuals and the general community;
- understand and are eligible to accept the rights, privileges and responsibilities of membership of learned societies and professional associates.

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.

Course requirements

Students enrolled in the BSc/BForSc must complete at least 500 points. Within the 500 points, students must ensure that they complete both the BSc requirements and the BForSc requirements.

Science requirements

A minimum of 237.5 science points is required which must include:

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

Note that:

- There are no specific requirements at the 200-level.
- Science points are awarded for the vast majority of the subjects that are listed in the science section of the Handbook. Exceptions include some of the subjects offered by the Department of Information Systems; and the physics, earth sciences, chemistry, mathematics and statistics subjects taught exclusively to students enrolled in courses other than the BSc.
- Students are able to undertake science subjects for which they have satisfied the prerequisites. Note, however that:
 - a quota applies to some science subjects as demand for the subject is greater than the number of places available. Selection into quota subjects is largely determined by academic performance in science subjects (refer to the quota subject entry in the Faculty of Science entry for further details).
 - for information about science majors refer to *Majors (p.8)* and *Co-majors (p.15)* in the Faculty of Science entry.
 - the forestry component may require the completion of specific science subjects.
- The Faculty of Science offers a Bachelor of Science (Honours) program. It involves advanced research and coursework and results in the award of an honours qualification. Refer to the Faculty of Science section of the Handbook for more information.

Forestry requirements

- First year of the BForSc except that the first semester subject 207-106 Conservation of Australian Forests may be replaced by a science subject.
- Second and third year as for the single BForSc degree (see page 15).

These years are undertaken at the School of Forestry, Creswick. However, they need not necessarily occur in the second and third years of the combined course, but could be taken in the third and fourth years of the combined course.

Various subjects in the second and third years of the course at Creswick contain a degree of common material which may rule out enrolment in certain science subjects in later years of the combined course.

- At least 50 points from 400-level BForSc subjects including 212-416 Resource Economics and Management, 211-442 Forestry Work Experience (no points), and one other subject from 207-406, 211-401, 207-410, 207-407, 207-411 and 208-412.
- The BForSc(Hons) is based on results in 300 and 400 level subjects but Project in Forest Science 1 or 2 (211-423 or 211-445) must be included in the 400 level enrolment to be eligible for honours.

Special notes

Credit towards the BForSc degree will not be granted for any subject listed in the Faculty of Science Handbook which is an elective in the BForSc degree. Individual exceptions to this requirement will need the approval of both faculties.

Bachelor of Applied Science

The Bachelor of Applied Science is awarded in:

- agriculture
- dairy foods
- equine management
- food technology (see *Bachelor of Applied Science (Food Technology) (p.11)*)
- horticulture
- natural resource management
- rural management

Course objectives

The course has as its objectives that its graduates can:

- demonstrate a broad knowledge of fundamental and applied science (physical, biological and social) related to their specialisation;
- apply the knowledge gained to the technical and vocational aspects of their chosen careers;
- have acquired skills in synthesis, analysis, evaluation and application and can use these effectively in applied problem-solving contexts;
- communicate effectively in a variety of situations and show skills in initiating cooperative relationships with colleagues, employers and clients;
- demonstrate an appreciation of the economic, political and social influences in the community and be able to analyse and respond appropriately;
- demonstrate their commitment to the highest standards of academic and intellectual integrity and their acceptance of the community responsibilities of citizenship befitting their professional standing.

Bachelor of Applied Science (Agriculture)

Dookie campus

There has been no first year entry into this course from 2001 onwards. Please refer to the details for the new Bachelor of Agriculture degree. The information below only applies to continuing students.

The Bachelor of Applied Science (Agriculture) stream aims to prepare people for employment in the production and service sectors of agriculture. The course is designed to allow graduates to communicate effectively with people at all levels in agriculture and the community, critically analyse and evaluate information, to understand and use effectively information from the sciences, economics and marketing and sociology in the management or agricultural systems, to develop competence in relevant practical skills and to develop specialised understanding in a selected area of agriculture while maintaining an appreciation of the whole agricultural system.

Duration

The course comprises three and a half years full-time study or equivalent part-time study. This includes a semester of supervised practical placement. To complete Bachelor of Applied Science (Agriculture) students are required to successfully complete a total of 350 points of study.

Industry experience

Practical work experience is an integral part of the Bachelor of Applied Science course. Students must complete a HECS-liable semester of supervised industry placement as part of the course.

