Institute of Land and Food Resources

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

Overview

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

The 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 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.

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

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

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

Campus contacts

Burnley campus: +61 3 9250 6800

Creswick campus: +61 3 5321 4150

Dookie campus: +61 3 5833 9200

Gilbert Chandler campus: +61 3 9217 5200

Glenormiston campus: +61 3 5557 8200

Longerenong campus: +61 3 5362 2222

McMillan campus: +61 3 5622 6000

Parkville campus: +61 3 8344 0276

For more information about any of these campuses, visit the 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, and this now covers agriculture, animal science and management, 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 2003:

- Bachelor of Agriculture
- Bachelor of Agriculture/Bachelor of Commerce
- Bachelor of Animal Science and Management
- Bachelor of Food Science
- Bachelor of Forestry

- Bachelor of Forestry/Bachelor of Commerce
- Bachelor of Forestry/Bachelor of Science
- Bachelor of Horticulture
- Bachelor of Resource Management
- Advanced Diploma of Agriculture*
- Advanced Diploma of Forestry Management
- Advanced Diploma of Horticulture

The following course will be available for honours entry in 2003:

- Bachelor of Food Science (Honours)

The following courses are being progressively phased out and have no first-year entry in 2003:

- Bachelor of Agricultural Science
- Bachelor of Agricultural Science/Bachelor of Commerce
- Bachelor of Applied Science (Food Technology)
- Bachelor of Forest Science
- Bachelor of Forest Science/Bachelor of Commerce
- Bachelor of Forest Science/Bachelor of Science
- Advanced Diploma in Equine Management

Postgraduate

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

- Graduate Certificate in Agribusiness*
- Graduate Certificate in Dairy Technology*/Graduate Diploma in Dairy Technology*
- Graduate Certificate in Forest Industries/Graduate Diploma in Forest Industries
- Postgraduate Diploma in Agricultural Science
- Postgraduate Certificate/Diploma in Food Science
- Postgraduate Diploma in Forest Science
- Graduate Diploma in Horticulture
- Graduate Certificate/ Diploma in Wine Technology and Viticulture
- Master of Agribusiness (by coursework)*
- Master of Agribusiness (by research)
- Master of Agriculture (by research)
- Master of Animal Welfare (by research)
- Master of Food Science (by coursework)
- Master of Food Technology (by research)
- Master of Forest Industries (by coursework)*
- Master of Forest Science (by research)
- Master of Horticulture (by research)
- Master of Natural Resource Management (by research)
- Master of Wood Science (by research)
- Doctor of Philosophy

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

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

Vocational Education and Training programs (TAFE)

The Institute also offers Vocational Education and Training programs (TAFE), 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 employers and industry representatives so that they align closely with industry needs. 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.

<http://www.landfood.unimelb.edu.au/courses/tafe/index.html>

AGRICULTURE

Advanced Diploma of Agriculture

Campus location: Longerenong

This two-year full-time study program is for people wishing to pursue a professional career as a supervisor, manager, or owner/operator in agriculture or agribusiness.

Advanced Diploma of Agriculture (Dairy)

Location: McMillan

A full-time program of up to three years duration, offering professional education and training in agriculture with a strong focus on dairy production and management, particularly practical dairy farming and associated managerial skills.

Diploma of Agriculture with Specialisation in Animal Fibre Production

Location: Longerenong

A full-time program of one year (or equivalent by part-time study). Graduates from this course will be awarded a Diploma of Agriculture (Sheep and Wool Production) and/or a Diploma of Agriculture (Goat Production).

Certificate/Diploma/Advanced Diploma of Agriculture (Rural Business Management)

Location: Available by flexible delivery from Longerenong

This program, provided by flexible delivery, aims to improve the effectiveness of those who perform business management and supervisory roles in a modern rural business environment.

Diploma/Advanced Diploma of Agriculture

Location: Available by flexible delivery from Glenormiston

A flexibly delivered management education and training program for those already engaged in farming or the associated agricultural services sector.

Certificate IV in Agriculture (Milk Harvesting)

Location: McMillan

A workplace-based/part-time professional training course for milking machine technicians.

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.

Certificate IV in Agriculture

Location: Longerenong

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

PRODUCTION HORTICULTURE

Advanced Diploma of Horticulture (Production)

Location: McMillan

A full-time program of up to three years duration, offering professional education and training for careers and employment in the production horticulture industries.

Diploma of Horticulture (Production)

Location: Available by flexible delivery from Glenormiston

A flexibly delivered education and training program for those already engaged in production horticulture, as a preparation for advancement in their careers to managerial levels.

Certificate III in Horticulture (Production)

Location: Glenormiston, McMillan

A workplace-based/part-time introductory program for new entrants and existing employees wishing to advance their careers in production horticulture. These courses cater for the needs of production horticulture apprentices/trainees.

CONSERVATION AND LAND MANAGEMENT

Diploma/Advanced Diploma of Conservation and Land Management

Location: Full time at Longerenong, flexible delivery at Glenormiston

A full-time program of two years duration (advanced diploma) or one year (diploma), or equivalent by flexible delivery, for the purpose of addressing the education and training needs of those who will assume positions of responsibility in conservation and land management.

Certificates II-IV in Conservation and Land Management (Indigenous Land Management)

Location: Longerenong

This workplace-based/part-time program aims to provide participants with skills to manage land and natural resources in a way that is consistent with Koori culture and beliefs.

Certificates II-IV in Conservation and Land Management

Location: Longerenong

A workplace-based/part-time introductory program for new entrants, and existing employees wishing to advance their career working in the sustainable management of natural resources.

FORESTRY

Certificate IV in Forest and Forest Products (Forest Growing and Management)

Location: Creswick

A flexibly delivered program combining higher level technical units relevant to the forest growing and management sector of the forest industry, together with lower level management/supervisory units.

Certificates II-III 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 careers in establishing and maintaining 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: Available by flexible delivery from Gilbert Chandler

A flexibly delivered program for those already employed in the dairy processing industry.

Certificates I-III in Food Technology (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: Available by flexible delivery from Dookie

This flexibly delivered course is designed for people who are seeking to advance their careers 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 Wine Technology

Location: Dookie

A flexibly delivered program 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.

AMENITY HORTICULTURE

Certificate IV in Horticulture

Location: Burnley

Recent trends in demand for garden plants and their associated products and services in amenity horticulture have resulted in the growth of employment opportunities for trained professionals in amenity horticulture. This two-year full-time (or equivalent part-time) study program enables graduates to enter industry as horticulture supervisors and trainee managers.

Certificates II-IV in Horticulture

Location: Burnley, McMillan

A workplace-based/part-time introductory program for new entrants and existing employees wishing to advance their careers working in amenity horticulture. These courses cater for the needs of horticulture apprentices/trainees.

ARBORICULTURE

Diploma of Horticulture (Arboriculture)

Location: Burnley

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

Certificate IV in Horticulture (Arboriculture)

Location: Burnley

Recent trends in demand for arboricultural services have resulted in the growth of employment opportunities for trained professionals in the maintenance and management of trees. This program, normally undertaken part-time over 2-3 years, enables graduates to enter industry as arboricultural supervisors or trainee managers.

