FACULTY OF
SCIENCE AND MATHEMATICS
1995
## The University of Newcastle

**New South Wales, Australia**

- **Location Address**: University Drive, Callaghan
- **Postal Address**: The University of Newcastle NSW 2308
- **Telephone**: (02) 21.5000
- **Tele**: AA28194 — Library
- **Tele**: AA28618 — Finance
- **Tele**: AA28784 — TUNRA (The University of Newcastle Research Associates Limited)
- **Facsimile**: (02) 21.6922
- **Hours of Business**: Mondays to Fridays excepting public holidays, 9 am to 5 pm

The University of Newcastle Calendar consists of the following volumes:

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Also available are the Undergraduate Guides.

This Volume is intended as a reference handbook for students enrolling in courses conducted by the Faculty of Science and Mathematics.

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The colour band Topaz BCC4 on the cover is the lining colour of the hood of Bachelor of Science of this University. The colour band Amethyst BCC8 on the cover is the lining colour of the hood of Bachelor of Mathematics of this University.

The information in this Handbook is correct as at 23 November 1994.

**Recommended Price**: Five dollars and fifty cents plus postage.

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The Faculty of Science and Mathematics comprises the Departments of Aviation and Technology, Biological Sciences, Chemistry, Geography, Geology, Mathematics, Physics and Psychology. Undergraduate Degrees handled by the Faculty include the Bachelor of Science, Bachelor of Science (Aviation), Bachelor of Science (Psychology), Bachelor of Mathematics, Bachelor of Environmental Science and a number of combined degrees with other Faculties including Law and Engineering.

This Handbook provides details relating to these degrees. Students enrolled in a Science or Mathematics degree should be aware that they can apply to take subjects in Computer Science (offered within the Faculty of Engineering). Subjects from Statistics, Information Science and a number of other disciplines can be pursued within the various degree programs. In the Bachelor of Science and Bachelor of Mathematics degrees, students may take a sequence of subjects from outside the Faculty, thus combining expertise in basic science and/or mathematics with a wide range of elective areas such as languages and other humanities, accountancy, management, computing and engineering.

Those students entering university for the first time will find the system of instruction vastly different from that in secondary schools. The responsibility is placed on the student to extract the maximum benefit from the course. University staff will lecture to you and during that time you are expected to make notes about the material being presented. Some students respond by trying to take down the lecture verbatim but without understanding, others listen and make notes in outline form, copying down quotations or blackboard material, while a minority, overwhelmed by the volume and complexity of the subject matter, simply contemplate their next social engagement, to their own disadvantage. Two issues will be important for your ultimate success. The first is the development of an efficient note-taking system and in this you should seek the assistance of the Student Counselling Unit which provides relevant short courses. The second is that, apart from regular tutorials, tests, and final examinations, no one will follow up your comprehension of the lecture material other than yourself. The Faculty expects you to spend at least one hour of your time on private study for every contact hour that you have with University staff. You need to allocate this from the very beginning of your course and if you delay the process you will probably never make up the lost time. A well planned, uniform program of work to support your lectures, tutorials and laboratory classes will allow you to develop your understanding of the subjects and enjoy the many other facets of university life.

The quality of your tertiary education depends upon your ability to make efficient use of the University Library. Ensure that you take part in the orientation programs which the Library staff offer at the beginning of every year. Throughout your course the teaching and administrative staff of the University are here to guide you and if you need assistance it is available at a number of levels. Difficulties with particular subjects should be discussed with the lecturer or tutor concerned or the Year Supervisor in each Department. Problems with your degree structure and progression are the province of the Assistant Deans and the Dean who will give guidance when required. Day to day changes in your current enrolment are handled by the Assistant Registrar who can be found in the Faculty Office which is located in the Science Building adjoining Chemistry.

In a climate where government charges for tertiary education have risen steeply, you must make the most of your time at University by using its resources to the full. Learn to organise your thoughts, expand your mind, and develop your critical faculties to the utmost in order to provide yourself with qualifications which will lead to a successful career and satisfying life. On a final note, I invite you to enjoy your time at University.

D.C. Finlay
Dean
section one
Faculty Staff

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J.R. Giles, BA(Syd), PhD, DipEd(Syd), ThL
The Faculty of Science and Mathematics comprises the Departments of Aviation and Technology, Biological Sciences, Chemistry, Geography, Geology, Mathematics, Physics and Psychology. The Departments of Computer Science and Statistics also offer major sequences of qualifying subjects for the degrees of Bachelor of Science and Bachelor of Mathematics in the Faculty of Science and Mathematics.

Transition Arrangements in Exceptional Circumstances

In order to provide for exceptional circumstances arising in particular transition cases, the Dean may determine the transition program to be followed.

General Information for New Undergraduates

Students embarking on a university course for the first time may find some difficulty in adapting to the new environment. Tertiary education makes a number of demands on students and it requires them to be self-disciplined, organized, self-motivated and responsible for their own course of study. Hence it is important that students become familiar with the University structure, degree courses offered and service organizations such as the University Counselling Service and Accommodation Service which offer assistance with study, personal and accommodation problems.

Often students on first entering University are not certain of their final field of interest. In fact, it is usually only after the completion of the first year of study that many students finally choose to major in a particular subject. In order to maintain flexibility first year semester subjects (100 level subjects) should be chosen from areas where the student has some previous expertise or special interest. At the same time they should take note of the degree requirements, particularly with regard to prescribed subjects, prerequisites and corequisites as set out in the appropriate degree/diploma Rules in this Handbook.

Students should note that degrees must be structured to include a specified number of 300 level subjects. For example, a Bachelor of Science degree must include forty credit points at 300 levels in one Department, and at least forty more credit points at 300 level chosen from subjects approved by the Faculty Board. Subject to the Dean's permission, a candidate may be permitted to enrol in some subjects from those offered by another Faculty.
Time limits are set on the duration of an undergraduate course as indicated in the appropriate Rules. Maximum workloads are also preset, since limits are placed on the number of subjects students are permitted to undertake in any one year. Information on these restrictions is located in the appropriate degree Rules.

**Undergraduate Admission Requirements**

In order to be considered for admission for any qualification other than a postgraduate qualification an applicant shall be required to:

(i) attain such aggregate of marks in approved subjects at the New South Wales Higher School Certificate examination as may be prescribed by the Academic Senate from time to time; or

(ii) otherwise satisfy the Admissions and Progression Committee that the applicant has reached a standard of education sufficient to enable the approved course to be pursued.

**Assumed Knowledge for Entry to the Faculty**

There are no prescribed prerequisites for entry to the Faculty of Science and Mathematics except for the Bachelor of Mathematics degree. Students are advised that lectures will commence on the assumption that all students will have achieved the following levels:

- **Subject**
  - Assumed Knowledge
  - Biology 101: Higher School Certificate Chemistry or 4-unit Science is appropriate and students are advised to include CHEM101 and CHEM102 in their University program. However, some lectures in background chemistry will be offered by the Department of Community Programmes prior to the start of the first semester.
- **Chemistry 101**: At least 2-unit Mathematics, 2-unit Chemistry, and 2-unit Physics Higher School Certificate courses or equivalent with ranking in the top 50% in each case.

- **Geography**
  - HSC Geography would be an advantage, but the course is a foundation course that does not require having undertaken Geography at school.
- **Geology 101**: 2-units of Science, preferably Chemistry, and at least 2-units of Mathematics.
- **Mathematics 111**: 2-unit course Mathematics, or higher.
- **Mathematics 102**: Mathematics at 3-unit level with a score of at least 120/150 in 3-unit, or have passed Mathematics 111.
- **Physics 111**: HSC 2-unit course Mathematics with a performance in the top 30% of the candidate for this subject.
- **Physics 113**: HSC 3-unit Mathematics with a mark of at least 110/150.

Enrolment in PSYC101 is restricted. Students who are not enrolled in Bachelor of Science (Psychology), Bachelor of Arts (Psychology), Bachelor of Social Work or Bachelor of Speech Pathology degree programs are eligible to enrol in PSYC101 only on achievement of a specific Tertiary Entrance Rank. In 1994 to enrol in PSYC101 students required a TERR of 70 or better. The University is currently reviewing the TERR required for enrolment in this subject in 1995.

**Mature Age Entry**

Entry into the University is available to persons who will be at least 21 years of age by 1st March of the year in which enrolment is sought and who have completed a limited New South Wales Higher School Certificate Program. Subjects which will enable entry into the Faculty of Science and Mathematics include four units selected from Biology, Chemistry, Geography, Geology, Physics, Mathematics (3-unit course preferred) or 4-unit Science. For entry into the Bachelor of Mathematics degree, include 3-unit Mathematics (attaining a result of at least 120/150) and one other subject recognized for admission purposes.

**Combined Degree Courses**

The decision to take a combined degree course is usually taken at the end of a student’s first year in his or her original degree course, in consultation with the Deans of the Faculties responsible for the two degrees. Pursuit of a combined degree course will normally require an average of Credit levels in first year subjects.

**ADDITIONAL INFORMATION**

**Advisory Services**

Students requiring specific advice on the selection or content of subjects in the course should seek help from members of the Faculty. In particular, advice should be sought from first, second and third year Subject Coordinators in each Department, Heads of Departments, the Assistant Deans or Dean.

Enquiries regarding enrolment, variation to program and general administrative problems should be directed to the Assistant Registrar in the Faculty of Science and Mathematics in the Science Building.

For personal counselling and study skills training, students should consult the University Counselling Service.

**Student Participation in University Affairs**

Provision is made for students to be elected as members on Departmental and Faculty Boards as well as to other University bodies. Election of student members usually takes place in Semester One and students should watch Departmental notice boards for details of election of student members.

The Faculty Board of the Faculty of Science and Mathematics has provision for the election of four student members.

**Subject Timetable Clashes**

Students are strongly advised to check on possible timetable clashes before enrolling. Clashes may force students to take those subjects in different years. Although academic staff are always willing to advise students, it is the student’s responsibility to ensure that chosen subjects may be studied concurrently.

Science and Mathematics students taking subjects from other Faculties must examine the timetable to ensure that clashes do not exist in their proposed courses.

Although the timetable for one particular subject may clash with that of another, this may not necessarily mean that this combination cannot be done. Often an arrangement can be made by one or both Departmental representatives to overcome this problem. Therefore, see the Departmental representatives before deciding upon your final subject combinations.

**Workload**

The expected maximum workload for students devoting most of their time to degree studies is 40 credit points per semester. In the case of a 20 credit point subject offered over a full year, the workload will be rated as 10 credit points per semester. Enrolment in excess of forty credit points per semester is only accepted in exceptional circumstances by students with a good academic record, with the permission of the Dean.

Students with external commitments such as part-time employment, should enrol in fewer subjects. Such commitments cannot be taken into consideration for an extension of time for written work, or failure to attend examinations some of which may be scheduled on Saturday mornings.

**Review of Student Academic Progress**

All candidates are reminded of the need to maintain satisfactory progress and, in particular, attention is drawn to the Rules Governing Unsatisfactory Progress. In accordance with Regulation 4(1) of the Rules Governing Unsatisfactory Progress the Faculty Board has determined the following policy:

1. If a candidate does not pass at least two semester subjects (equivalent to twenty credit points) in their first year of full-time attendance or in their first two years of part-time attendance, that candidate will be asked to show cause as to why the candidate should not be excluded from further enrolment. Although academic staff are always willing to advise students, it is the student’s responsibility to ensure that chosen subjects may be studied concurrently. Science and Mathematics students taking subjects from other Faculties must examine the timetable to ensure that clashes do not exist in their proposed courses.

Although the timetable for one particular subject may clash with that of another, this may not necessarily mean that this combination cannot be done. Often an arrangement can be made by one or both Departmental representatives to overcome this problem. Therefore, see the Departmental representatives before deciding upon your final subject combinations.

2. If a candidate does not pass at least eight semester subjects (equivalent to eighty credit points) by the end of their first two years of full-time attendance or four years of part-time attendance, that candidate will be asked to show cause as to why the candidate should not be excluded from the Faculty. Candidates who have been reviewed under (1) above and have satisfied the conditions imposed on their re-enrolment, will not be asked to show cause at the end of that year.

3. In any year following their second year of full-time attendance or first four years of part-time attendance, if a candidate’s academic record indicates failure in more than fifty percent of their total enrolment (as expressed in credit points), that candidate will be asked to show cause as to why the candidate should not be excluded from the Faculty.

4. The Dean may request that Faculty Board review the academic progress of any student who has an extremely poor academic performance in years subsequent to the end of the second year of attendance in the Faculty of Science and Mathematics. The use of this provision is at the discretion of the Dean.
5. If a candidate fails a semester subject for the second time, that candidate shall not be permitted to enrol again in that subject except with the permission of the Dean on the recommendation of the Head of Department offering that subject.

6. If a candidate fails a compulsory subject for the second time or fails four semester subjects twice that candidate will be asked to show cause as to why the candidate should not be excluded from the Faculty.

7. Candidates should note that a Terminating Pass can be awarded only at the 100 Level or 200 Level and that no more than four Terminating Passes may count in a candidate’s program (equivalent to forty credit points), with no more than two (equivalent to twenty credit points) at the 200 Level.

8. In the case of a candidate enrolled in a Combined Degree course who fails to maintain a minimum of Credit level grades or better in fifty percent of the candidate’s total enrolment in any one year, that candidate will be asked to show cause why a recommendation should not be made to the Student Equity, Access and Progression Committee that the candidate’s enrolment in the combined degree course be terminated (i.e. the candidate be permitted to continue in a single degree only).

Note Where there is a change in attendance status, two part-time years will be taken as the equivalent of one full-time year for the purposes of this policy.

Failure by a Potential Graduate
Where a student fails a single subject and is thereby prevented from qualifying to graduate, the Faculty Board may award a result of Incomplete (I) in that subject with a view to review and/or reassessment of the student’s performance by the Department concerned. Such a decision would not be taken until the results of all other subjects required to meet degree requirements were known. Thus a failure in a single first semester subject would be recorded as a FF unless the student had been enrolled in a program which was potentially sufficient to complete degree requirements in first semester. A result of FF given in a first semester subject may be reviewed at the conclusion of second semester in the light of results obtained in other subjects undertaken in that year and may be amended to ‘I’ if it is then the only subject required to meet degree requirements. Further assessment of a subject will be possible only after the relevant Department is satisfied that the student has attempted to complete all subjects by standard assessment. All such further assessments should be completed where possible by the second Friday following the end of the examination period in the case of Semester 1 examinations and by the second week of January for Semester 2 and Full Year results.

The relevant Department is requested by Faculty to review the grade given and to consider the provision of a supplementary examination. The initial request for review is made by the student, in writing, to the Head of Department.

TEACHER TRAINING COURSES
Prerequisites for Diploma in Education Units
Students who intend to proceed to a Diploma in Education should familiarise themselves with the prerequisites offered in the course.

These prerequisites are stated in terms of subjects of the University of Newcastle. Applicants whose courses of study have included subjects which are deemed for this purpose to provide an equivalent foundation may be admitted to the Diploma course as special cases.

In the Diploma course the Problems in Teaching and Learning units are grouped as follows:
(a) Secondary
   - Social Science
   - Mathematics
   - Science
   - Modern Languages (French, German, Japanese)
(b) Primary
   Prerequisites

For information about prerequisites, students are invited to contact the Assistant Registrar, Faculty of Education. This contact should be made in the early stages of a degree course.

All secondary methods
Normally at least 50 credit points comprising 20 at 100 Level and 30 at 200 Level of a degree are required in the main teaching area and 30 credit points at 100 Level of a degree in any subsidiary area. The specified area is usually a secondary teaching area.

Further details may be obtained from the Assistant Registrar, Faculty of Education.

ROLE OF FACULTY BOARD, FACULTY OF SCIENCE AND MATHEMATICS
The role of the Faculty Board, Faculty of Science and Mathematics is defined by Faculty Board Rule 7 which states:

Subject to any resolution of the Council or the Academic Senate, and any provisions of any Rules, a Faculty Board shall:
(a) encourage and supervise the teaching, assessment and research activities of the Faculty;
(b) make recommendations to the Academic Senate on any matter affecting the Faculty;
(c) determine the grades of pass to be used for subjects offered in the courses for which the Faculty is responsible;
(d) consider the examination results recommended in respect of each of the candidates for which the Faculty is responsible and take action in accordance with the prescribed procedures.
(e) make recommendations on matters concerning admissions, enrolment and progression in the courses for which the Faculty is responsible to the Admissions and Progression Committee; and
(f) deal with any matter referred to it by the Academic Senate.

PROFESSIONAL RECOGNITION
Graduates of the University of Newcastle enrolled in the Faculty of Science and Mathematics are recognized by a number of different professional societies depending on their degree majors.

AVIATION AND TECHNOLOGY
The Department of Aviation and Technology teaches the disciplines and manages and services laboratories and workshops for the following applied sciences and technology areas: Apparel, AutoCAD, Architecture, Computer Science and Mathematics are recognized by a member (MRACI) or fellow (FRACI) includes registration as a Chartered Chemist (CChem).

Chemistry
Graduates holding a Bachelor of Science majoring in Chemistry may join the Royal Australian Chemical Institute which has several categories of membership according to qualification and experience. Admission to the RACI as a member (MRACI) or fellow (FRACI) includes registration as an Australian Chartered Chemist (CChem).

Geology
Graduates holding a Bachelor of Science (Honours) majoring in Geology may join the Geological Society of Australia Inc., the Australian Institute of Geoscientists and The Australasian Institute of Mining & Metallurgy which has several categories of membership according to qualification and experience.

Mathematics
For employment as a Mathematician, graduates should have at least one major in Mathematics. An Honours degree is preferred by many employers. The profession is represented by the Australian Mathematical Society which offers optional accreditation at a variety of levels according to qualifications and experience.

Physics
For employment as a physicist, students must have a minimum of an ordinary Bachelor of Science degree with a major in Physics. An Honours degree in Physics or combined Physics/Mathematics would be preferred.

Physics as a profession is represented by the Australian Institute of Physics. Membership is limited to graduates with a minimum of a major in Physics. The Australian Institute of Physics has a number of grades of membership which are related to experience as a physicist. There is a grade of membership for students currently working towards...
a degree. The Institute monitors courses in Physics at tertiary institutions and judges them in terms of suitability for admission to membership of the Australian Institute of Physics. The Institute also responds on behalf of physicists to matters relating to physicists and their role. There are no formal conditions for registration as a physicist.

Psychology

Membership of the Australian Psychological Society requires a four-year degree in Psychology. This is provided by a Bachelor of Science majoring in Psychology followed by an Honours degree in Psychology, or by completion of the BSc (Psychology) degree. Provision is also made for Student Subscribers and Affiliates. Registration as a Psychologist by the State of NSW currently requires the same qualifications as Membership of the A.P.S.

section three

Undergraduate Degree and Diploma Rules

UNDERGRADUATE DEGREE AND DIPLOMA RULES

Undergraduate Degrees and Diploma offered in the Faculty of Science and Mathematics

- Bachelor of Applied Science (Environmental Assessment and Management)
- Bachelor of Science (Aviation)
- Bachelor of Environmental Science
- Bachelor of Science
- Bachelor of Science (Food Technology)
- Bachelor of Science (Psychology)
- Bachelor of Mathematics
- Diploma in Aviation Science

Rules Governing Academic Awards

1. Application of Rules

These rules shall apply to all the academic awards of the University other than the degrees of Doctor and Master.

2. Interpretation

(1) In these rules, unless the context or subject matter otherwise indicates or requires
- "award" means the degree, diploma (including graduate diploma and associate diploma) or graduate certificate for which a candidate is enrolled;
- "course" means the total requirements of the program of study approved by the Academic Senate to qualify a candidate for the award as set out in the schedule;
- "Dean" means the Dean of a Faculty;
- "department" means the department offering a particular subject and includes any other body so doing;
- "Faculty" means the Faculty responsible for the course;
- "Faculty Board" means the Faculty Board of the Faculty;
- "schedule" means the schedule to these rules relevant to the award listed under the name of the Faculty;


“subject” means any part of a course for which a result may be recorded.

(2) A reference in these rules to a Head of Department shall be read not only as a reference to the person appointed to that office but also, where a subject is not offered by a department as such, to the person approved by the Academic Senate to undertake the responsibilities of a Head of Department for the purpose of these rules.

3. Admission

An applicant for admission to candidature for an award shall satisfy the requirements of the University governing admission to and enrolment in a course and any other additional requirements as may be prescribed in the schedule for that award.