Advanced standing and credit arrangements

- Students who have previously completed relevant subjects at other recognised institutions may be granted credit for those subjects.
- Students who are admitted to the degree program and already hold a relevant diploma or associate diploma shall be granted advanced standing according to the articulation arrangement.
- Students who are admitted and already hold a diploma or associate diploma from another institution shall be granted advanced standing according to their individual previous study.

Career opportunities

Graduates may find employment in a wide range of occupations such as agricultural production, horticultural production, education and extension, resource management, consultancy, applied research, marketing and sales, technical advice, agricultural development, finance and banking, rural welfare and journalism.

Course outline

	Points
Third year	
Semester 1	
791-301 Major Study Program Planning (p.3)	5
791-302 Organisation and Management I (p.3)	7.5
791-304 Systems and Rural Resource Management (p.3)	10
791-315 Communications IV (p.4)	5
791-316 Comparative Production Systems (p.4)	7.5
Two electives ¹	15.0
<i>Sub-total</i>	<i>50.0</i>
Semester 2	
791-303 Industry Evaluation (p.3)	10
791-305 Industry Study (p.3)	22.5
791-313 Organisation and Management II (p.4)	7.5
791-333 Project Proposal (p.5)	10
<i>Sub-total</i>	<i>50.0</i>

Fourth year		Points
Semester 1		
791-317	Entrepreneurship (p.4)	5
791-334	Enrichment Activities (p.5)	5
791-336	Project Report (p.5)	20
791-337	Final Interview (p.5)	5
Two electives ¹		15.0
<i>Sub-total</i>		<i>50.0</i>
Total		350.0

1. Of the electives to be completed, two must be management electives and two must be specialist electives.

Specialist electives

The offering of a specialist elective in any semester depends on staff availability and student demand. Due to the limitations that may be imposed by timetabling, student numbers and staff availability, not all possible combinations can be scheduled or offered in each semester.

Specialist elective subjects		Points
791-001	Agricultural Marketing (p.8)	7.5
791-002	Animal Breeding (p.8)	7.5
791-005	Grazing Systems (p.8)	7.5
791-008	Plant Physiology and Nutrition (p.9)	7.5
791-010	Working with Community Groups (p.9)	7.5
791-011	Plant Protection (Pathology) (p.9)	7.5
791-012	Water Resources & Waste Water Management (p.9)	7.5
791-013	Special Studies (p.9)	7.5
791-028	Fertiliser Management & Precision Farm (p.10)	7.5
791-053	Irrigation Technology (p.10)	7.5
791-054	Financial Planning (p.11)	7.5
791-056	Whole Farm Planning (p.11)	7.5
791-390	Animal Health and Nutrition (p.5)	12.5

Management electives

Due to the limitations that may be imposed by timetabling, student numbers and staff availability, not all possible combinations can be scheduled or offered in each semester at every campus.

Management elective subjects		Points
791-291	Crop and Pasture Production (p.1)	12.5
791-292	Grazing Animals (p.1)	12.5
791-293	Production Horticulture (p.2)	12.5

Bachelor of Applied Science (Agriculture) (Honours)

The honours year is designed for students who intend to pursue a career in research within industry and/or to progress towards research based postgraduate study. The objectives of the program are to provide experience in research; increase competence in the design, conduct and analyse 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).

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 program will consist of the equivalent of half a year of coursework and a research project for the equivalent of half a year. Coursework will consist of the compulsory unit I *Research Methods and Statistics* and two electives drawn from the fourth year of the Bachelor of Agricultural Science or other relevant program.

Assessment

The research component of the honours year will be assessed by thesis and carry a weighting of 50 per cent. Coursework will carry the remaining 50 per cent. Candidates will also be required to present a seminar detailing their work at the conclusion of their candidature. While the presentation of this

seminar will not be assessed, the satisfactory completion of this component is a prerequisite for completion of the course.

Bachelor of Applied Science (Equine Management)

There has been no entry into this course from the year 2001 onwards. The information below only applies to continuing students.

Glenormiston campus

The Bachelor of Applied Science (Equine Management) stream prepares students for professional roles in the equine industry as managers of horse breeding, training, equestrian, equine business enterprises; or service providers. Areas of the equine industry in which graduates may contribute include enterprise management, marketing, technological innovation, consulting, project management, development facilitation, education and extension, and journalism.