Certificates II-IV in Horticulture (Arboriculture)

Location: Burnley

A workplace-based/part-time introductory program for new entrants and existing employees wishing to advance their careers in arboriculture. These courses cater for the needs of arboricultural apprentices/trainees.

EQUINE

Advanced Diploma in Horse Management

Location: Glenormiston

A full-time program of two years duration (also available by flexible delivery) designed for people aspiring to manage horse enterprises such as studs, stables and the related service industries.

Certificate IV in Horse Management

Location: Glenormiston

A full-time program of one year duration (also available by flexible delivery) designed for people aspiring to manage horse enterprises such as studs and stables, or to work in the related service industries.

Certificate IV/Diploma in Racing (Thoroughbred) - Thoroughbred Trainer Level I/II

Location: Available by flexible delivery from Glenormiston

This program, available by flexible delivery, is part of a general package developed by the racing industry for personnel involved in the training and management of horses.

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

Location: McMillan

This one-year full-time course is designed to provide the skills and knowledge base for people to enter the harness racing industry.

Certificate II in Equine Industry

Location: Available by flexible delivery from Glenormiston and McMillan

Flexibly delivered introductory course providing the knowledge and 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 higher education advanced diploma or a degree. These arrangements provide eligibility for admission into the higher education course but they do not guarantee entry as students are selected on the basis of marks and/or relevant work experience.

Credit policy

The 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 Institute degree courses. However, credit is not granted for final-year subjects.

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

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).

Planning an undergraduate course

The Bachelors of Agriculture, Animal Science and Management, Food Science, Horticulture and Resource Management 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 (or part-time equivalent) 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 are 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 Animal Science and Management

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

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 Food Science

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

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/>.

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

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

Scholarships and bursaries

There are a number of scholarships and bursaries available to students in certain courses according to academic merit, financial need or both. To find out if you may be eligible and for further information please contact the student administration office at your campus or 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>.

Course rules

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

Students in the BAg, BHort, BRes Mgt, BApp Sc (Food Tech),

BAnScMan, and BFood Sc Pass degrees:

- must achieve a minimum of 300 credit points
- must achieve at least 75 points of 300-level (or 400-level) subjects
- must pass all core subjects defined for the particular degree, and select electives from the appropriate electives list for that degree in the University Handbook
- may take up to two electives not on the approved elective list for that degree in the University Handbook, provided these are approved by the course coordinator
- must meet the defined work experience requirements.

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

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

Students in the BFood Sc(Hons) degree:

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

Students in the BFor pass and honours degrees:

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

Students in the BFor/BSc pass and honours degrees:

- must achieve a minimum of 500 credit points,made up of 237.5 science points and 262.5 from the Bachelor of Forestry. Science points must include between 75 and 125 science points at 100 level, 50 science points of a prescribed science major at 300 level, and 25 points towards 202-401 or 202-402 Industry Research Project.

- must pass all core subjects defined for the forestry component of the degree, and select electives from the approved elective list for this degree in the University Handbook or as approved by the course coordinator.
- must meet the defined work experience requirements.
- are awarded honours in Forestry if an honours score of at least 65 is attained.

Students in the BAg/BCom pass and honours degrees:

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

Students in the BFor/BCom pass and honours degrees:

- must obtain a minimum of 500 credit points, made up of 200 points from the Bachelor of Commerce, and 300 points from the Bachelor of Forestry. Commerce points must include at least 50 points from 100-level subjects, at least 50 points from 300-level subjects, and compulsory subjects specified in the University Handbook.
- must pass all core subjects defined for the forestry component of the degree.
- must meet the defined work experience requirements
- are awarded honours in Forestry if an honours score of at least 65 is attained.

Students in the AdvDipAg, AdvDipHort and AdvDipFor Man:

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

Honours eligibility and honours scores in ILFR degrees

1. Bachelor of Forestry, Bachelor of Agricultural Science and Bachelor of Forest Science:

On completion of fourth year, the Institute determines the award of honours degrees on the basis of average marks in third-year and fourth-year subjects. Honours degrees at H3 level are not awarded in the Bachelor of Agricultural Science and Bachelor of Forest Science. The third-year average mark is the weighted average of the seven best third-year subjects. The fourth-year average mark is the weighted average of all fourth-year subjects. These year averages are then weighted by multiplying the third-year average marks by 0.333 and the fourth year average marks by 0.666. The resulting figures are summed to give the 'honours score'.

2. Bachelor of Applied Science:

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

3. Bachelor of Agriculture, Bachelor of Horticulture, Bachelor of Resource Management, Bachelor of Animal Science and Management, Bachelor of Food Science:

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

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

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

4. Combined degrees

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

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 an Institute Student Progress Committee for a determination of whether they will be permitted to continue in the course.

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. These progress rules will apply regardless of the year.

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.land-food.unimelb.edu.au/courses/undergrad/guide2002.pdf>.

Undergraduate entry

Course prerequisites for 2003 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 30 in further mathematics. Selection mode is ENTER and a two-stage process with a middle-band of approximately 20 per cent. For middle-band selection, a study score of at least 25 in mathematical methods = an ENTER maximum three points higher. Consideration is also given to the full range of Year 12 studies and relevant work experience.

Bachelor of Animal Science and Management:

As for the Bachelor of Agriculture.

Bachelor of Food Science:

As for the Bachelor of Agriculture.

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.

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.

Combined degrees with Bachelor of Public Policy and Management

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

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 multidisciplinary packages such as systems analysis and management.

Course objectives

Students who have completed this course will 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 (Parkville students)		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		
202-107	Mathematics for Land and Food Resources *(p.1)*	12.5
Students entering without VCE Mathematical Methods or equivalent must enrol in 202-107, Mathematics for Land and Food Resources		
Semester 2		
202-106	Land Resources *(p.1)*	12.5
207-101	Economics of Resource Use *(p.2)*	12.5
Two electives*		25
Sub-total		*100.0*

First Year (Dookie Students): As for Parkville except that 202-101 Chemistry for Land and Food Resources is offered in Semester 2, and 202-106 Land Resources is offered in Semester 1.

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.3)*	12.5
208-210	Financial Management for Resource Ind I *(p.3)*	12.5
Electives		
Four electives*		50.0
Sub-total		*100.0*

Third year		Points
Semester 1		
202-302	Human Resource Management *(p.4)*	12.5
Year long subjects		
202-001	Industry Placement# *(p.3)*	0
202-301	Industry Project *(p.3)*	25
202-301 Industry Project (25 points, year-long) may be replaced by 202-303 Industry Project (25 points, Semester 1 or Semester 2)		
Elective subjects		
Five electives*		62.5
Sub-total		*100.0*

Fourth year (honours)		Points
Year long subjects		
202-401	Industry/Research Project *(p.4)*	50
202-401 Industry/Research Project (50 points, year-long) may be replaced by 202-402 Industry/Research Project (50 points, Semester 1 or Semester 2)		
Elective subjects		
Four electives*		50.0
Sub-total		*100.0*

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

Elective subjects

Electives may be selected from the following list and a limited number may be selected from approved subjects from other courses.

Insufficient enrolments may lead to an elective subject being suspended. Not all electives are offered at all campuses.