4. Subject

(1) For the purpose of a course, a subject may be classified at a level determined by the Faculty Board.

(2) Each subject shall be allotted a credit point value by the Academic Senate after considering the advice of the Faculty Board of the Faculty in which the department is located.

(3) The Academic Senate, after considering a request from a Faculty Board, may determine that a subject be not offered during a particular academic year.

(4) The Faculty Board shall approve the subjects for the award. Any change in the list of approved subjects which will have effect in the following year shall be approved by a date determined by the Academic Senate.

(5) Where there is any change in the list of approved subjects, the Faculty Board shall make all reasonable provision to permit students already enrolled in the course to progress normally.

5. Enrolment

(1) A candidate may not enrol in any year in a combination of subjects which is incompatible with the requirements of the timetable for that year.

(2) Except with the permission of the Dean and subject to any contrary provision in the schedule (a) a candidate may not enrol in subjects totalling more than the equivalent of 40 credit points in any semester; and

(b) a candidate shall not enrol in a subject which does not count towards the award; and

(c) a candidate shall not be permitted to enrol in any subject which is substantially equivalent to one which that candidate has previously counted towards a degree or diploma.

(3) A candidate for an award shall not enrol in a course or part of a course for another award in this University unless consent has first been obtained from the Dean and, if another Faculty is responsible for the course leading to that other award, the Dean of that Faculty, provided that a student may enrol in a combined course approved by the Academic Senate leading to two awards.

6. Prerequisites and Corequisites

(1) The Faculty Board on the recommendation of the Head of the Department may prescribe prerequisites and/or corequisites for any subject offered by that Department.

(2) Except with the permission of the Dean granted after considering any recommendation made by the Head of the Department, no candidate may enrol in a subject unless that candidate has passed any subjects prescribed as its prerequisites at any grade which may be specified and has already passed or concurrently enrols in or is already enrolled in any subjects prescribed as its corequisites.

(3) Except with the permission of the Dean, a candidate will not have satisfied a prerequisite if the prerequisite subject has not been completed in the preceding eight calendar years.

(4) A candidate attaining a Terminating Pass in a subject shall be deemed not to have passed that subject for prerequisite purposes.

7. Credit

(1) A Faculty Board may grant credit to a candidate in specified and unspecified subjects, on such conditions as it may determine, in recognition of work completed in the University or another institution approved by the Faculty Board for this purpose.

(2) Except as may be otherwise provided in the schedule, a candidate shall not be given credit for more than sixty five percent of the total number of credit points required to complete the course.

8. Subject Requirements

(1) The subjects which may be completed in the course for the award shall be those approved by the Faculty Board and published annually as the Approved Subjects section of the schedule.

(2) A candidate enrolled in a subject shall comply with such academic and practical requirements and submit such written or other work as the Department shall specify.

(3) Except as otherwise permitted by the Head of Department, any material presented by a candidate for assessment must be the work of the candidate and not have been previously submitted for assessment.

(4) To complete a subject a candidate shall satisfy published departmental requirements and gain a satisfactory result in such assessments and examinations as the Faculty Board shall require.

9. Withdrawal

(1) A candidate may withdraw from a subject or the course only by informing the Academic Registrar in writing and the withdrawal shall take effect from the date of receipt of such notification.

(2) A student shall be deemed not to have enrolled in a subject if that student withdraws from the subject (a) in the case of a semester length subject, before the Higher Education Contribution Scheme census date for that semester, or

(b) in the case of a full year subject, before the first Higher Education Contribution Scheme census date for that academic year.

(3) Except with the permission of the Dean (a) a candidate shall not be permitted to withdraw from a subject if that candidate has not achieved the minimum credit point ratio required to complete the course; and

(b) a candidate shall not be permitted to withdraw from a subject if that candidate has not achieved the minimum credit point ratio required to complete the course.

10. Absence

Subject to any provision in the schedule, a candidate in good academic standing in the course (a) may take an absence of one year from the course, or

(b) with the permission of the Dean, may take an absence of two consecutive years from the course without prejudice to any right of the candidate to re-enrol in the course following such absence.

11. Qualification for the Award

To qualify for the award a candidate shall satisfactorily complete the requirements governing the course prescribed in the schedule.

12. Combined Degree Programs

(1) Where so prescribed for a particular course, a candidate may complete the requirements for one Bachelor degree in conjunction with another Bachelor degree by completing a combined degree program approved by the Academic Senate on the advice of the Faculty Board and, where the other Bachelor degree is offered in another Faculty, the Faculty Board of that Faculty.

(2) Admission to a combined degree program shall be restricted to candidates who have achieved a standard of performance deemed satisfactory for the purposes of admission to the specific combined degree course by the Faculty Board(s).

(3) The work undertaken by a candidate in a combined degree program shall be no less in quantity and quality than if the two courses were taken separately.

(4) To qualify for admission to the two degrees a candidate shall satisfy the requirements for both degrees, except as may be otherwise provided.

In order to provide for exceptional circumstances arising in a particular case, the Academic Senate on the recommendation of the Faculty Board may relax any provision of these rules.

SCHEDULE — BACHELOR OF APPLIED SCIENCE (ENVIRONMENTAL ASSESSMENT AND MANAGEMENT)

No intake after 1993.

SCHEDULE — BACHELOR OF ENVIRONMENTAL SCIENCE

1. Qualification for the Degree

(1) To qualify for admission to the degree, candidates shall pass subjects totalling 240 credit points selected from the list of Approved Subjects including the prescribed subjects unless the Faculty Board approves otherwise in a particular case.

(2) At least 80 credit points from 100 level subjects;
(b) at least 60 credit points from 200 level subjects;
(c) at least 80 credit points from 300 level subjects.

2. Credit

(1) A candidate may be granted credit:
(a) for up to 160 credit points in recognition of subjects completed at another tertiary institution which have not previously counted towards a completed award;
(b) for as many credit points as the Faculty Board determines in recognition of subjects completed in the University which have not been previously counted towards a completed award; and
(c) for up to 110 credit points in recognition for subjects completed and previously counted towards a completed award.

(2) Except with the permission of the Dean, candidates granted credit in recognition of work completed at another institution must complete at least 40 credit points at the 300 level at the University.

3. Time Requirements

(1) Except with the permission of the Faculty Board, a candidate shall complete the course within nine years of study.

(2) A candidate granted credit shall be deemed to have commenced the course from a date determined by the Dean at the time at which credit is granted.

APPROVED SUBJECTS

The subjects approved by the Faculty Board for the award are:

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### THE ENVIRONMENT CORE

The compulsory subjects are:

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENV102</td>
<td>Environmental Values and Ethics</td>
<td>10cp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENV103</td>
<td>Environmental Issues and Problems</td>
<td>10cp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOL101</td>
<td>Plant and Animal Biology</td>
<td>10cp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOL102</td>
<td>Cell Biology, Genetics and Evolution</td>
<td>10cp</td>
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<td></td>
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</table>

### 200 Level

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENV201</td>
<td>Environmental Legislation and Planning</td>
<td>10cp</td>
<td>ENV102</td>
<td></td>
</tr>
<tr>
<td>ENV202</td>
<td>Human Values and the Environment</td>
<td>10cp</td>
<td>ENV103</td>
<td></td>
</tr>
<tr>
<td>ENV203</td>
<td>Environmental Sampling and Data Analysis</td>
<td>10cp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOL207</td>
<td>Ecology</td>
<td>10cp</td>
<td>BIOL101, BIOL102</td>
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### 300 Level

<table>
<thead>
<tr>
<th>Code</th>
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<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
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</thead>
<tbody>
<tr>
<td>ENV301</td>
<td>Integrated Environmental Impact Assessment</td>
<td>Not in ENV201</td>
<td>1995 ENV201</td>
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</tr>
<tr>
<td>ENV203</td>
<td>Environmental Specialist Study</td>
<td>Not in ENV201, ENV202,</td>
<td>1995 ENV203</td>
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<tr>
<td>BIOL311</td>
<td>Environmental Biology</td>
<td>10cp</td>
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<td>BIOL207</td>
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</tbody>
</table>

### Subjects for a Biological Sciences Major

#### 200 Level

Minimum of thirty credit points from:

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
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</thead>
<tbody>
<tr>
<td>BIOL201</td>
<td>Biochemistry</td>
<td>10</td>
<td>BIOL101, BIOL102</td>
<td></td>
</tr>
<tr>
<td>BIOL202</td>
<td>Animal Physiology</td>
<td>10</td>
<td>BIOL101, BIOL102</td>
<td></td>
</tr>
<tr>
<td>BIOL204</td>
<td>Cell and Molecular Biology</td>
<td>10</td>
<td>BIOL101, BIOL102</td>
<td></td>
</tr>
<tr>
<td>BIOL205</td>
<td>Molecular Genetics</td>
<td>10</td>
<td>BIOL101, BIOL102</td>
<td></td>
</tr>
<tr>
<td>BIOL206</td>
<td>Plant Physiology</td>
<td>10</td>
<td>BIOL101, BIOL102</td>
<td></td>
</tr>
<tr>
<td>BIOL208</td>
<td>Biochemistry 308</td>
<td>10</td>
<td>BIOL201</td>
<td></td>
</tr>
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</table>

#### 300 Level

Minimum of forty credit points from:

<table>
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<tbody>
<tr>
<td>BIOL301</td>
<td>Environmental Plant Physiology</td>
<td>10</td>
<td>Two BIOL200 level subjects</td>
<td></td>
</tr>
<tr>
<td>BIOL305</td>
<td>Immunology</td>
<td>10</td>
<td>Two BIOL200 level subjects</td>
<td></td>
</tr>
<tr>
<td>BIOL309</td>
<td>Molecular Biology</td>
<td>10</td>
<td>BIOL201, BIOL205</td>
<td></td>
</tr>
<tr>
<td>BIOL310</td>
<td>Microbiology</td>
<td>10</td>
<td>BIOL201 and one other BIOL200 (BIOL204 advisable)</td>
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<tr>
<td>BIOL312</td>
<td>Animal Development</td>
<td>10</td>
<td>Two BIOL200 level subjects</td>
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</tr>
<tr>
<td>BIOL313</td>
<td>Cellular Biochemistry</td>
<td>10</td>
<td>BIOL201, BIOL208</td>
<td></td>
</tr>
<tr>
<td>Code</td>
<td>Name</td>
<td>Cp</td>
<td>Prerequisites</td>
<td>Corequisites</td>
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</tr>
<tr>
<td>BIOL315</td>
<td>Plant Molecular Biology</td>
<td>10</td>
<td>Two BIOL200 including one of BIOL204, BIOL205, BIOL206 or BIOL208</td>
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<tr>
<td>BIOL316</td>
<td>Cell Biology</td>
<td>10</td>
<td>Two BIOL200 level subjects</td>
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**Subjects for Chemistry Major**

**100 Level**

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<th>Corequisites</th>
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<tbody>
<tr>
<td>CHEM101</td>
<td>Chemistry 101</td>
<td>10</td>
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<tr>
<td>CHEM102</td>
<td>Chemistry 102</td>
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**200 Level**

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<th>Corequisites</th>
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<tbody>
<tr>
<td>CHEM211</td>
<td>Analytical Chemistry</td>
<td>10</td>
<td>CHEM101, CHEM102</td>
<td></td>
</tr>
<tr>
<td>CHEM261</td>
<td>Environmental Chemistry</td>
<td>10</td>
<td>CHEM101, CHEM102</td>
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</tr>
<tr>
<td>CHEM221</td>
<td>Inorganic Chemistry</td>
<td>10</td>
<td>CHEM101, CHEM102</td>
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<tr>
<td>CHEM231</td>
<td>Organic Chemistry</td>
<td>10</td>
<td>CHEM101, CHEM102</td>
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<tr>
<td>CHEM241</td>
<td>Physical Chemistry</td>
<td>10</td>
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**300 Level**

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
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<th>Prerequisites</th>
<th>Corequisites</th>
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</thead>
<tbody>
<tr>
<td>CHEM311</td>
<td>Analytical Chemistry</td>
<td>10</td>
<td>CHEM211</td>
<td></td>
</tr>
<tr>
<td>CHEM313</td>
<td>Industrial Chemical Analysis</td>
<td>5</td>
<td>CHEM211</td>
<td></td>
</tr>
<tr>
<td>CHEM314</td>
<td>Trace Analysis in Environmental Systems</td>
<td>5</td>
<td>CHEM211</td>
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<tr>
<td>CHEM360</td>
<td>Environmental Chemistry</td>
<td>10</td>
<td>CHEM261</td>
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**Subjects for Environmental Management Major**

**100 Level**

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<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
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<tbody>
<tr>
<td>EMGT101</td>
<td>Foundations of Environmental Management</td>
<td>10</td>
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</tr>
<tr>
<td>EMGT102</td>
<td>Social Development and the Environment</td>
<td>10</td>
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</table>

**200 Level**

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMGT201</td>
<td>Soils and Hydrology</td>
<td>10</td>
<td>ENV103</td>
<td></td>
</tr>
<tr>
<td>EMGT203</td>
<td>The Sustainable Society</td>
<td>10</td>
<td>EMGT102 and/or ENV103</td>
<td></td>
</tr>
<tr>
<td>EMGT203</td>
<td>Australian Flora and Fauna</td>
<td>10</td>
<td>BIOL101, BIOL102 and ENV103</td>
<td></td>
</tr>
<tr>
<td>EMGT204</td>
<td>Systems Agriculture</td>
<td>10</td>
<td>ENV103</td>
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</table>

**300 Level**

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
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</thead>
<tbody>
<tr>
<td>EMGT306</td>
<td>Environmental Management Specialist Study</td>
<td>10</td>
<td>ENV201, ENV203, ENV303 and prescribed EMGT300 Level subjects</td>
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**Subjects for an Earth Sciences Major**

**100 Level**

<table>
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<tr>
<th>Code</th>
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<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG101</td>
<td>Introduction to Physical Geography</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEOL101</td>
<td>The Environment</td>
<td>10</td>
<td></td>
<td></td>
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<tr>
<td>GEOL102</td>
<td>Earth Materials</td>
<td>10</td>
<td>GEOG101</td>
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**200 Level**

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG201</td>
<td>Methods in Physical Geography</td>
<td>10</td>
<td>GEOG101</td>
<td></td>
</tr>
<tr>
<td>GEOG203</td>
<td>Biogeography &amp; Climatology</td>
<td>10</td>
<td>GEOG101</td>
<td></td>
</tr>
</tbody>
</table>

**Subjects for a Physical Sciences Major**

**100 Level**

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
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</thead>
<tbody>
<tr>
<td>PHYS113</td>
<td>Physics 113</td>
<td>10</td>
<td>see¹</td>
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</tr>
<tr>
<td>PHYS114</td>
<td>Physics 114</td>
<td>10</td>
<td>PHYS113</td>
<td></td>
</tr>
<tr>
<td>MATH102</td>
<td>Mathematics 102</td>
<td>10</td>
<td>see² or MATH111</td>
<td></td>
</tr>
</tbody>
</table>

¹ See departmental directions for corequisite.
² See departmental directions for corequisite.
## SCHEDULE — BACHELOR OF SCIENCE

1. **Interpretation**

   In this schedule, "discipline" means a branch of learning recognized as such by the Faculty Board.

2. **Qualification for the Degree**

   (1) To qualify for admission to the degree, candidates shall pass subjects totalling 240 credit points of which 150 credit points shall be selected from the list of Approved Subjects in Group A and comprising:

   (a) at least 60 credit points from 100 level subjects;

   (b) at least 60 credit points from 200 level subjects;

   (c) at least 60 credit points from 300 level subjects.

   (2) The subjects shall be chosen in accordance with the following conditions:

   (a) at least 150 credit points from Group A subjects consisting of:

   (b) a sequence of at least 20 credit points at the 100 level, 30 credit points at the 200 level and 40 credit points at the 300 level chosen from a single discipline;

   (c) not more than 160 credit points chosen from a single discipline; and

   (d) subjects at the 300 level from not more than three disciplines.

   (3) Enrolment in any Group B subject shall require the approval of the Dean.

3. **Credit**

   (1) A candidate may be granted credit:

   (a) for up to 160 credit points in recognition of subjects completed and previously counted towards a completed award.

   (2) Except with the permission of the Dean, candidates shall complete the course within nine years of study.

4. **Time Requirements**

   (1) Except with the permission of the Faculty Board, a candidate shall complete the course within nine years of study.

   (2) A candidate granted credit shall be deemed to have commenced the course from a date determined by the Dean at the time at which credit is granted.

5. **Combined Degrees**

   A candidate may undertake one of the following combined degree programs in accordance with Rule 12 of the Rules Governing Academic awards, namely Science/Arts Science/Computer Science Science/Laws Science/Mathematics Science/Engineering.
APPROVED SUBJECTS

The subjects approved by the Faculty Board for the award are in the discipline areas of Biological Sciences, Chemistry, Geography, Geology, Mathematics, Physics and Psychology and are listed in Group A Subjects.

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¹ see Departmental handbooks.
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**Footnote**

Students should note that GEOG101 and GEOG102 are prerequisites for a major study in Geography, and for admission to Geography Honours GEOG601, GEOG602.

**GEOLOGY**

- GEOI01 The Environment 10 GEOI01
- GEOI02 Earth Materials 10 GEOI01
- GEOI11 Optical Mineralogy 5 GEOI02
- GEOI12 Introductory Petrology 10 GEOI11 Advisory CHEMI102
- GEOI13 Ancient Environments & Organisms 10 GEOI02

**MATHMATICS**

- MATHI02 Mathematics 102 10 See or MATHI11
- MATHI03 Mathematics 103 10 See or MATHI02 or (MATHI11 & MATHI12)
- MATHI11 Mathematics 111 10 2 unit HSC Mathematics
- MATHI12 Mathematics 112 10 MATHI11
- MATHI01 Multivariable Calculus 5 (MATHI02 & MATHI03) or (MATHI11 & MATHI12) or (MATHI02 & Permission of the H.O.D.)
- MATHI02 Partial Differential Equations 1 5 MATHI01
- MATHI03 Ordinary Differential Equations 1 5 (MATHI02 & MATHI03) or (MATHI11 & MATHI12) or (MATHI02 & Permission of the H.O.D.)
- MATHI06 Complex Analysis 1 5 MATHI01
- MATHI08 Linear Algebra 5 (MATHI02 & MATHI03) or (MATHI11 & MATHI12 & MATHI03)
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<tr>
<td>PSYC304</td>
<td>Basic Processes 2</td>
<td>10</td>
<td>PSYC207, PSYC202</td>
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<tr>
<td>PSYC305</td>
<td>Individual Processes</td>
<td>10</td>
<td>PSYC207, PSYC210</td>
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<tr>
<td>PSYC306</td>
<td>Advanced Social Processes</td>
<td>10</td>
<td>PSYC207, PSYC209</td>
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<tr>
<td>PSYC307</td>
<td>Advanced Applied Topics in Psychology 1</td>
<td>10</td>
<td>PSYC207</td>
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<tr>
<td>PSYC308</td>
<td>Advanced Applied Topics in Psychology 2</td>
<td>10</td>
<td>PSYC207</td>
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<tr>
<td>PSYC309</td>
<td>Topics in Neural Science</td>
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<td>PSYC207, PSYC208</td>
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<td>PSYC310</td>
<td>Social and Organisational Psychology</td>
<td>10</td>
<td>PSYC207, PSYC209</td>
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<tr>
<td>PSYC311</td>
<td>Associative Learning</td>
<td>10</td>
<td>PSYC207, PSYC202</td>
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</tr>
<tr>
<td>PSYC312</td>
<td>Research Project Design</td>
<td>10</td>
<td>Credit or better in PSYC207 and Credit grades in two other 200 Level Psychology subjects</td>
<td></td>
</tr>
</tbody>
</table>

**GROUP B SUBJECTS**

Group B Subjects may be chosen from subjects offered in courses leading to other degrees of the University, and must be approved by the Dean.

**Footnotes**

The normal pattern for the Bachelor of Science degree is 80 credit points at 100 level, 80 credit points at 200 level and 80 credit points at 300 level.

1. Credit cannot be obtained for both MATH112 and MATH112.

2. Entry requirement HSC 3 unit Mathematics with a mark of at least 120/150.

3. This option is for students who take MATH103 in second semester.

4. From 1991 to 1994 MATH208 was MATH218 and MATH219 was MATH217.

5. Students who have passed Mathematics I in 1989 or before and those who have passed MATH204 in 1994 or before do not need MATH222. Those who have passed MATH205 in 1994 or before do not need MATH221.

