Faculty of Agricultural and Natural Resource Sciences
Website: http://www.waite.adelaide.edu.au

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Postgraduate awards in the Faculty of Agricultural and Natural Resource Sciences

Graduate Certificate
Graduate Diploma
Postgraduate Diploma
Master
each of which shall be defined by one of the following fields of study:
   Agricultural Biotechnology
   Agricultural Business
   Agronomy and Farming Systems
   Animal Production
   Crop Protection
   Food Safety and Veterinary Public Health
   Horticulture
   Natural Resources Management
   Oenology
   Plant Science
   Rangeland Management
   Soil Management and Conservation
   Spatial Information Science
   Veterinary Studies
   Viticulture
   Wine Business

Notes on Delegated Authority

1 Council has delegated the power to approve minor changes to the General Academic Program Rules to the Convenor of the Academic Board.

2 Council has delegated the power to approve minor changes to the Specific Academic Program Rules to the Executive Deans of Faculties.

3 Council has delegated the power to specify syllabuses to the Head of each department or centre concerned, such syllabuses to be subject to approval by the Faculty or by the Executive Dean on behalf of the Faculty. The Head of department or centre may approve minor changes to any previously approved syllabus.
The University is currently in the process of implementing a new information systems infrastructure. This includes a new Student Administration system. A consequence of this initiative is that the University has adopted a new set of nomenclature to describe its academic awards and curriculum offerings.

The changes in terminology that will be noticed in the Handbook of Academic Programs are as follows:

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic Program</td>
<td>Is used to describe academic awards which were previously referred to as Courses</td>
</tr>
<tr>
<td>Course</td>
<td>Is used to describe syllabus offerings which were previously referred to as Subjects</td>
</tr>
<tr>
<td>Unit</td>
<td>Is used to describe the value the course contributes to program completion previously referred to as Points</td>
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</table>
The above awards have been developed within the framework of the General Academic Program Rules printed at the beginning of this volume of the Handbook. As all students must comply with both the General and Specific Academic Program rules, they are advised to refer to them to gain an understanding of their rights and responsibilities regarding program matters.

**Specific Academic Program Rules**

1 **General**
   1.1 A candidate who complies with the following conditions shall, on the recommendation of the Faculty, be admitted to the certificate, diploma or degree concerned.

2 **Admission requirements**
   2.1 An applicant for admission to the program of study for a Graduate Certificate shall have qualified for a degree of the University in an approved field of study, or a degree of another institution accepted for the purpose by the Faculty.

   2.2 An applicant for admission to the program of study for a Graduate Diploma shall
      (a) have qualified for a Graduate Certificate of the University in an approved field of study, or an equivalent award of another institution accepted for the purpose by the Faculty or
      (b) have qualified for a degree or a three year diploma of the University or an equivalent award of another institution accepted for the purpose by the Faculty.

   2.3 An applicant for admission to the program of study for a Postgraduate Diploma shall
      (a) have qualified for a Graduate Certificate of the University in an approved field of study or an equivalent award of another institution accepted for the purpose by the Faculty or
      (b) have qualified for a degree or a three year diploma of the University or an equivalent award of another institution accepted for the purpose by the Faculty, and
      (i) have completed at a satisfactory standard (normally credit average)

   2.4 An applicant for admission to the program of study for a Master’s degree by coursework shall
      (a) have qualified for the Bachelor of Agricultural Science (Honours) or the Bachelor of Applied Science (Honours) of the University or
      (b) have qualified for a degree or other award of the University in an approved field of study or an award of another institution accepted by the Faculty as being equivalent to the Honours degree. Such an award may be a postgraduate Diploma with a significant research component in the field of study of the proposed research or
      (c) have qualified for a Bachelor’s degree of the University in an approved field of study or an equivalent award of another institution accepted for the purpose by the Faculty,
courses to the value of 12 units from the Graduate course pool in the same field of study or
(ii) have other relevant practical experience approved by the Faculty.

2.5 An applicant for admission to the Master of Agricultural Science or the Master of Applied Science shall:

(a) have qualified for an Honours degree offered by the Faculty or its equivalent in an institution accepted for the purpose by the Faculty or
(b) have qualified for a Postgraduate Diploma of the University which contained a significant research component in the field of study of the proposed Master’s research or an equivalent award in an institution accepted for the purpose by the Faculty or
(c) have qualified for a Bachelor’s degree of the University in an approved field of study or an equivalent award in an institution accepted for the purpose by the Faculty and have relevant professional experience.

2.6 Applicants deemed to have a deficiency in some part of their preparation for candidature may be required to complete such other work as may be prescribed during the first year of their candidature.

2.7 Under the authority delegated to it by Council, the Faculty may, in special cases and subject to such conditions (if any) as it may see fit to impose in each case, accept as a candidate for the Graduate Certificate, the Graduate Diploma or the Postgraduate Diploma a person who does not satisfy the requirements of 2.1, 2.2 or 2.3 above but who has given evidence satisfactory to the Faculty of fitness to undertake work for the Graduate Certificate, the Graduate Diploma or the Postgraduate Diploma.

2.8 With the approval of the Board of Graduate Studies, the Faculty may, in special cases and subject to such conditions (if any) as it may see fit to impose in each case, accept as a candidate for the Master’s degree a person who does not satisfy the requirements of 2.4 or 2.5 above but who has given evidence satisfactory to the Faculty of fitness to undertake work for the Master’s degree.

2.9 Status, exemption and credit transfer

2.9.1 No candidate will be permitted to count for an award any course, project work, dissertation or research thesis which, in the opinion of the Faculty, contains substantially the same material as any other course, project work, dissertation or research thesis which the candidate has already presented for another qualification.

2.9.2 A candidate who desires that work completed should be counted towards the requirements of these Specific Academic Program Rules may, on written application to the Faculty Registrar (in the case of the Graduate Certificate, the Graduate Diploma or the Postgraduate Diploma) or Graduate Studies (in the case of the Master’s degree by coursework or the Master’s degree by research), be granted such exemption from the requirements as the Faculty or the Board of Graduate Studies on the advice of the Faculty shall determine.

3 Enrolment

3.1 Program approval

3.1.1 Every candidate for the Graduate Certificate or the Graduate Diploma in consultation with the Postgraduate Coursework Adviser shall prepare a program of courses and activities to be submitted for the approval of the Postgraduate Coursework Adviser.

3.1.2 Every candidate for the Postgraduate Diploma or the Master’s degree by coursework in consultation with the Postgraduate Coursework Adviser shall prepare a program of coursework and project work to be submitted for the approval of the Postgraduate Coursework Adviser. The project work shall be under the direction of a supervisor or supervisors who shall normally be members of the academic staff of the University, but an external supervisor may also be appointed.

3.1.3 Every candidate for the Master of Agricultural Science or the Master of Applied Science shall

(a) prior to enrolment indicate in general terms the course of the research work on which the candidate proposes to submit a thesis
(b) provide certification from the Head of Department of the intended supervisor that:
(i) the applicant has shown evidence of ability to undertake work for the Master’s degree
(ii) the proposed research project is appropriate
(iii) there are available members of staff qualified and able to provide supervision of the proposed candidacy throughout its likely duration and
(iv) suitable resources and facilities are available (either in the University or, by arrangement acceptable to the Faculty, elsewhere) for the proposed research to be undertaken.

(c) complete a structured program of activities within the first twelve months from the commencement of candidature. Continuation of the candidate’s enrolment is conditional upon the completion of the activities to the satisfaction of the department.

If the applicant is accepted as a candidate for the degree concerned the Faculty shall appoint at least two supervisors to guide the candidate in the candidate’s work.

3.1.4 (a) Except by permission of the Faculty, the whole of the work for the Master’s degree must be completed within the University.

(b) Subject to such conditions as it may determine in each case, the Faculty may permit project or research work to be undertaken outside the University provided that it can be satisfied that
(i) this will result in academic benefit to the candidate
(ii) there will be adequate contact and interaction between the candidate and the candidate’s internal supervisor/s
(iii) the supervisor’s access to any experimental work, the candidate’s availability for seminars and other discussions, and the publication of results will not thereby be prejudiced.

4 Assessment and examinations

Coursework Awards

4.1 There shall be four classifications of pass in each course in the Graduate Course Pool: Pass with High Distinction, Pass with Distinction, Pass with Credit, Pass.

4.2 A candidate who fails in a course and desires to take the course again shall attend lectures and saturately do such written and practical work as the teaching staff concerned may prescribe, unless specifically exempted therefrom after written application to the Head of Department for such exemption.

4.3 A candidate who has twice failed in any course may not enrol for that course again except by special permission of the Faculty and then only under such conditions as may be prescribed.

4.4 A candidate shall not be eligible for examination in a course unless the prescribed work has been completed to the satisfaction of the teaching staff concerned.

A candidate who is not eligible for examination shall be deemed to have failed the examination.

4.5 For the purpose of this Specific Academic Program Rule a candidate who fails, without a reason accepted by the Dean of the Faculty (or nominee), to attend all or part of a final examination (or supplementary examination if granted) after remaining enrolled for at least nine teaching weeks of that semester, shall be deemed to have failed the examination.

4.6 On completion of the work for the Postgraduate Diploma or the coursework Master’s degree the candidate shall inform the Postgraduate Coursework Adviser concerned and lodge with the Postgraduate Coursework Adviser three copies of the dissertation prepared in accordance with directions given to candidates from time to time.

4.7 On the submission or re-submission of the dissertation the Faculty shall nominate examiners who shall normally be members of the academic staff of the University, but an external examiner may be appointed. The examiners may recommend that the dissertation
(a) be accepted subject to such amendments as the examiners may have suggested or
(b) be accepted subject to satisfactory oral examination or
(c) be not accepted but sent back to the candidate for revision and re-submission or
(d) be rejected.

The examiners of a dissertation re-submitted following recommendation (c) above may recommend only (a), (b) or (d) above.

Having considered the reports of the examiners the Faculty shall determine whether the dissertation is satisfactory.
Research Awards

4.8 On completion of the work for a research Master's degree the candidate shall inform the Head of Department concerned and lodge with Graduate Studies, three copies of the thesis prepared in accordance with directions given to candidates from time to time.

4.9 On the submission or re-submission of the thesis the Faculty shall appoint two examiners, at least one of whom shall be external to the University, to report on the thesis and any supporting papers which the candidate may submit.

The examiners may recommend that the candidate
(a) be awarded the degree or
(b) be awarded the degree but that minor amendments be made or
(c) be awarded the degree subject to the specified amendments being made to the thesis or
(d) be not awarded the degree but be permitted to re-submit the thesis in revised form or
(e) not be awarded the degree.

The examiners of a thesis re-submitted following recommendation (d) may recommend only (a), (b), (c) or (e) above.

Having considered the reports of the examiners the Faculty shall determine whether the thesis is satisfactory.

4.10 Review of academic progress

4.10.1 The progress of each candidate in the Certificate, Diploma and coursework Master's program shall be reviewed by the Faculty each academic year.