First year		Points
208-101	Farm Animal Biology *(p.4)*	12.5
208-102	Field Engineering *(p.5)*	12.5
208-105	Field Skills *(p.5)*	12.5
208-107	Vineyard & Winery Ops for Quality WP I *(p.5)*	12.5
600-142	Genetics & The Evolution of Life *(p.1)*	12.5
610-141	Chemistry *(p.2)*	12.5
610-142	Chemistry *(p.2)*	12.5

Second year		Points
202-104	Information Technology and Communication *(p.1)*	12.5
208-201	Comparative Nutrition *(p.6)*	12.5
207-201	Resource Industry Economics *(p.5)*	12.5
208-202	Animal Physiology *(p.6)*	12.5
208-203	Ecology & Management of Grazing Systems *(p.6)*	12.5
208-205	Australia in the Wine World *(p.6)*	12.5
208-206	Vineyard & Winery Ops for Quality WP II *(p.7)*	12.5
208-207	Animal Management and Production I *(p.7)*	12.5
208-208	Crop Production *(p.7)*	12.5
208-212	Agribusiness Marketing *(p.7)*	12.5
208-306	Agricultural Marketing *(p.9)*	12.5
521-211	Biochemistry & Molecular Biology Part A *(p.2)*	12.5
521-212	Biochemistry & Molecular Biology Part B *(p.2)*	12.5
526-201	Principles of Microbiology & Immunology *(p.1)*	12.5

Third year		Points
207-201	Resource Industry Economics *(p.5)*	12.5
202-304	Resource Mgt & Agric Systems Analysis *(p.7)*	12.5

Third year		Points
207-301	Global Env'ment & Sustain Prod Systems *(p.8)*	12.5
207-328	Working with Community Groups *(p.8)*	12.5
208-212	Agribusiness Marketing *(p.7)*	12.5
208-301	Crop and Pasture Physiology *(p.8)*	12.5
208-302	MolecularBiology,Breeding& Biotechnology *(p.8)*	12.5
208-303	Animal Management and Production II *(p.8)*	12.5
208-304	Advanced Topics in Animal Science *(p.9)*	12.5
208-306	Agricultural Marketing *(p.9)*	12.5
208-307	Plant Pathology and Pest Management *(p.9)*	12.5
208-308	Irrigation and Water Management *(p.9)*	12.5
208-316	Oenology *(p.10)*	12.5
208-320	Fertiliser Management *(p.10)*	12.5
207-401	Soil Management and Conservation *(p.11)*	12.5
208-329	Viticulture *(p.10)*	12.5
791-013	Special Studies *(p.10)*	12.5
791-056	Whole Farm Planning *(p.10)*	12.5

Fourth year (honours)		Points
202-304	Resource Mgt & Agric Systems Analysis *(p.7)*	12.5
207-301	Global Env'ment & Sustain Prod Systems *(p.8)*	12.5
207-401	Soil Management and Conservation *(p.11)*	12.5
207-404	Agricultural Policy&International Trade *(p.11)*	12.5
207-413	Community Mgt Of Land & Natural Resource *(p.5)*	12.5
207-414	Social Research Methods *(p.11)*	12.5
208-401	Advanced Topics in Plant Pathology *(p.11)*	12.5
208-402	Advanced Plant Breeding & Biotechnology *(p.11)*	12.5
208-409	Animal Welfare *(p.12)*	12.5
208-412	Advanced Topics in Genetics and Breeding *(p.12)*	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 the 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 *(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
316-102	Introductory Microeconomics *(p.1)*	12.5
Semester 2		
208-101	Farm Animal Biology *(p.4)*	12.5
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
Sub-total		*100.0*

Second year		Points
202-201	Plant Function *(p.2)*	12.5
208-201	Comparative Nutrition *(p.6)*	12.5
208-210	Financial Management for Resource Ind I *(p.3)*	12.5
316-201	Intermediate Macroeconomics *(p.1)*[1]	12.5
or one commerce elective		
One of:		
316-205	Introductory Econometrics *(p.1)* or	12.5
316-206	Quantitative Methods 2 *(p.1)*	12.5
Elective subjects		
Three commerce electives		37.5
Sub-total		*100.0*

Third year		Points
202-203	Soil and Water Resources *(p.3)*	12.5
316-316	Basic Econometrics *(p.3)*[1]	12.5
or		
One commerce elective		
Elective subjects		
Three commerce electives		37.5
Three electives (See BAg for complete listing)		37.5
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.

Fourth year		Points
202-302	Human Resource Management *(p.4)*	12.5
or		
207-201	Resource Industry Economics *(p.5)*	12.5
208-306	Agricultural Marketing *(p.9)*	12.5
Elective subjects		
Four commerce electives		50.0
Two electives		25.0
Sub-total		*100.0*

Fifth year		Points
202-001	Industry Placement# *(p.3)*	0
202-401	Industry/Research Project *(p.4)*	50
202-401 Industry/Research Project (50 points, year-long) may be replaced by 202-402 Industry/Research Project (50 points, Semester 1 or Semester 2)		
207-404	Agricultural Policy&International Trade *(p.11)*	12.5
Elective subjects		
Three electives		37.5
Sub-total		*100.0*

Bachelor of Animal Science and Management

This is a new course offered at the Parkville campus of the University with first year intake from 2003.

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

Course objectives

Students who have completed this course will have acquired:

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

Career opportunities

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

Course outline

Pass degree:

A total of 300 points must be obtained comprising-

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

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

    The aim of this focus area is to develop the student's knowledge, and ability to apply knowledge of animal behaviour, of animal-animal and human-animal interactions in diverse natural and managed environments for conservation and production purposes. Students selecting this area would be expected to take subjects such as Applied Animal Behaviour, Animal Welfare, Animal Management and Production II, and Advanced Topics in Applied Animal Science
  - **animal physiology and nutrition**

    The aim of this focus area is to develop the student's knowledge, and ability to apply knowledge, of physiological processes underlying animal function and performance, considering also responses to climatic environment, nutritional conditions and stressors. Physiology and nutrition will be developed on a comparative basis from general principles to the specific function for a wide array of animal species. Students selecting into this area would be expected to take subjects such as Animal Environmental Physiology, Advanced Topics in Animal Science, Applied Animal Reproduction and Special Studies in Applied Animal Science
  - **animal genetics and breeding**

    The aim of this focus area is to develop the student's understanding of how differences in genes at the molecular level evolve, how these differences affect traits relevant to animal production, ecology and disease, and how these genetic differences can be managed for the benefit of animal owners and for genetic conservation. The use of selection, crossbreeding and biotechnology will be covered. Students selecting this area would be expected to take subjects such as Molecular Biology Genetics and Breeding, Advanced Topics in Applied Animal Science and Applied Animal Reproduction.
  - **equine management**

    The aim of this focus area is to develop the student's knowledge of principles and practices in management and care of horses for best welfare and performance in the human-animal interactions of sport and leisure. Students selecting this area would be expected to take subjects such as Equine Management Systems, Animal Welfare, Animal Environmental Physiology and Applied Animal Reproduction.