6. Students who have passed MATH209 or MATH211 in 1994 or before do not need MATH222 and students who have passed MATH209 and MATH211 in 1994 or before do not need MATH233.

7. Advisory entry requirement: HSC 3 unit Mathematics with a mark of at least 110/150 and 2 unit Physics or 4 unit Science with a performance in the top 50% of candidates for these subjects.

8. Performance to an acceptable level in PHYS111 and PHYS112 may substitute for PHYS113 and PHYS114 with the approval of Head of Department. MATH111 and MATH112 may substitute for MATH102.

9. Advisory entry requirement: HSC 2 unit Mathematics with a result in the top 30% of candidates or equivalent.

10. Advisory entry requirement: PHYS111 and HSC 2 unit Mathematics with result in top 30% of candidates or equivalent.

11. Advisory entry requirement: PHYS113

12. Students who are not enrolled in a Bachelor of Science (Psychology), Bachelor of Arts (Psychology) or Bachelor of Social Work are eligible to enrol in PSYC101 only on achieving a Tertiary Entrance Rank (or equivalent), equal to or greater than the TER required for admission to either the Bachelor of Science (psychology) or Bachelor of Arts (Psychology), whichever is the lesser.

13. PSYC312 replaces PSYC302 from 1995. Credit cannot be obtained for both PSYC302 and PSYC312.

14. Enrolment in PSYC101 is restricted.

Students who are not enrolled in Bachelor of Science (Psychology), Bachelor of Arts (Psychology) or Bachelor of Social Work, Bachelor of Speech Pathology degree programs are eligible to enrol in PSYC101 only on achievement of a specific Tertiary Entrance Rank. In 1994 to enrol in PSYC101 students required a TER of 70 or better. The University is currently reviewing the TER required for enrolment in this subject in 1995.

15. Credit cannot be obtained for both MATH122 and MATH112.

16. Credit cannot be obtained for more than one of MATH217, MATH218, MATH219 or MATH219.

17. Credit cannot be obtained for both MATH222 and MATH211.

18. Credit cannot be obtained for both MATH223 and MATH209.

Other approved subjects may be chosen from the schedules for the degrees offered elsewhere in the University, if approved by the Dean.
**Section Three: Undergraduate Degree and Diploma Rules**

**SCHEDULE — BACHELOR OF SCIENCE (AVIATION)**

1. **Qualification for the Degree**
   
   To qualify for admission to the degree, candidates shall pass subjects totalling 240 credit points selected from the list of Approved Subjects and comprising:
   
   (a) at least 60 credit points from 100 level Group A subjects;
   
   (b) at least 60 credit points from 200 level subjects of which 50 credit points shall be from Group A; and
   
   (c) at least 80 credit points from 300 level subjects of which 40 credit points shall be from Group A.

2. **Credit**
   
   (1) Credit may be granted for studies completed which qualified the candidate for an award of the University or for studies completed at another institution up to a total of 120 credit points.
   
   (2) Credit may be granted for all subjects completed in the University which have not already been counted towards a completed award.

3. **Time Requirements**
   
   (1) Except with the permission of the Faculty Board, a candidate shall complete the course within nine years of study.
   
   (2) A candidate granted credit shall be deemed to have commenced the course from a date determined by the Dean at the time at which credit is granted.

* Under review by Faculty Board. Consult Faculty Office Staff.

**APPROVED SUBJECTS**

The subjects approved* by the Faculty Board for the award are:

**GROUP A SUBJECTS**

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
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<tr>
<td>100 Level</td>
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<tr>
<td>AVIA124</td>
<td>Aviation I: Private Pilot Licence</td>
<td>40</td>
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<tr>
<td>AVIA125</td>
<td>Aviation II: Commercial Pilot Licence</td>
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<td>AVIA124</td>
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<td>200 Level</td>
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<tr>
<td>AVIA207</td>
<td>Aviation Meteorology</td>
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<td>AVIA116</td>
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<td>AVIA208</td>
<td>Instrument Navigation</td>
<td>5</td>
<td></td>
<td>AVIA117</td>
</tr>
<tr>
<td>AVIA209</td>
<td>Long Range Navigation</td>
<td>5</td>
<td></td>
<td>AVIA117</td>
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<tr>
<td>AVIA211</td>
<td>Jet Engines</td>
<td>5</td>
<td></td>
<td>AVIA117</td>
</tr>
<tr>
<td>AVIA212</td>
<td>Human Factors</td>
<td>10</td>
<td></td>
<td>AVIA119</td>
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<tr>
<td>AVIA213</td>
<td>Aircraft Structures &amp; Materials</td>
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<td>AVIA100 level</td>
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<td>AVIA214</td>
<td>Jet Aircraft Flight Planning</td>
<td>10</td>
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<td>AVIA117</td>
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<td>AVIA223</td>
<td>Aviation Computing and Electronics</td>
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<td>AVIA121</td>
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<td>AVIA224</td>
<td>Light Twins and Specialised</td>
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<td>AVIA123</td>
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<td>AVIA225</td>
<td>Advanced Meteorology</td>
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<tr>
<td>300 Level</td>
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<tr>
<td>AVIA306</td>
<td>Advanced Aircraft Operations</td>
<td>10</td>
<td></td>
<td>AVIA214</td>
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<tr>
<td>AVIA308</td>
<td>Aviation Instruction</td>
<td>10</td>
<td>60cp AVIA200 level</td>
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<td>AVIA310</td>
<td>Advanced Navigation</td>
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<td>AVIA209</td>
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<tr>
<td>AVIA318</td>
<td>Aircraft Stability &amp; Control</td>
<td>10</td>
<td></td>
<td>AVIA118</td>
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<tr>
<td>AVIA322</td>
<td>Aviation Psychology: Theory</td>
<td>10</td>
<td></td>
<td>AVIA212 or</td>
</tr>
<tr>
<td></td>
<td>and Practice</td>
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<td>PSYC207</td>
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<tr>
<td>AVIA323</td>
<td>Advanced Meteorology</td>
<td>5</td>
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<td>AVIA207</td>
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</table>

**GROUP B SUBJECTS**

| 200 Level                                             |                                             |     |                      |              |
| AVIA210 | Compressible Aerodynamics                               | 5   |                      | AVIA118      |
| AVIA220 | Aircraft Fatigue Management                              | 5   |                      | AVIA213      |
| AVIA222 | Management of Aviation                                   | 5   |                      | AVIA120      |
| AVIA225 | Group Interaction and Multi-Crew Performance             | 10  |                      | AVIA212      |
| 300 Level                                             |                                             |     |                      |              |
| AVIA305 | Aircraft Design                                          | 5   |                      | AVIA213      |
| AVIA311 | Advanced Aviation Instruction                            | 10  |                      | AVIA308      |
| AVIA312 | Applied Aerodynamics                                     | 5   |                      | AVIA318, AVIA223 |
### Schedule - Bachelor of Mathematics

#### Qualification for the Degree

1. (1) To qualify for admission to the degree a candidate shall pass subjects totalling 240 credit points from the list of Approved Subjects and comprising:
   
   (a) not more than 80 credit points from 100 level subjects of which 20 credit points shall be from Group A;
   
   (b) at least 20 credit points from 200 level subjects of which:
       
       (i) at least 25 credit points shall be from Group A;
       
       (ii) at least 5 credit points shall be from Group B; and
       
       (iii) at least a further 30 credit points shall be from Group B and/or Group C;
   
   (c) at least 80 credit points from 300 level subjects of which:
       
       (i) at least 40 credit points shall be from Group A; and
       
       (ii) at least a further 40 credit points shall be from Group A and/or Group C.

2. (1) A candidate may be granted credit:
   
   (a) for up to 160 credit points in recognition of subjects completed at another tertiary institution which have not been previously counted towards a completed award;
   
   (b) for as many credit points as the Faculty Board determines in recognition of subjects completed in the University which have not been previously counted towards a completed award; and
   
   (c) for up to 110 credit points in recognition of subjects completed and previously counted towards a completed award.

   (2) Except with the permission of the Dean, candidates granted credit in recognition of work completed at another institution must complete at least 40 credit points at the 300 level at the University.

#### Credit

3. (1) Except with the permission of the Faculty Board, a candidate shall complete the course within nine years of study, from its commencement.
### APPROVED SUBJECTS

The subjects approved by the Faculty Board for the award are:

#### GROUP A SUBJECTS

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
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<tbody>
<tr>
<td>MATH102#</td>
<td>Mathematics 102</td>
<td>10</td>
<td>See^2 or MATH111</td>
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<tr>
<td>MATH103</td>
<td>Mathematics 103</td>
<td>10</td>
<td>See^2 or MATH112 or (MATH111 &amp; MATH112)</td>
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</tr>
<tr>
<td>MATH112#</td>
<td>Mathematics 112</td>
<td>10</td>
<td>MATH111</td>
<td></td>
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<tr>
<td>MATH201</td>
<td>Multivariable Calculus</td>
<td>5</td>
<td>(MATH102 &amp; MATH103) or (MATH111 &amp; MATH112) or (MATH102 &amp; Permission of H.O.D.)</td>
<td></td>
</tr>
<tr>
<td>MATH203</td>
<td>Ordinary Differential Equations 1</td>
<td>5</td>
<td>(MATH102 &amp; MATH103) or (MATH111 &amp; MATH112) or (MATH102 &amp; Permission of H.O.D.)</td>
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<tr>
<td>MATH206</td>
<td>Complex Analysis 1</td>
<td>5</td>
<td>(MATH102 &amp; MATH103) or (MATH111 &amp; MATH112) or (MATH102 &amp; Permission of H.O.D.)</td>
<td>MATH201</td>
</tr>
<tr>
<td>MATH208†</td>
<td>Linear Algebra</td>
<td>5</td>
<td>(MATH102 &amp; MATH103) or (MATH111 &amp; MATH112 &amp; MATH103)</td>
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<tr>
<td>MATH220++</td>
<td>Analytic Methods 1</td>
<td>5</td>
<td>(MATH102 &amp; MATH103) or (MATH111 &amp; MATH112 &amp; MATH103)</td>
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<tr>
<td>MATH222##</td>
<td>Algebraic Methods 1</td>
<td>5</td>
<td>(MATH102 &amp; MATH103) or (MATH111 &amp; MATH112 &amp; MATH103)</td>
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<tr>
<td>MATH301</td>
<td>Logic &amp; Set Theory</td>
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<td>Two of MATH208, MATH220, MATH222</td>
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<tr>
<td>MATH302</td>
<td>General Tensors &amp; Relativity</td>
<td>10</td>
<td>MATH201 &amp; MATH208</td>
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<tr>
<td>MATH303</td>
<td>Variational Methods and</td>
<td>Not in 1995</td>
<td>MATH201, MATH203, MATH220 &amp; MATH222</td>
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<tr>
<td>MATH304</td>
<td>Integral Equations</td>
<td>10</td>
<td>MATH201, MATH203, MATH220 &amp; MATH222</td>
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<tr>
<td>MATH305</td>
<td>Ordinary Differential Equations 2</td>
<td>10</td>
<td>MATH201, MATH203, MATH220 &amp; MATH222</td>
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<tr>
<td>MATH306</td>
<td>Partial Differential Equations 2</td>
<td>10</td>
<td>MATH201, MATH203, MATH220 &amp; MATH222</td>
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</table>

#### GROUP B SUBJECTS

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
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</thead>
<tbody>
<tr>
<td>MATH307</td>
<td>Quantum &amp; Statistical Mechanics</td>
<td>10</td>
<td>MATH201, MATH203, MATH220 &amp; MATH222</td>
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<tr>
<td>MATH308</td>
<td>Geometry 2</td>
<td></td>
<td>MATH208 &amp; (MATH221 or MATH204)</td>
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<tr>
<td>MATH309</td>
<td>Combinatorics</td>
<td></td>
<td>MATH208 &amp; (MATH221 or MATH204)</td>
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<tr>
<td>MATH310</td>
<td>Functional Analysis</td>
<td>10</td>
<td>MATH208 &amp; (MATH221 or MATH204)</td>
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<tr>
<td>MATH311</td>
<td>Measure Theory &amp; Integration</td>
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<td>MATH208 &amp; (MATH221 or MATH204)</td>
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<tr>
<td>MATH312</td>
<td>Algebra</td>
<td></td>
<td>MATH208 &amp; MATH223</td>
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<tr>
<td>MATH313</td>
<td>Numerical Analysis (Theory)</td>
<td>10</td>
<td>MATH201, MATH203, MATH220 &amp; MATH222</td>
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<tr>
<td>MATH314</td>
<td>Optimization</td>
<td>10</td>
<td>MATH201, MATH208 &amp; MATH220</td>
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<tr>
<td>MATH316</td>
<td>Industrial Modelling</td>
<td></td>
<td>MATH201, MATH202, MATH203, MATH220, MATH222, MATH223</td>
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<tr>
<td>MATH317</td>
<td>Number Theory</td>
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<td>MATH224</td>
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<tr>
<td>MATH318</td>
<td>Topology</td>
<td>10</td>
<td>(MATH224 or MATH240)</td>
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<td>MATH319</td>
<td>Advanced Mathematical Modelling</td>
<td>10</td>
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<tr>
<td>MATH320</td>
<td>An Introduction to Hilbert Space</td>
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<td>MATH208 &amp; MATH220</td>
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<td>STAT301</td>
<td>Statistical Inference</td>
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<td>STAT201, STAT202</td>
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<tr>
<td>STAT302</td>
<td>Study Design</td>
<td>10</td>
<td>STAT201, STAT202</td>
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<tr>
<td>STAT303</td>
<td>Generalized Linear Models</td>
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<td>STAT201 &amp; STAT202</td>
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<td>STAT304</td>
<td>Time Series Analysis</td>
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<td>STAT201 &amp; STAT202</td>
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<tr>
<td>STAT310</td>
<td>Total Quality Management</td>
<td>10</td>
<td>Permission of Head of Department</td>
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Not in 1995

MATH208, MATH220, MATH222, MATH223, MATH224

MATH201, MATH203, MATH220, MATH222, MATH223

MATH201, MATH203, MATH220, MATH222, MATH223
Section Three  
Undergraduate Degree and Diploma Rules

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
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<th>Prerequisites</th>
<th>Corequisites</th>
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<tbody>
<tr>
<td>MATH216</td>
<td>Numerical Analysis</td>
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<td>GROUP C SUBJECTS</td>
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<tr>
<td>MATH202</td>
<td>Partial Differential Equations 1</td>
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<td>MATH203</td>
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<td>MATH205*</td>
<td>Analytic Methods 2</td>
<td>5</td>
<td>MATH205</td>
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<td>MATH223*</td>
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<td>PHYS201</td>
<td>Quantum Mechanics &amp; Electromagnetism</td>
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<td>MATH102, PHYS113, PEYS114</td>
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<td>Mechanics &amp; Thermal Physics</td>
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<td>Solid State &amp; Atomic Physics</td>
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<td>Scientific Measurement Principles,</td>
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<td>Processes and Applications</td>
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<td>PHYS301</td>
<td>Mathematical Methods &amp; Quantum</td>
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<td>Statistical Physics &amp; Relativity</td>
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<td>STAT203</td>
<td>Queues &amp; Simulation</td>
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<td>MATH112/ MATH102 or equivalent</td>
<td>STAT204</td>
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Section Three  
Undergraduate Degree and Diploma Rules

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
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<tr>
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<td>Non-parametric Statistics</td>
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<td>STAT201 or STAT101 &amp; MATH112/MATH102</td>
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<td>STAT205*</td>
<td>Engineering Statistics</td>
<td>5</td>
<td>MATH112 or MATH102</td>
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<tr>
<td>COMPUTER SCIENCE</td>
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</tr>
<tr>
<td>COMP201</td>
<td>Advanced Data Structures</td>
<td>5</td>
<td>COMP205 &amp; MATH212</td>
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<tr>
<td>COMP202</td>
<td>Computer Architecture</td>
<td>5</td>
<td>COMP203</td>
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<tr>
<td>COMP203</td>
<td>Assembly Language</td>
<td>5</td>
<td>COMP101 or COMP212</td>
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<tr>
<td>COMP204</td>
<td>Programming Language Semantics</td>
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<td>COMP205</td>
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<td>COMP205</td>
<td>Programming in C</td>
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<td>COMP101 or COMP212</td>
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<tr>
<td>COMP206</td>
<td>Theory of Computation</td>
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<td>COMP101 COMP212</td>
<td>MATH212</td>
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<tr>
<td>COMP212</td>
<td>Introduction to Programming</td>
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<tr>
<td>COMP241</td>
<td>Cognitive Science</td>
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<tr>
<td>COMP301</td>
<td>Compiler Design</td>
<td>10</td>
<td>COMP201</td>
<td></td>
</tr>
<tr>
<td>COMP302</td>
<td>Artificial Intelligence</td>
<td>10</td>
<td>COMP101 or COMP212</td>
<td></td>
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<tr>
<td>COMP303</td>
<td>Computer Networks</td>
<td>10</td>
<td>COMP201</td>
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<tr>
<td>COMP304</td>
<td>Database Design</td>
<td>10</td>
<td>COMP201</td>
<td></td>
</tr>
<tr>
<td>COMP305</td>
<td>Design &amp; Analysis of Algorithms</td>
<td>10</td>
<td>COMP201</td>
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</tr>
<tr>
<td>COMP306</td>
<td>Computer Graphics</td>
<td>10</td>
<td>COMP201 MATH216 &amp; either MATH2084 or MATH2194</td>
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<tr>
<td>COMP307</td>
<td>Software Engineering Principles</td>
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<tr>
<td>COMP308</td>
<td>Operating Systems</td>
<td>10</td>
<td>COMP201</td>
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</table>

Footnotes:

1. Credit cannot be obtained for both MATH112 and MATH102.
2. Entry requirement: HSC 3 unit Mathematics with a mark of at least 120/150.
3. This option is for students who take MATH103 in second semester.
4. From 1991 to 1994 MATH206 was MATH112 and MATH119 was MATH217.
5. Students who have passed Mathematics I in 1989 or before and those who have passed MATH204 in 1994 or before do not need MATH210. Those who have passed MATH205 or MATH210 in 1994 or before do not need MATH221.
6. Students who have passed MATH209 or MATH211 in 1994 or before do not need MATH222 and students who have passed MATH209 and MATH211 in 1994 or before do not need MATH223.
7. Advisory entry requirement: HSC 2 unit Mathematics with a mark of at least 110/150 and 2 Unit Physics or 4 Unit Science with a performance in the top 50% of candidates for those subjects.
8. Performance to an acceptable level in PHYS111 and PHYS112 may substitute for PHYS113 and PHYS114 with the approval of Head of Department. MATH111 and MATH112 may substitute for MATH102.
9. Advisory entry requirement: HSC 2 unit Mathematics with a result in the top 30% of candidates or equivalent.
Advisory entry requirement: PHYS111 or HSC 2 unit Mathematics with result in top 30% of candidature or equivalent.

Advisory entry requirement: PHYS113

Credit cannot be obtained for both MATH112 and MATH102

Credit cannot be obtained for more than one of MATH217, MATH218, MATH208 or MATH219

Credit cannot be obtained for both MATH220 and MATH204

Credit cannot be obtained for both MATH221 and MATH205

Credit cannot be obtained for both MATH222 and MATH211

Credit cannot be obtained for both MATH223 and MATH209

Credit cannot be obtained for both STAT201 and STAT205

Other approved subjects may be chosen from the schedules for the degrees offered elsewhere in the University, if approved by the Dean.

SCHEDULE — BACHELOR OF SCIENCE (FOOD TECHNOLOGY)

1. Qualifications for the Degree
   (1) To qualify for the degree, candidates shall pass subjects totalling 340 credit points from the list of Approved Subjects including the prescribed subjects unless the Faculty Board approves otherwise in a particular case.

   (2) (a) at least 80 credit points from 100 level subjects;
      (b) at least 90 credit points from 200 level subjects;
      (c) at least 90 credit points from 300 level subjects; and
      (d) at least 80 credit points from 400 level subjects.

2. Credit
   (1) A candidate may be granted credit:
      (a) for up to 160 credit points in recognition of subjects completed at another tertiary institution which have not been previously counted towards a completed award;
      (b) for as many credit points as the Faculty Board determines in recognition of subjects completed in the University which have not been previously counted towards a completed award; and
      (c) for up to 110 credit points in recognition for subjects completed and previously counted towards a completed award.

   (2) Except with the permission of the Dean, candidates granted credit in recognition of work completed at another institution must complete at least 40 credit points at the 300 level and 80 credit points at the 400 level at this University.