Duration

The course comprises one year full-time study or equivalent part-time or external study. To complete Bachelor of Applied Science (Equine Management) students are required to successfully complete a total of 300 points of study. Students entering the equine management stream will normally have satisfactorily completed an Advanced Diploma of Applied Science (Equine Management) which consists of two years coursework and one year of industry experience prior to commencing the final year.

Distance education

The Bachelor of Applied Science (Equine Management) is also offered by external mode.

Career opportunities

Graduates can expect to find employment as enterprise managers, product development technologists, marketing managers, racetrack administrators, advisers and consultants, project managers, adult educators, equine journalists and information technologists.

Course outline

First to third year	Points
Advanced Diploma of Applied Science (credit granted)	200.0
Fourth year	Points
Semester 1	
793-406 Project I (p.7)	12.5
Three electives*	37.5
Semester 2	
793-410 Human Resource Management in Agriculture (p.8)	12.5
793-412 Project II (p.8)	12.5
Two electives*	25.0
Total	300.0
*Electives may be chosen from the following list or other approved subject(s).	
Elective subjects	Points
793-403 Financial Management (p.12)	12.5
793-407 Agribusiness (p.12)	12.5
793-411 Information Technology (p.12)	12.5
The availability of electives may depend on demand.	

Bachelor of Applied Science (Horticulture)

There has been no first year entry into this course from 2001 onwards. Please refer to the details for the new course Bachelor of Horticulture degree. The information below only applies to continuing students.

Burnley campus

The Bachelor of Applied Science (Horticulture) stream is directed towards the development of the professional horticulturist and emphasises the need to study the horticultural system from the technological, environmental and managerial point of view. The course is also directed towards the development of the horticultural technologist and emphasises the study of horticultural industry skills, plant science and practices, plant materials, horticultural engineering, communications, business management and an understanding of the scientific method. Students can choose between two major study areas, nursery production and environmental horticulture. Their major is determined by subject choice in Semesters 3, 5 and 6.

Duration

The course comprises three years full-time study or equivalent part-time study. To complete the Bachelor of Applied Science (Horticulture) students are required to successfully complete a total of 300 points of study.

Industry experience

Practical work experience is an integral part of the Bachelor of Applied Science course. Students must gain experience, during the vacations, in a relevant branch of the industry for a minimum of 12 weeks. This component must be satisfactorily completed prior to graduation.

Advanced standing and credit arrangements

- Students who have previously completed relevant subjects at other recognised institutions may be granted credit for those subjects.
- Students who are admitted to the degree program and already hold a relevant diploma or associate diploma shall be granted advanced standing according to the articulation arrangement.
- Students who are admitted and already hold a diploma or associate diploma from another institution shall be granted advanced standing according to their individual previous study.

Career opportunities

The course has been designed to prepare graduates for careers in areas such as landscape management and design; horticultural enterprise management and operation; horticultural commerce; horticultural teaching; journalism and broadcasting; research and development support.

Course outline

	Points
Third year	
Semester 1	
794-355 Plant Production I (p.7)	7.5
or	
794-358 Landscape Design (p.7)	7.5
and	
794-312 Plant Science V (p.6)	10
794-335 Human Resource Management (p.6)	7.5
794-364 Horticultural Project I (p.7)	10
Two electives*	15.0
<i>Sub-total</i>	<i>50.0</i>
Semester 2	
794-365 Plant Production II (p.7)	7.5
or	
794-368 Urban Park Studies (p.7)	7.5
or	
794-302 Landscape Studies (p.6)	7.5
and	
794-351 Horticultural Project II (p.6)	20
Three electives*	22.5
<i>Sub-total</i>	<i>50.0</i>
Total credit points for course	
Core subjects	262.5
Elective subjects	37.5
Total	300.0

Articulation pathway from Diploma of Applied Science (Horticulture)

Students may be selected into the Bachelor of Applied Science (Horticulture) stream after satisfactory completion of the Diploma of Applied Science (Horticulture) course, which is a two-year program offered at the Burnley campus, or other appropriate diploma programs.