Honours degree requirements:

A total of 400 points must be obtained comprising-

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

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

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

First year		Points
Semester 1		
208-108	Animals in Society *(p.1)*	12.5
202-103	Biology for Land and Food Resources *(p.1)*	12.5
or		
600-141	Biology of Cells and Organisms *(p.1)*	12.5
202-101	Chemistry for Land and Food Resources *(p.1)*	12.5
or		
610-141	Chemistry *(p.2)*	12.5
Students entering with VCE Chemistry or equivalent are advised to take 610-141 Chemistry.		
Students without VCE Mathematical Methods or equivalent take:		
202-107	Mathematics for Land and Food Resources *(p.1)*	12.5
Students with VCE Mathematical Methods or equivalent choose one elective from:		
202-104	Information Technology and Communication *(p.1)*	12.5
640-121	Physics A (Adv) *(p.2)*	12.5
640-141	Physics A *(p.2)*	12.5
640-161	Physics: Principles & Applications A *(p.3)*	12.5
208-109	Australian Agricultural Production Sys *(p.2)*	12.5
Semester 2		
600-142	Genetics & The Evolution of Life *(p.1)*	12.5
208-111	Working with Animals *(p.1)*	12.5
Students with a pass in 610-141 Chemistry, or a very good pass in 202-101 Chemistry for Land and Food Resources, take 610-142 Chemistry.		
610-142	Chemistry *(p.2)*	12.5
or		
610-141	Chemistry *(p.2)*	12.5
Choose one elective from:		
640-122	Physics B (Adv) *(p.2)*	12.5
640-142	Physics B *(p.3)*	12.5
640-162	Physics: Principles & Applications B *(p.3)*	12.5
600-111	Biology of Australian Flora & Fauna *(p.1)*	12.5
207-101	Economics of Resource Use *(p.2)*	12.5

Second year (offered in 2003 only if enrolments are sufficient)		Points
Semester 1		
208-201	Comparative Nutrition *(p.6)*	12.5
208-202	Animal Physiology *(p.6)*	12.5
202-202	Experimental Design/Statistical Methods *(p.2)*	12.5
Plus one elective from below		
Semester 2		
654-204	Ecology: Individuals and Populations *(p.2)*	12.5
208-215	Animal Health and Epidemiology *(p.1)*	12.5
Plus two electives from below		
Electives		
Choose three electives from the following:		
208-203	Ecology & Management of Grazing Systems *(p.6)*	12.5
521-211	Biochemistry & Molecular Biology Part A *(p.2)*	12.5
521-212	Biochemistry & Molecular Biology Part B *(p.2)*	12.5
208-203	Ecology & Management of Grazing Systems *(p.6)*	12.5
208-207	Animal Management and Production I *(p.7)*	12.5
526-201	Principles of Microbiology & Immunology *(p.1)*	12.5

Third year (not offered in 2003)		Points
Core Subjects		
202-001	Industry Placement# *(p.3)*	0
202-301	Industry Project *(p.3)*	25

Third year (not offered in 2003)		Points
202-301 Industry Project (25 points, year long) may be replaced by 202-303 Industry Project (25 points, Semester 1 or Semester 2).		
Electives		
75 points of subjects must be chosen, with a total of 50 points according to combinations recommended for a focus area of study. At least two of the following electives must be chosen.		
208-302	MolecularBiology,Breeding& Biotechnology *(p.8)*	12.5
208-303	Animal Management and Production II *(p.8)*	12.5
208-323	Equine Management Systems *(p.2)*	12.5
208-324	Applied Animal Behaviour *(p.2)*	12.5
208-325	Applied Animal Reproduction *(p.2)*	12.5
Other electives		
202-302	Human Resource Management *(p.4)*	12.5
208-304	Advanced Topics in Animal Science *(p.9)*	12.5
208-326	Animal Environmental Physiology *(p.3)*	12.5
208-327	Advanced Topics in Appied Animal Science *(p.3)*	12.5
Other subjects: A maximum of two other ILFR or Science Faculty 300-level subjects not on this list may be selected. In addition, entry may be granted to a maximum of two ILFR 400-level subjects (except 202-401 and the one Special Studies subject) with approval of the Associate Dean, Coursework. One of these subjects can be counted towards the 50-point load for a student's selected focus area of study		

Fourth year		Points
Core subject		
202-401	Industry/Research Project *(p.4)*	50
202-401 Industry Project (50 points, year long) may be replaced by 202-402 Industry Project (50 points, Semester 1 or Semester 2).		
Electives: choose four subjects		
208-405	Advanced Animal Management Systems *(p.3)*	12.5
208-406	Advanced Topics in Equine Systems *(p.4)*	12.5
208-407	Advanced Animal Breeding *(p.4)*	12.5
208-408	Special Studies in Animal Science *(p.4)*	12.5
208-409	Animal Welfare *(p.12)*	12.5
or one 300-level subject from ILFR or science approved by the Associate Dean, Coursework on the advice of the course coordinator.		

Bachelor of Food Science

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

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

Course objectives

Students who have completed this course will have acquired:

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

Career opportunities

Career choices are vast and growing. They range from a research and development officer for food processing companies to monitoring quality assurance standards of food products in the interests of public health; from developing cheeses for the Japanese market to managing your own boutique cheese company; from a microbiologist for a multinational corporation to developing packaging for products sold in supermarkets.

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

Course outline

First year (Parkville students)		Points
Semester 1		
202-101	Chemistry for Land and Food Resources *(p.1)*	12.5
or		
610-141	Chemistry *(p.2)*	12.5
Students entering with VCE Chemistry or equivalent are adviised to take 610-141 Chemistry		
202-103	Biology for Land and Food Resources *(p.1)*	12.5
202-104	Information Technology and Communication *(p.1)*	12.5
or		
202-107	Mathematics for Land and Food Resources *(p.1)*	12.5
Students entering without Mathematical Methods or equivalent must take 202-107 Mathematics for Land and Food Resources		
208-109	Australian Agricultural Production Sys *(p.2)*	12.5
Semester 2		
600-142	Genetics & The Evolution of Life *(p.1)*	12.5
or		
208-101	Farm Animal Biology *(p.4)*	12.5
207-101	Economics of Resource Use *(p.2)*	12.5
208-106	Introduction to Food Science *(p.1)*	12.5
One elective from:		
202-106	Land Resources *(p.1)*	12.5
208-101	Farm Animal Biology *(p.4)*	12.5
208-206	Vineyard & Winery Ops for Quality WP II *(p.7)*	12.5
610-141	Chemistry *(p.2)*	12.5
610-142	Chemistry *(p.2)*	12.5

First year Dookie students: As for Parkville except that 202-101 Chemistry in Semester 1 is replaced by 208-206 Vineyard & Winery Ops for Quality WP II, and that the elective in Semester 2 is replaced by 202-101 Chemistry.

Enrolment in elective studies is dependent on subject availability.

Honours students undertake a fourth year of study, leading to the award of the Bachelor of Food Science (Honours).