3. Time Requirements
   (1) Except with the permission of the Faculty Board, a candidate shall complete the course within eleven years of study.

   (2) A candidate granted credit shall be deemed to have commenced the course from a date determined by the Dean at the time at which credit is granted.
### APPROVED SUBJECTS

The subjects approved by the Faculty Board for the award are:

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
</tr>
</thead>
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<tr>
<td>100</td>
<td>B1011 Plant and Animal Biology</td>
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<tr>
<td>100</td>
<td>B1021 Cell Biology Genetics &amp; Evolution</td>
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<tr>
<td>100</td>
<td>CHEM101 Chemistry 101</td>
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<td>100</td>
<td>CHEM102 Chemistry 102</td>
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</tr>
<tr>
<td>100</td>
<td>MATH111 Mathematics 111</td>
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<td>2 unit HSC Mathematics</td>
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<tr>
<td>100</td>
<td>MATH112 Mathematics 112</td>
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<td>MATH111</td>
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<tr>
<td>100</td>
<td>PHYS111 Physics 111</td>
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<td>See&lt;sup&gt;a&lt;/sup&gt;</td>
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<tr>
<td>100</td>
<td>PHYS112 Physics 112</td>
<td>10</td>
<td>See&lt;sup&gt;b&lt;/sup&gt;</td>
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#### Proposed Subjects for Later Years

**Second Year**

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<tr>
<td>FOOD201</td>
<td>Food Science and Technology</td>
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<tr>
<td>FOOD202</td>
<td>Plant Animal Food Science</td>
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<tr>
<td>BIOL201</td>
<td>Biochemistry</td>
<td>10</td>
<td>BIOL101, BIOL102, CHEM101 CHEM102</td>
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<td>BIOL208</td>
<td>Biochemistry 208</td>
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<td>BIOL201</td>
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</tr>
<tr>
<td>CREM231</td>
<td>Organic Chemistry</td>
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<td>CHEM101, CHEM102</td>
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<td>CREM231</td>
<td>Analytical Chemistry</td>
<td>10</td>
<td>CHEM101, CHEM102</td>
<td></td>
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<tr>
<td>NUTR291</td>
<td>Introductory Nutrition</td>
<td>5</td>
<td></td>
<td></td>
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<tr>
<td>PSYC101</td>
<td>Psychology Introduction 1</td>
<td>10</td>
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<tr>
<td>INFO101</td>
<td>Introduction to Information Systems</td>
<td>10</td>
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<tr>
<td>FOOD203</td>
<td>Introduction to Food Engineering</td>
<td>5</td>
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**Third Year**

<table>
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<tr>
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<tbody>
<tr>
<td>FOOD301</td>
<td>Food Technology Lab.</td>
<td>10</td>
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<tr>
<td>FOOD303</td>
<td>Food Preservation</td>
<td>10</td>
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<tr>
<td>FOOD303</td>
<td>Bulk Food Handling</td>
<td>10</td>
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<tr>
<td>BTEC201</td>
<td>Microbial Biology</td>
<td>10</td>
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<tr>
<td>BIOL310</td>
<td>Microbiology</td>
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<td>CHEM336</td>
<td>Food Chemistry</td>
<td>10</td>
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<tr>
<td>NUTR391</td>
<td>Nutritional Science</td>
<td>10</td>
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<tr>
<td>PSYC291</td>
<td>Sensory Evaluation 1</td>
<td>10</td>
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<tr>
<td>MNGT211</td>
<td>Introduction to Management</td>
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**Fourth Year**

**Compulsory 40 credit points:**

<table>
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<th>Code</th>
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<th>Corequisites</th>
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<tbody>
<tr>
<td>FOOD401</td>
<td>Project</td>
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<tr>
<td>FOOD402</td>
<td>Plant Inspections</td>
<td>5</td>
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<tr>
<td>FOOD403</td>
<td>Quality Control</td>
<td>5</td>
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<tr>
<td>FOOD404</td>
<td>Food Product Development Management</td>
<td>10</td>
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<tr>
<td>FOOD405</td>
<td>Food Legislation</td>
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<tr>
<td>FOOD406</td>
<td>Food Packaging</td>
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</table>

**Elective Subjects to total 40 credit points from:**

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<tr>
<td>FOOD407</td>
<td>Food Processing Wastes</td>
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<tr>
<td>FOOD408</td>
<td>Yeast Technology</td>
<td>5</td>
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<tr>
<td>FOOD409</td>
<td>Postharvest Food Technology</td>
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<tr>
<td>FOOD410</td>
<td>Technology</td>
<td>10</td>
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<tr>
<td>BTEC304</td>
<td>Biotechnology Practical</td>
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<tr>
<td>CHEM311</td>
<td>Analytical Chemistry</td>
<td>10</td>
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<tr>
<td>NUTR391</td>
<td>Advanced Nutrition</td>
<td>10</td>
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<tr>
<td>PSYC391</td>
<td>Sensory Evaluation 11</td>
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<tr>
<td>PHYS205</td>
<td>Scientific Measurement</td>
<td>10</td>
<td>PHYS112 or PHYS113</td>
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</table>

**Footnote**

<sup>a</sup> Advisory entry requirement: HSC2 unit Mathematics with a result in the top 30% of candidature or equivalent.

<sup>b</sup> Advisory entry requirement: PHYS111 or HSC2 unit Mathematics with a result in top 30% of candidature or equivalent.
SCHEDULE — BACHELOR OF SCIENCE (PSYCHOLOGY)

1. Interpretation
   In this schedule "discipline" means a branch of learning recognised as such by the Faculty Board.

2. Qualification for the Degree
   To qualify for admission to the degree, a candidate shall pass subjects totalling 320 credit points from the list of Approved Subjects and comprising:
   (a) at least 60 credit points from 100 level subjects of which:
      (i) 20 credit points shall be from Group A subjects; and
      (ii) 40 credit points shall be comprised of 20 credit points from each of two disciplines;
   (b) at least 60 credit points from 200 level subjects of which 40 credit points shall be from Group A subjects;
   (c) at least 80 credit points from 300 level subjects of which 60 credit points shall be from Group A subjects; and
   (d) 80 credit points from 400 level subjects taken from Group A subjects.

3. Grading of the Degree
   (1) The degree shall be conferred as an Ordinary Degree except that, where the performance of a candidate has reached a standard determined by the Faculty Board to be of sufficient merit, the degree shall be conferred with Honours.
   (2) There shall be three classes of Honours, namely Class 1, Class 11 and Class 111. Class 11 shall have two divisions, namely Division 1 and Division 2.

4. Credit
   (1) A candidate may be granted credit:
      (a) for up to 160 credit points in recognition of subjects completed at another tertiary institution which have not been previously counted towards a completed award;
      (b) for as many credit points as the Faculty Board determines in recognition of subjects completed in the University which have not been previously counted towards a completed award; and
   (c) for up to 110 credit points in recognition for subjects completed and previously counted towards a completed award.

5. Time Requirements
   (1) Except with the permission of the Dean, a candidate shall complete the course within eleven years of study, from its commencement.
   (2) A candidate who has been granted credit shall be deemed to have commenced the course from a date determined by the Dean at the time at which credit is granted.

APPROVED SUBJECTS
   The subjects approved by the Faculty Board for the award consist of the following prescribed Group A and Group B subjects:

   GROUP A SUBJECTS

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
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</thead>
<tbody>
<tr>
<td>100 Level</td>
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<tr>
<td>PSY101</td>
<td>Psychology Introduction 1</td>
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<td>See footnote</td>
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<tr>
<td>PSY102</td>
<td>Psychology Introduction 2</td>
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<td>PSYC101</td>
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<tr>
<td>200 Level</td>
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<tr>
<td>PSY202</td>
<td>Basic Processes</td>
<td>10</td>
<td>PSYC102</td>
<td>PSYC207</td>
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<tr>
<td>PSY205</td>
<td>Applied Topics in Psychology 1</td>
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<td>Not in 1995</td>
<td>PSYC102</td>
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<tr>
<td>PSY206</td>
<td>Applied Topics in Psychology 2</td>
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<td>Not in 1995</td>
<td>PSYC102</td>
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<tr>
<td>PSY207</td>
<td>Experimental Methodology</td>
<td>10</td>
<td>PSYC102</td>
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<tr>
<td>PSY208</td>
<td>Psychobiology</td>
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<td>PSYC102</td>
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<tr>
<td>PSY209</td>
<td>Personality and Social Processes</td>
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<td>PSYC102</td>
<td>PSYC207</td>
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<td>PSY210</td>
<td>Developmental Psychology</td>
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<td>PSYC102</td>
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<td>300 Level</td>
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<tr>
<td>PSY301</td>
<td>Advanced Foundations for Psychology</td>
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<td>PSYC207</td>
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<td>PSY302</td>
<td>Basic Processes 1</td>
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<td>PSYC207, PSYC202</td>
<td>PSYC301</td>
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<tr>
<td>PSY304</td>
<td>Basic Processes 2</td>
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<td>PSYC207, PSYC208</td>
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<td>PSY305</td>
<td>Individual Processes</td>
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<td>PSY306</td>
<td>Advanced Social Processes</td>
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<td>PSYC207, PSYC209</td>
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<td>PSY307</td>
<td>Advanced Applied Topics in Psychology 1</td>
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<td>PSYC207</td>
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<td>PSY308</td>
<td>Advanced Applied Topics in Psychology 2</td>
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<td>PSYC207</td>
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<td>PSY309</td>
<td>Topics in Neural Science</td>
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<td>PSY310</td>
<td>Social and Organisational</td>
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<td>PSYC207, PSYC209</td>
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<td>PSY311</td>
<td>Associative Learning</td>
<td>10</td>
<td>PSYC207, PSYC202</td>
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<tr>
<td>PSY312</td>
<td>Research Project Design</td>
<td>10</td>
<td>Credit or better in PSYC207 and Credit grades in up to two other 200 Level Psychology subjects</td>
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   400 Level
<table>
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<tr>
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<td>Psychology Honours 401</td>
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<td>PSY402</td>
<td>Psychology Honours 402</td>
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<td>PSYC403</td>
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</table>
Section Three

Footnotes

Enrolment in PSYC101 is restricted.

Students who are not enrolled in Bachelor of Science (Psychology), Bachelor of Arts (Psychology) or Bachelor of Social Work, Bachelor of Speech Pathology degree programs are eligible to enrol in PSYC101 only on achievement of a specific Tertiary Entrance Rank. In 1994 to enrol in PSYC101 students required a TER of 70 or better. The University is currently reviewing the TER required for enrolment in this subject in 1995.

PSYC312 replaces PSYC302 from 1995. Credit cannot be obtained for both PSYC302 and PSYC312.

Entry to PSYC401 and PSYC402 requires the completion of 40 credit points of PSYC200 including PSYC207 and 60 credit points of PSYC300 or equivalent, including PSYC301 and PSYC312 (or PSYC302) obtaining at least a Credit grade average. The student's best six results including PSYC301 and PSYC312 will be averaged on the normal basis of Pass=1, Credit=2, Distinction=3, High Distinction=4 and the students with the highest scores accepted. Admission is competitive.

SCHEDULE — DIPLOMA IN AVIATION SCIENCE

1. Qualification for the Diploma
   (1) To qualify for admission to the diploma, a candidate shall pass subjects totalling 160 credit points from the list of Approved Subjects and comprising
      (a) at least 60 credit points from 100 level Group A subjects;* and
      (b) at least 60 credit points from 200 level subjects including at least 50 credit points from Group A subjects.

2. Grading
   (2) In cases where a candidate's performance in the course has reached a level determined by the Faculty Board, on the recommendation of the Board of Studies in Aviation, the Diploma may be conferred with Merit.

3. Time Requirements
   (1) Except with the permission of the Faculty Board, a candidate shall complete the course within six years of study.
   (2) A candidate who has been granted credit shall be deemed to have commenced the course from a date determined by the Dean at the time at which credit is granted.

* Under review by Faculty Board. Consult Faculty Office Staff.
## APPROVED SUBJECTS

The subjects approved* by the Faculty Board for the award are:

### GROUP A SUBJECTS

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
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**GROUP B SUBJECTS**

### 200 Level

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**Footnotes**

The normal pattern for the Diploma in Aviation Science course is 80 credit points at 100 level and 80 credit points at 200 level.

leave of Absence - For the purpose of Rule 10 of the Rules Governing Academic Awards, a candidate shall be deemed to be in good standing if, at the conclusion of the year of last enrolment in the course, that candidate was eligible to re-enrol without restrictions.

* Refers to the list of approved subjects in the Schedule - Bachelor of Science Group A Subjects.

## Approved Subjects for the Bachelor Degrees

### APPROVED SUBJECTS FOR THE BACHELOR DEGREES

**LIST OF APPROVED SUBJECTS REFERRED TO IN BACHELOR DEGREE SCHEDULES**

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*Refers to the list of approved subjects in the Schedule - Bachelor of Science Group A Subjects.*
### Section Four

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The Department of Geography co-ordinates these subjects.

Available only to Bachelor of Applied Science Environmental Assessment and Management candidates.

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ENVIRONMENTAL ASSESSMENT AND MANAGEMENT SUBJECTS

The Department of Geography co-ordinates these subjects.

Available only to Bachelor of Environmental Science Fee candidates who commence prior to 1994.

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GEOGRAPHY

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#### Approved Subjects for Bachelor Degrees

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**Footnote**

1. Students should note that GEOL101 and GEOL102 are prerequisites for a major study in Geography, and for admission to Geography Honours GEOL201, GEOL202.

### Section Four

#### Approved Subjects for Bachelor Degrees

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### Mathematics

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Approved Subjects for Bachelor Degrees

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<td>Measure Theory &amp; Integration</td>
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Footnotes

1. Credit cannot be obtained for both MATH111 and MATH102.
2. Entry requirement HSC 3 unit Mathematics with a mark of at least 120/150
3. This option is for certain students who take MATH103 in second semester
4. From 1991 to 1994 MATH208 was MATH218 and MATH219 was MATH217.
5. Students who have passed Mathematics I in 1989 or before and those who have passed MATH208 in 1994 or before do not need MATH217. Those who have passed MATH208 in 1994 or before do not need MATH221.
6. Students who have passed MATH209 or MATH211 in 1994 or before do not need MATH222 and students who have passed MATH209 and MATH211 in 1994 or before do not need MATH223.
7. Credit cannot be obtained for both MATH112 and MATH102.
8. Credit cannot be obtained for more than one of MATH217, MATH218, MATH208 and MATH219.
9. Credit cannot be obtained for both MATH220 and MATH204.
10. Credit cannot be obtained for both MATH221 and MATH205.
11. Credit cannot be obtained for both MATH222 and MATH211.
12. Credit cannot be obtained for both MATH223 and MATH209.

DIVISION OF QUANTITATIVE METHODS

These subjects are available only to Bachelor of Education students.

Subjects provided by the Division of Quantitative Methods to Bachelor of Education courses in the Faculty of Education in 1995 are as follows:

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Footnotes:
1. Advisory entry requirement: HSC 3 unit Mathematics with a mark of at least 110/150 and Physics 2 unit or Science 4 unit with a performance in the top 50% of candidates for these subjects.
2. Performance to an acceptable level in PHYS111 and PHYS112 may substitute for PHYS113 and PHYS114 with approval of the Head of Department. MATH111 and MATH112 may substitute for MATH102.
3. Advisory entry requirement: HSC 2 unit Mathematics with a result in the top 30% of candidates or equivalent.
4. Advisory entry requirement: PHYS111 or HSC 2 unit Mathematics with results in top 30% of candidates or equivalent.
5. Advisory entry requirement: PHYS113.
Students who are not enrolled in Bachelor of Science (Psychology), Bachelor of Arts (Psychology) or Bachelor of Social Work, Bachelor of Speech Pathology degree programs are eligible to enrol in PSYC101 only on achievement of a specific Tertiary Entrance Rank. In 1994 to enrol in PSYC101 students required a TER of 70 or better. The University is currently reviewing the TER required for enrolment in this subject in 1995.

PSYC312 replaces PSYC302 from 1995. Credit cannot be obtained for both PSYC312 and PSYC302.

Entry to PSYC401 and PSYC403 requires the completion of 40 credit points of PSYC200 including PSYC207 and 60 credit points of PSYC300 or equivalent, including PSYC301 and PSYC312 (or PSYC311) obtaining at least a Credit grade average. The student’s best six results including PSYC301 and PSYC312 will be averaged on the normal basis of Pass = 1, Credit = 2, Distinction = 3, High Distinction = 4 and the students with the highest scores accepted. Admission is competitive.

The following subjects are compulsory for candidates enrolled in the combined Bachelor of Science/Bachelor of Law degree: consult the Faculty Handbook for further details.

APPLIED SCIENCE AND TECHNOLOGY

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COMPUTER SCIENCE

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<tr>
<td>COMP322</td>
<td>Computer Vision and Robotics</td>
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<td>COMP225 (assumed knowledge MATH112)</td>
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<td>COMP324</td>
<td>Parallel Processing</td>
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<td>S2</td>
<td>COMP222 &amp; ELEC170</td>
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<td>COMP325</td>
<td>Database Systems</td>
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<td>S1</td>
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<td>COMP326</td>
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<td>S2</td>
<td>COMP112 (assumed knowledge COMP225 &amp; ELEC170)</td>
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<tr>
<td>COMP327</td>
<td>Principles of Operating Systems</td>
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INFORMATION SCIENCE

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<th>Prerequisites</th>
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<td>INFO101</td>
<td>Introduction to Information Systems</td>
<td>10</td>
<td>S1,S2</td>
<td>5</td>
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LAW

Compulsory Subjects

The following subjects are compulsory for candidates enrolled in the combined Bachelor of Science/Bachelor of Law degree: consult the Faculty of Law Handbook for further details.

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<td>LL.B.102</td>
<td>Criminal Law and Procedure</td>
<td>20</td>
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<td>LL.B.201</td>
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<tr>
<td>LL.B.401</td>
<td>Constitutional Law 1</td>
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<td>LL.B.402</td>
<td>Administrative Law 1</td>
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<td>LL.B.404</td>
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<td>LL.B.408</td>
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STATISTICS

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<td>S1</td>
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<td>(STAT101 or STAT103) &amp; (MATH112 or MATH102)</td>
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<td>STAT202</td>
<td>Regression Analysis</td>
<td>10</td>
<td>S2</td>
<td>4</td>
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<td>STAT205*</td>
<td>Engineering Statistics</td>
<td>5</td>
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<td>Design and Analysis of Experiments and Surveys</td>
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<td>STAT301</td>
<td>Statistical Inference</td>
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<td>S1</td>
<td>3</td>
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<td>STAT303</td>
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<tr>
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<td>S2</td>
<td>2</td>
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<td>Subjects at level 200</td>
</tr>
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**Footnote**

* Credit cannot be obtained for both STAT201 and STAT205

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**section five**

**Undergraduate Degree**

**Subject Descriptions**

**UNDERGRADUATE DEGREE SUBJECT DESCRIPTIONS**

**Guide to Undergraduate Subject Entries**

Subject outlines and reading lists are set out in a standard format to facilitate easy reference.

An explanation is given below of some of the technical terms used in this Handbook.

1. (a) **Prerequisites** are subjects which must be passed at a Pass level or better before a candidate enrolls in a particular subject.

   (b) Where a subject is marked **Advisory** it refers to a pass in the Higher School Certificate. In such cases lectures will be given on the assumption that a pass has been achieved at the level indicated.

   (c) **Preparatory** subjects are those which candidates are strongly advised to have completed before enrolling in the subject for which the preparatory subject is recommended.

2. **Corequisites** refer to subjects or topics which the candidate must either pass before enrolling in the particular subject or be taking concurrently.

3. Under examination rules "examination" includes mid-year examinations, assignments, tests or any other work by which the final grade of a candidate in a subject is assessed. Some attempt has been made to indicate for each subject how assessment is determined.

4. **Texts** are books recommended for purchase.

5. **References** are books relevant to the subject or topic which need not be purchased.
AVIATION SUBJECT DESCRIPTIONS

AVIA subjects are available only to candidates enrolled in the Bachelor of Science (Aviation) degree and those approved by the Head of Department.

100 Level Aviation Syllabus
The syllabus is based on four broad areas of study:

1. Aeronautical Engineering - aerodynamics, engines, systemsand design
2. Aviation Science - meteorology and navigation
3. Human Factors - aviation psychology, medicine, and ergonomics
4. Aviation Management - aviation law, administration, and computer applications.