4.10.2 The progress of each candidate in the research Master's programs shall be reviewed annually and satisfactory progress shall be a condition of re-enrolment. Should the candidate's work be unsatisfactory further review and action shall be taken in accordance with University policies and procedures.

5 Qualification requirements

5.1 To qualify for the Graduate Certificate a candidate shall present courses to the value of 12 units (which may not include 6043 Research Proposal or a Research Project) from the Graduate Course Pool.

A candidate who has been enrolled for the coursework Master's degree, the Postgraduate Diploma or the Graduate Diploma and who as such a candidate has completed the work prescribed for a Graduate Certificate and who has not been awarded the Master's degree, the Postgraduate Diploma or the Graduate Diploma shall, on written application to the Faculty Registrar, be awarded the appropriate Graduate Certificate, subject to the student discontinuing candidature for the higher award.

5.2 To qualify for the Graduate Diploma a candidate shall present courses to the value of 24 units, no fewer than half of which are from the Graduate Course Pool and which may not include 6043 Research Proposal or a Research Project.

A candidate holding a Graduate Certificate of the University who has counted or presented the courses in the Graduate Certificate towards the requirements of the Graduate Diploma shall surrender the Graduate Certificate before being admitted to the Graduate Diploma.

A candidate who has been enrolled for the coursework Master's degree or the Postgraduate Diploma and who as such a candidate has not been awarded the Master's degree or the Postgraduate Diploma shall, on written application to the Faculty Registrar, be permitted to transfer to the appropriate Graduate Diploma, subject to the student discontinuing candidature for the award of Master's degree or Postgraduate Diploma.

5.3 To qualify for the Postgraduate Diploma a candidate shall present courses to the value of 24 units, including, if required, 6043 Research Proposal, 6495 Research Methodology or 7046 Research Methodology and Experimentation; a minimum of six and a maximum of nine units deriving from research; and the balance from the Graduate Course Pool.

A candidate holding a Graduate Certificate of the University who has counted or presented the courses in the Graduate Certificate towards the requirements of the Postgraduate Diploma shall surrender the Graduate Certificate before being admitted to the Postgraduate Diploma.

A candidate who has been enrolled for the coursework Master's degree and who as such a candidate has completed the work prescribed for the Postgraduate Diploma and who has not been awarded the Master's degree shall, on written application to the
5.4 To qualify for the Master’s degree by coursework a candidate shall present courses to the value of 36 units, including, if required, 6043 Research Proposal, 6495 Research Methodology or 7046 Research Methodology and Experimentation; a minimum of twelve and a maximum of twenty one units deriving from research; and the balance from the Graduate Course Pool.

Except with the permission of the Faculty, the Master’s degree program, if taken full-time, will normally be completed in eighteen months, depending on the nature of the project activity, and over not less than two and not more than five years if taken part-time.

A candidate holding a Graduate Certificate or a Postgraduate Diploma of the University who has presented the courses in the Certificate or Diploma towards the requirements of the Master’s degree by coursework shall surrender the Graduate Certificate or Postgraduate Diploma before being admitted to the Master’s degree.

5.5 To qualify for the Master’s degree by research a candidate must submit a satisfactory thesis on a course approved by the Faculty and shall adduce evidence acceptable to the Faculty that the thesis is the candidate’s own work. The thesis shall give the results of original research on which the candidate has been engaged.

Except on the recommendation of the Faculty and with the approval of the Board of Graduate Studies, the work for the degree shall be completed and the thesis submitted in not less than one year and not more than three years from the date of commencement of the candidature in the case of a full-time candidate or not less than two years and not more than six years from the date of commencement of the candidature in the case of a part-time or external candidate.

note: A candidate who holds an Honours degree of Adelaide University approved for this purpose or its equivalent in a university recognised by Adelaide University may proceed to the degree of Master of Agricultural Science or Master of Applied Science at the expiration of one year from the date of the candidate’s admission to the Honours degree of Bachelor; no other candidate may proceed to the degree before the expiration of two years from the date of the beginning of the candidature.

### 6 Program of Study - Graduate Course Pool

#### 6.1 There shall be a Graduate Course Pool which will include graduate level courses, approved supplemented level III courses (either of which may include intensive workshops) and research projects.

#### 6.2 The selection of courses and activities will be made by students in consultation with and with the approval of Postgraduate Coursework Advisers or supervisors. Such selected components

(a) shall form part of the formal coursework requirements or

(b) may form a preparatory portion of the research degrees.

#### 6.3 The following courses shall comprise the Graduate Course Pool:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
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<tr>
<td>1822</td>
<td>Advanced Agronomy S</td>
<td>6</td>
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<tr>
<td>4091</td>
<td>Advanced Biometry S</td>
<td>3</td>
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<tr>
<td>2445</td>
<td>Advanced Raster Analysis</td>
<td>3</td>
</tr>
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<td>1086</td>
<td>Advanced Recombinant DNA Techniques</td>
<td>1.5</td>
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<td>9086</td>
<td>Advances in Oenology S</td>
<td>3</td>
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<td>8424</td>
<td>Advertising and Promotion S</td>
<td>3</td>
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<td>1042</td>
<td>Agricultural Biotechnology S</td>
<td>3</td>
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<td>9002</td>
<td>Agricultural Business Management</td>
<td>3</td>
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<td>8597</td>
<td>Agricultural Engineering</td>
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<td>4783</td>
<td>Agroforestry Research Principles</td>
<td>3</td>
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<tr>
<td>1341</td>
<td>Agroforestry S</td>
<td>3</td>
</tr>
<tr>
<td>9477</td>
<td>Animal Biotechnologies S</td>
<td>3</td>
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<td>7824</td>
<td>Animal Breeding Biotechnologies S</td>
<td>3</td>
</tr>
<tr>
<td>9259</td>
<td>Animal Welfare</td>
<td>3</td>
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<td>4837</td>
<td>Applied Management Science S</td>
<td>3</td>
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<tr>
<td>9321</td>
<td>Applied Marketing Research S</td>
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<td>1927</td>
<td>Basic Techniques in Biotechnology</td>
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<tr>
<td>3285</td>
<td>Biological Control S</td>
<td>3</td>
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<td>5088</td>
<td>Biology and Diversity of Insects S</td>
<td>3</td>
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<tr>
<td>3362</td>
<td>Breeding and Genetics of Animals</td>
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<td>5370</td>
<td>Cellar Management S</td>
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<td>7518</td>
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<td>3741</td>
<td>Conservation Biology S</td>
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<td>Crop Physiology III S</td>
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<td>6363</td>
<td>Crops and Pastures G</td>
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<td>5264</td>
<td>Current Topics in Animal Diseases</td>
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<td>6207</td>
<td>Development of New Crops and Markets</td>
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<td>8225</td>
<td>Diseases and Nutrition of Livestock S</td>
<td>3</td>
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<td>6864</td>
<td>Distillation and Fortified Winemaking S</td>
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Agricultural and Natural Resource Sciences — Postgraduate Academic Programs

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<td>Ecology and Management of Freshwater Systems S</td>
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<td>Ecology and Management of Rangelands S</td>
<td>3</td>
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<td>3008</td>
<td>Ecology and Management of Vertebrate Pests S</td>
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<td>7376</td>
<td>Economic Principles S</td>
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<td>7816</td>
<td>Environmental Chemistry III S</td>
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<td>Environmental Toxicology S</td>
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<td>6632</td>
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<td>5325</td>
<td>Fauna Management S</td>
<td>3</td>
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<td>7194</td>
<td>Fruit and Nut Crops S</td>
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<td>5715</td>
<td>Fungal Biology S</td>
<td>3</td>
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<tr>
<td>5698</td>
<td>Genetic Technologies for Plant Improvement S</td>
<td>3</td>
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<td>8583</td>
<td>GIS for Environmental Management S</td>
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<td>Grape Industry Practice, Policy and Communication S</td>
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<td>Horticultural Production S</td>
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<td>8632</td>
<td>Indigenous Australians and Environmental Management S</td>
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<td>Industry Experience (Oenology) S</td>
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<td>International Business Environment S</td>
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<td>Managing Agricultural Development S</td>
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<td>Measurement of Plant and Soil Water</td>
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<td>Mineral Nutrition of Plants S</td>
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<td>Ornamental Horticulture S</td>
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Candidates may include, within those courses presented to qualify for a coursework award, graduate level courses from outside the Graduate Course Pool subject to the approval of the Postgraduate Coursework Adviser and the Postgraduate Studies Committee.
1822 Advanced Agronomy
6 units full year
Agronomy requires specialist knowledge and skills to be able to integrate biophysical and financial parameters in the practical management of farming systems. This course concentrates on the understanding and development of complex interactions which occur in agronomic systems. Further, the course exposes the student to cutting edge research, technology and understanding which is not yet in the text books. Students will engage in focussed studies of climate, soil, nutrient, weed disease interrelations with plant growth and the impacts of management such as tillage, rotation and farming to land type. The course is undertaken with consideration of management decision making and information technology in agronomy.

assessment: literature reviews and associated assignments

4091 Advanced Biometry S
3 units semester 2
3 lectures, two hour tutorial per week
prerequisite: 5286 Agricultural Experimentation.
A selection of topics from the following: fractional replication; confounding; incomplete block designs; spatial analysis of large field trials; components of variance models; genotype x environment analysis (joint regression analysis and cluster analysis); multivariate analysis (principal components, factor analysis, Hotellings T2 and the linear discriminant function); harmonic regression and transformations; design and analysis of repeat measures data; non-linear regression; epidemiological methods (logistic regression). As well as GENSTAT 5 for Windows, the statistical packages SAS, REML and S-PLUS may be utilised.
assessment: individual assignment 30%, class exercises 10%, final exam 60%

2445 Advanced Raster Analysis
3 units semester 2
20 hours lectures, 30 hours practicals, 20 hours to be advised
prerequisite: core courses
This unit carries on from the work commenced in Introduction to Remote Sensing. Topics include: advanced computer enhancements of image data; image data radiometric rectification; image data spectral transformations; image data classification by unsupervised techniques; supervised classification using spectral techniques: inclusion of texture; supervised classification using non-spectral decision Rules, inclusion of GIS data in supervised classification, role of neural networks in supervised classification; integration of raster and vector GIS in remote sensing.
assessment: project 50%, presentation 25%, essay 25%

1086 Advanced Recombinant DNA Techniques
1.5 units one week in semester 2
40 hours
assumed knowledge: 9503 Molecular Markers in Plant Breeding; or equivalent background knowledge of recombinant DNA methods
This course builds on the basic recombinant DNA methodologies taught in 9503 Molecular Markers in Plant Breeding. The following techniques will be taught: cloning in lambda vectors; construction of DNA library; screening lambda libraries; lambda DNA isolation; DNA sequencing; computer assisted sequence analysis. Lecturers will describe various cloning techniques, methods of clone analysis and application of molecular genetics. The emphasis will be on plant molecular genetics.
assessment: work book assessment