Second year (not offered in 2003) Refer to ***Bachelor of Applied Science (Food Technology) (p.19)***		Points
Semester 1		
526-201	Principles of Microbiology & Immunology *(p.1)*	12.5
202-202	Experimental Design/Statistical Methods *(p.2)*	12.5
208-225	Food Chemistry, Biology and Nutrition *(p.1)*	12.5
One elective from:		
208-201	Comparative Nutrition *(p.6)*	12.5
208-202	Animal Physiology *(p.6)*	12.5
521-211	Biochemistry & Molecular Biology Part A *(p.2)*	12.5
or other approved subjects from ILFR or Science courses		
Semester 2		
208-216	Food Microbiology *(p.1)*	12.5
208-226	Food Structure and Function *(p.1)*	12.5
202-001	Industry Placement# *(p.3)*	0
Two electives from:		
521-212	Biochemistry & Molecular Biology Part B *(p.2)*	12.5
521-220	Techniques in Protein & Gene Technology *(p.2)*	12.5
208-218	Production Management *(p.1)*	12.5
208-316	Oenology *(p.10)*	12.5
208-210	Financial Management for Resource Ind I *(p.3)*	12.5
208-207	Animal Management and Production I *(p.7)*	12.5
208-227	Molecular Biology of Food Microorganisms *(p.2)*	12.5
208-228	Waste Management and Use *(p.2)*	12.5
or other approved ILFR subjects		

Third year (not offered in 2003) Refer to *Bachelor of Applied Science (Food Technology) (p.19)*		Points
Semester 1		
208-314	Technology of Food Processing *(p.2)*	12.5
208-310	Analytical Techniques *(p.2)*	12.5
202-302	Human Resource Management *(p.4)*	12.5
or other approved ILFR or science subject		
208-321	Food Safety, Quality and Regulation *(p.2)*	12.5
Semester 2		
208-319	Trends in Food Science and Nutrition *(p.2)*	12.5
208-322	Food Production Chain Mgt&ConsumerIssues *(p.2)*	12.5
202-303	Industry Project *(p.4)*	25

Bachelor of Food Science (Honours)

Course overview

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

Admission requirements

All applicants must satisfy the following two requirements:

- Applicants must hold a bachelors level degree in any of the following areas: agricultural science, biological science (preferred majors in biochemistry or microbiology), chemistry, engineering or food science.
- The minimum entry requirement 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.

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

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

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

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

Course objectives

Students who have completed this course will have acquired:

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

Career opportunities

Graduates are well suited to a wide range of occupations relating to the management of forest estates and the environment. Most forest estates cover several hundred thousand hectares and the management of such large scale enterprises draws continually on training in forest biology (including ecology, genetics and physiology), hydrology, engineering, remote sensing and economics. Some forestry graduates are employed by government authorities, sometimes with the state forest services but also with land care, national parks, wildlife, water supply and country fire authorities as well as environmental management and planning agencies. There are also many opportunities for employment in private forestry. Traditionally this has been in the larger firms in the wood-based industry, especially in resource planning, timber and harvesting management, reforestation and wood technology. However, increasingly graduates are being employed in private and non-governmental conservation efforts in many parts of the world.

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

Course outline

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
Students entering with VCE Chemistry or equivalent are advised to take 610-141 Chemistry		
202-103	Biology for Land and Food Resources *(p.1)*	12.5
625-101	Earth Sciences - The Global Environment *(p.1)*	12.5
or		
202-107	Mathematics for Land and Food Resources *(p.1)*	12.5
Students entering without VCE Mathematical Methods or equivalent must take 202-107 Mathematics for Land and Food Resources		
207-106	Conservation of Australian Forests *(p.1)*	12.5
Semester 2		
207-101	Economics of Resource Use *(p.2)*	12.5
202-106	Land Resources *(p.1)*	12.5
600-142	Genetics & The Evolution of Life *(p.1)*	12.5

First year (Parkville)		Points
610-141	Chemistry *(p.2)*	12.5
or		
610-142	Chemistry *(p.2)*	12.5
Students with a pass in 610-141 Chemistry, or a very good pass in 202-101 Chemistry for Land and Food Resources, take 610-142		
Sub-total		*100.0*

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.3)*	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	Processes in Forest Ecology *(p.2)*	12.5
207-276	Field Studies and Dendrology *(p.2)*	12.5
Sub-total		*100.0*

Third year (Creswick)		Points
Semester 1		
207-307	Fire Ecology and Management *(p.2)*	12.5
207-317	Applied Native Forest Ecology *(p.3)*	12.5
207-334	Trees, Genes and Environment *(p.4)*	12.5
Semester 2		
207-309	Forest Management & Access Systems *(p.2)*	12.5
207-323	Plantations and Farm Forests *(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
207-311	Forest Values *(p.3)*	12.5
Sub-total		*100.0*

Fourth year (Parkville)		Points
Semester 1		
202-302	Human Resource Management *(p.4)*	12.5
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
202-301 Industry Project (25 points, year-long) may be replaced by 202-303 Industry Project (25 points, Semester 1 or Semester 2)		
and		
Four electives*		50
Honours degree pathway		
202-401	Industry/Research Project *(p.4)*	50
202-401 Industry Project (50 points, year-long) may be replaced by 202-402 Industry Project (50 points, Semester 1 or Semester 2)		
and		
Two electives*		25
Sub-total		*100.0*

*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
207-201	Resource Industry Economics *(p.5)*	12.5
207-301	Global Env'ment & Sustain Prod Systems *(p.8)*	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.5)*	12.5
207-413	Community Mgt Of Land & Natural Resource *(p.5)*	12.5
207-414	Social Research Methods *(p.11)*	12.5
208-412	Advanced Topics in Genetics and Breeding *(p.12)*	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 will have acquired:

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

Career opportunities

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

Course outline

To be eligible to graduate students must obtain 500 credit points. Of these, 300 must be from Bachelor of 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
or		
610-141	Chemistry *(p.2)*	12.5
Students entering with VCE Chemistry or equivalent are advised to take 610-141 Chemistry		
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

First year		Points
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
Students with a pass in 610-141 Chemistry, or a very good pass in 202-101 Chemistry for Land and Food Resources, take 610-142 Chemistry		
Sub-total		*100.0*

Second year		Points
207-106	Conservation of Australian Forests *(p.1)*	12.5
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.3)*	12.5
207-270	Wood Science *(p.1)*	12.5
207-271	Forest Mensuration & Surveying *(p.1)*	12.5
207-275	Processes in Forest Ecology *(p.2)*	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	Forest Management & Access Systems *(p.2)*	12.5
207-311	Forest Values *(p.3)*	12.5
207-317	Applied Native Forest Ecology *(p.3)*	12.5
207-323	Plantations and Farm Forests *(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	Trees, Genes and Environment *(p.4)*	12.5
Sub-total		*100.0*

Fifth Year		Points
202-001	Industry Placement# *(p.3)*	0
202-301	Industry Project *(p.3)*	25
202-301 Industry Project (25 points, year-long) may be replaced by 202-303 Industry Project (25 points, Semester 1 or Semester 2)		
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 will 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:

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

Science points must include:

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

202-401or 202-402 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. 202-202 Experimental Design/Statistical methods is equivalent to 620-160 Experimental Design and Data Analysis and contributes to science points.