Examination:
Progressive assessment during semester and final examination.

Content:
Introduction to hardware and data management systems. Development of expertise in a programming language, the software packages associated with scientific applications. Information retrieval and introduction to library and information networks involving information retrieval and communication.

To be advised.

AVIA124 AVIATION I: PRIVATE PILOT LICENCE
Prerequisite Nil
Hours 20 hours per week for one semester.
Examination The subject requirements will comprise several items comprising a combination of essays, practical reports, tests and a final examination.

Content:
Introductory Meteorology; Introductory Navigation; Introductory Aerodynamics; Introductory Human Factors; PPL Flight Rules & Procedures; Aircraft Performance and Loading; Engines, Systems and Instrumentation; Principles of Flight.

AVIA125 AVIATION II: COMMERCIAL PILOT LICENCE
Prerequisite AVIA124 Aviation I: Private Pilot Licence
Hours 20 hours per week for one semester.
Examination The subject requirements will comprise several items comprising a combination of essays, practical reports, tests and a final examination.

Content:

Texts
Enroute Charts, CAA. Departure and Approach Procedures, CAA. Terminal Area Charts. Civil Aviation Orders CAA. Enroute Supplement - Australia CAA. Aeronautical Information Publication CAA.

Reference

AVIA207 AVIATION METEOROLOGY 5cp
Prerequisite AVIA116
Hours 3 hours per week for one semester.
Examination Progressive assessment plus a 2 hour final examination.

Content:
Operational meteorology, tropical meteorology, complex thermodynamics, micro and meso-scale winds, surface synoptic charts, dynamics of lows and highs, visibility, fog, hazardous weather analysis.

Texts
Bureau of Meteorology, Manual of Meteorology Parts 1 and 2
Department of Aviation Meteorology Handbook

AVIA208 INSTRUMENT NAVIGATION 5cp
Prerequisite AVIA117
Hours 3 Hours per week for one semester.
Examination Progressive assessment plus a 2 hour final examination.

Content:
Instrument Flight Procedures, Airspace, and Air Traffic Control; Departure Procedures; Enroute Procedures; Holding Procedures; Instrument Approach Procedures; Emergency Procedures; IFR Flight Planning

Texts
Enroute Charts, CAA. Departure and Approach Procedures, CAA. Terminal Area Charts. Civil Aviation Orders CAA. Enroute Supplement - Australia CAA. Aeronautical Information Publication CAA.

Reference

AVIA209 LONG RANGE NAVIGATION 5cp
Prerequisite AVIA117.
Hours 3 Hours per week for one semester.
Examination Progressive assessment plus a 2 hour final examination.

Content:
The construction properties and use of orthomorphic charts suitable for long range navigation. The calculation of great circle tracks and distances. Grid navigation; navigation in polar regions; navigation on the climb and descent; high speed/high altitude navigation including the use of radio aids and area navigation systems; weather radar; inertial navigation systems; operational problems including the use of off track alternates; searches.

Texts
To be advised.

References

AVIA210 COMPRRESSIBLE AERODYNAMICS 5cp
Prerequisite AVIA118.
Hours 3 Hours per week for one semester.
Examination Progressive assessment, tutorials plus a final examination.

Content:
Thermodynamics of a compressible perfect gas, effects of compressibility on lift, Prandlt-Glauert equation, critical mach number, shock stall and drag of vergence, Supersonic and transonic aerofoils and wings, wave drag, area ruling. Vortex lift at low speeds from delta wings and strakes.

References

AVIA211 JET ENGINES 5cp
Prerequisite 60 credit points AVIA100 level.
Hours 3 Hours per week for one semester plus field trip.
Examination Progressive assessment plus final examination.
Content

Characteristics of gas turbine engines and basic thermodynamic analysis, requirements for combustion, fuel specifications, combustion chambers, turbines, compressor design features, materials employed in aviation gas turbines, turbojets, turbofans, turboprops, ramjets, requirements for supersonic and transonic designs, developments in transonic, supersonic and hypersonic propulsion systems.

Text


Reference


Pratt & Whitney The Aircraft Gas Turbine Engine and its Operation.


Mc Cormick, B.W. 1979, Aerodynamics, Aeronautics and Flight Mechanics, Chap 6, Wiley.


AVIA212 HUMAN FACTORS 10cp

Prerequisite AVIA119.

Hours 5 hours per week for one semester.

Examination Progressive assessment plus a 2 hour examination.

Content

Aircraft automation, systems theory, cores systems design and integration.

Text


AVIA224 LIGHT TWINS AND SPECIALISED GENERAL AVIATION OPERATIONS 10cp

Prerequisite AVIA123.

Hours 5 hours of group sessions (Problem-Based) and 1 hour tutorial per week.

Examination Progressive plus a final examination.

Content

This course integrates the knowledge and skills gained in principles of flight; engines, systems, and instrumentation; aircraft performance and operation; navigation, meteorology; and flight rules and procedures with applications to charter flight in multi-engine aircraft. The course will cover:

1) Concepts, procedures and considerations which are distinctive to light twin engine aircraft;
2) Flight planning and performance requirements for multi stage charter operations;
3) Specialised General aviation operations, such as mountain flying, float operations, and ferrying aircraft.

By using a Problem-Based learning approach, the course also aims to develop problem definition skills, problem solving strategies and teamwork skills.

Texts

Civil Aviation Regulations CAA
Civil Aviation Orders 20-99 CAA
Civil Aviation Advisory Publication CAA
Aeronautical Information Publication CAA
Abridged Performance and Operations Manual for Echo Mk IV CAA
Different Twin Engine Aircraft Operating Handbooks.
crew aircraft. It is divided into three sections: Social Psychology in Aviation; Cockpit Management; and Crew Management.

(1) Social Psychology in Aviation: This section examines aspects of social psychology and its implications for operations in a multi-crew environment. Topics such as social psychological theory, group processes, communication and group norms are examined.

(2) Cockpit Management: This section examines issues such as situation awareness, decision-making, CRM programs and CRM evaluation. Emphasis is placed on the critical evaluation of CRM programs and related research.

(3) Crew Management: This section examines the influence of leadership, attitudes, motivation and conflict resolution in developing efficient and effective multi-crew performance.

Text

AVIA305 AIRCRAFT DESIGN 5cp
Prerequisite AVIA233.
Corequisite AVIA310.
Hours 3 Hours per week for one semester.
Examination Progressive assessment based on individual and syendic tasks plus final examination.

Content
Standard and computerised flight planning. The evaluation of aircraft types for particular types of operation. The development of operational procedures and policy.

References
Performance Manuals and Flight Planning Data of Current Aircraft Types.
Civil Aviation Authority, 8727 Performance and Operations Manual.
Bosing Aircraft Operations and Performance Manuals.

Civil Aviation Authority, 1992, Air Transport Pilot Licence.
Aeronautical Knowledge Syllabus, CAA. Civil Aviation Authority, 1994, Air Transport Pilot Licence: Examination Information Booklet, Volume 1, CAA.

AVIA308 AVIATION INSTRUCTION 10cp
Prerequisite 60 credit points AVIA200 level.
Hours 6 hours lecture and 2 Hours tutorial a week for semester one.
Examination Progressive evaluation based on seminar preparation and presentation, practice teaching, assignments, and examinations.

Content
Theories of learning; the psychology of learning; lesson planning; use and preparation of teaching aids; teaching methods and strategies; evaluation of teaching and learning; adult education; teaching in the aviation environment.

References

Civil Aviation Authority 1992, Air Transport Pilot Licence: Aeronautical Knowledge Syllabus, CAA.

AVIA310 ADVANCED NAVIGATION 10cp
Prerequisites AVIA299.
Hours 4 hours per week for one semester.
Examination Progressive assessment by class tests, tutorials, presentations and assignments.

Content
This course covers the spectrum of navigation aids, methods and systems, past, present and projected. The mathematical and physical basis of navigation and navigation. System accuracy and reliability requirements.

References
Kayton, M. 1984, Dynamics of Flight, Wiley, N.Y.
Civil Aviation Authority 1992, Air Transport Pilot Licence: Aeronautical Knowledge Syllabus, CAA.

AVIA312 APPLIED AERODYNAMICS 5cp
Prerequisites AVIA318. AVIA323. Hours 3 Hours per week for one semester.
Examination Progressive assessment plus final examination.

Content
(a) Flight simulation using analog and digital computers, modelling stability and control characteristics from flight test data, simulations, flight control computers.
(b) The use of computers in predicting aerodynamic performance, comparison of computer predictions with wind tunnel results, modelling real aircraft effects including boundary layers, and compressibility.

References
Stin, B. 1982, Dynamics of Flight, Wiley, N.Y.

AVIA314 DIRECTED STUDY 10cp
Prerequisites
Corequisites At least two of the following: AVIA306, AVIA308, AVIA310, AVIA311, AVIA316, AVIA318. Hours 2 Hours per week for full year plus practical work.
Examination Satisfactory completion of project.

Content
This subject is designed for students interested in developing a specialist topic under the supervision of a lecturer. The approval of the lecturer and Year III co-ordinator is required. A detailed proposal indicating objective(s) and work area is to be submitted by the end of semester one. The resultant project should represent the allocation of four Hours per week for the second semester, and is due on the first week of the examination period at the end of the semester.

AVIA315 ADVANCED AVIATION MANAGEMENT 5cp
Prerequisite AVIA322. Hours 3 Hours per week for one semester.
Section Five

Aviation Subject Descriptions

Examination Progressive assessment based on seminars, assignments and final project.
Content Students will be assigned to groups of four which will be responsible for the production of a group report on an aviation management topic to be decided in consultation.

AVIA318 AIRCRAFT STABILITY AND CONTROL 5cp
Prerequisite AVIA118
Hours 3 Hours per week
Content Aircraft stability and control, aerodynamic coupling, stick fixed / free longitudinal static stability, neutral point, cg margin, static margin, lateral and directional stability, configuration effects, control surface sizing. Introduction to Aeroelasticity.

References
Barnard and Philpott, Aircraft Flight, Available from University Bookshop.

AVIA322 AVIATION PSYCHOLOGY: THEORY AND PRACTICE 10cp
Prerequisite AVIA212 or PSYC207. These subjects provide students with the skills necessary to examine advanced topics in human factors and aviation psychology.
Hours 5 hours per week for one semester.
Examination The subject requirements will comprise five items comprising a combination of essays, presentations, practical reports, and a final examination.
Content A number of topics are examined during the subject including error detection and prevention, pilot judgement and decision-making, and aviation disaster management. Students will discuss the role of psychological theory in our present understanding of these topics in aviation. Students will also examine the process through which psychological theory contributes to the development of effective aircraft accident prevention strategies.

AVIA323 ADVANCED METEOROLOGY 5cp
Prerequisite AVIA207
Hours 3 hours per week for one semester.
Examination The subject requirements will comprise such items comprising a combination of essays, presentations, practical reports, and a final examination.
Content Operational meteorology, Synoptic meteorology, Numerical meteorology. Meso-meteorology for aviation. Satellite meteorology, Tropical meteorology. Short-term forecasting (using radar, satellite pictures to forecast low clouds, thunderstorms, hail, wind shear, turbulence). This subject introduces students to Aviation Services and practices with particular emphasis on "bazard weather related conditions and short-term forecasting".

AVIA324 PRACTICUM 1 IN AVIATION INSTRUCTION 10cp
Prerequisite Nil
Corequisite AVIA308.
Hours 5 hours per week for one semester.
Examination Progressive assessment based on the preparation of lesson plans, instructional aids, and evaluation materials for a variety of learning situations and environments, participation and contribution to weekly group discussions, and a take-home examination. The lesson plans are assessed using a marking key that is distributed to all the students when the topics and due dates are given.
Content Instructional design: instructional planning and preparation (conceptual stage, definitional stage, developmental stage, operational stage, progressive evaluation); writing instructional objectives; sequencing and scheduling; selection of teaching approaches and strategies; planning motivation and reinforcement techniques; planning feedback and corrective; planning assessment and evaluation procedures; preparing instructional material and teaching aids; planning and preparation of lessons for a variety of environments, i.e., the traditional classroom, the flight simulator, and the aircraft; planning and preparation of long briefings, pre-flight briefings, airborne instruction, remedial instruction, and post-flight briefings; reflective pedagogical thinking.

Examination Progressive assessment based on microteaching presentations, written reflections on the outcome of the presentations, oral and written evaluations of presentations observed, contribution and participation in group discussions. Guidelines for the assessment of practice teaching and a performance rating key are distributed to the students at the beginning of the semester.
Content Teaching approaches and strategies: delivery techniques, variability, introductory and closure procedures, explaining, lecture, skill lesson (demonstration-performance), developmental teaching, guiding small group discussion, problem-solving strategies, problem-based learning, computer-based instruction, competency-based learning, individualised instruction, conducting seminars and tutorials, simulation, role-playing, effective use of instructional material and teaching aids, of questioning techniques and of evaluation methods; teaching in a variety of environments, including a non-traditional and threatening environment (the aircraft), barriers to learning; teaching adult learners; presentation of long briefings, pre-flight briefings, airborne instruction, remedial instruction, and post-flight briefings; reflective pedagogical thinking.

AVIA325 PRACTICUM 2 IN AVIATION INSTRUCTION 10cp
Prerequisite AVIA306 and AVIA324
Corequisite AVIA311
Hours 5 hours per week for one semester.
BIOLOGICAL SCIENCES SUBJECT DESCRIPTIONS

BIOI101 PLANT & ANIMAL BIOLOGY 10cp

Prerequisites Nil — see notes on BIOL101 under "Assumed Knowledge for Entry to the Faculty".

Hours 6 Hours per week for one semester.

Examinations One 3 hour paper.

Content

The course is organised into 2 units.

Unit 1 Animal Diversity — Form and Function.

Theme The variety of structural and functional adaptations which have allowed animals to exploit the wide range of available environments.

Topics

The Animal Phyla - organisation of tissues and organs, body plans, body cavities, patterns of development.

Animal Function - digestion, circulation, respiration, integration and control, homeostasis, reproduction and development.

Unit 2 Plant Diversity — Form and Function.

Theme Structural specialization to facilitate efficient functional capacity.

Topics


Texts


or

Recommended for students not majoring in Biological Sciences


References


BIOI102 CELL BIOLOGY, GENETICS & EVOLUTION 10cp

Prerequisite See notes on BIOL101 under "Assumed Knowledge for Entry to the Faculty".

Hours 6 Hours per week for one semester.

Examinations One 3 hour paper.

Content

Cell Biology

Theme The evolution and functional organization of cells.

Topics

Biological molecules - the structure of proteins, carbohydrates and lipids.

Cell organization - emphasis on organelle ultrastructure and principal function, evolution of cells, cell division.

Biological energy processes - photosynthesis, cellular respiration.

Mendelian Genetics

Biodiversity and the environment

DNA, Evolution, Microbiology, Diseases, Ecology.

Texts


or

Recommended for students not majoring in Biological Sciences


References


BIOI201 BIOCHEMISTRY 10cp

Not to count for credit with ALSC206

Prerequisites BIOI101, BIOI102, CHEM 101, CHEM102

Hours 6 Hours per week for one semester.
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PRINCIPAL DATES 1995

Note: Semester dates for the Bachelor of Medicine and Bachelor of Laws/Diploma of Legal Practice courses differ from those below. Semester dates for these courses are set out in the Faculty Handbook for the Faculties concerned.

January
2 Monday New Year's Day Public Holiday.
13 Friday Last day for return of Re-enrolment Application Forms - Continuing Students.

February
13 Monday to
21 Tuesday Commencing students enrol.
23 Thursday Last day for payment of General Service Charge (without late fee).
27 Monday Semester 1 begins.

March
10 Friday Last day to pay HECS up-front.
30 Thursday Last day to change HECS option for Semester 1 to "DEFERRED".

April
14 Friday Good Friday - Easter Recess commences.
24 Monday Lectures resume.

June
9 Friday Semester 1 concludes.
12 Monday Queen's Birthday Public Holiday.
13 Tuesday Mid year Examinations begin.

31 Friday HECS Census Date. Last day to withdraw from Semester 1 subjects.
Last day to add Semester 1 or Full year subjects.
Last day for payment of General Service charge, with late fee.
Last day to withdraw from Semester 1 and Full Year Subjects without incurring a HECS liability for Semester 1.
Mid year Examinations begin.
30 Friday Closing date for applications for selection to the Bachelor of Medicine and Bachelor of Science (Aviation) courses in 1996. Mid-year Examinations end.

July
11 Friday Last day to pay HECS up-front for Semester 2.
17 Monday Semester 2 begins.

August
30 Wednesday Last day to change HECS option to “DEFERRED”.
31 Thursday HECS Census Date. Last day to withdraw from Semester 2 or Full Year subjects. Last day to add Semester 2 Subjects. Last day to withdraw from Semester 2 and Full Year Subjects without incurring HECS liability for Semester 2.

September
25 Monday Mid Semester recess begins.
29 Friday Closing date for UAC applications for enrolment in 1996. (Prior application also required for B.Med. and B.Sc. (Aviation).

October
2 Monday Labour Day Public Holiday.
9 Monday Lectures resume.

November
3 Friday Semester 2 concludes.
6 Monday End of Year Examinations begin.
24 Friday End of Year Examinations end.

PROVISIONAL DATES 1996
March
4 Monday Semester 1 begins.

April
5 Friday Easter recess commences.
15 Monday Semester 1 resumes.

June
15 Friday Semester 1 concludes.

17 Monday Mid-year examinations begin.
July
5 Friday Mid-year examinations conclude.
22 Monday Semester 2 begins.

September
30 Monday Semester 2 recess commences.
13 Monday Semester 2 resumes.

November
8 Friday Semester 2 concludes.
11 Monday End of Year Examinations begin.
29 Friday End of Year Examinations end.

ADVICE AND INFORMATION
Students may obtain advice and information on a range of admission, enrolment and course-related matters from the following sources:
- Faculty Offices (listed below)
- Student Enquiry Counter
- The Chancellery
- Callaghan Campus (049) 21 5333
- Student Administration and Services Counter
- Central Coast Campus (043) 48 4030

FACULTY OFFICES
The Faculty Office is the main reference point for students with enquiries concerning course, admission and enrolment matters. It provides advice on Faculty Rules and Policies and course requirements. If academic advice is required the Faculty Office can, where necessary, direct enquiries to the Dean, Assistant Dean, Course Co-ordinator or Head of Department as appropriate. The locations of Faculty Offices are set out below:
- Faculty Office Location Telephone
  - Architecture Building Room A1-006 215570
  - Art and Design Building Room B1-10 216525
  - Arts and Social Science Building Room CT231 216536
  - Economics and Commerce Building Room S48 215986
  - Education Building Room B1-41 216529

Engineering Engineering Administration Building, Room EA206 210055
Law Social Sciences Building Room S18 215984
Medicine and Health Sciences Medical Sciences Building Room MS5007 215676
Music Conservatorium Building Room ConL04 294133
Nursing Richardson Wing Hunter Building, Room R110 216523
Science and Mathematics Science Building 215562
CALLAGHAN CAMPUS - STUDENT ENQUIRY COUNTER
Located in The Chancellery, the Student Enquiry Counter is the main point of contact for enquiries relating to “non-academic” aspects of student administration, such as the issue of travel concessions, matters relating to the administration of the Higher Education Contribution Scheme (HECS), examinations and the issue and receipt of various forms, such as Change of Name/Address and Statement of Academic Record request forms. The Student Enquiry Counter also acts as a point of referral for general student enquirers.

The telephone number for the Student Enquiry Counter is (049) 215333.

CENTRAL COAST CAMPUS - STUDENT ADMINISTRATION AND SERVICES COUNTER
The Student Administration and Services Counter is the point of contact for students at the Central Coast Campus with respect to enrolment, course administration, student cards and travel concessions, the administration of the Higher Education Contribution Scheme (HECS), the issue and receipt of Variations of Program, Change of Address/Name, Special Consideration, Statement of Academic Record request forms, examinations and student welfare and service matters including accommodation, careers and employment, chaplaincy, counselling, loans and financial advice.

The telephone number for the Student Administration and Services Counter at the Central Coast Campus is (043) 484030.