Course outline

	Points
First and second year	
Diploma of Applied Science (Horticulture)	150.0
Third year	
Semester 2	
794-203 Marketing (p.2)	7.5
794-209 Research Methodology and Analysis (p.2)	10
794-305 Plant Science IV (T) (p.6) ¹	5
794-306 Environ'tal Managem't & Site Eng'ring (T) (p.6) ¹	5
794-220 Organisational Management (p.2)	7.5
Two electives*	15
<i>Sub-total</i>	<i>50.0</i>

1. Transitional subjects incorporate particular components of degree level units, building upon what has already been taught at diploma level.

	Points
Fourth year	
Semester 1	
794-355 Plant Production I (p.7)	7.5
or	
794-358 Landscape Design (p.7)	7.5
and	
794-202 Plant Science III (p.2)	7.5
794-312 Plant Science V (p.6)	10
794-335 Human Resource Management (p.6)	7.5
794-364 Horticultural Project I (p.7)	10
One elective*	7.5
<i>Sub-total</i>	<i>50.0</i>
Semester 2	
794-365 Plant Production II (p.7)	7.5
or	
794-368 Urban Park Studies (p.7)	7.5
or	
794-302 Landscape Studies (p.6)	7.5
and	
794-351 Horticultural Project II (p.6)	20
Three electives*	22.5
<i>Sub-total</i>	<i>Total 50.0</i>
Total	300.0

* Electives may be chosen from the range of subjects listed below.

Elective subjects

The offering of an elective in any semester depends on student demand. Insufficient enrolments may lead to a subject being suspended. Electives can be selected from the following list:

	Points
Elective subjects	
794-001 Arboriculture (p.12)	7.5
794-003 Computer Software-Develop't & Applct'ns (p.12)	7.5
794-005 Greenhouse Technology & Management (p.12)	7.5
794-007 Horticultural Crop Production (p.13)	7.5
794-008 Horticultural Genetics & Plant Breeding (p.13)	7.5
794-010 Horticultural Therapy (p.13)	7.5
794-011 Horticultural Chemicals (p.13)	7.5
794-012 Revegetation (p.13)	7.5
794-014 Irrigation Design (p.13)	7.5
794-015 Landscape Contract Management (p.13)	7.5
794-016 Landscape Construction (p.14)	7.5
794-017 Landscape Graphics I (p.14)	7.5
794-018 Landscape Graphics II (p.14)	7.5
794-019 Recreational Facility Management (p.14)	7.5
794-021 Plant Tissue Culture & Micropropagation (p.14)	7.5
794-024 Seed Technology (p.14)	7.5
794-025 Sports Turf Management (p.15)	7.5
794-026 Management of Heritage Landscapes (p.15)	7.5

Subject prerequisite, content and assessment details for all elective studies are specified in the subject descriptions.

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 Institute. Project topics will be drawn from research areas identified as being of strategic importance to the Institute 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 carry a weighting of 80 per cent. Coursework will carry the remaining 20 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.

Bachelor of Applied Science (Natural Resource Management)

There has been no first year entry into this course from 2001 onwards. Please refer to the details for the new course Bachelor of Resource Management degree. The information below only applies to continuing students.

Dookie campus

The aim of the Bachelor of Applied Science (Natural Resource Management) is to prepare graduates with practical skills and theoretical knowledge for a wide range of professional roles in private land management, with an emphasis on the integrated management of land and water resources (catchment management), land rehabilitation, revegetation and restoration and community based land management (Landcare). Students may pursue a number of areas of specialisation such as private land conservation, forestry, soil conservation and fisheries and wildlife management.

Duration

The course comprises three years full-time study or equivalent part-time study. To complete the Bachelor of Applied Science (Natural Resource Management) students are required to successfully complete a total of 300 points of study.

Work experience

Practical work experience is an integral part of the Bachelor of Applied Science course. Students must gain experience, during the vacations, in a relevant branch of the industry for a minimum of 12 weeks. This component must be satisfactorily completed prior to graduation.

Advanced standing and credit arrangements

- Students who have previously completed relevant subjects at other recognised institutions may be granted credit for those subjects.
- Students who are admitted to the degree program and already hold a relevant diploma or associate diploma shall be granted advanced standing according to the articulation arrangement.
- Students who are admitted and already hold a diploma or associate diploma from another institution shall be granted advanced standing according to their individual previous study.

Career opportunities

The aim of the course is to produce graduates for professional roles in the general management of land and water resources within an ecologically sustainable context. Graduates will be effective communicators with people at all levels within agencies, industry and the community.