A typical course combination would appear as follows:

First year		Points
Semester 1		
207-106	Conservation of Australian Forests *(p.1)*	12.5
600-141	Biology of Cells and Organisms *(p.1)*	12.5
610-171	Fundamentals of Chemistry *(p.3)*	12.5
or		
610-141	Chemistry *(p.2)*	12.5
Students entering with VCE Chemistry or equivalent are advised to take 610-141 Chemistry		
625-101	Earth Sciences - The Global Environment *(p.1)*	12.5
Semester 2		
202-106	Land Resources *(p.1)*	12.5
207-101	Economics of Resource Use *(p.2)*	12.5
600-142	Genetics & The Evolution of Life *(p.1)*	12.5

First year		Points
610-141	Chemistry *(p.2)*	12.5
or		
610-142	Chemistry *(p.2)*	12.5
Students with a pass in 610-141 Chemistry, or a very good pass in 202-101 Chemistry for Land and Food Resources, take 610-142 Chemistry		
Sub-total		*100.0*

Second year		Points
202-201	Plant Function *(p.2)*	12.5
202-203	Soil and Water Resources *(p.3)*	12.5
207-270	Wood Science *(p.1)*	12.5
207-271	Forest Mensuration & Surveying *(p.1)*	12.5
207-275	Processes in Forest Ecology *(p.2)*	12.5
207-276	Field Studies and Dendrology *(p.2)*	12.5
207-277	Forest Inventory and GIS *(p.2)*	12.5
202-202	Experimental Design/Statistical Methods *(p.2)*	12.5
Sub-total		*100.0*

Third year		Points
207-307	Fire Ecology and Management *(p.2)*	12.5
207-309	Forest Management & Access Systems *(p.2)*	12.5
207-311	Forest Values *(p.3)*	12.5
207-317	Applied Native Forest Ecology *(p.3)*	12.5
207-323	Plantations and Farm Forests *(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	Trees, Genes and Environment *(p.4)*	12.5
Sub-total		*100.0*

Fourth and fifth years		Points
202-001	Industry Placement# *(p.3)*	0
202-401	Industry/Research Project *(p.4)*	50
202-401 Industry/Research Project (50 points, year-long) may be replaced by 202-402 Industry/Research Project (50 points, Semester 1 or 2)		
207-406	Environmental Mngt Systems and Policy *(p.4)*	12.5
Elective subjects		
One of:		
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.5)*	12.5
or		
208-412	Advanced Topics in Genetics and Breeding *(p.12)*	12.5
125 (10 x 12.5 subjects) science credit points		
(50 points at 300 level in a particular science discipline)		125
Sub-total		*200.0*

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 will have acquired:

- an understanding of integrated approaches to environmental horticulture;
- an understanding of the individual roles and inter-relationships of plants, soil, water, air and micro-organisms in order to identify/assess/predict problems and solutions in the horticultural growing systems;
- an ability to describe and apply scientific principles appropriate to environmental horticulture;
- an ability to demonstrate a broad knowledge of technology and practical competence appropriate to a selected specialisation in environmental horticulture;
- an ability to develop strategies appropriate to the establishment, maintenance and management of 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 *(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		
202-107	Mathematics for Land and Food Resources *(p.1)*	12.5
Students entering without VCE Mathematical Methods or equivalent must take 202-107 Mathematics for Land and Food Resources		
207-104	Horticulture I *(p.1)*	12.5
Semester 2		
202-106	Land Resources *(p.1)*	12.5
207-101	Economics of Resource Use *(p.2)*	12.5
207-102	Plant Health *(p.1)*	12.5
207-105	Horticulture II *(p.1)*	12.5
Sub-total		*100.0*

Second year		Points
Semester 1		
202-201	Plant Function *(p.2)*	12.5
202-202	Experimental Design/Statistical Methods *(p.2)*	12.5
207-217	Horticultural Engineering *(p.2)*	12.5
207-212	The Horticulture of Australian Plants *(p.2)*	12.5
Semester 2		
202-203	Soil and Water Resources *(p.3)*	12.5
207-201	Resource Industry Economics *(p.5)*	12.5
or		
208-210	Financial Management for Resource Ind I *(p.3)*	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		Points
Semester 1		
202-302	Human Resource Management *(p.4)*	12.5
Year long subject		
202-001	Industry Placement# *(p.3)*	0
202-301	Industry Project *(p.3)*	25
202-301 Industry Project (25 points, year-long) may be replaced by 202-303 Industry Project (25 points, Semester 1 or 2)		
Electives		
Five electives*		62.5
Sub-total		*100.0*

Fourth year (honours)		Points
Year long subjects		
202-401	Industry/Research Project *(p.4)*	50
202-401 Industry/Research Project (50 points, year-long) may be replaced by 202-402 Industry/Research Project (50 points, Semester 1 or 2)		
Electives		
Four electives*		50.0
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
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		
207-305	Revegetation and Landscape Restoration *(p.2)*	12.5
207-308	Turfgrass Science and Management *(p.3)*	12.5
207-312	Garden History and Contemporary Design *(p.3)*	12.5
207-313	Graphic Studies *(p.3)*	12.5
207-315	Landscape Construction *(p.4)*	12.5

Urban landscape management		Points
207-316	Landscape Studies *(p.4)*	12.5
207-318	Management of Heritage Landscapes *(p.4)*	12.5
207-333	Amenity Tree Assessment and Management *(p.5)*	12.5

Plant production		Points
Second year		
207-208	Production Of Cultivated Plants *(p.1)*	12.5
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.4)*	12.5
208-302	MolecularBiology,Breeding& Biotechnology *(p.8)*	12.5
Honours		
208-402	Advanced Plant Breeding & Biotechnology *(p.11)*	12.5

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
207-305	Revegetation and Landscape Restoration *(p.2)*	12.5
207-308	Turfgrass Science and Management *(p.3)*	12.5
207-310	Horticultural Reproduction Technology *(p.3)*	12.5
207-312	Garden History and Contemporary Design *(p.3)*	12.5
207-313	Graphic Studies *(p.3)*	12.5
207-315	Landscape Construction *(p.4)*	12.5
207-316	Landscape Studies *(p.4)*	12.5
207-318	Management of Heritage Landscapes *(p.4)*	12.5
207-321	Protected Cropping *(p.4)*	12.5
207-322	Irrigation for Intensive Horticult Mgt *(p.5)*	12.5
207-332	Arboriculture *(p.5)*	12.5
207-333	Amenity Tree Assessment and Management *(p.5)*	12.5

Fourth year		Points
207-301	Global Env'ment & Sustain Prod Systems *(p.8)*	12.5
208-302	MolecularBiology,Breeding& Biotechnology *(p.8)*	12.5
207-413	Community Mgt Of Land & Natural Resource *(p.5)*	12.5
207-414	Social Research Methods *(p.11)*	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 (Parkville)		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
202-104	Information Technology and Communication *(p.1)*	12.5
or		
202-107	Mathematics for Land and Food Resources *(p.1)*	12.5
Students entering without VCE Mathematics Methods or equivalent must take 202-107 Mathematics for Land and Food Resources		
208-109	Australian Agricultural Production Sys *(p.2)*	12.5
Semester 2		
202-106	Land Resources *(p.1)*	12.5
207-101	Economics of Resource Use *(p.2)*	12.5
207-103	Ecology *(p.1)*	12.5
One elective*		12.5
Sub-total		*100.0*

First Year (Dookie Students): As for Parkville except that 202-101 Chemistry for Land and Food Resources is offered in Semester 2, and 202-106 Land Resources is offered in Semester 1.