ENROLMENT PROCEDURES FOR NEW AND RE-ADMITTED UNDERGRADUATE STUDENTS
Applicants who have accepted an offer of enrolment at the Callaghan Campus are required to attend an enrolment session in mid-February 1995 at the Great Hall. Applicants who have accepted an offer of enrolment at the Central Coast Campus are required to attend an enrolment session in mid-February 1995 at the Central Coast Campus. Detailed instructions concerning the exact date, time and venue for these enrolment sessions are provided in the Enrolment Guide sent out with the Universities Admissions Centre (UAC) offer. A Fees and Charges Notice will be sent to the applicant’s correspondence address in mid-February 1995. All Fees and Charges should be paid by 23 February 1995 at a branch of the Commonwealth Bank, unless otherwise instructed. Payments made after 23 February 1995 will incur a $50 late fee. If Fees and Charges remain unpaid after 31 March 1995 enrolment will be automatically cancelled. All Fees and Charges listed on the Notice must be paid in full. The Commonwealth Bank cannot accept part payments.

Scholarship Holders and Sponsored Students
Students holding scholarships or receiving other forms of financial assistance are required to lodge with the Cashier their Fees and Charges Notice together with a warrant or other written evidence that charges will be paid by the sponsors. Sponsors must provide a separate voucher warrant or letter for each student sponsored.

RE-ENROLMENT PROCEDURES FOR ALL UNDERGRADUATE AND POSTGRADUATE (COURSEWORK AND RESEARCH) STUDENTS
All continuing undergraduate and postgraduate students are sent a re-enrolment kit in December.

A re-enrolment kit contains:
- The student’s Re-enrolment Application form
- A 1995 Class Timetable (where applicable)
- A 1995 Re-enrolment Guide

Students must:
(i) Return their completed, signed and dated Re-enrolment Application form, either in person or by mail, to the Student Enquiry Counter, Callaghan Campus, or the Student Administration and Services Counter, Central Coast Campus by 13 January, 1995.
(ii) Lodge a new, signed and dated HECS Payment Options form, if the previous year’s option was for one year only, in HECS exempt and Up-Front payment students, if applicable.
(iii) Clear all outstanding debts (loans and fines) in order to receive their Fees and Charges Notice in late January 1995.
Pay their Fees and Charges by the 23 February 1995 at any branch of the Commonwealth Bank, unless otherwise instructed. Payments made after 23 February 1995 will incur a $50 late fee. The enrolments of students whose fees remain unpaid after 31 March, 1995 will be cancelled. All Fees and Charges listed on the Notice must be paid in full. The Commonwealth Bank will not accept part payment.

ENROLLMENT/RE-ENROLLMENT APPROVAL

In early February 1995 all re-enrolling students will receive either a Program Approval letter with a student identification card attached or a Clarification of Re-enrollment Program letter requesting that they attend a special re-enrollment approval session during the last week of February 1995 to clarify and amend details of their proposed programs.

REGISTRATION FOR TUTORIAL OR LABORATORY SESSIONS

All tutorial or laboratory sessions should be arranged with Departments on an individual basis. Where clinical and/or course information not being received.

TRANSFER

Students who wish to transfer to a different undergraduate course

Students currently enrolled in an undergraduate course, who wish to transfer to a different undergraduate course in 1996 must apply through UAC and Central Coast Campuses (see p. v) as well as from:

- The Universities Admissions Centre
  Locked Bag 500
  Lidcombe NSW 2141
- all other UAC participating universities.

FAILURE TO PAY DEBTS

Any student who is indebted to the University by reason of non-payment of any fee or charge, non-payment of any fine imposed, or who has failed to pay any overdue debts shall not until such debts are paid be permitted to:

- enrol in a following semester or year as the case may be;
- receive a Statement of Academic Record;
- graduate or receive any other award;
- receive a replacement student identification card.

Students are requested to pay any debts incurred without delay.

IDENTIFICATION CARD

All students should carry their student identification card when at the University. The card's machine readable identification enabling the University Library staff to verify a student's identity and library status when borrowing material. The Identification card also has a temporary password for initial access to the University's computing facilities. Lost or damaged identification cards can be replaced at a cost of $5 at the student Enquiry/Administration and Services Counters at the Callaghan and Central Coast Campuses (see p. v). Please note that the student identification card is not evidence of enrolment or re-enrolment. To be enrolled in a course after

CHANGE OF ADDRESS

The University records correspondence and home addresses for all students. Students are responsible for notifying the University in writing of any change in their addresses. A Change of Address form must be used. These are available from Faculty Offices, as well as the Student Enquiry/Administration and Services Counters at the Callaghan and Central Coast Campuses (see p. v).

ADDITION OF SUBJECTS

Addition of subjects to a student's program will not be permitted after the following dates:

Semester 1 or Full Year Subjects

Semester 2

31 March 1995

31 August 1995

STATEMENT OF ACADEMIC RECORD

A statement of Academic Record may be obtained by completing the appropriate application form and lodging it either in person or by mail, together with a fee of $10, with the University Cashier. The statement will be mailed to the nominated address as soon as it becomes available. Normally statements will be mailed within a week. Statements involving pre-1979 records may take a little longer as these are manually produced. indebted applicants must clear their debt before statements can be issued. Request forms may be obtained from the Student Enquiry/Administration and Services Counters at the Callaghan and Central Coast Campuses.

LEAVE OF ABSENCE

Undergraduate Awards

Generally, a student 'in good academic standing' (i.e. eligible to re-enrol) may take Leave of Absence from his/her course for one year, or with the permission of the Dean, for two consecutive years, without prejudicing any right to re-enrol in the course.

However, as some courses have special requirements concerning Leave of Absence, students should contact their Faculty Office for advice. To re-enrol in a course after a period of leave of absence, students must re-apply through the Universities Admissions Centre by 30 September.

Postgraduate Coursework Awards

Leave of Absence may not be available for some courses. Students should seek Information from the relevant Faculty Offices regarding any requirement to lodge a formal application for leave.

Research Higher Degrees

Leave of Absence is not automatically granted, and candidates are required to lodge a written application for Leave of Absence prior to the end of the semester proceeding the intended absence with the Graduate Studies and Scholarships Office for approval by the Graduate Studies Committee. Research students may wish to refer to the Masters and Doctoral Degree Rules for further information.
Scholarship Recipients

Scholarship holders, both undergraduate and postgraduate, who wish to take Leave of Absence from their courses, or who do not intend to take full-time programs in any semester, are required to lodge written applications for suspension of their scholarships prior to the end of the semester preceding the intended absence. Applications for suspension should be lodged with the Graduate Studies and Scholarships Office for approval by the Scholarships Committee. Scholarship holders should refer to the conditions of their scholarships.

ATTENDANCE AT CLASSES

Where a student’s attendance or progress has not been satisfactory, action may be taken under the Rules Governing Unsatisfactory Progress (see p. xiii). In the case of illness or absence for some other unavoidable cause, a student may be excused for non-attendance at classes.

All applications for exemption from attendance at classes must be made in writing to the Head of the Department offering the subject. Where assessments have been missed, this fact should be noted in the application.

The granting of an exemption from attendance at classes does not carry with it any waiver of the General Services Charge.

GENERAL CONDUCT

In accepting membership of the University, students undertake to observe the By-law and other requirements of the University.

Students are expected to conduct themselves at all times in a worthy fashion. Smoking is not permitted during classes, in examination rooms or in the University Libraries.

Members of the academic staff of the University, senior administrative officers, and other persons authorised for the purpose have authority to report on disorderly or improper conduct occurring in the University or in relation to University activities away from the University.

NOTICES

Official University notices are displayed on Departmental noticeboards and students are expected to be acquainted with the contents of those announcements which concern them.

In order to establish that a student has achieved certain learning milestones, every subject has assessment tasks which must be completed.

Students at the Central Coast Campus should refer to the Student Administration and Services noticeboard. The Hunter Building Concourse is used for the specific purpose of displaying examination timetables and other notices about examinations and final results.

EXAMINATION AND PROGRESS RULES AND PROCEDURES

In order to establish that a student has achieved certain learning milestones, every subject has assessment tasks which must be completed. In the assessment of a student’s progress in a course, consideration may be given to laboratory work, tutorials, assignments, projects, tests and any other work prescribed for the subject. The results of such assessments and class work may be incorporated with those of formal written examinations.

EXAMINATION SESSIONS

Formal written examination sessions take place on prescribed dates within the periods given below and may include Saturdays and evenings.

Mid Year: 13 to 30 June 1995
End of Year: 6 to 24 November 1995

Timetables showing the date and time at which individual examinations will be held will be displayed in the Hunter Building Concourse, on specific Departmental noticeboards and in other prominent locations within the University. Students should consult the final timetable in advance to find out the date and time of their examinations. Misreading of the timetable will not under any circumstances be accepted as an excuse for failure to attend an examination.

SPECIAL ARRANGEMENTS DUE TO RELIGIOUS CONFESSIONS OR OTHER CONSCIENTIOUS OBJECTIONS

Special arrangements may be made for students who have religious or other conscientious objections preventing them from attending an examination timetabled on a certain day. Students should contact the Student Enquiry/Administration and Services counter at Central Coast (043) 484030 or Hunter Building (049) 216490 or Central Coast (043) 484030 Campuses for further advice.

STUDENTS WITH A DISABILITY

A special examination facility is available, for students who, for physical or psychological reasons, are unable to sit their examinations in the normal fashion. Further information with respect to this facility may be obtained from the Student Services Office at Callaghan Campus (049) 216457 or Central Coast Campus (043) 484030.

LOCATION OF EXAMINATIONS

Seat allocation lists for examinations will be displayed about two weeks before the commencement of the examination period on the Departmental noticeboards and on a noticeboard outside the examination room on the day of the examination. Candidates should allow themselves plenty of time to get to the examination room so that they can take advantage of the 10 minutes reading time that is allowed before the examination commences. Normally, entry into the examination room will be permitted from 15 minutes before the actual commencement of the examination writing time. This allows the candidate time to locate the allocated seat and complete the necessary attendance slip and any related necessary registration details before the commencement of reading time. A list of materials which may be taken into each examination will also be displayed outside the examination room.

PERMITTED AIDS

Students may take into an examination room any writing or drawing instrument or eraser. Logarithmic tables are not permitted. These will be provided by the supervisor if required.

Calculators may not be taken into an examination room. For examinations where calculators are necessary the Department will provide. Students should consult the final timetable for details of these calculators. Students will be provided to students during 1995.

UNLISTED CANDIDATES

Students expecting to sit for an examination and whose names do not appear on the displayed seat allocation listings may not be formally recorded as being enrolled and eligible to sit and receive a result. If the examination has been affected by illness, disability or other serious cause to apply for special consideration.

SPECIAL CONSIDERATION REQUESTS

The examination Rules provide for students whose preparation for an examination, or attendance or performance in an examination has been affected by illness, disability or other serious cause to apply for special consideration.

Applications for special consideration should be made on the Application for Special Consideration form obtainable from Faculty Offices, the Student Enquiry Counter, Callaghan Campus, the University Health Service, the Counselling Service and the Student Administration and Services Counter, Central Coast Campus.

The granting of Special Consideration could involve a further examination or other form of assessment held shortly after the normal examination. Any further examination or assessment will be administered by the Department that offered the subject. Consequently students must check with the Department that offered the subject to ascertain that Department's requirements. Students should also check the Department's noticeboard for further advice concerning Special Consideration. The rules dealing with special consideration are mentioned in Part 3 of the Examination Rules. For details see page 42.

FINAL EXAMINATION RESULTS

End of year examination results will be mailed out by late December. Examination results for Semester 1 subjects will be mailed out the week preceding the commencement of Semester 2.

Final examination results are also displayed in the Hunter Building Concourse and Student Administration and Services Building, Central Coast Campus as soon as they become available. No results will be given by telephone.

REVIEW OF FINAL RESULT

After the release of both Semester 1 and Semester 2 (and year final examination results students may apply to have results reviewed. Part 3 of the University's Examination Rules specifies procedures relating to the review of results. For details see page xi and the necessary application form. You should read the instructions on the application form before applying for a Review. There is a charge per subject, which is refundable in the event of an error being discovered. However, it should be noted that examination results are released only after careful assessment of students' performances and that, amongst other things, marginal failures are reviewed before results are released.

EXAMINATION RULES

Part 1 - Preliminary Application of Rules

1. These Rules shall apply to all examinations of the University with the exception of the examination of a thesis submitted by a candidate for a degree of Master or the degree of Doctor of Philosophy. The examination of these for these degrees is the examination of published works submitted for Higher Degree or the degree of Doctor of Philosophy shall be conducted in accordance with the requirements for the degree.

Interpretation

2. In these Rules, unless the context or subject matter otherwise indicates or requires: “award” means the degree, diploma (including graduate diploma and associate diploma) or graduate certificate for which a candidate is enrolled;
"Department" means the department assigned responsibility for a particular subject and includes any other body so responsible;

"Departmental Examinations Committee" means the Departmental Examinations Committee of the Department constituted in accordance with the Rules Governing Departments;

"examination" includes any form of examination, assignment, test or any other work by which the final grade of a candidate in a subject is assessed;

"external examiner for a subject" means an examiner, not being a member of the staff of the University, appointed to assist in the examination of an extended essay, project or similar work submitted by a candidate;

"external examiner for the Department" means an examiner, not being a member of the staff of the University, appointed to assist in the examining processes within a Department;

"Faculty Board" means the Faculty Board of the Faculty responsible for the course in which a candidate is enrolled and includes a Board of Studies where given powers relevant to this Rule;

"formal written examination" means an examination conducted under Part 4 of these Rules;

"subject" means any part of a course of study for an award for which a result may be recorded;

"supervisor" means the supervisor for an examination appointed, in the case of a formal written examination, by the Academic Registrar and, in the case of any other examination, by the Head of Department.

"supplementary examination" means an examination administered to a candidate in respect of whom any doubt exists as to the judgement to be recorded in an examination return.

Department and the Departmental Examinations Committee in respect of that subject shall be decided by the Faculty Board concerned or, where Departments from more than one Faculty are involved, by the Academic Senate.

Determination of nature and extent of examining
4. Each Faculty Board shall determine the nature and extent of examining in the subjects in the awards for which the Faculty is responsible and such examining may be written, oral, clinical or practical or any combination of these.

Publication of requirements
5. The Head of Department shall ensure the publication of the Department’s examination requirements in each subject by the end of the second week of the semester in which the subject commences including the weight and timing of each task comprising the total assessment to be applied in determining the final grade.

Penalties
6. An infringement of any of the rules set out in Rule 16(1), other than pursuant to Rule 16(2), or the instructions referred to in Rule 19 shall constitute an offence against discipline.

Part 3 - Procedures

External Examiners
7. (1) The Academic Senate may, on the recommendation of a Faculty Board made on the recommendation of a Head of Department appoint one or more external examiners for the Department. Such appointment shall be for a term of one year and, except with the approval of the Academic Senate, no external examiner for the Department shall be reappointed for more than four consecutive terms of office.

(2) Where the appointment of an external examiner for a candidate is prescribed by the Rules for an award, or where the Faculty Board considers it appropriate that an external examiner for a candidate by appointed, such appointment shall be made by the Faculty Board or as otherwise prescribed in the Rules for that award.

Examinations
8. The Head of each Department shall arrange for the number of members of the academic staff responsible for each of the subjects offered by the Department:

(a) to prepare the examination papers in the subjects;

(b) in consultation with any other members of staff involved in the tuition or supervision of the candidates, to assess the scripts and other work submitted by candidates and, if required, prescribe a further or supplementary examination for any candidate; and

(c) to record in an examination return a judgement in respect of each candidate for submission to the Departmental Examinations Committee.

Departmental recommendations of results
9. The Departmental Examinations Committee shall consider the judgements recorded for candidates and shall make recommendations to the Faculty Board as to the result in the subject to be recorded for each candidate.

Determination of results in subjects
10. (1) The recommendations of the Departmental Examinations Committee shall be presented to the Faculty Board by the Head of the Department or the representative of that Head, who shall be entitled to vary any recommended result if of the view that it is appropriate to do so on the request of the Faculty Board.

(2) The Dean shall ensure that in making its recommendations the Departmental Examinations Committee has considered any request for special consideration made by a candidate pursuant to Rule 13.

(3) Each Faculty Board shall consider the recommendations of the Departmental Examinations Committee and, taking into account any change in the results of that candidate.

(4) If the Faculty Board, on the recommendation of the Head of the Department concerned or the representative of that Head, changes the result following review, the fee shall be refunded to the candidate.

Special Consideration
13. (1) A candidate who claims that:

(a) study during the year or preparation for an examination; or

(b) attendance at or performance in an examination has been affected by illness, disability or other serious cause, may report the circumstances in writing, supported by medical or other appropriate evidence to the University Secretary and Registrar and request that they be taken into account in the assessment of the examination results of that candidate.

Such request shall be made on the prescribed form.

(2) A request made pursuant to sub-rule (1)(a) shall be submitted by the candidate within seven days after any absence arising from the illness or event on which the request is based, or such longer period as the Dean of the Faculty in which the candidate is enrolled may accept.

(3) A request made pursuant to sub-rule (1)(b) shall be submitted by the candidate not later than three days after the date of the examination or within such further period as the Dean of the Faculty in which the candidate is enrolled may permit.

(4) Where a candidate is personally unable to take the action prescribed under this Rule, some other person may take such action on behalf of the candidate.

(5) The University Secretary and Registrar may call for such other evidence in respect of the candidate’s
request as may be reasonably required.

(6) A candidate who is granted special consideration may be required to attend a further examination or to undertake further assessment to determine a result.

Part 4 - Formal Written Examinations

Responsibility

14. The University Secretary and Registrar shall be responsible for the administration and supervision of the formal written examinations of the University.

Timetable for formal written examinations

15. (1) The University Secretary and Registrar shall publish a timetable showing when and where formal written examinations will be held and it shall be the responsibility of candidates to examine those examinations prescribed for the subjects in which they are enrolled.

(2) Notwithstanding the provisions of Rule 15(1), where the University Secretary and Registrar considers it justified on religious, conscientious or other grounds, special arrangements may be made to allow a candidate to attend a prescribed examination for a subject at a time and place different from that published in the examination timetable.

(3) Subject to the provision of Rule 13(1)(b), candidates who fail to attend an examination which is shown on the examination timetable will be deemed to have sat for and failed the examination.

Rules for formal written examinations

16. (1) Formal written examinations shall be conducted in accordance with the following rules:

(a) candidates shall comply with any instructions given by a supervisor relating to the conduct of the examination;

(b) no candidate shall enter the examination room after thirty minutes from the time the examination has begun;

(c) a candidate shall not bring into the examination room any bag, paper, book, written material, device or aid whatsoever, other than such as may be specified for the particular examination;

(d) a candidate shall not by any means obtain or endeavour to obtain improper assistance,

(o) a candidate shall not take from the examination room any examination answer book, any examination paper so marked, graph paper, drawing paper or other material issued for use during the examination;

(f) no candidate may smoke in the examination room;

(g) before the examination begins candidates shall not read the examination paper until granted permission by the supervisor which shall be given ten minutes before the start of the examination;

(h) no candidate shall leave the examination room during the first thirty minutes or the last ten minutes of the examination and

(i) no candidate shall re-enter the examination room after leaving it unless during the full period of absence that candidate has been under approved supervision.

(2) The provision of sub-rule (1) may be relaxed

(a) by the University Secretary and Registrar; and

(b) in respect of paragraphs (g) and (h) by the supervisor upon the direction of the University Secretary and Registrar or at the discretion of the supervisor, provided that the circumstances of any case in which discretion has been exercised shall be reported in writing to the University Secretary and Registrar immediately following the conclusion of the examination.

Part 5 - Other Examinations

Responsibility

17. The Head of Department shall be responsible for the administration and supervision of the examinations of the University, other than formal written examinations, in the subjects offered by the Department.

Timetable

18. (1) Where appropriate, the Head of Department shall publish a timetable showing when and where examinations will be held and it shall be the responsibility of candidates to attend those examinations prescribed for the subjects in which they are enrolled.

(2) Notwithstanding the provisions of Rule 18(1), where the Head of Department considers it justified on religious, conscientious or other grounds, special arrangements may be made to allow a candidate to attend a prescribed examination for a subject at a time and place different from that published in the examination timetable.

Compliance with instructions

19. Candidates shall comply with any instructions given by the Head of Department or the supervisor relating to an examination.

UNSATISFACTORY PROGRESS

A student's enrolment in a subject or course may be terminated because of unsatisfactory progress in the subject or course.

To regulate such matters the University has adopted Rules Governing Unsatisfactory Progress as set out below. Students who become liable for action under these Rules will be informed accordingly by mail. Progress requirements for subjects and courses are set out elsewhere in this volume.