9086 Advances in Oenology S
3 units semester 2
2 lectures per week; practical sessions, industry visits equivalent of 4 hours per week
prerequisite: 5896 Introductory Winemaking
Current research and practices in oenology. Particular emphasis will be placed on grape and wine phenolics and flavour compounds; methods of analysis in wine science; yeast biochemistry including nutrition, sugar transport, nitrogen and organic acid metabolism, ethanol toxicity, sulphur dioxide production and tolerance, yeast aroma compounds; the malolactic fermentation - biochemical and molecular approaches. Wine industry visits will focus on modern practices and recent developments to increase production efficiencies and wine quality.
assessment: two written exams, reports on practical exercises and industry visits
8424 Advertising and Promotion S
3 units semester 1
external only
prerequisite: 9129 Principles of Agricultural Business Marketing or 4932 Principles of Food and Wine Marketing or 4843 Agricultural Marketing Principles and Strategies
This course will provide the student with an overview of the Integrated Marketing Communications process. Students will learn to manage the formal communications process in the context of wine and agricultural businesses. Attention will be paid to developing communication plans and understanding strategic applications of advertising, sales promotion and public relations tools. Students should expect to gain knowledge of communications theory as well as practical application through study of texts and real world cases.
assessment: exam 50%, assignments 50%

1042 Agricultural Biotechnology S
3 units Not offered in 2001
prerequisite: 6553 Biological Chemistry
2 lectures, 4 hours of practicals a week
Biotechnology offers methods for producing exciting new products for agriculture, new ways of controlling pests and diseases and sophisticated diagnostic tools for selection and breeding. This course is designed to provide students with an opportunity to understand the basic principles, practices and applications of new biotechnological approaches being used to improve agriculture.
You will learn some of the modern techniques in plant and animal cell culture, monoclonal antibody production, role of microbes in toxin degradation, use of recombinant DNA methods to express foreign proteins in micro-organisms and obtain an introduction to advanced procedures used in genetic manipulations of plants and animals. You will also gain an appreciation of the benefits, scientific limitations and ethical issues associated with these modern bio-techniques.
assessment: to be advised at first lecture

9002 Agricultural Business Management
3 units semester 1, multi-modal
3 hour seminar each week
The aim of this course is to provide perspective and understanding of the overall management role, and to demonstrate linkages between various management functions. Aspects covered include business and society, business management, organisational design, entrepreneurship, human resources management, production management, marketing management, accounting management, financial management, information management, business and social ethics, and careers in agricultural business.
assessment: assignments, seminar presentations

8597 Agricultural Engineering
4 units full year
3 hours per week
The course consists of a project, negotiated between the student and the Department of Agronomy and Farming Systems, and assignment and tutorial work as directed by the Department. Each component is complementary in that the assignment and tutorial work is directed toward the theoretical and analytic basis of the topic in which the project has been selected.
assessment: written reports

4783 Agroforestry Research Principles
3 units semester 1 or 2
Agroforestry is a relatively new discipline which is developing its own set of principles, techniques and institutions. This is due to the extended temporal and spatial dimensions of agroforestry systems which complicate the experimental design and statistical analysis of agroforestry research; and the wide range of socioeconomic contexts within which the research is based. The course examines case studies of agroforestry research across a wide range of systems hierarchy (i.e. physiological to landscape levels) in both developing and developed countries. This will also introduce the biophysical and economic modelling of agroforestry systems and Australian and international agroforestry research institutions.
assessment: literature reviews, assignments

1341 Agroforestry S
3 units semester 1
The focus of this course is the practical application of agroforestry in low and high rainfall environments in Australia. It also exposes students to agroforestry as it is practised elsewhere in the world.
Topics include: the management of trees/shrubs for timber, fodder and other products; agroforestry for the control of salinity and ground water, soil erosion, and habitat management; practical tree establishment, maintenance and harvest; ecological interactions in agroforestry systems; the effect of shelter on crop, pasture and animal
productivity, planning agroforestry on the farm; modelling agroforestry systems; agroforestry research and development in Australia; agroforestry in developing countries.

assessment: to be advised

9477 Animal Biotechnologies S
3 units semester 2
2 lectures; four hour practical per week
assumed knowledge: 7583 Agricultural Biotechnology
This course aims to describe advanced concepts in biotechnology, including cell biology, molecular biology, protein engineering, microbiology and genetics, and to show how these technologies can be applied to the animal production industries. Topics include gene expression and control in animal cells, cell signalling and regulations, growth promotants and their function, genetic engineering in animals, synthetic vaccine development, DNA diagnostic technologies.

assessment: to be advised

7824 Animal Breeding Biotechnologies S
3 units semester 2
6 hours per week or equivalent
assumed knowledge: 2448 Agricultural Zoology II and 6739 Physiology of Farm Animals or 5636 Nutrition, Breeding and Health
restriction: 4522 Reproductive Biology and Technology
Anatomy, physiology and endocrinology of the male and female reproductive systems. Gamete production, sexual behaviour, seasonal breeding, pregnancy, growth and development of the foetus, and lactation are discussed with an emphasis on agriculturally important species. The technologies of artificial insemination, in-vitro fertilisation and embryo transfer are introduced with hands-on practical experience. The use of reproductive and genetic technologies to maximise response to selection are examined for a range of livestock industries. This will include estimation of breeding values and the use of DNA markers to assist selection. There will also be a large emphasis on the design of breeding programs which includes definition of breeding objectives.

assessment: to be advised

9259 Animal Welfare
3 units semester 1
external Mode only
The aim of this course is to provide the necessary knowledge and understanding of the scientific and ethical bases of animal welfare and to be able to review objectively the current animal welfare problems in society. It does not seek to change peoples minds, but to ensure that they have, or can find, the relevant information and have the required skills of analysis and integration. The course addresses animal welfare issues covering a range of disciplines, including biology, veterinary science, medicine, agriculture, philosophy, economics and sociology. It does not include practical animal handling.

The course will comprise two major components, science and ethics are intermingled. In general, the course develops progressively from simple to complex ethical questions relating to animal welfare.

4837 Applied Management Science S
3 units semester 1
2 lectures, 1 2-hour practical/tutorial per week
prerequisite: 9101 Business Data Analysis I or equivalent
The aim of this course is to introduce a collection of management science techniques that helps business managers make better decisions and to foster a logical, consistent and systematic approach to problem formulation, problem solving and decision making. Emphasis is placed on model formulation and interpretation rather than algorithms. Topics to be covered include mathematical programming, network modelling, Monte Carlo simulation, decision analysis under risk, and time series forecasting.

assessment: theory, and practical exams, case studies, other assignments

9321 Applied Marketing Research S
3 units semester 2
The aim of this course is to study quantitative and qualitative marketing research for pro-active and reactive marketing intelligence systems as it applies to wine and agricultural marketers. Topics included are problem analysis, types of data collection systems, steps in research projects, controls of a research project, questionnaire design, statistical methodology for data reduction, sampling theory and the industry and operative organisations. Dealing with a market research organisation will be a significant aspect of the
course which is not aimed at producing researchers but clients who understand the intricacies of the process - and the limitations. The focus will be the application of the theory for use in new wine/agricultural product evaluation, advertising measurement, corporate/ product/range analysis, attitudinal research, as primary sources. Secondary sources such as trade, governmental or syndicated data will be explored and assessed.

assessmen: exam 50%, assignments 50%

3285 Biological Control S
3 units semester 2
6 hours per week

prerequisite: 2448 Agricultural Zoology II or 8712 Agricultural Zoology (Invertebrates), and 3689 General Microbiology II, or 3472 Zoology II, or 1151 Microorganisms and Invertebrates; or equivalent courses approved by Head of Department of Applied and Molecular Ecology.

Theory and practice of biological control of insects and the use of insects as agents of biological control. Includes: theory of population dynamics; classical biological control of insects, weeds and dung; augmentation of natural enemies; use of pathogens and parasites to control insects.

assessmen: reports, assignments 50%, exam 50%

5088 Biology and Diversity of Insects S
3 units semester 1
2 lectures, 4 hours practicals a week

prerequisite: 2448 Agricultural Zoology (pre 1992: 5677 Agricultural Microbiology and Zoology; pre 1989: 5114 Agricultural Zoology). Students without such qualification must obtain permission of the Head of Department before enrolling.

After a brief review covering the internal anatomy of insects and the processes involved in metamorphosis, excretion and reproduction, a number of specific topics will be explored in more detail, including: morphological and biological characteristics of the major insect orders; life histories of selected pest and beneficial species; sociality, caste formation and nest building in termites; sound production methods and functions; feeding mechanisms; adaptations and biology of vertebrate ectoparasites; insects as disease vectors of plants and animals; production and function of silk in insects and arachnids; mimicry and defensive adaptations; sociality and parasitism in the Hymenoptera.

The practical component will examine collecting techniques, identification of adult insects to family level, identification of immature stages and feeding damage. A requirement of the course is the presentation of a well-curated insect collection.

3362 Breeding and Genetics of Animals
1.5 units semester 1 or 2
See Department of Animal Science for details

5370 Cellar Management S
1.5 units semester 1
2 lectures; 4 hours practicals per week for 6 weeks
prerequisite: 5896 Introductory Winemaking

Cellar hygiene, wine spoilage by micro-organisms, microbial control, basic quality control, vintage planning, winery record keeping and practical winery management.

assessment: exams, written assignments

7518 Communications and Agricultural Extension
4 units full year external, odd years only
3 hours per week


assessment: assignments
3741 Conservation Biology S
3 units semester 2
2 weeks in mid-semester break including a field camp
assumed knowledge: 6254 Population Ecology, 2184 Community Ecology; 6976 Biomathematics and Statistics or equivalent
This course deals with key biological characteristics of native plant and animal species which influence their survival in increasingly disturbed and fragmented habitats. Topics include reproduction and renewal, population genetics, plant and animal interactions, habitat management, endangered species management, population viability analysis, reserve design in theory and practice, fragmentation. The politics, legislation and economics of conservation issues like endangered species and regional biodiversity management planning.
assessment: theory 60%, practicals/assignments 40%

6363 Crops and Pastures G
4 units full year
3 hours per week
external - odd years only
assumed knowledge: degree in Agriculture
An advanced course providing a detailed knowledge of recent technological developments in the production of crops and pastures in southern Australia with particular reference to dryland farming and promoting the ability to conduct field experiments and interpret the results of agronomic research.
The syllabus includes the technology of cereal, grain legume and oilseed crop production, with particular emphasis on the effects of crop rotations, tillage systems and fertiliser usage on crop production; the selection and evaluation of herbage plants in relation to physical and biological factors in the environment; methods of pasture establishment, management, conservation and utilisation; recent advances in the control and management of weeds, pests and diseases of crops and pastures.
assessment: to be advised

4726 Crop Physiology III S
3 units semester 2 even years only
2 lectures, 4 hours practicals a week
prerequisite:  9339 Agricultural Botany or 1028 Principles of Sustainable Agriculture
The development of appropriate management techniques and adapted cultivars of crop and pasture plants requires knowledge of the environmental constraints to growth and yield and of how plants respond to environmental stresses. Crop physiology is a course that examines the interaction between crops in the field and their environment. Discussions will concentrate on the crop and pasture canopy as the unit of organisation and the course will analyse how productivity is affected by the field environment and the genetic and managerial means by which the adverse effects of environmental stress can be reduced and yield improved. The physiological basis for these practices will be stressed. Topics include solar radiation and crop production, water use by crops and water use efficiency, dry matter production and partitioning, cereal and legume physiology, nitrogen fixation, the use of physiological characteristics in plant breeding, and case studies of important grain crops.
assessment: to be advised