Second year		Points
Semester 1		
202-201	Plant Function *(p.2)*	12.5
202-202	Experimental Design/Statistical Methods *(p.2)*	12.5
207-205	Human Dimensions of Natural Resource Mgt *(p.1)*	12.5
One elective*		
Semester 2		
202-203	Soil and Water Resources *(p.3)*	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
Sub-total		*100.0*

Third year		Points
Semester 1		
202-302	Human Resource Management *(p.4)*	12.5
Semester 2		
207-201	Resource Industry Economics *(p.5)*	12.5
or		
208-210	Financial Management for Resource Ind I *(p.3)*	12.5
Year long subject		
202-001	Industry Placement# *(p.3)*	0
202-301	Industry Project *(p.3)*	25
202-301 Industry Project (25 points year-long) may be replaced by 202-303 Industry Project (25 points, Semester 1 or Semester 2)		
Electives		
Four electives*		50.0
Sub-total		*100.0*

Fourth year (honours)		Points
Year long subjects		
202-401	Industry/Research Project *(p.4)*	50
202-401 Industry/Research Project (50 points Year-Long) may be replaced by 202-402 Industry Project (50 points, Semester 1 or Semester 2)		
Elective subjects		
Four electives*		50.0
Sub-total		*100.0*

*Electives may be chosen from the following list or from approved subjects from other courses.

Elective subjects

Insufficient enrolments may lead to an elective subject being suspended.

First year		Points
208-105	Field Skills *(p.5)*	12.5
600-142	Genetics & The Evolution of Life *(p.1)*	12.5
Second Year		**Points**
202-104	Information Technology and Communication *(p.1)*	12.5
625-101	Earth Sciences - The Global Environment *(p.1)*	12.5
121-018	Geomorphology *(p.3)*	12.5
207-328	Working with Community Groups *(p.8)*	12.5
121-021	Environmental Politics and Management *(p.4)*	12.5
Third year		**Points**
202-104	Information Technology and Communication *(p.1)*	12.5
207-301	Global Env'ment & Sustain Prod Systems *(p.8)*	12.5
207-305	Revegetation and Landscape Restoration *(p.2)*	12.5
207-307	Fire Ecology and Management *(p.2)*	12.5
207-318	Management of Heritage Landscapes *(p.4)*	12.5
207-326	Wildlife Conservation and Management *(p.2)*	12.5
207-328	Working with Community Groups *(p.8)*	12.5
207-330	GIS and Remote Sensing *(p.2)*	12.5
207-335	Resource Management Policy and Action *(p.2)*	12.5
207-402	Management of Plant & Animal Invasions *(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.8)*	12.5
207-401	Soil Management and Conservation *(p.11)*	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.5)*	12.5
207-414	Social Research Methods *(p.11)*	12.5

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
202-154	Introductory Biology for Land and Food *(p.1)*	12.5
207-171	Sustainable Catchment Management *(p.1)*	12.5
208-151	Production Systems and Skills I *(p.2)*	12.5
Semester 2		
207-170	Applied Ecology in the Rural Environment *(p.1)*	12.5
207-172	Rural Economics *(p.1)*	12.5
208-154	Production Systems and Skills II *(p.2)*	12.5
208-161	Financial Management for Resource Ind I *(p.2)*	12.5
Sub-total		*100.0*
Second year		**Points**
Semester 1		
207-278	Resource Management (Soil and Water) *(p.3)*	12.5
Three electives chosen from the following:*		
208-251	Rural Community Development *(p.4)*	12.5
208-263	Animal Science and Nutrition *(p.4)*	12.5
208-253	Pasture Management *(p.4)*	12.5
208-265	Integrated Pest and Weed Management *(p.5)*	12.5
Semester 2		
208-269	Managing Staff *(p.3)*	12.5
Three electives chosen from the following:*		
208-162	Agribusiness Marketing *(p.4)*	12.5
208-271	Animal Management *(p.5)*	12.5
208-255	Crop Management *(p.4)*	12.5
208-252	Production Horticulture (Fruits & Vines) *(p.4)*	12.5
208-152	Agricultural Technology *(p.3)*	12.5
202-250	Quantitative Skills for Land and Food *(p.3)*	12.5
Year long subject		
202-051	Industry Placement# *(p.2)*	0
Sub-total		*100.0*

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

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

Insufficient enrolments may lead to an elective being suspended.

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

Advanced Diploma 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>.

First year		Points
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

First year		Points
207-162	Forest Surveying and Measurement *(p.1)*	12.5
208-161	Financial Management for Resource Ind I *(p.2)*	12.5
Year long subject		
207-166	Forestry Work Skills I *(p.1)*	12.5
Sub-total		*100.0*

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:		
202-250	Quantitative Skills for Land and Food *(p.3)*	12.5
207-273	Tree, Water and Land Planning *(p.2)*	12.5
207-280	Silviculture of Native Forests *(p.2)*	12.5
207-282	Plantation and Farm Silviculture *(p.3)*	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
208-267	Financial Management for Resource Ind II *(p.3)*	12.5
Sub-total		*100.00*

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

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

First year		Points
Semester 1		
202-151	Information Technology and Communication *(p.1)*	12.5
207-151	Plant Biology *(p.1)*	12.5
207-153	Horticultural Plants *(p.1)*	12.5
207-158	Horticultural 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
207-319	Plant Protection *(p.2)*	12.5
Sub-total		*100.0*

Second year		Points
Semester 1		
207-252	Horticultural Practices III *(p.2)*	12.5
207-263	Advanced Plant Biology *(p.2)*	12.5
208-161	Financial Management for Resource Ind I *(p.2)*	12.5
One of		
207-251	Plant Technology *(p.2)*	12.5
207-261	Landscape Design and Graphics *(p.3)*	12.5
207-258	Sports Turf Management *(p.3)*	12.5
Semester 2		
207-253	Horticultural Practices IV *(p.2)*	12.5
207-265	Plant Management and the Environment *(p.2)*	12.5
208-269	Managing Staff *(p.3)*	12.5
One of:		
202-250	Quantitative Skills for Land and Food *(p.3)*	12.5
207-254	Horticultural Project Management *(p.3)*	12.5
207-333	Amenity Tree Assessment and Management *(p.5)*	12.5
207-269	Vegetation Management *(p.3)*	12.5
Year long subject		
202-051	Industry Placement# *(p.2)*	0
Sub-total		*100.0*

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

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.