RULES GOVERNING UNSATISFACTORY PROGRESS

Application of Rules

1. These Rules shall apply to all students of the University except those who are candidates for a research higher degree.

Interpretation

2. (1) these Rules, unless the context or subject matter otherwise indicates or requires:

"the Committee" means the Student Progress Sub-Committee as constituted by the Academic Senate from time to time;

"Dean" means the Dean of the Faculty in which a student is enrolled;

"Board" means the Faculty Board of the Faculty responsible for the course in which the student is enrolled.

(2) A reference in these Rules to a Head of Department shall be read not only as a reference to the person appointed to that office but also, where a subject is not offered by a Department as such, to the person approved by the Academic Senate to undertake the responsibilities of a Head of Department for the purpose of these Rules.

Termination of Enrolment by Head of Department

3. (1) A student's enrolment in a subject may be terminated by the Head of Department offering that subject if that student does not maintain a rate of progress considered satisfactory by the Head of the Department. In determining whether a student is failing to maintain satisfactory progress the Head of Department may take into consideration such factors as unsatisfactory attendance or failure to complete a satisfactory standard academic or professional components specified for the subject.

(2) The enrolment of a student in a subject shall not be terminated pursuant to clause 3(1) unless that student has been given prior written notice of the intention to consider the matter, with brief particulars of the grounds for so doing, and has also been given a reasonable opportunity to make representations either in person or in writing or both.

(3) A student whose enrolment in a subject is terminated under clause 3(1) may appeal to the Faculty Board which shall determine the matter.

(4) A student whose enrolment in a subject is terminated under this clause shall be deemed to have failed the subject.

Review of Performance by Board

4. (1) The Faculty Board may review the academic performance of a student who does not maintain a rate of progress considered satisfactory by the Faculty Board and may determine:

(a) that the student be permitted to continue the course;

(b) that the student be permitted to continue the course subject to such conditions as the Faculty Board may decide;

(c) that the student be excluded from further enrolment:

(i) in the course;

(ii) in the course and any other course offered in the Faculty;

(iii) in the Faculty.

(2) Before a decision is made under clause 4(1), the student shall be given an opportunity to make representations to the Faculty Board with respect to the matter either in person or in writing or both.
A student who has made representations to the Faculty Board may appeal against any decision made under clause 4(1) or (c) to the Committee which shall determine the matter.

Where the progress of a student enrolled in a combined degree program is considered to be unsatisfactory by the Faculty Board responsible for one of the degrees comprising the combined degree program, that Faculty Board shall advise the Faculty Board responsible for the second degree of any action it has taken with respect to the student in question.

In no case shall such action commence within fourteen (14) days of the posting to the student of the notification of the decision or such further period as the Committee may accept.

In hearing an appeal the Committee may take into consideration any circumstances whatsoever, including any appeal not previously raised, and may seek such information as it thinks fit concerning the academic record of the appellant and the making of the determination by the Board.

The appellant and the Dean or the Dean's nominee shall have the right to be heard in person by the Committee.

The Committee may confirm the decision made by the Faculty Board or may substitute for it any other decision which the Faculty Board is empowered to make pursuant to these Rules.

A student who has been excluded from further enrolment in a Faculty may enrol in a course in which the student is seeking to enrol provided that

(i) An appeal made by a student to the Committee pursuant to clause 4(3) or clause 7 shall be made within fourteen (14) days from the date of posting to the student of the notification of the decision or such further period as the Committee may accept.

(ii) In hearing an appeal the Committee may take into consideration any circumstances whatsoever, including any appeal not previously raised, and may seek such information as it thinks fit concerning the academic record of the appellant and the making of the determination by the Board.

(iii) The appellant and the Dean or the Dean's nominee shall have the right to be heard in person by the Committee.

(iv) The Committee may confirm the decision made by the Faculty Board or may substitute for it any other decision which the Faculty Board is empowered to make pursuant to these Rules.

Re-enrolment

(1) A student who has been excluded from further enrolment in a Faculty may enrol in a course in which the student is seeking to enrol provided that

Appeal Against Rejection of Re-enrolment Application

7. (1) A student whose application to enrol pursuant to clause 6 in rejected by a Faculty Board may appeal to the Committee.

FEES, CHARGES AND HECs

LOCATION OF CASHIER'S OFFICES

Cashier - Callaghan Campus
The Cashier's Office is located on the First Floor, Chancellory Building. The telephone number is (049) 215122. Credit card facilities are not available.

Hours of Opening
(a) During Semester 10.00am - 4.00pm (Open during lunch break)
(b) Vacation Period 10.00am - 12.30pm 2.00pm - 4.00pm

Cashier - Central Coast Campus
The Cashier's Office at the Central Coast Campus is located in the Finance and Estates Building. Hours of opening will be published throughout the campus early in 1995. The telephone number is (049) 484000.

GENERAL SERVICE CHARGE

There are separate General Service Charges for External, Non-Award and Award students. In 1995 Fees and Charges notices will be sent in late January to continuing students and in mid February to commencing students.

Students are expected to pay these charges at any branch of the Commonwealth Bank by 23 February, 1995. Payments made after this date will incur a 450 late fee. The final date for payment of charges with the Commonwealth Bank is 31 March 1995.

All other payments such as fines should be made directly to the University by cheque, or in person to the Cashier at either the Callaghan or Central Coast Campuses.

General Service Charge Per Annum

(a) Students Stroiled in courses leading to academic awards proceeding to a Degree or Diploma $275
(b) Final Students joining Newcastle University Union for the first time $35
(c) Non-Award Students (excluding Neatstep and Foundation Certificate) $35

Newcastle University Union Charge $35
(d) External Students $37

The exact amount must be paid in full by the prescribed date.

LATE CHARGES

Where the Fees and Charges Notice is lodged after the 24 February 1995 $50

ADMINISTRATIVE CHARGES

(a) Examination under special supervision (per assessment item) $15
(b) Review of examination results (per subject) $35
(c) Replacement of Student Identification Card $5
(d) Replacement of lost or damaged Transcripts $30
(e) Statement of Academic Record
   (i) First copy $10
   (ii) Second Copy No charge
   (iii) Each additional copy $1

Note:
(i) Graduates will be provided with two copies of their Transcripts of Academic Record free at the time of issue of their testaments.
(ii) Transcripts will be issued on request free of charge to other institutions or prospective employers nominated by the student.

Indebtedness

Persons with debts outstanding to the University cannot register for a new semester of study. To determine an amount of the total amount due will not be accepted.

HIGHER EDUCATION CONTRIBUTION SCHEME (HECS)

Students are required under the Higher Education Contributions Scheme (HECS) to contribute towards the cost of their higher education. On the census date of each semester a student's HECS liability is calculated according to their Student Load (i.e. subjects in which a student is enrolled at the time). For 1995 the liability for a standard student load of 80 credit points is $2409.

The census dates are:
   Semester 1 - 31 March
   Semester 2 - 31 August

Further information on HECS can be obtained from the booklet, "HECS: Your Questions Answered 1995" included with enrolment kits. Copies of this booklet are also available from the Student Enquiry Administration and Services Counters at the Callaghan and Central Coast Campuses.

TUITION FEES

Tuition fees are charged for fee-paying international students, specific categories of Non-Award enrolment (Extrafamous Subject and Miscellaneous Vocational) and a range of award courses.

REFUND OF CHARGES

The following policy applies with respect to refunds of the General Service Charge (GSC):

(i) A student shall be eligible for a refund of the GSC if no "student load" existed as at the HECS census date for any semester.

(ii) If, in terms of the above, no "student load" exists for both semesters in the year, the student would be entitled to receive a full refund of the GSC paid excluding the Union joining fee, if applicable.

(iii) If a student has a "student load" for only one semester in any one year he/she will be entitled to a refund of 50% of the GSC paid excluding the Union joining fee.

(iv) Those students who enrolled in a course only offered in second semester and who have only paid 50% of GSC and who have no "student load" in the semester will be entitled to a refund of 100% of the GSC paid.

In exceptional circumstances the Director, Student Administration may vary these provisions in the case of individual students.

A refund cheque will be mailed to a student or if applicable, a sponsor. Any change of address must be notified to the University as soon as possible.

No 100% refund will be made before 30 April. No 50% refund will be made before 30 September.

UNIVERSITY FACILITIES

COMPUTING AND COMMUNICATIONS FACILITIES

The University has extensive computing and communication facilities available for use by students.

Set out below are the terms governing the use of these facilities. The University may at any time review these terms. These terms apply to all users (students, staff and others). Use by you of any such facilities indicates your understanding and acceptance of these terms. If you are unsure of the meaning of any of these terms, you should seek advice from the Computing Services Help Desks prior to use. The locations and telephone numbers of the Help Desks are as follows:

- GSC
- Help Desks prior to use. The locations
Callaghan Campus
Computing and Information Sciences Building (049)21 5382
Hunter Building (049)21 0412
D W George (Engineering Science) Building (049)21 0600
Central Coast Campus
Multi Purpose Building (043)48 4010

General Information

1 General
Computing and communications facilities are provided by the University for the use of staff and students. Access may be given to standalone or networked microcomputers, to minicomputers or to other computers accessible via the University’s computer network.

These facilities are provided free of charge except where specific charges are levied. 90 days’ notice will be given of any change in such charges.

Student access is for use in association with university studies and activities related to the University.

Staff are given access for use associated with their duties.

Arrangements for computer use for external work such as consulting must be negotiated and will usually be on a ‘payment for use’ basis.

It is expected that all users will make use of University computing and communications facilities in a manner which is ethical, lawful, effective, efficient and not to the detriment of others.

Failure to abide by the following terms will be treated as misconduct and may result in disciplinary action including denial of access to the facilities concerned. In particular, if, in the opinion of the Director, Computing Services, you have failed to abide by these terms, you may be denied access to computing facilities or to the University’s communications network. You may also be fined and required to pay at up to the full commercial rates for any use you have made.

Where these terms incorporate legal restrictions, violation may constitute a legal offence.

2 Disclaimer
The University makes available to users, both internal and external, computing and network facilities consisting of software and hardware. The University accepts no warranty, express or implied regarding the computing services offered, or their fitness for any particular purpose.

The University cannot guarantee the confidentiality of any information stored on any University computer or transmitted through its network. For the purpose of managing the resources, it may be necessary for the University to monitor files and usage.

The University’s liability in the event of any loss or damage shall be limited to the fees and charges paid to the University for the use of the computing facilities which resulted in the loss or damage.

3 Conditions
1. You may use only those facilities which have been authorised for your use. If access is protected by a password, you must not make that password available to others. You may not use any account set up for another user, nor may you attempt to find out the password of another user. This applies both to facilities within the University and to any accessible using the University’s network.

2. You may only use authorised facilities for authorised purposes. For example, facilities made available for teaching may not be used for private gain.

3. You must be aware of the law of copyright as it affects computer software. Software must not be copied except with the express permission of the copyright owner.

4. You may not attempt to copy information belonging to other users (whether they be staff, students or other users) without their express permission.

5. You may not attempt to interfere with the operation of the University’s computers or any other facilities accessed by use of the University’s computers or network.

6. You may not attempt to subvert the security of any of the University’s computing facilities or any other facilities accessible by use of the University’s facilities.

7. You may not use the University’s computing facilities to send obscene, offensive, abusive, harassing or illegal messages.

8. You may grant access to your own files by other users by setting appropriate protection.

9. You may access computing and communications facilities on other sites only with their permission and in a manner consistent with those terms.

10. You must, on request, by an authorised member of staff, produce evidence of identity (for example by student card) when using University computing facilities.

11. You are required to inform the University of any breach of these Terms (for example, if you become aware that someone else has used your account).

12. You must abide by any relevant instructions given by the Director or the Director’s delegated officer. Such instructions may be issued by notice displayed in the vicinity of computing facilities, by letter, by electronic communication, in person or otherwise.

4 Copyright
The Copyright Act proceeds on the basis of bringing a computer program within the scope of the expression ‘literary work’ as used in the Copyright Act. ‘Computer program’ is defined as meaning:

‘An expression, in any language code or notation, of a set of instructions (whether with or without related information) intended, either directly or indirectly or after either or both of the following: (a) conversion to another language, code or notation; (b) reproduction in a different material form; to cause a device having digital information processing capabilities to perform a particular function.’

2 Subject to what is said below in relation to backup copies, the reproduction of a computer program (as defined) constitutes a breach of the Copyright Act which may result in civil and/or criminal action against the offender.

3 The Act also prohibits what is termed an ‘adaptation’ of a computer program – an adaptation being one of the exclusive rights given to the owner of the copyright of a literary work. In relation to computer program an adaptation is defined as:

‘a version of the work (whether or not in the language, code or notation in which the work was originally expressed) not being a reproduction of the work.’

This definition is intended to prevent persons purchasing a computer program in one language and converting it to another language without the consent of the copyright owner.

4 The purchase or lease of computer software normally provides a licence to use the software, together with a copy of the software and associated documentation. The title to the software remains with the copyright owner, who is entitled, subject to the Copyright Act, to place conditions upon the use of the software.

5 Members of the University are personally responsible for complying with the Commonwealth Copyright Act relating to the copying of computer software and to the terms and conditions of the particular contract or software licence relating to leased or purchased software.

6 The Copyright Act makes specific provision for the making of a backup copy of either or both the original or an adaptation of a computer program. Thus the University can only make backup copies of programs for which it has purchased a licence. If a program is on loan or has been hired, the right to make copies will have to be expressly authorised by the copyright owner.

In addition, the reproduction may only be made for the purpose of being used in lieu of the original copy in the event that the original copy is lost, destroyed or rendered unusable.

Such a backup copy cannot be made from an infringing copy of the computer program or where the owner of the copyright in the program has given an express direction to the contrary.

7 Copying of computer software to hard disk should only occur if:

(a) the computer software licence specifically allows it for other than normal backup purposes. The hard disk copy must not be used by more than one person at a time unless the agreement states otherwise; or

(b) in the absence of an agreement, it is used on the hard disk by no more than one person at a time.

8 Hard disk copies of software used in a network environment to allow simultaneous access by more than one user can only be provided if:

(a) specially permitted in the contract or software licence; or

(b) a copy of the software has been purchased for every simultaneous user of the hard disk copy.

9 Copying of software for classroom use is not permitted unless specifically permitted under the contract or software licence for the leased or purchased product.

UNIVERSITY LIBRARY SERVICES

As members of the University of Newcastle, students are entitled to use the Anchunty, Huxley, Conservatorium and Central Coast Libraries as well as the libraries of the teaching hospitals. The University’s library collections are accessed through the computerised catalogue NEWCAT.

Anchunty Library
Located adjacent to the Shortland Union, the Anchunty Library is the main library on the Callaghan campus. It supports the teaching and research requirements of the Faculties of Architecture, Arts and Social Science, Economics and Commerce, Education, Engineering, Law, Medicine and Health Sciences and Science and Mathematics. It holds an extensive range of books, serials, government publications, microforms, audiovisual media, archival materials and a Rare Book Collection. Specialist services are provided in Biomedicine, Law, and audiovisual media.
Central Coast Campus Library

The Library has a rapidly developing collection of books, serials and audiovisual media which supports teaching programs in Arts, Business, Social Sciences, Education, Applied Science and Nursing. Reference Services providing access to CD-ROM and online databases are available.

Further information can be obtained by ringing (049) 494020.

Gardiner Library Service

There are three separate libraries within the service: the John Hunter Hospital Branch, the Royal Newcastle Hospital Branch and the Mater Hospital Branch. The specific opening hours for these libraries will be published through NEWCAT and the appropriate library guides.

Further information can be obtained by ringing (049) 213779.

Borrowing Rights

Borrowing/Student Identification Cards

Students need a student identification card to borrow. Please remember to carry your card with you at all times if you wish to borrow or use library facilities. If books are borrowed on your card by anyone else, you are responsible for them. Report any lost card to the Loans Desk staff immediately to prevent unauthorised use. Replacement cards are available for $5.00 from the Student Enquiry Counter, Callaghan Campus or the Student Administration and Services Counter, Central Coast Campus.

For the details of loan conditions students should refer to the Library Guide and the various handouts published at the beginning of each year.

Books may be returned to any branch of the University Libraries. A fine of $2.00 per item is levied when material is more than two days overdue. The fine will increase by $0.50 cents per day per item until the material is returned. Borrowing rights are also withdrawn. If library material is lost or damaged, the replacement cost, plus a processing fee, will be charged.

Photocopying

Photocopying facilities are available in all University Libraries. The machines are operated by magnetic-strip cards which can be purchased in the Library. Credit for the photocopying is added to these cards from a dispenser as many times as needed. Users must observe the relevant Copyright Act provisions which are on display near the photocopiers. Central Coast Campus Library uses $2.00 and $5.00 dispensable cards.

Inter-Library Services

This service is available to academic staff, higher degree and honours/final year students. Material not held in the University of Newcastle Libraries may be obtained from other libraries within Australia or overseas. Books and serials readily available within Australia should arrive within two weeks. A Fast Track Service is available, at extra cost, for urgent requests.

People With a Disability

All libraries provide access for students and staff with a disability. Both Auchmuty and Huxley Libraries provide special services for students with a disability. Contact librarians in each Library will help with information about the library, parking, lift keys and other facilities such as the Braille Library, OCR machines which read aloud from English printed text and access to large-print NEWCAT, the University Libraries' online catalogue. Please phone (049) 217046 for further information.

Hours of Opening

AUCHMUTY LIBRARY

During Semester:

Monday to Thursday 8.30am - 10.00pm
Friday 8.30am - 7.00pm
Saturday & Sunday 1.00pm - 5.00pm

During Semester Vacations:

Monday to Friday 8.30am - 7.00pm
Saturday & Sunday 1.00pm - 5.00pm

During Long Vacation:

Monday to Friday 8.30am - 5.00pm

Library Closed: Easter except Easter Monday, Christmas to New Year University Holidays

Library Open:

Easter Monday, Anzac Day, Queen's Birthday, Show Day, Labour Day

HUXLEY LIBRARY

During Semester:

Monday to Thursday 8.30am - 9.00pm
Friday 8.30am - 5.00pm
Saturday & Sunday 1.00pm - 5.00pm

During Semester Vacations:

Wednesday 9.00am - 6.00pm

Other Days 9.00am - 5.00pm

During Long Vacation:

Monday to Friday 9.00am - 5.00pm

Library Closed: Australia Day, Easter except Easter Monday, Christmas to New Year Public Holidays

CONSERVATORIUM LIBRARY

During Semester:

Monday to Thursday 9.00am - 8.00pm
Friday 9.00am - 4.00pm
Saturday 10.00am - 3.00pm

During Semester Vacations and Examination Periods:

Monday to Thursday 9.00am - 6.00pm
Friday 9.00am - 4.00pm
Saturday 10.00am - 3.00pm

During Long Vacation:

Monday to Thursday 10.00am - 6.00pm
Friday 10.00am - 2.00pm
Saturday & Sunday CLOSED

CAMPUS TRAFFIC AND PARKING

Vehicle traffic and parking on the University’s campuses is regulated by the Traffic and Parking Rules. These Rules have been introduced to ensure the safe and orderly movement and parking of vehicles for the benefit of students, staff and visitors, and to protect the University’s physical environment and landscape.

Essentially the Rules require that persons who seek to bring a motor vehicle, including motorcycles, onto campus apply for a vehicle parking permit. In so doing, the applicant undertakes to abide by the Traffic and Parking Rules and are automatically subject to prescribed penalties for infringements. It is important to realise that the granting of a parking permit does not carry with it an automatic right to park on campus. The University has a serious under supply of car parking spaces and frequently it will not be possible to park on campus. The issue of a parking permit only entitles a member of the University to park in a properly designated and marked out car park space to the extent...
The scale of penalties for traffic and parking infringements as contained in the Rules are as follows:

- **Exceeding the speed limit on University roads**: $30
- **Parking on University roads**: $30
- **Parking on footpaths**: $15
- **Parking on areas marked by a security officer**: $30
- **Illegal parking**: $30
- **Failing to stop when signalled to do so by a security officer**: $50
- **Failing to display a parking permit on the vehicle**: $30
- **Parking in a way that may risk injury to others**: $50
- **Parking in an area reserved for disabled person**: $50
- **Any other breach of the Traffic and Parking Rules**: $1

Any objection to the imposition of the penalty must include notification that any objection has been rejected by the Senior Facilities Officer.

Any enquiry in relation to traffic and parking matters at the Callaghan Campus should be referred to the Manager, Security Services, located in the foyer of the Great Hall and at the Central Coast Campus to the Property and Estates Officer, Finance and Estates Building. Application forms to bring a vehicle on to the campus are also available from those offices.

