

Faculty of Land and Food Resources

Master of Agricultural Science

(Incorporating the Postgraduate Diploma in Agricultural Science as an exit point)

1 Background

The Master of Agricultural Science (by coursework) course was developed under the guidelines of Growing Esteem and within the new +2 coursework structure to provide a research-led national and international focused program. The course is directed at students who wish to build a professional career in a specialised area of the Agricultural Sciences. The course will commence in 2008 with the two distinct streams of 'plant' and 'animal'.

The proposal is for a new Master of Agricultural Science coursework programme that would provide a rational progression (+2) for students who have either completed an undergraduate degree in the life sciences, an associated undergraduate degree (i.e. Environments) or another previous qualifications for which a suitable articulation pathway is met.

All elements used to guide the design of the new degree are validly represented in this proposal. This includes a structure that is common to other courses to be offered in the new generation Master (by coursework) program, with a core curriculum of 8 subjects (4 subjects per annum) including foundation subjects enabling transition from non-cognate backgrounds in Year 1 and a progression towards fully cognate subjects. Students may choose to undertake up to 8 elective subjects or alternatively complete either one, two or three subject equivalents of research project and a minimum of two electives.

To equip the next generation of agricultural scientists with specialist knowledge, we propose a Master with ability to stream within the chosen specialist area of 'plant' or 'animal', whilst at the same time offering flexibility to undertake training across these disciplines for a more generalist degree. Further flexibility to undertake a small as well as large research topic, or to choose additional electives will enable student to better plan for future career pathways (ie professional extension verses continuing on to a PhD program).

Three 'specialist' stream subjects must be completed in order to gain recognition of that specialisation area. This will ensure that students have sufficient depth in their chosen area of Agricultural Science.

The Master of Agricultural Science (coursework) course will enable students to examine in depth the opportunities and constraints underpinning plant and animal derived food and fibre production and their markets. This will include issues of scientific, ethical and economic importance such as technology, trade, policy, bioethics, intellectual property, environmental impact, biosecurity and pathogens, together with their impacts on societal and community concerns.

The programme will enable students to examine the practical applications and knowledge transfer of scientific, economic or societal information in the production of food and fibre and the subsequent environmental interactions and challenges through a research component.

Graduates in the Master programme will possess attributes that will ensure they can either find employment in the public or private sectors related to a wide range of agricultural production, environmental, economics, bioresearch and service industries, and community organisations concerned with public good, or continue into further postgraduate programmes of study.

2 Course/Program Objectives

Candidates will graduate with an excellent understanding of the many factors underpinning agricultural systems and an awareness of methods for sustainable food and fibre production and their markets. Equally, candidates may graduate with specialist knowledge and training in one of or both of the two key Agricultural Science disciplines of plant science and/or animal science. The course design comprises theory and technology applications, with a focus on improving current cropping and animal production systems for increased product yields and qualities within Australian and International environments.

Agricultural science comprises many existing and novel emerging areas in the plant, animal and associated sciences, aimed to create opportunities for unprecedented advances in the manipulation of biological systems for increased productivity. The scientific tools and advances are evolving fast and are being directly applied to food and fibre industries worldwide. This encompasses aspects such as plant and animal physiology and breeding, climate change and environmental impact, microbial organism and pathogen impact, and genetic manipulation together with policy, ethical and intellectual property issues. Similarly, the ability to forge and maintain a high profit market share for agricultural products is key to agricultural industries both in Australia and worldwide.

The objectives of this course are to:

- Enable students to explore the interdisciplinary nature of agricultural crop, food and fibre production and markets at an advanced level
- Provide students with a sound foundation in the scientific principles and analytical skills behind improved agricultural production systems and their sustainability,
- Introduce the student to advanced research topics and practical applications within the disciplines of agricultural science,
- Develop competence in the design, conduct and analysis of experimental work,
- Introduce students to industrial applications of agricultural science and the commercial outcomes,
- Develop a critical understanding of environmental, economic, social and ethical factors related to plant and animal-derived food and fibre production in Australia and globally.

3 Entry Requirements

To be separately recommended by Academic Board.

4 Statement of how the course allows students to achieve the University of Melbourne Graduate Attributes and how it meets the statement of Expectations of a Professional Masters

The graduates from the Master of Agricultural Science will have achieved academic excellence in their chosen field(s) of study. They will possess in-depth knowledge in those fields (s) and have been equipped with all necessary tools and skills to become leaders at both national and global levels.

5 Course/Program Structure

The Master of Agricultural Science (coursework) consists of 200 credit points of study at level 400 and above. Students may specialise during the course within the stream of 'plant science' and/or 'animal science' by completing the three subjects (75 points) of each stream. It is possible for a student to gain specialist training in more than one stream area by completion of subjects as elective selections.

The Master course may be undertaken as either full time study over two years or part-time study over four years and will be delivered at the Parkville campus. International students may only enrol in the course on a full-time basis. The program comprises up to 16

coursework subjects (12.5 points each) and students may elect to undertake research project subjects of 25 or 50 points. Students may not obtain credit for more than 50 points of project. Students who are given advanced credit from an honours or postgraduate diploma in a cognate area, and who as part of that previous course conducted a project worth more or equal to 50 points, will not be permitted to conduct a project within the Masters program.