Fourth year		Points
212-413	Vacation Work (Practical Experience) 2 # *(p.1)*	4
Electives		
Six electives chosen from the following fourth-year subjects:		
207-301	Global Env'ment & Sustain Prod Systems *(p.8)*	16
207-410	Agroforestry *(p.4)*	16
208-412	Advanced Topics in Genetics and Breeding *(p.12)*	16
212-411	Animal Management and Production *(p.2)*	16
212-404	Animal Welfare *(p.1)*	16
212-406	Crop & Pasture Physiology *(p.1)*	16
212-407	Applied Plant Breeding & Biotechnology *(p.1)*	16
212-408	Advanced Topics in Farm Animal Science *(p.1)*	16
212-409	Plant Pathology *(p.2)*	16
212-416	Resource Economics & Management *(p.2)*	16
212-423	Agricultural Policy & Internat.Trade *(p.2)*	16
212-424	Project In Agricultural Science *(p.2)*	16
212-433	Resource Mgt & Agric Systems Analysis *(p.2)*	16
Up to 32 points (two 16 point subjects) of approved subjects may be chosen from elsewhere in ILFR or 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.2)*	8
521-302	Functional Genomics *(p.2)*	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.3)*	8
521-321	Gene Technology & Protein Expression *(p.4)*	8

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 organisations during vacations. The subject 202-001 Industry Placement 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

Fourth year		Points
207-406	Environmental Mngt Systems and Policy *(p.4)*	12.5
202-001	Industry Placement# *(p.3)*	0
212-416	Resource Economics & Management *(p.2)*	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.5)*	12.5
207-413	Community Mgt Of Land & Natural Resource *(p.5)*	12.5
208-412	Advanced Topics in Genetics and Breeding *(p.12)*	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 also 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 BAgSc 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 subjects for the BAgSc degree (except for the first-year elective, 620-031 and 620-032 Statistics subjects, 212-207 Field Experimentation);
- 212-423 Agricultural Policies and International Trade;
- 212-410 Agricultural Business Management and Marketing;
- Vacation Work 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

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)

- 212-423 Agricultural Policies and International Trade
- 207-414 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

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.9)* and *Co-majors (p.16)* 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 17).

  These years are undertaken at Creswick Campus. 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, 202-001 Industry Placement (no points, hurdle requirement), 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

There has been no first-year entry into this course from 2001 onwards.

The Bachelor of Applied Science is awarded in:

- agriculture
- dairy foods
- equine management
- food technology
- horticulture
- natural resource management
- rural management.

Bachelor of Applied Science (Food Technology)

There will be no new intake into this course from 2003. The Bachelor of Applied Science (Food Technology) aims to produce graduates for professional roles in the food industry. The course comprises three years full-time study or equivalent part-time study.

Please refer to details of the new course, Bachelor of Food Science. The information below only applies to continuing students.

Course objectives

Students who have completed this course will 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

Second year		Points
Semester 1		
208-216	Food Microbiology *(p.1)*	12.5
208-311	Engineering Applications *(p.1)*	12.5
Two electives from:		
202-202	Experimental Design/Statistical Methods *(p.2)*	12.5
208-206	Vineyard & Winery Ops for Quality WP II *(p.7)*	12.5
208-221	Frozen and Fat Products *(p.3)*	12.5
208-225	Food Chemistry, Biology and Nutrition *(p.1)*	12.5
Semester 2		
208-210	Financial Management for Resource Ind I *(p.3)*	12.5
208-218	Production Management *(p.1)*	12.5
Two electives from:		
208-220	Fermented Milk Products *(p.3)*	12.5
208-222	Concentrated and Dried Dairy Products *(p.3)*	12.5
208-223	Liquid Products and Membrane Technology *(p.3)*	12.5
208-316	Oenology *(p.10)*	12.5

Second year		Points
Year long subject		
208-224	Industry Placement II *(p.1)*	0
Sub-total		*100.0*

Third year		Points
Semester 1		
202-302	Human Resource Management *(p.4)*	12.5
208-305	Production and Management Techniques *(p.2)*	12.5
208-310	Analytical Techniques *(p.2)*	12.5
208-314	Technology of Food Processing *(p.2)*	12.5
Semester 2		
208-312	Biochemistry and Fermentation Technology *(p.2)*	12.5
208-311	Engineering Applications *(p.1)*	12.5
208-319	Trends in Food Science and Nutrition *(p.2)*	12.5
208-321	Food Safety, Quality and Regulation *(p.2)*	12.5
Sub-total		*100.0*

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

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 *Research Methods and Statistics* and 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 (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) (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 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 be drawn from subjects offered within the institute and consist of the compulsory unit Research Methods and Statistics and 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.

Courses being phased out (diplomas)

Advanced Diploma in Equine Management

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

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

Course objectives

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

- successfully organise, operate and develop a business plan;

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

Career opportunities

The increase in the level of activity in the industry has 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.1)*	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.1)*	12.5
208-161	Financial Management for Resource Ind I *(p.2)*	12.5
Sub-total		*100.0*
Second year		Points
Semester 1		
204-251	Horse Health and Genetics *(p.2)*	12.5
204-252	Equine Training *(p.2)*	12.5
209-255	Equine Management *(p.3)*	12.5
207-278	Resource Management (Soil and Water) *(p.3)*	12.5
Semester 2		
204-253	Equine Systems *(p.2)*	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
208-255	Crop Management *(p.4)*	12.5
208-161	Financial Management for Resource Ind I *(p.2)*	12.5
Year long subject		
204-254	Industry Experience (Horse) *(p.2)*	0
Sub-total		*100.0*

Postgraduate awards

Graduate Certificate in Agribusiness

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

Graduate Certificate in Dairy Technology

The Graduate Certificate in Dairy Technology is designed for those graduates in disciplines other than dairy/food technology who seek employment in lower and middle level management positions in the dairy industry. The shorter duration of this course when compared with the Graduate Diploma in Dairy Technology can be advantageous to those candidates who seek more immediate employment as well as to those industry employees who want to further their understanding of dairy technology without studying the management aspects. The course may be completed in a minimum time of one year part-time study. The course is available by external study.

Graduate Certificate in Forest Industries

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

Postgraduate Diploma in Agricultural Science

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

Graduate Diploma in Dairy Technology

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

Postgraduate Certificate/Diploma in Food Science

The Postgraduate Certificate and Diploma in Food Science are directed at students who are interested in focusing their further study on food industry 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 Postgraduate Certificate in Food Science, which consists of four subjects (50 credit points).

Graduate Diploma in Forest Industries

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

Postgraduate Diploma in Forest Science

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

Graduate Diploma in Horticulture

The Graduate Diploma in 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.

Graduate Certificate/Diploma in Wine Technology and Viticulture

The Graduate Certificate and Graduate Diploma in Wine Technology and Viticulture has been developed for employees in the viticulture and/or oenology sectors of the wine industry or people who are establishing or operating their own vineyard and/or winery. Students are introduced to the science of viticulture and wine, as well as reviewing the australian wine industry's position in the world wine scene. An integrated approach to viticulture and oenology exposures students to all operations undertaken throughout the yearly cycle on a vineyard and in a winery. The graduate certificate comprises one year distance education-based study including residential workshops, and the graduate diploma is two years' study. The graduate certificate comprises the first four of the eight graduate diploma subjects.

Master of Agribusiness (by coursework)

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

Master of Agribusiness (by research)

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

Master of Agriculture (by research)

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

Master of Animal Welfare (by research)

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

Master of Food Science (by coursework)

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

Master of Food Technology (by research)

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

Master of Forest Industries (by coursework)

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

Master of Forest Science (by research)

The Master of Forest Science requires at least a year of advanced studies and practical work. Normally the Bachelor of Forestry degree or the Postgraduate Diploma in Forest Science are prerequisites, although candidates with another degree recognised as appropriate by the Institute may be admitted. The main areas of forestry research in the institute at present are in agroforestry, biotechnology, conservation, fire management, forest economics, forest engineering, forest measurement, forest protection, forest soils, silviculture and wood science.

Master of Horticulture (by research)

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

Master of Natural Resource Management (by research)

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

Master of Wood Science (by research)

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

Doctor of Philosophy

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

For more information

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

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