Course outline

Third year in 2002		Points
Semester 1		
791-206	Statistical Methods I (p.1)	5
791-302	Organisation and Management I (p.3)	7.5
791-309	Water Resources (p.3)	10
791-315	Communications IV (p.4)	5
791-321	Ecological Management (p.4)	7.5

Third year in 2002

Two electives*	15.0	
<i>Sub-total</i>	50.0	
Semester 2		
791-216	Statistical Methods II (p.1)	5
791-310	Geographic Information Systems (p.4)	7.5
791-312	Cultural Heritage Management (p.4)	7.5
Four electives*	30.0	
<i>Sub-total</i>	50.0	
Total	300.0	

Articulation pathway from Associate Diploma of Applied Science (Resource Management) and Diploma of Forestry

Students may be selected into the final stage of the Bachelor of Applied Science (Natural Resource Management) program after completion of the Associate Diploma of Applied Science (Resource Management), Diploma in Natural Resource Management or the Diploma in Forestry. For students not employed in the natural resources area, an eight-week period of industry experience will be compulsory.

Course outline

Second year		Points
Semester 1		
791-218	Earth Science (p.1)	10
791-234	Ecological Analysis (p.1)	7.5
791-309	Water Resources (p.3)	10
791-321	Ecological Management (p.4)	7.5
Two electives	15.0	
<i>Sub-total</i>	50	

Electives

The offering of an elective in any semester depends on staff availability and student demand. Due to the limitations that may be imposed by timetables, student numbers and staff availability, not all possible combinations can be scheduled or offered in each semester at every campus.

Elective subjects available in 2002		Points
791-006	Habitat Restoration (p.8)	7.5
791-010	Working with Community Groups (p.9)	7.5
791-013	Special Studies (p.9)	7.5
791-025	Aquatic Ecology (p.9)	7.5
791-026	Wildlife Techniques & Management (p.10)	7.5
791-041	Project I (p.10)	7.5
791-042	Project II (p.10)	7.5
791-056	Whole Farm Planning (p.11)	7.5
791-058	Pest Animal Management (p.11)	7.5
791-059	Rural Revegetation Methods (p.11)	7.5
791-060	Remnant Vegetation Management (p.11)	7.5
791-061	Fire Ecology (p.11)	7.5

Bachelor of Applied Science (Natural Resource Management) (Honours)

The honours year is designed for students who intend to pursue a career in research within industry and/or to progress towards research based postgraduate study. 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 or in the degree articulation program. Students who have completed studies other than the Bachelor of Applied Science may be eligible to enrol in the Bachelor of Applied Science (Honours) 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 (Honours) degree, and have obtained the approval of the School Committee to enter the course.

Duration

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

Course structure

The program will consist of the equivalent of half a year of coursework and a research project for the equivalent of half a year. Coursework will be drawn from subjects offered within the institute and consist of the compulsory unit *Research Methods and Statistics* and two electives drawn from the fourth year of the Bachelor of Agricultural Science or other relevant program.

Assessment

The research component of the honours year will be assessed by thesis and carry a weighting of 50 per cent. Coursework will carry the remaining 50 per cent. Candidates will also be required to present a seminar detailing their work at the conclusion of their candidature. While the presentation of this seminar will not be assessed, the satisfactory completion of this component is a prerequisite for completion of the course.

Bachelor of Applied Science (Rural Management)

There has been no first year entry into this course since 2001. Please refer to the new details for the new course Bachelor of Agriculture. The information below applies only to continuing students.

Glenormiston campus

The Bachelor of Applied Science (Rural Management) is an undergraduate course which prepares people for professional roles in the rural sector as managers of agricultural production in agribusiness enterprises or rural management projects and enterprises. Areas of the rural sector to which graduates may contribute include production management, marketing, technological innovation, consulting, project management, counselling, education and extension and journalism.

Duration

The course comprises one year full-time study or equivalent part-time or external study.

Distance education

The Bachelor of Applied Science (Rural Management) is also offered by external mode.

Admission requirements

Students entering this course will normally have satisfactorily completed an Advanced Diploma of Applied Science in Farm Management or Farm Production (which consist of two years coursework and one year industrial experience), or equivalent, prior to commencing the final year as detailed below.

Career opportunities

Graduates can expect to obtain employment as production managers, product development technologists, marketing managers, advisers and consultants, rural journalists and rural counsellors.