Year 1 comprises four core subjects and four other subjects. The core subjects include three non-cognate subjects in semester 1 and one specialist cognate 'stream subject' in semester 2. Students may undertake two or four elective subjects, dependant on whether they choose to complete Project A (25 points).

Year 2 comprises a further four core subjects and four other subjects. The core subjects include two 'broadening subjects in agricultural science' and a further two specialist cognate 'stream subjects'. Students may choose to undertake four elective subjects, dependant on whether they chose to complete Project B (50 points).

Once the requirements of a specialist degree have been satisfied (three subjects from one specialist stream), across-stream subject selection will be encouraged, particularly for those who do not wish to conduct project A or B. In addition, students will be able to choose elective subjects from the list of approved subjects offered by other University of Melbourne faculties, subject to approval by the Course Coordinator.

Master of Agricultural Science (coursework) program

	1	2	3	4
Year 1				
Semester 1	208 xxx**, *** Research Philosophies and Statistics or 207 xxx* Social Research Methods***	Elective A	202 xxx Emerging Issues for Land Resources	207 xxx* Soil Fertility and Conservation
Semester 2	Elective B	Stream A 208 xxx Agricultural Plants and the Environment or Stream B 208 xxx Advanced Animal Management***	202 xxx*, **, *** Project A or Elective C	202 xxx*, **, *** Project A or Elective D
Exit with Postgraduate Diploma of Agricultural Science possible here				
Year 2				
Semester 1	208 xxx Climate Change: Agricultural impacts and adaptation	Stream A 208 xxx Agronomy and Cropping Systems or Stream B 208 5xx Animal Metabolism and Nutrition*** or 208 409 Animal Welfare and Ethics*	202 xxx*, **, *** Project B or Elective E	202 xxx*, **, *** Project B or Elective F
Semester 2	202 xxx	Stream A	202 xxx*, **, ***	202 xxx*, **, ***

	Animal and Plant Protection	208 xxx Advanced Plant Breeding and Improvement or Stream B 208 xxx Genetics and Animal Breeding***	Project B or Elective G	Project B or Elective H
Exit with Master of Agricultural Science				

Notes

*Subjects cross-listed in the Master of Urban Horticulture proposal.

** Subjects cross-listed in the Master of Food Science proposal.

*** Subjects cross-listed in the Master of Animal Science proposal.

There are no year-to-year progression requirements. To successfully complete the program students will need to complete 200 points in core and elective/project subjects. Students may elect to take a project of 25 or 50 points, or no project at all. Students need to complete all three of the stream 'specialist subjects' (75 points) to be awarded a degree with recognition of that specialist stream. Students who complete 100 points in the program and who do not wish to proceed may be awarded a Post Graduate Diploma in Agricultural Science.

List of subjects

Core subjects

202 xxx Emerging Issues for Land and Food (non cognate)

208 xxx Climate Change; Agricultural Impacts and Adaptation (non cognate)

202 xxx Animal and Plant Protection

207 xxx Soil Fertility and Conservation

And one of:

208 411 Research Philosophies and Statistics (non cognate)**

207 414 Social Research Methods (non cognate)*

And one of:

208 xxx Agricultural Plants and the Environment

208 405 Advanced Animal Management

And one of:

208 xxx Agronomy and Cropping Systems

208 xxx Animal Metabolism and Nutrition

208 409 Animal Welfare and Ethics

And one of:

208 402 Advanced Plant Breeding and Improvement

208 407 Genetics and Animal Breeding

Approved elective subjects from within FLFR

202 xxx Research Project A*,**

202 xxx Research Project B*,**

208 xxx Research Project Management*

208 xxx Fundamentals and Management of GIS

208 xxx Management Economics for Primary Resource Businesses

208 xxx AgriFood Marketing

208 xxx Economics of Resource Use and Conservation

208 xxx Food Biotechnology**

207 508 Conservation Genetics

207 505 Global Environment and Sustainability

207 501 Management of Plant and Animal Invasions

Proposed elective subjects from the University (examples - in 2007 handbook)

136-531 Genetics in Society**

505 944 Bioinformatics and Statistical Genetics

421 681 Management for the Environment**

Exit Award: Postgraduate Diploma in Agricultural Science

Course objectives for exit award:

Student will have gained a broad understanding of many of the issues underpinning the advances in food and fibre production within the Australian and International Agriculture sectors. This will be achieved through the completion of foundation subjects “Emerging Research Issues for Land Resources” and “Soil Fertility and Conservation”. Students will also have completed at least one specialist subject in plant or-animal science and have also undertaken a 25 point research project if appropriate, or may have broadened their base knowledge through elective subjects.

Program structure

The Postgraduate Diploma of Agricultural Science will be offered as an exit-only award to those who may wish to discontinue after the first year.

The Postgraduate Diploma consists of 100 credit points of study at level 400 and above and may be undertaken as either full time study over one year or part-time study over two years and will be delivered at the Parkville campus. International students may only enrol in the course on a full-time basis. The program comprises up to eight coursework subjects (12.5 points each), four core subjects and four other subjects. The core subjects include three non-cognate subjects in semester 1 and one cognate subject in semester 2. Students may undertake either two or four elective subjects, dependant on whether they choose to complete Project A (25 points).

Students are not permitted to enrol directly into the exit award.

6 Availability of Course

The program will be available from 2008 on a full-time basis and (except for international students) on a part-time basis, and will be offered to CSP students, fee-paying international students and fee-paying Australian students.