5264 Current Topics in Animal Diseases
3 units semester 1
2 lectures, 4 hours tutorials/practicals per week
prerequisite: degree in Biological Science
restriction: 8225 Animal Diseases and Control S
The course will consist of lectures, tutorials and practical classes covering symptoms, causes and effects of production limiting diseases of livestock in Mediterranean and arid zone climates. The primary focus will be diseases of sheep and cattle, pigs and poultry but other grazing species may be covered if there is a demand. Exotic animal diseases of concern to Australian agriculture will also be covered.
assessment: seminar 10%, assignment 20%, tutorial/ practical participation 20%, exam 50%

6207 Development of New Crops and Markets
6 units full year
Sustainable economic development demands that national and regional agricultural systems have the capacity to diversify. This requires individuals with
a multi-disciplinary understanding of the whole process to develop new crops and markets as well as those with specific knowledge of various industry and market structures along the process. This course begins with a market perspective of crop diversification. The influences of international influence, gene sources and potential new crops are covered. Seed development technology and developing new production systems, industry infrastructure, seeking processing and quality control are introduced in the second semester. Finally, new technology issues are studied. Students will also engage in focused projects on specific stages on the market development or production process, eg. Seed and propagule technology; post harvest handling, processing and quality control of field crops; and the role of biotechnology in new crop development.

assessment: literature reviews, associated assignments

8225 Diseases and Nutrition of Livestock S
3 units semester 2
6 hours per week
prerequisite: 5636 Nutrition Breeding and Health of Farm Animals
Diseases of farm animals caused by viral, bacterial, fungal and parasitic infections, and metabolic disturbances. Disease symptoms, the scientific basis of diagnosis and treatment. Interactions between nutrition and immune responses. Detection and treatment for deficiencies and toxicities. The metabolic roles of vitamins, minerals, amino acids, carbohydrates and fatty acids. Regulation of feed intake, diet selection and feed preference/palatability. Practical classes include a poultry nutrition trial, computer-based diet formulation, disease diagnosis techniques, case studies, and post-mortems of animals.

assessment: internal assessment - practicals, assignments, seminars 50%, theory exam 50%

6864 Distillation and Fortified Winemaking S
1.5 units second half of semester
2 lectures, 4 hours practicals per week for 7 weeks
prerequisite: 5896 Introductory Winemaking
Distillation principles and wine distillation practices. Production and maturation of Australian and overseas grape spirits for fortification and brandy production. Legal requirements. Sensory evaluation of fortifying and brandy spirits. Composition and production of Australian and overseas fortified and liqueur wine styles.

assessment: practical reports, assignments, written exam

3089 Ecology and Management of Freshwater Systems S
3 units semester 1
2 lectures, 4 hours laboratory & field practicals per week
assumed knowledge: 4642 Ecology EBII or 6254 Population Ecology
The course provides theoretical understanding and practical implications of the ecology and restoration of freshwater lakes, wetlands and streams. Practicals and a field camp will be conducted in order to provide skills for the monitoring, modelling and management of drinking water reservoirs, urban and floodplain wetlands.

The detailed schedule, lecture program and practical topics can be found at: http://www.waite.adelaide.edu.au/Soil_Water/Friedrich/FreshWater2000.html.

assessment: literature essay and to pass with 60%

6139 Ecology and Management of Rangelands S
3 units part semester 2, part winter vacation
2 weeks in July or September, including a 10-day field camp (Middleback Field Centre)
assumed knowledge: 6254 Population Ecology, 2184 Community Ecology, or equivalent
A course in ecology emphasising the study of interactions between grazing animals and the vegetation in arid areas, the principles involved and their application to management practices. Particular attention is paid to the impact of domestic, feral and native herbivores on the population dynamics of the dominant woody perennials, and the maintenance of their stabilising influence on the landscape. The bulk of the teaching is done at Middleback, a working sheep station set in the western myall woodlands on the southern margins of the north-west pastoral district of South Australia. The main focus on ecology of these arid woodlands and their highly productive saltbush-bluebush understorey, is taught in the context of the history of land use, subsequent research, the ensuing legislation, and its administration, with input from pastoralists and government officers where appropriate.

assessment: project reports 40%, theory exam 60%
7816 Environmental Chemistry III S
4 units  semester 1
3 lectures, 1 tutorial, 6 hours of practical work per week
prerequisite: 6878 Chemistry 1 or 7312 Chemistry IANR
restriction: 1699 Environmental Chemistry III (NR)
The course aims to establish a sound understanding of the chemical nature of the biosphere and the natural and human induced chemical variations in local and global environments. The atmospheric, terrestrial, riverine and oceanic chemical compositions and their interactions to produce climate and other environmental variations are examined. The natural chemical cycles of major environmental importance, such as those of carbon, nitrogen, oxygen-ozone phosphorus and sulfur, are examined. The chemical environmental impact of human activities such as farming, mining and other industries, will be examined in both general terms and through case studies. Analytical chemistry, spectroscopy and statistical analysis will be included as integral parts of the course. Teaching will be through lectures and laboratory classes which may include some field study.
assessmen: to be advised

1984 Environmental Toxicology S
3 units  summer semester
10 days during the summer vacation
prerequisite: 7151 Chemistry IHA or equivalent
The goals of this course are to provide students with an understanding of the fate, consequences and assessment of toxicants in environmental and biological systems. Classes of environmental toxicants discussed include pesticides, air and water pollutants, food-borne toxicants and heavy metals. The properties of toxic chemicals which influence their distribution and transformations and the action of environmental forces which affect toxicant breakdown and accumulation are discussed. Students are introduced to the principles of toxicology necessary for an understanding of the environmental consequences of toxicants.
assessmen: theory, practicals/assignments

5325 Fauna Management S
3 units  semester 2
3 lectures, 1 tutorial per week
assumed knowledge: 6254 Population Ecology, 4217 Plant and Animal Adaptations or equivalents
The course deals with the management of captive and wild populations. Topics covered include: the reasons for management; conflicts between man and wildlife; the philosophical rationale for maintaining captive collections; management of diseases; development of ecologically based management strategies for the purpose of conservation, commercial harvesting and pest control; management of captive collections; legal and administrative framework
assessment: theory 60%, practicals/assignments 40%

7194 Fruit and Nut Crops S
3 units  semester 2
odd years only
2 lectures, 4 hour practical per week
prerequisite: 6553 Biological Chemistry, 3673 Botany II or 8420 Chemistry and Introductory Biochemistry A
This course examines production aspects of common fruit and nut crops including limits to production and characteristic requirements for cultivars, management, irrigation, integrated pest and disease management, harvesting and marketing. Crops normally considered include citrus, vines, pome, berry, stone fruits, nut crops and the main tropical fruits. Students are normally required to participate in field visits to horticultural crop enterprises.
assessment: exam 60%, assignments 40%
5715  Fungal Biology S  
3 units  
semester 1  
Even years only  
2 lectures, 4 hours of practical/tutorial per week  
prerequisite: 3689 General Microbiology II (pre 1992: 5677 Agricultural Microbiology and Zoology) or equivalent approved by the Head of Department prior to enrolment.  
Aspects of the biology of fungi, including classification, biodiversity, ecology, physiology, genetics and molecular biology, will be covered. Emphasis will be placed on fungi that are pathogens of economically important crops. Fungi of importance in natural ecosystems, industry, biotechnology and medicine will also be considered.  
assessment: exam, fungal collection and practical books examined

5698  Genetic Technologies for Plant Improvement S  
3 units  
semester 2  
See Department of Plant Science for Syllabus entry

8583  GIS for Environmental Management S  
3 units  
summer semester  
10 days during the summer vacation  
The course deals with concepts and theory of geographic information systems and their use for environmental mapping, spatial modelling and analysis. Topics covered include the relationship of GIS models to real world perception and map representation, vector and raster systems; spatial modelling; translation of problems into GIS procedures; attribute manipulation and recoding, operations including arithmetic and Boolean overlay, reclassification, proximity and neighbourhood analyses; input of data to GIS; database structures; interpolation of surfaces from point and vector data; applications and case studies. Practical work uses PC-based software to teach basic skills in GIS data entry, analysis and output, emphasising a problem-solving approach through environmental and agricultural GIS case studies.  
assessment: practical exercises, case study and written exam

2746  Grape Industry, Practice, Policy and Communication S  
1.5 units  
second half of semester 1  
7 hours lectures/seminars/tastings per week  
prerequisite: Oenology students - 3113 Winemaking; Viticultural Science students - 2174 Viticultural Production A or 5153 Viticultural Production B  
The aims of the course are the development of a mature understanding of wine in society, the refinement of students abilities in written and spoken communication and the provision of a forum for the exchange of information between students and wine industry professionals. Invited speakers explore important issues including occupational health and safety, alcohol awareness and current practices in Australia and the world. Emphasis is placed on student participation in questions, discussions and sensory sessions.  
assessment: written assignments, seminar participation and presentation

4600  Horticultural Production S  
3 units  
semester 2  
even years only  
2 lectures, 4 hours practicals a week (practicals may be replaced by a tour)  
prerequisite: 7312 Chemistry 1ANR or 8637 Biochemistry and Plant Science A  
The application of scientific principles to the production of horticultural crops. The basis of decisions regarding the choice of the type of enterprise, including both open and protected cropping. Establishment of orchards, and the concept of alternative horticulture. Training and trellising methods, pruning and shaping, and control of pests and diseases. Root growth of crops, in relation to soil management, irrigation and drainage. Floral initiation and development, pollination requirements of crops, fruit set and growth, fruit thinning and biennial bearing. The course normally includes visits to horticultural enterprises.  
assessment: exam 70%, assignments 30%

4539  Horticultural Science S  
3 units  
semester 1  
2 lectures; 4 hours practicals or equivalent per week  
prerequisite: 7312 Chemistry 1ANR or 8420 Chemistry and Introductory Biochemistry A or equivalent
The scientific principles underlying horticultural production including classification of horticultural crops, aspects of plant growth in relation to environmental and management factors. The basis of horticultural plant growth cycles, organic nutrition, growth regulation and the accumulation of reserves. Methods of vegetative and sexual propagation, and the use of rootstocks, plant improvement and cultivar development. The course covers fruit, flower and vegetable crops of both temperate and tropical climates, and normally includes visits to horticultural enterprises.

assessment: exam 60%, assignments 40%

8632 Indigenous Australians and Environmental Management S
3 units semester 1
5 hours per week (includes vacation field camp)
quota will apply

Contemporary land and resource use and management by Aboriginal people, and its relationship to sustainable development. Theoretical frameworks drawing on development studies, emphasising concepts of empowerment and indigenous self determination, and participatory approaches to resource management. Exploration of the positive and negative impacts of Australian resource management on indigenous people. Aboriginal world views, social organisation and relationships to country. Skills in communicating and negotiating with Aboriginal people. Specific topics covered include Aboriginal ecologies; subsistence economies; land and sea rights including native title; co-management regimes; heritage management; the role of Aboriginal organisations in environmental management.

assessment: practicals/assignments

7032 Industry Experience (Oenology) S
4.5 units summer vacation, semester 1

10 weeks work experience
prerequisite: 3113 Winemaking

This course is largely practically orientated, based on work experience at a commercial winery during vintage. A specified level of proficiency in the following operations is expected: grape receival and weighbridge; crushing; draining and pressing; fermentation and postfermentation operations and quality control procedures. Furthermore, an understanding of the contribution of each of the specified unit operations to the overall winemaking process is required.

assessment: written diary and written report

8962 Insect Behaviour S
3 units semester 2
odd years only

2 lectures, 4 hours of project work a week
prerequisite: 4078 Biology and Diversity of Insects (Biology of Insects) or equivalent approved by Head of Department.