Course outline

First to third year	Points
Advanced Diploma of Applied Science or Advanced Diploma of Rural Business Management (credit granted)	200.0
Fourth year	Points
Semester 1	
793-406 Project I (p.7)	12.5
Three electives*	37.5
Semester 2	
793-410 Human Resource Management in Agriculture (p.8)	12.5
793-412 Project II (p.8)	12.5
Two electives*	25.0
Total	300.0
* Electives may be chosen from the following list or other approved subject(s).	
Elective subjects	Points
793-403 Financial Management (p.12)	12.5
793-407 Agribusiness (p.12)	12.5
793-411 Information Technology (p.12)	12.5
The availability of electives may depend on demand.	

Bachelor of Applied Science (Dairy Foods)

There is no first year entry into this course from 2002 onwards. Please refer to the course structure for the Bachelor of Applied Science (Food Technology). The following information applies to continuing students.

The Bachelor of Applied Science (Dairy Foods) stream is offered at the Gilbert Chandler campus of the university. The course comprises three years full-time study or equivalent part-time study (with the third year of the Bachelor of Applied Science (Dairy Foods) being offered by external mode) and prepares students for management positions in the dairy-food manufacturing industry. Areas of the industry to which they may contribute include production management, product and process development, market and technological innovation. Students gain an understanding of the dairy and food industries within the Australian and world economic scene. The importance of quality management, marketing, engineering applications and consumer views on food and nutrition are stressed.

To complete the Bachelor of Applied Science (Dairy Foods) students are required to successfully complete a total of 300 points of study.

Students who have previously completed relevant subjects at other recognised institutions may be granted credit for corresponding subjects in this course. Students who are admitted to the degree program and already hold a relevant diploma shall be granted advanced standing according to the articulation arrangements. Students who are admitted and already hold a diploma or associate diploma from another institution shall be granted advanced standing according to their individual previous study.

Course objectives

Students who have completed this course should have acquired:

- a broad knowledge of scientific principles underpinning the manufacturing technology of dairy products;
- an ability to apply and analyse the problems and issues facing dairy processing industry and propose appropriate solutions;
- understanding of the structure and organisation of dairy and food processing industries;
- skills to manage the physical, financial and human resources of a dairy processing plant;
- 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 dairy industry;
- understanding of environmental issues relevant to the operation of dairy processing plants;
- a capacity and motivation for continuing independent learning;
- understanding of the rights, privileges and responsibilities conferred with the degree and memberships of professional associations.

Career opportunities

Graduates can expect to find employment as production managers, quality assurance managers, product development technologists, or marketing managers for dairy and/or other food manufacturing organisations.

Course outline

Third year	Points
Semester 1	
208-305 Production and Management Techniques (p.2)	12.5
208-310 Analytical Techniques (p.2)	12.5
208-311 Engineering Applications (p.2)	12.5
208-314 Food Technology I (p.3)	12.5
Semester 2	
208-312 Biochemistry and Fermentation Technology (p.2)	12.5
208-313 Food Industry Policy and Planning (p.2)	12.5
208-315 Research Project (p.3)	12.5
208-319 Food Technology II (p.3)	12.5
<i>Sub-total</i>	<i>100.0</i>

Courses being phased out (diplomas)

Advanced Diploma of Applied Science (Farm Management)

There has been no first year intake into this course from 2001. Please refer to the course structure for the new Advanced Diploma of Agriculture. The following information applies to continuing students.

Glenormiston Campus

The objectives of the Advanced Diploma of Applied Science (Farm Management) are to produce graduates who have the knowledge, skills and attitude to successfully organise, operate and develop a farming business; can develop a sustainable farming system; are able to communicate effectively and able to recognise alternatives and opportunities; and have a capacity for imaginative thinking, sound judgement, problem-solving and decision-making.

Duration

The course comprises two years full-time study and one or more years of full-time practical work experience. By the external mode, students will normally complete the academic component of the course in four years. To complete the Advanced Diploma of Applied Science (Farm Management) students are required to successfully complete a total of 300 points of study.

Industry experience

The course has a practical industry experience requirement. Prior to second year all students are required to complete a report which records aspects of 12 months (or equivalent) industry experience. The industry experience is undertaken prior to commencement of the course or between the first and second year of academic study.

Distance education

The Bachelor of Applied Science (Farm Management) is also offered by external mode.

Career opportunities

The Advanced Diploma of Applied Science (Farm Management) was established to service the need for well-trained farm managers who are required to manage family properties and properties for corporations and private absentee owners. Agribusiness firms have also shown a keen interest in graduates who have a sound understanding of farming in addition to business and communication skills.

Course outline

Second year	Points
Semester 1	
793-274 Investment and Finance (p.3)	10
793-211 Land Use and Development (p.1)	10
793-221 Pasture Grazing and Management (p.2)	10
Elective	10.0
Semester 2	
793-228 Agricultural Economics and Marketing (p.3)	10
793-208 Business Responsibilities and Leadership (p.1)	10
Electives	20.0
Year long subjects	
793-214 Farm Management III (p.1)	10
793-223 Farm Management IV (p.2)	10
<i>Sub-total</i>	<i>100.0</i>
Total	300.0
Electives	
Available second year/Semester 1	
793-239 Management and Production of Beef (p.5)	10
793-231 Dairy Management I (p.5)	10
Available second year/Semester 2	
793-234 Crop Production and Management (p.5)	10
793-235 Dairy Management II (p.5)	10
793-240 Sheep and Wool Production and Management (p.5)	10
Horse Production Management ¹	10

- Students undertaking Horse Production Management select from a limited range of subjects from the horse management course (to a value of 10 credit points) with agreement of appropriate academic staff.

Note: Electives may be approved subjects from other courses. Students must seek approval prior to enrolment from the Course Committee.

Advanced Diploma of Applied Science (Horse Management)

There has been no first year intake into this course from 2001.

Glenormiston campus

This course is directed at the educational needs of men and women who are seeking a professional career in horse stud or training stable management or associated services. It is also directed at mature-age students who have an investment in an equine enterprise and operate the enterprise on part-time or full-time basis. Graduates develop the ability to perform practical horse handling skills with particular emphasis on breeding and training; horse husbandry; management and maintenance of facilities; and strategic enterprise planning.

Duration

The course comprises two years full-time study and one or more years of full-time practical work experience. By the external mode, students will normally

complete the academic component of the course in four years. To complete the Advanced Diploma of Applied Science (Horse Management) students are required to successfully complete a total of 300 points of study.

Industry experience

The course has a practical industry experience requirement. Prior to second year all students are required to complete a report which records aspects of 12 months (or equivalent) industry experience.

Distance education

External study students are provided with a program that enables them to proceed through the course in a similar progression to full-time students.

As a general rule subjects are offered by external study at the same time as they are offered to full-time students.

External students are encouraged to attend residential schools for subjects with a practical component.

Career opportunities

Careers in the horse industry are mainly in the stud and stable management area, however, there is scope for professional employment in other areas such as administration of race tracks, journalism, horse training and merchandising.

Course structure

The course is designed as a three-year program with two years of academic study and a year of practical experience working in industry sandwiched between the first and second years of the course. Students with two years or more of prior industry experience may apply for recognition of prior learning and be given credit for the practical component. Subjects are scheduled as follows:

Second year	Points
Semester 1	
793-211 Land Use and Development (p.1)	10
793-274 Investment and Finance (p.3)	10
793-216 Equine Management III (p.1)	5
793-218 Horse Genetics and Breeding (p.2)	5
Semester 2	
793-209 Equine Marketing (p.1)	5
793-217 Horse Health (p.1)	5
793-224 Stud and Stable Administration (p.2)	5
793-226 Equine Management V (p.3)	10
793-208 Business Responsibilities and Leadership (p.1)	10
Year long subjects	
793-219 Horse Training Management (p.2)	20
793-225 Equine Management IV (p.3)	5
793-227 Special Studies (p.3)	10
<i>Sub-total</i>	<i>100.0</i>
Total	300.0

Advanced Diploma of Equine Management

There will be 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 lead 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