This course will take an evolutionary perspective on animal behaviour using insects as examples. Topics will include nervous coordinating mechanisms, genetics and development of behaviour, orientation and movement, behavioural ecology, mating and reproduction, communication, and social systems of insects.

assessment: written exam 60%, practicals, project, tutorials 40%

9351 Insect Pathology
1.5 units semester break (July)

assumed knowledge: B.Sc.(Biol.)/B.Ag.Sc.

This course is designed to introduce participants to the basic principles and techniques of insect pathology. Each day of the course will be devoted to background information and practical training of an entomopathogenic group. The topics to be covered in the lectures are: consideration of the principles of general insect pathology, biology of major entomopathogenic viruses, bacteria, nematodes, fungi and protozoans including pathology, diagnosis and epizootiology, application of insect pathogens in microbial control (including formulation and field application) and insect pathogens and biotechnology. The techniques taught are laboratory procedures of the diagnosis of major insect pathogens using morphological and biochemical approaches, bioassay and analysis of data using computer programs, and maintenance of insect cell cultures and their use in insect virology.

assessment: to be advised

9444 Integrated Pest Management S
3 units semester 1

2 lectures; four/five hour of practical per week

This course provides an introduction to the theory and practice of pest management. Topics considered are: the development, regulation and use of pesticides; strategies and tactics for managing pests (biological, cultural, genetic and chemical control); integrated pest management; economics of pest management; the diagnosis of disease; strategies and tactics for managing disease outbreaks; integrated weed management.
4257  Integrated Weed Management S
3 units  full year
Modules at students pace, with two day residency for practicals in first mid-semester break.
The impact of weeds on agricultural and natural ecosystems. Important characteristics of weed biology. Ecology of weeds. Methods of sampling and monitoring weed infestations. Biological, cultural and chemical methods for weed management. Integrating management techniques for weeds in a range of ecosystems, including: cropping enterprises, perennial pastures, national parks and recreation areas and horticultural systems.
assessment: five assignments during the year

2729  Intensive Livestock A
3 units  semester 1 or 2
external mode only
This course develops or extends the students knowledge of the application of the principles and practices of intensive livestock production. The program will involve an examination of the following topics: accommodation of livestock; nutrition; animal behaviour; reproduction and animal breeding; animal health; animal welfare; industry structure and economics of production; marketing; product evaluation; by-product utilisation; alternative forms of meat production.
assessment: exam 50%, assignments 50%

7912  International Business Environment S
3 units  semester 2
3 hours seminars/lectures per week
assumed knowledge: 4843 Agricultural Marketing Principles and Strategies; 9002 Agricultural Business Management; Economics for Agricultural Business or equivalent
This capstone course is designed to provide an overview of the international trade and financial environment within which business must function with particular emphasis on the broader Asian region, including the Middle East. It considers comparative advantage and the basis for international trade; factor movement across national boundaries, trade policies such as tariffs, quotas, VERs, administrative regulations, dumping, export subsidies and international commodity agreements; international and regional commercial policies; exchange rate determination; the balance of payments and its adjustment under alternative exchange rate regimes; exchange control; the international currency system; and exchange rate policies.
assessment: exam 50%, assignments 50%

4063  Introduction to Managerial and Financial Accounting S
3 units  semester 2
external only
This course provides an introduction to the nature and purpose of financial, managerial and cost accounting, with particular emphasis on agricultural businesses. Topics included are designed to demonstrate how the processes of measurement of financial events and the collection, sorting, classification, analysis and reporting of financial information are determined by the objectives of accounting, which is to provide financial information for the purpose of decision-making by interested parties. Coverage of the course includes preparation of financial statements; the use of financial ratio analysis to aid decision making; product costing, budgeting, and CVP Analysis.
assessment: exams 60%, assignments 40%

7968  Introductory Winemaking S
3 units  semester 2
2 lectures, 4 hours practicals a week
Introduction to the Australian wine industry. Chemistry and unit processes of winemaking. Production of table wines, including dry floral fruity white, full bodied white, sweet white, rose, medium and full bodied red and sparkling wines.
assessment: practical reports, written assignments, written exam

9515  Issues in Australian Agribusiness S
3 units  semester 2
2 lectures, 2 hours tutorials per week
prerequisite: 4932 Principles of Food and Wine Marketing
This course focuses on current issues relating to the food and fibre business in Australia. Of particular importance are interrelationships between the farm firm and the macro environment. Topics will include the role and functions of agricultural producers, production and consumption decisions, institutions affecting decision-making in agriculture and the relevance of the political economy for changes in business.
environment facing Australian agricultural producers.

**assessment:** examinations 50%, assignments 50%

**2820 Issues in Wine Business S**
3 units semester 1
See Department of Horticulture, Viticulture and Oenology for Syllabus entry

**6949 Legal Issues in Wine Marketing S**
3 units semester 1 external only

The aim of this courses is to acquaint students with the legal issues relating to marketing in general and wine marketing in particular. Over the last two decades there have been very significant legislative changes designed to realign the common law rules in this area to suit the evolving needs of business and consumers. The wine aspects covered will relate to laws governing grades and standards, health, rights and obligations of buyers and suppliers of goods and services, etc.

**assessment:** exam, assignments

**1788 Managing Agricultural Development**
3 units semester 1
3 hour seminar per week

**assumed knowledge:** degree in Agriculture or equivalent

The course aims to provide students with an analytical and structural framework for management of agricultural development in developing countries. It deals with functions, structures and organisation in managing agricultural development. Various types of management, for example financial, information and marketing, are studied which link and involve the production and marketing programs. Applications will be studied, eg credit and input supply, land reform, extension and research. Other aspects include: policy making and agricultural development planning, management in government and nongovernment organisations, and participation at the community level.

**assessment:** as arranged by supervisor/lecturer

**4811 Measurement of Plant and Soil Water**
3 units semester 1

Agronomic research uses a wide range of techniques to measure the water status in plants and soil. This course leads the student through an integrated study of the theory and practical measurement of transpiration, soil water, groundwater and agrometeorology. The student will prepare focussed reviews of each of these sub-topics and learn the techniques for measurement of plant and soil water, groundwater and climate. The student will also be instructed in the general use of data loggers and specific measurement software.

**assessment:** literature reviews, associated assignments

**9110 Mineral Nutrition of Plants S**
3 units semester 1
2 lectures, 4 hours practicals a week

**prerequisite:** one of 1692 Botany IIA or 9339 Agricultural Botany or 9529 Biology A, and one of 7312 Chemistry 1ANR or 6878 Chemistry I or 8420 Chemistry and Introductory Biochemistry A

An advanced course which takes its brief from the acute deficiency in minerals of most South Australian soils, and the pre-eminent role of nutrition in successful agricultural production in this State. Topics are discussed in a context of both agricultural and horticultural industries, and include factors affecting nutrient acquisition by roots, diagnosis and correction of macro and micronutrient problems, fertiliser strategies, nutritional effects on produce quality, including nutritional quality, nutrition and disease resistance, genetic control of adaptation to nutrient limitations in soils, the role of symbiotic dinitrogen fixation, nutritional aspects of nitrogen fixation. A practical component supplements the lectures by providing hands on experience of the important issues.

**assessment:** exam 60%, practical reports 30%, reviews, essays 10%

**9503 Molecular Markers in Plant Breeding**
1.5 units one week in semester 1
40 hours

**assumed knowledge:** degree in Agricultural Science or Science

The aim of this course is to teach the basic principles of recombinant DNA technology with an emphasis on the application of these techniques to plant breeding. The following techniques will be taught: DNA isolation from plant tissue; restriction
digestion and gel polyacrylamide and agarose electrophoresis; cloning DNA in plasmid vectors; plasmid DNA isolation; Polymerase Chain Reaction; Southern hybridisation. Lectures will cover basic aspects of DNA structure and the organisation of the plant genome, the application of molecular markers to breeding programs and various related recombinant DNA techniques.

**assessment:** work book assessment

**6627 Molecular Tools for Diagnosis of Plant Pathogens**

1.5 units beginning of semester 1
35 hours comprising lectures and practicals over 5 days
Quota of 20

**prerequisite:** degree in Science, Agricultural Science or Environmental Science or equivalent. Some previous experience with techniques in molecular biology would be an advantage.

Molecular methods for the sensitive and rapid diagnosis of fungal, bacterial and viral pathogens, using both immunological and nucleic acid probing techniques appropriate for use by plant pathologists.

**assessment:** to be advised

**9302 Olive Production and Marketing S**

3 units mid-year break

This course examines production aspects of olive oil and pickling fruit. Characteristic requirements regarding cultivar selection, climate, soils and location; growing practices plus management of irrigation, pest and diseases; development budget financial planning; harvesting and oil quality assessment; marketing of olives including market evaluation, market plan development in product, pricing, distribution and marketplace decisions. Students are required to participate in field visits to growing/marketing enterprises as arranged.

**assessment:** exams 70%, practical reports 30%

**5867 Ornamental Horticulture S**

3 units semester 2

2 lectures, 4 hour practical per week

**prerequisite:** 9339 Agricultural Botany or 3673 Botany II or 7020 Horticultural Systems

The nursery industry, cut flower and pot plant production and amenity use of plants. Principles of production and management of ornamental crops including characteristic requirements for propagation, breeding, management, irrigation, hydroponics, pest and disease control, harvesting and marketing will be considered for major crops including rose, carnation and Australian native plants. The course will normally include visits to appropriate horticultural enterprises.

**assessment:** exam 50%, assignments 50%

**3569 Pathogen-Plant Interactions S**

3 units semester 1
2 lectures, four hour practical per week

**prerequisite:** 3689 General Microbiology II (pre 1992: 5677 Agricultural Microbiology and Zoology) or equivalent approved by the Head of Department prior to enrolment.

This course focuses on the biology of plant pathogenic fungi, nematodes, bacteria and viruses with emphasis on interactions with hosts, the nature of disease and diagnosis. It provides biological information required for devising disease control strategies and complements 9028 Plant Disease and the Environment S. Physiological, biochemical, genetic and molecular properties of pathogens will be discussed. Aspects of plant pathogen systems will include host physiology, disease development, resistance and molecular plant-microbe interactions.

**assessment:** practical reports 25% and written exam 75%

**8114 Physiology of Farm Animals S**

3 units semester 2

6 hours per week

**assumed knowledge:** B.Ag. students - 9520 Biology A; 8420 Chemistry and Introductory Biochemistry A; B.Ag.Sc. students - 2448 Agricultural Zoology

This course deals with animal physiology: the tissues; physiology of the major systems including skeletal and muscular, circulatory, respiratory, digestive, excretory, nervous, endocrine, reproductive, environmental physiology.

**assessment:** to be advised

**1578 Plant Breeding S**

3 units semester 2

2 lectures, 4 hours of practicals a week

**prerequisite:** 4507 Principles of Breeding

**restriction:** 8593 Advanced Plant Breeding

This course explores core methodologies for plant breeding, drawing on the latest scientific and
biometric advances. Theory of and experience with
the primary plant breeding objectives of quality
and resistance to diseases and pests will be
emphasised, as will understanding of the use of
genetic maps and establishment of a database. Site
visits will provide additional dimension to the
understanding of a breeding program.

assessment: practicals 25%, mid-semester exam
10%, essay 15%, final exam 50%

9028 Plant Disease and the Environment S
3 units semester 2
2 lectures, four hour practical per week
prerequisite: 3689 General Microbiology II (pre
1992: 5677 Agricultural Microbiology and Zoology)
or equivalent approved by the Head of Department
prior to enrolment.

An environmentally responsible approach to the
control of plant disease, based on knowledge of
the factors which influence disease development
and the survival and dispersal of pathogens. Emphasis
will be placed on the pathogen - host
plant - vector - environment interaction, the nature
of disease epidemics, biological control including
cultural practices, genetic and induced host plant
resistance and the use of antagonistic
microorganisms.

assessment: final exam, practical books and
assignments examined

2724 Plant Nutrition for Productive Systems
1.5 units semester 2 break
10 lectures, 5 tutorials, 5 hour field trip, 20 hours
laboratory, glasshouse, library work - over one
week
restriction: 3434 Mineral Nutrition of Plants
assumed knowledge: degree/diploma in Science
or Agricultural Science

Topics considered are: symptomatology, diagnosis
and prognosis, correction and fertiliser strategies,
interactions between nutrients, interactions with
other factors in production such as, genotype,
disease, herbicide, climate. Contemporary issues:
pollution, profitability, role of plant nutrition in
sustainable systems for nutrition of humans and
animals. Experimental methodology.

assessment: written work, short presentation

3010 Plant Tissue Culture
1.5 units semester break (July)
8 hours a day for 5 days
prerequisite: 3689 General Microbiology II (pre
1992: 5677 Agricultural Microbiology and Zoology)

This course is designed to introduce participants to
the basic principles and techniques of tissue
culture and plant transformation. Each day of the
course regular periods of time will be devoted to
background information, practical training followed
by discussion of results and the application of
techniques. The topics covered will be: basic
principles, media composition, selection of growth
regulators, explant tissue; in vitro propagation of
horticultural plants; shoot multiplication (direct
organogenesis); mass propagation of plants from
callus (indirect organogenesis); out planting;
hardening and acclimatisation to soil;
establishment of a cell suspension culture and
its maintenance and applications; plant
transformation, using Agrobacterium and direct
DNA delivery techniques, its application in
functional analysis of genes and genetic
engineering of crop plants.

assessment: practical reports 60%, written
assignment 40%

1986 Postharvest Horticulture S
3 units semester 2 odd years only
2 lectures, 4 hours practicals or equivalent per
week
prerequisite: 9339 Agricultural Botany or 3673
Botany II or 7020 Horticultural Systems

Interaction of the production and postharvest
phases of horticulture. The physiological and
morphological basis for successful postharvest
handling of fruit and vegetables including fruit
maturity, ripening and metabolism. Response of
horticultural crops to temperature, water, gas and
injury stress in the postharvest phase. Postharvest
handling technology based on these responses.
Processing and marketing of harvested fruit and
vegetables. The course normally includes visits to
horticultural enterprises.

assessment: exam 60%, assignments 40%

8497 Principles of Breeding S
3 units semester 1
2 lectures, 4 hours of practicals a week
prerequisite: 5178 Basic Genetics or 4863 Genetics II
restriction: 5501 Principles of Plant Breeding
The process of deliberate selection and improvement of animals and plants is integral to the development of civilisation. This course will introduce the fundamental concepts of breeding: genetic diversity and modes of inheritance; strategies for setting objectives and maximising selection and improvement of key traits; breeding methodologies for self or cross pollinated plants and animals, and perennials.

assessment: practicals 25%, essay 25%, exam 50%

**4843 Principles of Food and Wine Marketing S**

3 units  
2 lectures, 1 tutorial per week

The aim of this course is to give wine marketing students an understanding of the role of the marketing manager through an introduction to the basic concepts and practices in marketing with particular emphasis on wine and food products. The topics covered include the marketing environment and marketing strategy formulation. There will be particular examination of product, price, place and promotion strategies.

assessment: exam 50%, assignments, tutorials 50%

**9105 Problems in Agricultural Business A**

3 units  
Multi-modal

Contact arranged with Head of Department

This course will offer the student the opportunity to investigate a problem in the agricultural business area. The problem will relate to the students study program and the teaching and research interests of staff and visiting academics.

assessment: written assignments and oral presentations

**9281 Problems in Agricultural Business B**

3 units  
Multi-modal

Contact arranged with Head of Department

This course will offer the student the opportunity to investigate a problem in the agricultural business area. The problem will relate to the students study program and the teaching and research interests of staff and visiting academics.

assessment: written assignments and oral presentations

**6495 Research Methodology**

4 units  
2 hours per week

prerequisite: admission to B.App.Sc.(Hons) or to a postgraduate program offered by the Faculty.

This course introduces students to the research process. It covers topics such as priority-setting and planning; establishing and designing experiments; data collection and management; statistical analysis; grant application; scientific writing and communication of research results.

assessment: exam 45%, assignments 30%, tutorial exercises 15%, seminar 10%

**7046 Research Methodology and Experimentation**

3 units  
3 lectures, 3 hour tutorial per week or 9-5 Monday to Friday over two weeks inclusive

prerequisite: degree in Agricultural Science or Science

assumed knowledge: first program in Biometry or Introductory Statistics

The Statistical Package GENSTAT 5 for Windows is introduced and utilised extensively throughout the course. Revision of basic regression and analysis of variance methodology. A selection of topics from the following: extension of regression (both linear and non-linear); design and analysis of complicated multi-factor experiments; Latin squares; analysis of covariance; generalised linear models (including probit analysis and logistic regression); multiple comparisons.

As part of the course a selection of case studies will be discussed to illustrate the important steps involved during a research program (ie. development of aims, setting of hypotheses, design of the experiment, collection of data, analysis and interpretation of results).

assessment: written assignment, final written exam

**6946 Research Methodology and Methods**

3 units  
3 hours seminars per week

This course familiarises the student with: the methodology of scientific research in agricultural business, ie. the system of rules and procedures on which agricultural business research is based and against which claims for knowledge are appraised; and the methods or techniques commonly used in agricultural business research, including
quantitative techniques and computer techniques. Coverage of techniques emphasise the types of problems each technique is suitable for, and the strength and limitations of each technique. The first half of the course concentrate on methodology, the second half on methods. Concepts required for writing a research proposal are presented in the first half of the semester. The methods are presented during the second half of the semester. During the second half of the semester, a student completes and successively refines his/her proposal to be presented at the end of the semester.

**assessment:** written assignments, seminar presentations

6043 Research Proposal
3 units semesters 1 or 2
The proposal will include a review of the relevant literature on a research topic, a justification of the proposal in terms of its academic and, if appropriate, industry value and a summary of the methodology which would be used in the investigation. The candidate will also present a seminar as part of the research proposal.
**assessment:** written report, seminar as arranged by Department

8422 Retail Selling and Practice S
3 units semester 2
**prerequisite:** 4932 Principles of Food and Wine Marketing
This course focuses on the principles of establishing and managing a retail concern. It will expose the student to the theoretical and practical aspects of selling and retail practices. Some of the areas this course will cover include: distribution and information systems, selling and marketing technology and trends, retail and wholesale operations, negotiation skills. The course can involve some fieldwork, guest lectures and practical case studies.
**assessment:** to be advised

1058 Rural Sociology
4 units full year
3 hours per week
This course provides an introduction to sociology and the sociology of agriculture and natural resources. Topics include classical sociological theories, sociology of agriculture, sociology of natural resources, implications for Australian farmers and research methods and their application and interpretation.
**assessment:** assignment

2665 Seminars: Agricultural and Natural Resource Sciences
1 unit semester 1 or 2
Tutorials/discussions with supervisor by arrangement, or series of formal seminars/discussions, one per fortnight
**prerequisite:** appropriate degree in Science, Agricultural Science, Environmental Science or Agricultural Business
Each student will be required: *either* to prepare a substantial seminar paper (3000-5000 words) on a specific topic, present the paper to a selected audience and lead/contribute to the following discussion, the topic for the paper being related to but not covered by other courses taken by the student; or *prepare* assignments on a series of formal seminars attended by the student, on current research topics.
**assessment:** written seminar and/or assignment 70%, oral seminar presentation, discussion 30%

2491 Sensory Evaluation of Foods S
3 units semester 2
2 lectures, 1 practical per week
The role of sensory evaluation in marketing of food and beverages, physiological and psychological factors affecting sensory perception, relationships between sensory properties and product acceptability, measurement of sensory perception, design and conduct of sensory evaluation experiments, difference testing, preference testing, panel selection procedures, taste and aroma profiling, texture profiling, shelf life determination, sensory quality control, product development and optimisation, strategies for developing sensory evaluation programs. A range of food and beverage products will be assessed using the techniques and principles present in the lecture program.
**assessment:** to be advised

6694 Sensory Studies S
3 units semester 2
**contact hours to be advised**
Sensory evaluation and its relationship to the winemaking process, physiology of olfaction, taste and the oral mucosa, salivary composition,
perception of sweetness, acidity, bitterness and astringency, sensory measurement theory, psychophysics, aroma and taste interactions, threshold measurement, psychological and physiological factors affecting perception, adaptation, elements of good sensory practice including data collection and statistical analysis. The practical program will be used to illustrate concepts presented in lectures and to develop basic skills in sensory assessment of wines leading to the interpretation of wine characteristics in terms of wine style and quality.

assessment: practical reports, tasting exam written exam

2793 Social Psychology
4 units full year
3 hours per week
Introductory social psychology on educational objectives in learning programs, perception, attitudes, attitude theory and attitude measurement, balanced theories, motivation, needs, wants, goals; groups, group dynamics; principles of educational learning theories, classical conditioning, operant conditioning, Gestalt psychology, cognitive theories, social learning, personality and motivational theories applied to learning, self concept, defence mechanisms, non-Freudian personality and learning theories, elements of educational psychology, thinking methods and intelligence; adult education, agricultural education; human transactions, conflict resolutions; expectancy, role theory, social psychology of organisations, formal organisations, psychological implications of technological development, application of social psychology to working in developing countries.

assessment: to be advised

3065 Soil Conservation G
3 units full year
External only - residential school by negotiation

assumed knowledge: good basic knowledge of soils

Historical aspects of human activities on soil erosion, mechanics of wind and water erosion with emphasis on the theoretical aspects of soil structure, rainfall. Management of water repellent sands, soil acidity, sodicity, salinity and biology. Introduction to aerial photographic interpretation with respect to erosion features, classification and production of erosion maps. The use of remote sensing imagery for broad scale erosion mapping. Laboratory techniques for soil description.