First year	Points
Semester 1	
202-151 Information Technology and Communication (p.1)	12.5
202-154 Introductory Biology for Land and Food (p.1)	12.5
204-154 Industry Practices (Horse) (p.2)	12.5
204-153 Equine Resources (p.1)	12.5
Semester 2	
204-151 Horse Reproduction (p.1)	12.5
204-152 Horse Form and Function (p.1)	12.5
204-155 Horse Nutrition and Feed Production (p.2)	12.5
208-161 Financial Management for Resource Ind I (p.1)	12.5
<i>Sub-total</i>	<i>100.0</i>
Second year	Points
Semester 1	
204-251 Horse Health and Genetics (p.2)	12.5
204-252 Equine Training (p.2)	12.5
207-272 Water and Land Management (p.3)	12.5
209-255 Equine Management (p.3)	12.5
Semester 2	
204-253 Equine Systems (p.3)	12.5
204-263 Equine Project (p.3)	12.5
208-269 Managing Staff (p.3)	12.5
One of:	
207-274 Agricultural Economics and Policy (p.2)	12.5
208-156 Crop Production And Management (p.1)	12.5
208-204 Special Studies (p.4)	12.5
208-267 Financial Management for Resource Ind II (p.5)	12.5
Year long subject	
204-254 Industry Experience (Horse) (p.3)	0
<i>Sub-total</i>	<i>100.0</i>

Diploma of Applied Science (Horticulture)

There has been no first year intake into this course from 2001. Please refer to the course structure for the new Advanced Diploma of Horticulture. The following information applies to continuing students.

Burnley campus

The Diploma of Applied Science (Horticulture) is designed to provide training in the vocationally specific areas of arboriculture, nursery production and management, landscape construction, and park and garden management. It is a vocationally-oriented program with emphasis on horticultural skills and competence, an understanding of horticultural practice, business productivity improvement, horticultural technology and personnel management.

Duration

The course comprises two years full-time study or part-time equivalent. To complete the Diploma of Applied Science (Horticulture) students are required to successfully complete a total of 200 points of study.

Career opportunities

The course caters for people who aspire to positions such as arborist, nursery production manager, parks and gardener supervisor, landscape contractor, nursery stock propagator, sports turf supervisor, and gardening contractor.

Course outline

Second year	Points
Semester 1	
207-251 Plant Technology (p.2)	12.5
or	
207-252 Horticultural Management I (p.1)	12.5
207-269 Vegetation Management (p.3)	12.5
794-221 Industry Stream Engineering (p.3)	5
794-222 Financial Management and Marketing (p.4)	10
794-223 Plant Function (p.4)	10

Second year	Points
Semester 2	
207-253 Horticultural Management II (p.1)	12.5
207-254 Horticultural Project Management (p.2)	12.5
or	
207-333 Amenity Tree Assessment and Management (p.6)	12.5
794-218 Computers II (p.3)	5
794-224 Specialist Industry Plant Protection (p.4)	5
794-225 Managing Staff & Business Operations (p.4)	10
794-226 Ecology (p.5)	5
Total	100.0

Postgraduate awards

Graduate Certificate in Forest Industries

The CertForInd 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.

Graduate Diploma in Forest Industries

Candidates for the DipForInd 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.

Graduate Certificate in Agricultural Extension

This course concentrates on developing competent and responsible extension practitioners with the practical knowledge and skills to operate effectively in their rural industries. The course will normally be completed on a part-time basis over one to two years and will be delivered by a combination of practical residential workshops and independent study.

Graduate Certificate in Dairy Technology

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 Diploma in Dairy Technology

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.

Graduate Diploma in Horticulture

The Graduate Diploma of Applied Science (Horticulture) is 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.

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 problem 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 Postgrad-

uate Certificate in Food Science, which consists of four subjects (50 credit points).

Postgraduate Diploma in Forest Science

The DipForSc course 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.

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 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 research takes approximately one year of full-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 Agriculture (by research)

The MAgSc degree requires at least a year of advanced studies and research after completion of the bachelor degree or the DipAgSc. 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 Food Science (by coursework)

Offered at the Gilbert Chandler campus, the MFoodSc 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 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 MForSc degree requires at least a year of advanced studies and practical work. Normally the BForSc degree or the DipForSc 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 MHortSc degree requires at least a year of advanced study and practical work after completing a BAgSc, BAppSc(Hort) or other course approved by the institute.

Master of Natural Resource Management (by research)

The MNRM degree is awarded for research presented by thesis, or by publication. The areas of specialisation include catchment and land management; remnant vegetation; and wildlife research and management.

Master of Wood Science (by research)

The MWoodSc degree was established to provide advanced research training in wood science. Admission to candidature for the Master of Wood Science requires successful completion of a Bachelor of Forest Science (or equivalent) and the Diploma of Forest Industries. Candidates transferring from the Diploma of Forest Industries are expected to spend at least one calendar year preparing a research thesis.

For more information

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

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