Introduction to the sociological and legal constraints involved in conservation procedures.

assessment: written assignments

2282 Soil Ecology S
3 units semester 1
2 lectures, 4 hours practical work or equivalent per week

prerequisite: 3174 Biology I and one of 3689 Agricultural Microbiology II or 5681 Soil Resources II or 3283 Soils or an acceptable equivalent

The course provides an appreciation of the interactions among plants, microorganisms and animals in the soil. The roles played by organisms in the decomposition of organic materials and availability of nutrients. The biology of the rhizosphere and its relations with the chemical and physical properties of soil mycorrhizas and their effects on plant productivity and plant communities. Soil food webs and transfer of contaminates from soil through food chains.

Practical work will consist of laboratory exercises and other assignments related to the above topics.

assessment: exam, essay, practical work. other assignments

5026 Soil Fertility S
3 units semester 2
2 lectures, 4 hours practical work (or equiv.) a week

prerequisite: 5681 Soil Resources or a credit in 3283 Soils, or an acceptable equivalent

The course provides an understanding of processes in the soil which influence the availability to plants of nutrients in soil and in added fertilisers. The occurrence and reactions of nutrient elements in the soil. Effects of acidity, alkalinity and redox potential. Ion movement in soils and the relationship between root growth and nutrient availability. Principles of fertiliser application; reactions of fertilisers with the soil and the efficiency of fertiliser use by plants. Chemical contamination of soils, remediation.

Practical work will consist of laboratory exercises related to the above topics.

assessment: exam, essay, practical, other assignments
4366 Soil Management and Conservation S
3 units semester 1 Waite
2 lectures, 4 hours practical work or equivalent per week
prerequisite: 5681 Soil Resources or 3283 Soils or an acceptable equivalent
This course covers topics important to students of agriculture, horticulture, environmental science and natural resource management. Degradative processes which pose the greatest threats to the soil resources of Australia are examined and their avoidance, management and amelioration are discussed. These processes include: erosion of soil by water and wind, water repellence, irrigation and dryland salinity, induced soil acidity, soil structure decline and sodicity. Other issues addressed are soil conservation legislation and land capability. Practical work will consist of laboratory exercises, field excursions and other exercises related to the above topics.
assessment: exam, practical reports, other assignments

8898 Soil Water Management S
3 units mid-year break
10 day series of lectures, tutorials, laboratory/field practical exercises; field trips during July inter-semester break. (maximum enrolment 20 students)
prerequisite: 5681 Soil Resources or an acceptable equivalent
This course covers the theory and practice of measuring and managing soil water using commercially available technology. Topics include soil water content and potential, water availability to plants, water movement in unsaturated and saturated soils, soil structure and salt-affected soils. Computers will be used to model infiltration, storage and movement of soil water, and to solve problems. Practical classes and field trips will demonstrate important techniques in soil survey for managing soil water in dryland and irrigated situations.
assessment: exam, tutorial and practical reports.

5107 Spatial Data Modelling and Analysis
3 units semester 1
20 hours lectures, 30 hours practicals, 20 hours to be advised
prerequisite: Introduction to Spatial Information Systems
Over the last 10 years Spatial Information Systems have developed to handle the increasingly large amounts of digital spatial data available. Spatial analytical techniques derived from Geography and Remote Sensing are used to search, and refine these large amounts of data to produce timely, relevant information. This module provides a broad introduction to both the vector and raster analytical methods commonly in used within Spatial Information Systems.
Raster based Analysis - advanced computer enhancements of raster data; radiometric rectification and spectral transformations of remotely sensed raster data; classification of Raster data; classification by unsupervised techniques; supervised classification using spectral techniques; supervised classification using non-spectral decision Rules; surface analysis of Raster Data. Vector based Analysis - point methods, clustering techniques’ line methods, network analysis area methods, overlay analysis. Analysis of Error.
assessment: essay 20%, project 35%, exam 45%

3088 Spatial Data Visualisation
3 units semester 1
20 hours lectures, 30 hours practicals, 20 hours to be advised
prerequisite: Introduction to Spatial Information Systems
Modern visualisation techniques are increasingly used to explore and analyse spatial data as well as their more traditional role of distributing spatial information. The initial aim of the module is to provide students with a high level of cartographical knowledge and the computing skills to produce high quality graphical and cartographical output form SIS. This knowledge can then be used within an analytical framework to explore, summarise and analyse large spatial databases (e.g. 1996 Census). Topics include - cartographic communication and cartographic design; cartographic and graphical methods for spatial analysis; graphical interface design; integration Internet and GIS technologies; distribution spatial information.
assessment: essay 20%, project 35%, exam 45%

8588 Spatial Information Systems
1.5 units part semester 2
1 week intensive course
prerequisite: appropriate degree in Science, Agricultural Science or Environmental Science
This course deals with the use of global positioning units, analysis of satellite imagery and the manipulation of this data within a geographic information base. Use of these systems for the production of land evaluation criteria is discussed.

**assessment:** to be advised

### 4477 Stabilisation and Clarification S

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**prerequisite:** 5896 Introductory Winemaking

Principles and practices of wine clarification and stabilisation. Protein, tartrate, metal, colour oxidative, and microbiological stability and stability testing of wine. Wine clarification by means of settling, centrifugation, filtration and fining.

**assessment:** practicals, reports, written assignments, exam

### 9022 Strategic Business Management S

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See Department of Horticulture, Viticulture and Oenology for Syllabus entry

### 5684 Table and Drying Grape Production S

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**prerequisite:** 1242 Viticultural Science or 5882 Horticultural Science

Table grape production: varieties; genetic improvement; vineyard design; techniques to improve table grape quality particularly crop load adjustment and growth regulators; harvesting and handling including maturity standards, harvest methods, packing, postharvest handling, marketing.

Dried grape production: climatic requirements, principles of grape drying; treatments to enhance drying; dried grape product types; preparation for harvest; harvesting and handling of fresh grapes for drying and trellis dried fruit; finish drying and dehydration; classing, processing and marketing.

**assessment:** assignments 30%, written exam 70%

### 8381 The Global Market for Wine

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2 hours lectures, 1 tutorial per week

**prerequisite:** 7376 Economics for Agricultural Business; 7803 Marketing Management or 4843 Agricultural Marketing Principles and Strategies; 7168 Financial Reporting and Analysis or 4063 Accounting for Agricultural Business; or equivalent.

This course is designed to provide students with insights into the structure, mechanisms/regulatory agencies, and complexities of the global wine market and in particular to help them to understand its interfacing with the application of consumer behaviour and grounded marketing theory, practice and marketing strategies. It will help students understand the multi-dimensionality, barriers to entry and general complexities of the major wine consuming markets.

**assessment:** to be advised

### 9558 Theories of Social Change for Developing Countries

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In order to appreciate contemporary theories of rural and agricultural change in the third world, the background of these theories in general social theories will be examined. The logic and assumptions of contemporary theories of social change specifically related to ‘development’ can then more easily be identified. Practical and policy consequences flowing from these approaches can also be more easily analysed. With this background substantive issues in development can be considered, such as colonialism and its legacy, gender, power and inequality together with issues of ecological damage and sustainability.

### 8409 Topics in Agricultural Business A

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**restriction:** approval of Head of Department and Agricultural Business Postgraduate Coursework Adviser

The course will offer the opportunity to the student to cover a range of topics in Agricultural Business as it relates to the students study program and the teaching and research interests of staff and visiting academics.

**assessment:** written assignments and oral presentations
6492  Topics in Agricultural Business B
3 units  semester 2
3 hours per week
restriction: approval of Head of Department and Agricultural Business Postgraduate Coursework Adviser
The course will offer the opportunity to the student to cover a range of topics in Agricultural Business as it relates to the students study program and the teaching and research interests of staff and visiting academics.
assessment: written assignments and oral presentations

4945  Topics in Animal Science
3 units  semester 1 or 2
26 lectures or equivalent; associated practical work
assumed knowledge: degree in Agricultural Science or Science
The course will offer the opportunity to cover a range of topics on Animal Science related to the teaching and research interests of staff. Candidates should consult the Head of Department for topics currently available.
assessment: to be advised

6826  Topics in Crop Protection
3 units  semester 2
26 lectures or equivalent (comprising essays, tutorials and seminars); associated practical work
prerequisite: degree in Science, Environmental Science, Agriculture or equivalent
The course will review some of the following topics: population dynamics and seasonal occurrence of insect, plant pathogen and weed pests; biology of pests; quantitative methods of sampling, decision making and damage assessment; chemical control; plant resistance and biotechnology; biological control; quarantine procedures; integration and implementation of crop protection practices. Candidates should consult the Head of Department for topics currently available.
assessment: to be advised

2379  Topics in Soil and Water
3 units  semester 1 or 2
24 lectures or equivalent; associated practical work
prerequisite: appropriate degree in Science, Agricultural Science or Environmental Science
This course may be offered from time to time as a means of examining current topics in soil science, soil management and land evaluation that are related to the research and teaching interests of staff and visiting scientists. Candidates should consult the Head of the Department for topics currently available.
assessment: to be advised

9822  Topics in Soil and Water A
3 units  full year
24 lectures or equivalent; associated practical work
prerequisite: appropriate degree in Science, Agricultural Science or Environmental Science
This course may be offered from time to time as a means of examining current topics in soil science, soil management and land evaluation that are related to the research and teaching interests of staff and visiting scientists. Candidates should consult the Head of the Department for topics currently available.
assessment: to be advised

9508  Topics in Soil and Water B
1.5 units  semester 1 or 2
12 lectures or equivalent and associated practical work. May be presented as intensive short course
prerequisite: appropriate degree in Science, Agricultural Science, environmental Science or equivalent
This course may be offered from time to time as a means of examining current topics in soil science, soil management and land evaluation that are related to the research interests of staff and visiting scientists. Candidates should consult the Head of the Department for topics currently available.

5225  Vegetable Crops S
3 units  semester 1
odd years only
2 lectures, 4 hour practical per week
prerequisite: 9339 Agricultural Botany or 3673 Botany II
Vegetable crops are categorised according to commercially important families. Topics include primary and secondary centres of diversification, history of domestication, important genes for quality and breeding, Australian production, properties of new varieties. Practicals and visits to horticultural enterprises are included. Species identification, propagation, growing conditions, genetic improvement, properties of new varieties
and storage. Practicals and visits to horticultural enterprises are included.

**assessment:** exam 75%, assignments 25%

### 5180 Vineyard and Winery Operations IS

3 units  
semester 2  
External only. 5-day residential school

**prerequisite:** 8901 Introductory Grape and Wine Knowledge

Climatic requirements for viticulture, vineyard design, establishment and operations including pruning, irrigation, canopy management, soil management and pest and disease management. Characteristics of major white wine grape varieties. Principles and practices of white and sparkling wine production. Major white wine styles of the world. Oak in winemaking, oak production and cooperage.

Practical sessions relate to lecture topics and will include tasting sessions.

**assessment:** mid-semester and end-of-semester written exams, practical tests

### 9607 Vineyard and Winery Operations IIS

3 units  
semester 1  
5-day residential school

**prerequisite:** 4605 Vineyard and Winery Operations I

Characteristics of major red wine grape varieties; principles and practices of red wine production; major red wine styles of the world; techniques for grapevine improvement and biotechnology, as applied to the wine industry, wine packaging, bottling operations and quality standards; sensory science. Practical sessions relate to lecture topics and will include tasting sessions.

**assessment:** mid-semester and end-of-semester written exams, practical tests and reports

### 9630 Viticultural Engineering and Operations S

3 units  
semester 2  
6 hours per week

**prerequisite:** 1242 Viticultural Science and 3066 Irrigation Science

Tractor performance and safety, engine characteristics, power transmission, traction, hydraulics. Trellis design and performance. Water storage performance. Principles and practices of vineyard operations including tractor and machinery operation, spray equipment calibration and spray application. Pruning, training, trellis erection and repair, propagation and other activities. Students are required to work in the campus vineyards. This course includes visits to commercial vineyards.

**assessment:** assignments, tutorials, practicals, written exams

### 7536 Viticultural Production A S

3 units  
semester 2  
even years only

3 lectures, three hour practical per week - some lectures are replaced by tutorials

**prerequisite:** 1242 Viticultural Science

Principles behind the establishment of a viticultural enterprise comprising site selection, choice of planting material and the design and establishment of the vineyard. Trellising design, pruning principles, practices and mechanisation, and crop harvesting. The relationship between production aspects and the physiology of the vine including phenology and shoot development, effect of node position on fruitfulness, interaction with climate response to pruning, trellising and canopy management. The course includes visits to commercial vineyards.

**assessment:** exam, assignments, practical reports

### 2195 Viticultural Production B S

3 units  
semester 2  
odd years only

3 lectures, three hour practical per week - some lectures are replaced by tutorials

**prerequisite:** 1242 Viticultural Science

The management aspects of the vineyard including pests and diseases of grapevines, their recognition and control, and principles of plant protection, particularly spray application technology. Soil management comprising weed control, plant nutrition and tissue analysis. The response of the grapevine to irrigation and salinity including plant and soil moisture determination and irrigation scheduling. Use of growth regulators and propagation. Application of biotechnology to Viticulture. The course includes visits to commercial vineyards and service companies.

**assessment:** assignments, exam, practical report
7104 Viticultural Science S
3 units semester 1
2 lectures per week, 4 hour practical sessions; practical classes are held at the Waite Campus for a full week in the week prior to start of semester 1 and during the semester
prerequisite: 3174 Biology I
Growth and development of the grapevine with particular emphasis on flowering and fruiting. Floral initiation in relation to environmental control and vegetative growth. Fruit development and ripening, and chemical composition of the grape berry. The morphological and agronomic characteristics of fruiting varieties and rootstocks and their relationship with end-use. Vineyard sampling and yield estimation.
assessment: written exam, practical exam, practical reports, assignments.

2001 Wine and Food Tourism and Festivals
3 units semester 2
2 hours lectures, 1 tutorial per week
The course will explore the basics of wine and food festivals as cultural phenomena in the broad context of tourism and hospitality. Specific areas of focus will be cellar-door wine promoting and advertising, event management and sponsorship, and working with travel and tourism agents. The basics of tourism, structure and direction of the tourism industry and specific application of these concepts to the winery.
assessment: to be advised

6319 Wine and Society S
3 units semester 1
2 hours lectures, 1 tutorial per week
The student will be exposed to studies that cover the history and future of the Australian Wine Grape growing industry, this is compared with and presented in the wider context of European and other New World wine industries. The origins of grape and wine production, the religious and cultural symbolism of wine, the development of an international wine trade in the 20th century and the role of fashion in those markets, and examination of wine and other forms of alcohol and health issues. Alcohol and wine consumption habits and attitudes including societal influences on human behaviour; education an awareness programs, communication of wine information, introduction to wine, food, licensing, labelling and product laws and standards and distribution.
assessment to be advised

7114 Wine Business Management
3 units semester 2
2 hours lectures, 1 tutorial per week
prerequisite: 7376 Economics for Agricultural Business; 7803 Marketing Management or 4843 Agricultural Marketing Principles and Strategies; 7168 Financial Reporting and Analysis or 4063 Accounting for Agricultural Business; or equivalent
The course focuses on several key areas of wine business management and will help the student to understand how a wine business (winery) works, where is costs are, and its margins. Management within the wine industry is unique compared to many other businesses but the focus in the course is on the key areas of cost and management accounting, brand building, and marketing strategy as skills necessary to management the wine business into the next century. Students should finish the course with a much deeper understanding of how a wine business operates.
assessment: to be advised

1005 Winemaking S
3 units semester 1
6 hours per week (or equivalent) commencing second week of February
prerequisite: 5896 Introductory Winemaking.
corequisite: 4880 Cellar Management, 2580 Stabilisation and Clarification
Major table winemaking projects will be utilised to integrate wine technology with practical strategies to achieve wine quality targets.
assessment: written exam, wine reports

9701 Wine Packaging and Quality Management S
3 units semester 2
2 lectures, 4 hours practicals/field trips per week
prerequisite: 2580 Stabilisation and Clarification
Science and technology of bottling and packaging systems including chemical and physical properties of packaging materials, principles of filling machinery, design and process control of wine filling/packaging systems.
Wine and food laws and commercial forces as quality standards. Taints and residues in grapes and wine as quality issues. Approaches and systems of quality management using the wine industry as a focus, including the development of corporate quality cultures, standards and specifications, measurement for quality assurance, process and performance analysis methods,
quality accreditation. Visits will be made to commercial plants.

**assessment:** practicals, reports, written assignments, written exams

**5059  Winery Engineering III S**
3 units  
2 lectures, 1 tutorial, 3 hours practical/project exercises per week

**prerequisite:** 9100 Engineering Science or 3810 Engineering Physics

Process calculations (mass and energy balances), process utilities (refrigeration, process heating and cooling), steam systems, electrical power systems, heat transfer and heat exchangers, must, juice and wine transfer methods, centrifugation and filtration, process control and instrumentation.

**assessment:** final exam, tutorials, project work, laboratory reports.

**Research Projects**

**4205  Project A (ANR)**

**7215  Project A (ANR) (Mid-year)**
3 units  
Contact with supervisor by arrangement

**assumed knowledge:** students may be required to take certain courses in preparation for the project

Projects may comprise some or all of literature reviews, field trials, laboratory experiments, seminars and written assignments. Topics for projects may be chosen from any of the courses included in the program.

**5215  Project A (ANR) (One Semester)**
3 units  
Contact with supervisor by arrangement

**assumed knowledge:** students may be required to take certain courses in preparation for the project

Projects may comprise some or all of literature reviews, field trials, laboratory experiments, seminars and written assignments. Topics for projects may be chosen from any of the courses included in the program.

**7949  Project B (ANR)**

**6095  Project B (ANR) (Mid-year)**
4 units  
Contact with supervisor by arrangement

**assumed knowledge:** students may be required to take certain courses in preparation for the project

Projects may comprise some or all of literature reviews, field trials, laboratory experiments, seminars and written assignments. Topics for projects may be chosen from any of the courses included in the program.

**9502  Project B (ANR) (One Semester)**
4 units  
Contact with supervisor by arrangement

**assumed knowledge:** students may be required to take certain courses in preparation for the project

Projects may comprise some or all of literature reviews, field trials, laboratory experiments, seminars and written assignments. Topics for projects may be chosen from any of the courses included in the program.

**1717  Project C (ANR)**

**3653  Project C (ANR) (Mid-year)**
6 units  
Contact with supervisor by arrangement

**assumed knowledge:** students may be required to take certain courses in preparation for the project

Projects may comprise some or all of literature reviews, field trials, laboratory experiments, seminars and written assignments. Topics for projects may be chosen from any of the courses included in the program.

**3004  Project C (ANR) (One Semester)**
6 units  
Contact with supervisor by arrangement

**assumed knowledge:** students may be required to take certain courses in preparation for the project

Projects may comprise some or all of literature reviews, field trials, laboratory experiments, seminars and written assignments. Topics for projects may be chosen from any of the courses included in the program.
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1320  Project D (ANR)
8676  Project D (ANR) (Mid-year)
   8 units  full year
   Contact with supervisor by arrangement
   assumed knowledge: students may be required to take certain courses in preparation for the project.
   Projects may comprise some or all of literature reviews, field trials, laboratory experiments, seminars and written assignments. Topics for projects may be chosen from any of the courses included in the program.

4621  Project D (ANR) (One Semester)
   8 units  semester 1 or 2
   Contact with supervisor by arrangement
   assumed knowledge: students may be required to take certain courses in preparation for the project.
   Projects may comprise some or all of literature reviews, field trials, laboratory experiments, seminars and written assignments. Topics for projects may be chosen from any of the courses included in the program.

2211  Project E (ANR)
2018  Project E (ANR) (Mid-year)
   9 units  full year
   Contact with supervisor by arrangement
   assumed knowledge: students may be required to take certain courses in preparation for the project.
   Projects may comprise some or all of literature reviews, field trials, laboratory experiments, seminars and written assignments. Topics for projects may be chosen from any of the courses included in the program.

3522  Project E (ANR) (One Semester)
   9 units  semester 1 or 2
   Contact with supervisor by arrangement
   assumed knowledge: students may be required to take certain courses in preparation for the project.
   Projects may comprise some or all of literature reviews, field trials, laboratory experiments, seminars and written assignments. Topics for projects may be chosen from any of the courses included in the program.

2854  Project F (ANR)
8492  Project F (ANR) (Mid-year)
   12 units  full year
   Contact with supervisor by arrangement
   assumed knowledge: students may be required to take certain courses in preparation for the project.
   Projects may comprise some or all of literature reviews, field trials, laboratory experiments, seminars and written assignments. Topics for projects may be chosen from any of the courses included in the program.

7382  Project F (ANR) (One Semester)
   12 units  semester 1 or 2
   Contact with supervisor by arrangement
   assumed knowledge: students may be required to take certain courses in preparation for the project.
   Projects may comprise some or all of literature reviews, field trials, laboratory experiments, seminars and written assignments. Topics for projects may be chosen from any of the courses included in the program.

7188  Project G (ANR)
3661  Project G (ANR) (Mid-year)
   21 units  full year
   Contact with supervisor by arrangement
   assumed knowledge: students may be required to take certain courses in preparation for the project.
   Projects may comprise some or all of literature reviews, field trials, laboratory experiments, seminars and written assignments. Topics for projects may be chosen from any of the courses included in the program.