The Trafic and Parking Rules apply to all University campus locations.

**PUBLIC TRANSPORT**

The State Transit Authority provides a comprehensive bus service to and from locations throughout Newcastle. Private bus companies also provide services to Maitland, Wallsend, Toronto and Raymond Terrace. Bus Timetables are available from the Student Enquiry Counter, Callaghan Campus and the Students Association Office, in the Shortland Union.

Bus timetables for services between the Central Coast Campus and Gosford and Wyong are available from the Student Administration and Services Counter, Central Coast Campus.

**Examination** One 2 hour paper.

**Content**


**Text**


**References**


**BIOL102 ANIMAL PHYSIOLOGY** 10cp

**Prerequisites** BIOL101, BIOL102.

**Hours** 6 Hours per week for one semester.

**Examination** One 2 hour paper and one 2 hour biological methods paper.

**Content**

An introduction to the principles of molecular genetics including DNA structure; transcription; translation; control of gene expression in prokaryotes and eukaryotic development; DNA mutation and repair; recombinant DNA technology. The course also covers the principles of classical and evolutionary genetics including mode of inheritance; genetic mapping and recombination; pedigree analysis; heritability; natural selection and speciation.

**Texts**


**References**


**BIOL205 MOLECULAR GENETICS** 10cp

**Prerequisites** BIOL101, BIOL102.

**Hours** 6 Hours per week for one semester.

**Examination** One 2 hour paper and one 2 hour biological methods paper.

**Content**

Biological organisation and inter-relationships. Organelles, their structure & function. Cellular processes.

**Text**


**BIOL206 PLANT PHYSIOLOGY** 10cp

**Prerequisites** BIOL101, BIOL102.

**Hours** 6 Hours per week for one semester.

**Examination** One 2 hour paper and one 2 hour biological methods paper.

**Content**

The processes involved in the transport of oxygen in mammals and emphasizing the relation between structure and function. The course examines molecule, cell and tissue structure and function, particularly of nerve and muscle, and the respiratory, cardiovascular and control systems. Particular emphasis is given to physiological adaptations to the environment.

**Text**


**References**


**BIOL204 CELL AND MOLECULAR BIOLOGY** 10cp

**Prerequisites** BIOL101, BIOL102.

**Hours** 6 Hours per week for one semester.

**Examination** One 2 hour paper.
BIOL207 ECOLOGY 10cp

Prerequisites BIOL101, BIOL102.

Hours Average of 6 Hours per week for one semester, plus a two-day field excursion in July.

Examination One 2 hour paper.

Content
The lecture course will begin with basic population dynamics. This includes the measurement of population size and growth components as well as models of population growth. The effect of environmental factors on the basic models will be considered. This will lead to an investigation of the scientific basis of biological control and conservation strategies. The second part of the course involves the analysis of communities. Methods of defining communities, gradients within communities, species diversity and the similarity between all organisms will be considered. The origin of high species diversity in some environments will be considered. As part of the laboratory course students will be introduced to the use of spreadsheets and word-processing and expected to use these throughout the course.

Text

BIOL208 BIOCHEMISTRY 208 10cp

Not to count for credit with ALSG206

Prerequisites BIOL201

Hours 6 Hours per week for one semester

Examination One 2 hour paper

Content
This subject complements and extends BIOL201 emphasising bioenergetics, metabolic regulation and biosynthesis. Biochemical processes peculiar to plant cells are also considered. Topics covered will include:

- Bioenergetics and oxidative metabolism
- Nucleic acid metabolism
- Membranes
- Protein synthesis
- Principles of metabolic regulation and signal transduction
- Amino acid, cell wall and starch metabolism in plants
- Photosynthetic carbon metabolism

Students who have completed BIOL201 and BIOL208 will have a sound biochemical knowledge for more advanced studies of cellular, biochemical and molecular processes in all organisms.

Texts

BIOL302 REPRODUCTIVE PHYSIOLOGY 10cp

Not offered in 1995

Prerequisites Two BIOL200.

Hours 6 Hours per week for one semester.

Examination One 2 hour paper.

Content
Environmental impacts on whole plant growth are interpreted in terms of the responses of susceptible components of key physiological processes. The processes examined include whole plant photosynthesis, mineral ion absorption and nutrient transport.

Texts

References

BIOL305 IMMUNOLOGY 10cp

Prerequisites Two BIOL200.

Hours 6 Hours per week for one semester.

Examination One 2 hour paper.

Content
Molecular and cellular aspects of the function of the immune system including phlogistic, reproductive and tumour immunology.

Texts
Reitt, I. 1994, Essential Immunology, 8th edn, Mosby, London.

BIOL309 MOLECULAR BIOLOGY 10cp

Prerequisites BIOL201 and BIOL205.

Hours 6 Hours per week for one semester.

Examination One 2 hour paper.

Content
How genes function - and their control. Organisms and techniques used in recombinant DNA technology. Applications of recombinant DNA technology in biology and medicine. Gene expression and its regulation. The control of cell proliferation. The origins and genetic basis of cancer. Because the laboratory sessions need to be continuous, they will be held over four consecutive days during the September recess. Students intending to enrol in this subject are required to indicate this during the Semester 1 enrolment period.

Texts

References

BIOL310 ENVIRONMENTAL PLANT PHYSIOLOGY 10cp

Prerequisites Two BIOL200.

Hours 6 Hours per week for one semester.

Examination One 2 hour paper.

Content
Environmental impacts on whole plant growth are interpreted in terms of the responses of susceptible components of key physiological processes. The processes examined include whole plant photosynthesis, mineral ion absorption and nutrient transport.

References


BIOL311 ENVIRONMENTAL BIOLOGY 10cp

Prerequisites BIOL207.

Hours 2 Hours of lectures per week for one semester. A three-day field excursion and some laboratory classes.

Examination One 2 hour paper.

Content
The course covers applied aspects of both animal and plant ecology.

The lecture course will begin by revising methods of analysing plant communities. A number of methods including Cluster Analysis will be used on the excursion data and evaluated. Some applied ecological topics will then be considered. Various general strategies of pest control will be considered; their ecological basis and the advantages and disadvantages of each. These methods range from using traditional insecticides, through integrated control to genetic manipulations. An important and controversial topic is the exploitation of wild populations such as fish, whales and kangaroos. The mathematical models for ranging will be discussed, as well as the particular problems associated with some species. The models of ecological succession will be discussed in relation to regeneration of disturbed sites, fire control and eutrophication of lakes and dams. Standardised descriptions of communities for GIS’s etc will be demonstrated. This will lead to consideration of rational selection of nature reserves. Finally, some aspects of...
evolutionary ecology will be considered including group selection, the origin of mating patterns and aggressive behaviour.

Text
or

References

**BIO132 ANIMAL DEVELOPMENT** 10cp

Prerequisites Two BIO120

Hours 6 hours per week for one semester.

Examination One 2 hour paper.

Content
The course deals with molecular, cellular and physiological aspects of the development and differentiation of invertebrates and vertebrates. Specific topics include gametes & fertilization, cleavage & gastrulation, molecular biology of development, mammalian development and placentation, sex determination & differentiation, embryos & reproductive technologies, and abnormal development & the role of environmental agents.

References

**BIO133 CELLULAR BIOCHEMISTRY** 10 cp

Prerequisites BIO120 and BIO1208

Hours 6 hours per week for one semester

Examination One 2 hour paper

Content
The regulation of biochemical processes by endocrine, paracrine and autocrine mechanisms is the central theme of this course.

Topics

References

**BIO134 PLANT DEVELOPMENT** 10cp

Not offered in 1995

**BIO135 PLANT MOLECULAR BIOLOGY** 10 cp

Prerequisites Two BIO120 including one of BIO1204, BIO1205, BIO1206 or BIO1208

Hours 6 hours per week for one semester

Examination One 2 hour paper

Content
Plant Molecular Biology emphasises those aspects of molecular biology that are peculiar to plants, particularly in relation to the three plant genomes, the totipotency of plant cells and the genetic engineering of plants.

Topics

References

**BIO136 CELL BIOLOGY** 10cp

Prerequisites Two BIO120.

Hours 6 hours per week for one semester

Examination One 2 hour paper

Content
The structural organization and function of organisms at the subcellular level is examined. Emphasis will be placed on processes which determine the unique properties of plant cells. Topics include the cellular basis of morphogenesis; structural features of the plant cytoskeleton and its role in motility, division and cell shape determination; synthesis and properties of the cell wall; intracellular communication; the role of calcium and other agents as second messengers in development; molecular and cellular mechanisms involved in plant responses to environmental stimuli. Selected concepts of cellular organization and molecular function derived from the study of animal cells will be used as a framework to illustrate comparable processes occurring in plant cells.

Text

References
CHEMISTRY SUBJECT DESCRIPTIONS

CHEM101 CHEMISTRY 101 10cp

Students who have not studied Chemistry previously are strongly advised to read the first six chapters in the main text (Brown and LeMay) before commencement of the academic year.

Advisory subjects at least Mathematics (2 unit course), Chemistry (2 unit course) and Physics (2 unit course), with ranking in the top 50% in each case.

Hours 3 lecture Hours, 1 hour of tutorial and 2 Hours of laboratory classes per week for one semester.

Examination One 3 hour paper. The laboratory work will count for 10% of the final assessment but a pass in the laboratory work is a prerequisite for a pass in the subject.

Content

Inorganic Chemistry (approximately 12 lectures)

Inorganic solids and their structures. Simple molecular orbital theory and structure and bonding in metals. Transition metal chemistry, coordination compounds.

Physical Chemistry (approximately 24 lectures)

Chemical equilibria, thermodynamics, electrochemistry, chemical kinetics.

Text


CHEM211 ANALYTICAL CHEMISTRY 10cp

Prerequisites CHEM101, CHEM102

Hours 2 Hours of lectures, 1 hour of tutorials/workshops and 3 Hours of laboratory work each week for one semester.

Examination One 2 hour paper. The laboratory work will count for 15% of the final assessment but a pass in the laboratory work is a prerequisite for a pass in the subject.

Content

Evaluation and manipulation of analytical data, titrimetric methods of analysis including theory of acid-base, complex formation and oxidation - reduction titrations.

Selected instrumental methods of analysis, atomic spectroscopy, absorption spectrophotometry, potentiometric techniques, gas chromatography.

Text


CHEM221 INORGANIC CHEMISTRY 10cp

Prerequisites CHEM101, CHEM102

Hours 2 Hours of lectures, 1 hour of tutorials/workshops and 3 Hours of laboratory work each week for one semester.

Examination One 2 hour paper. The laboratory work will count for 15% of the final assessment but a pass in the laboratory work is a prerequisite for a pass in the subject.

Content

Main group chemistry and transition metal chemistry. Coordination complexes and metal ion-ligand interactions; ionic bonding; symmetry and structure.

Introduction to reactions and mechanisms, synthesis, spectroscopic methods, bonding and ligand field theory in coordination compounds and organometallic chemistry.

Text


CHEM231 ORGANIC CHEMISTRY - 10cp

Prerequisites CHEM101, CHEM102

Hours 2 Hours of lectures, 1 hour of tutorials/workshops and 3 Hours of laboratory work each week for one semester.

Examination One 2 hour paper. The laboratory work will count for 15% of the final assessment but a pass in the laboratory work is a prerequisite for a pass in the subject.

Content

A course covering the basic chemistry of aliphatic and aromatic compounds and their spectroscopic properties.

An introduction to spectroscopic methods of structure determination (infra-red, proton magnetic resonance, mass spectrometry); acidity and basicity of organic compounds; reactions of carbonyl compounds; aromaticity; electrophilic substitution in aromatic systems; reactions of aromatic compounds. An introduction to the chemistry of some biologically important compounds including carbohydrates, amino acids, proteins and nucleic acids.

Text


CHEM241 PHYSICAL CHEMISTRY 10cp

Prerequisites CHEM101, CHEM102

Hours 2 Hours of lectures, 1 hour of tutorials/workshops and 3 Hours of laboratory work each week for one semester.

Examination One 2 hour paper. The laboratory work will count for 15% of the final assessment but a pass in the laboratory work is a prerequisite for a pass in the subject.

Content

Chemical Dynamics - rate laws of chemical kinetics, principles of mechanism, determination; transition state theory; electrolyte activity; thermodynamics of galvanic cells.

Surface Chemistry - definitions; binding in crystals; condensation coefficient; sticking probability; absorption isotherms; Langmuir model; types of isotherms; determination of surface area of adsorbents (BET); applications of adsorption.

Text

Chemistry Subject Descriptions

CHEM261 ENVIRONMENTAL CHEMISTRY 10cp
Prerequisites CHEM101, CHEM102
Hours 2 Hours of lectures, 1 hour of tutorials/workshops and 3 Hours of laboratory work each week for one semester.
Examination One 2 hour paper. The laboratory work will count for 15% of the final assessment but a pass in this work is a prerequisite for a pass in the subject.
Content
This is an introduction to environmental chemistry, focussing on the hydrosphere and the atmosphere. Specific topics include general introduction; properties, composition and redox equilibria in natural and waste waters; chemical aspects of nitrogen and phosphorous cycles; water pollution; municipal and wastewater treatment; nature and the composition of the atmosphere; atmospheric pollutants; analytical methods.
Text

CHEM311 ANALYTICAL CHEMISTRY 10cp
Prerequisite CHEM211
Hours 2 Hours of lectures, 1 hour of tutorials/workshops and 3 Hours of laboratory work each week for one semester.
Examination One 2 hour paper. The laboratory work will count for 20% of the final assessment but a pass in the laboratory/assignment work is a prerequisite for a pass in the subject.
Content
A survey of selected techniques for specialized or high volume analysis used in areas as diverse as industrial, R & D, hospital and nuclear chemistry. Topics include electronic analytical signal processing; automated analysis (flow analysers, batch analysers, samplers); applications of computers and robotics; X-ray electron microprobe analysis; radiochemical analysis; kinetic and enzymatic methods of analysis.
Text

CHEM312 CHEMOMETRICS 5cp
Prerequisites CHEM211, MATH102 (or MATH112)
Hours 2 Hours of lectures, 1 hour of tutorials/workshops and 3 Hours of laboratory work/assignments each week for half a semester.
Examination One 1 hour paper. The laboratory/assignment work will count for 20% of the final assessment but a pass in the laboratory/assignment work is a prerequisite for a pass in the subject.
Content
Examination of the role of analytical chemistry in studying inorganic species distributions in environmental systems. Course includes discussion of sampling theory and problems associated with trace analysis and speciation.
Text
No formal text. Material to be advised.

CHEM321 INORGANIC CHEMISTRY 10cp
Prerequisite CHEM211
Hours 2 Hours of lectures, 1 hour of tutorials/workshops and 3 Hours of laboratory work each week for one semester.
Examination One 2 hour paper. The laboratory work will count for 20% of the final assessment but a pass in the laboratory/assignment work is a prerequisite for a pass in the subject.
Content
A general course exploring the range of modern inorganic chemistry, including synthesis, reactivity and applications of spectroscopic methods.
Text

CHEM331 BIOINORGANIC CHEMISTRY 10cp
Prerequisite CHEM211
Hours 2 Hours of lectures, 1 hour of tutorials/workshops and 3 Hours of laboratory work each week for one semester.
Examination One 2 hour paper. The laboratory work will count for 20% of the final assessment but a pass in the laboratory/assignment work is a prerequisite for a pass in the subject.
Content
The central theme of this course will be organic synthesis. A survey of important synthetic reactions for functional group transformations and carbon-carbon bond formation with emphasis on the chemo- and stereo- selectivity and mechanisms of these reactions. Systematic approach to synthesis - the disconnection/synthon method. Examples of syntheses and discussion of some literature classics.
Text

CHEM334 IDENTIFICATION OF NATURAL COMPOUNDS 5cp
Prerequisite CHEM211
Hours 2 Hours of lectures, 1 hour of tutorials/workshops and 3 Hours of laboratory work/assignments each week for half a semester.
Examination One 1 hour paper. The laboratory/assignment work will count for 20% of the final assessment but a pass in the laboratory/assignment work is a prerequisite for a pass in the subject.
Content
Metal-metal multiple bonding; lower halide clusters, structure and bonding in boranes and transition metal clusters; higher nuclearity clusters; clusters and catalysis; Zintl species.
Text
No formal text. Material to be advised.
**CHEM355 ORGANIC SPECTROSCOPY** 5cp  
Prerequisite: CHEM231  
**Hours**: 2 Hours of lectures, 1 hour of tutorials and 3 Hours of workshops/laboratory each week for half a semester.  
**Examination**: One hour paper. The laboratory/workshop work will count for 20% of the final assessment but a pass in the laboratory work is a prerequisite for a pass in the subject.  
**Content**: The course will cover applications of ultraviolet/visible, infrared, 1H and 13C nuclear magnetic resonance and mass spectrometry in the structural elucidation of organic compounds.  

**CHEM343 MOLECULAR SPECTROSCOPY** 5cp  
Prerequisite: CHEM241  
**Hours**: 2 Hours of lectures, 1 hour of tutorials/workshops and 3 Hours of laboratory work/assignments each week for half a semester.  
**Examination**: One hour paper. The laboratory/assignment work will count for 20% of the final assessment but a pass in the laboratory/assignment work is a prerequisite for a pass in the subject.  
**Content**: Atomic and Laser Spectroscopy — spontaneous emission of radiation; measurement of radiative lifetimes of atoms and molecules; population inversion mechanism in gas lasers. Photoelectron Spectroscopy — resonant multiphoton ionisation photoelectron spectroscopy; HeI and HeII photoelectron spectroscopy of diatomic molecules.  

**CHEM344 COLOID AND SURFACE CHEMISTRY** 5cp  
Prerequisites: CHEM241  
**Hours**: 2 Hours of lectures, 1 hour of tutorials/workshops and 3 Hours of laboratory work/assignments each week for half a semester.  
**Examination**: One hour paper. The laboratory/assignment work will count for 20% of the final assessment but a pass in the laboratory/assignment work is a prerequisite for a pass in the subject.  
**Content**: Properties and thermodynamics of surfaces, macrolayer, surface tension and wetting, surfactant solutions. The solid-solid interface, adsorption, surface structure. Electrical double layers at interfaces, ion adsorption, coagulation of colloids. Properties and applications of colloids.  
**Text**: Atkins, P.W. Physical Chemistry, 5th edn, Oxford Univ. Press.

**CHEM361 ENVIRONMENTAL CHEMISTRY** 10cp  
Prerequisite: CHEM261  
**Hours**: 2 Hours of lectures, 1 hour of tutorials, and 3 Hours of laboratory/library/workshop/site visits each week for one semester.  
**Examination**: One hour paper. The laboratory/library/workshop/site visits will count for 20% of the final assessment but a pass in this work is a prerequisite for a pass in the subject.  
**Content**: Principles laid down in CHEM261 will be expanded into a more detailed treatment of the chemistry of the hydrosphere, the atmosphere, and the geosphere. Specific topics include advanced aquatic chemistry; aquatic microbial biochemistry; phase interactions on surfaces and clays; pollution and treatment of water by trace elements and radioactivity; photochemical smog: acid rain, greenhouse, ozone hole; energy and resources; environmental chemistry of the geosphere; particulate matter in the atmosphere; organic pollutants in the atmosphere and the geosphere; environmental toxicology.  

**EAMC303 OCCUPATIONAL HYGIENE AND TOXICOLOGY** 10cp  
Prerequisites: EAMC203 and EAMC213 or equivalent.  
**Hours**: 2 hours per week for one year.  
**Examination**: Two major written assignments and an examination at the end of each semester.  
**Content**: By the end of the subject students will be able to: explain the role of the occupational hygienist in identification, assessment and control of workplace hazards; compare and contrast the applicability of environmental, biological and health monitoring in workplace assessment; discuss the uses and limitations of hygiene standards in Australia; devise appropriate monitoring strategies for environmental pollutants; outline strategies for the control of environmental pollutants; explain key toxicological terms such as dose, exposure, effect, response; pharmacokinetic and pharmacodynamics; demonstrate an awareness of the factors influencing toxicity; outline methods of testing for toxicity.  

EAMS313 SOCIAL ASPECTS OF ENVIRONMENTAL HEALTH 10cp
Prerequisites EAMS203 and EAMS113.
Corequisite EAMS303
Hours 2 hours per week for one semester.
Examination Tutorial assessment, essay, take home examination.
Content The social origins of disease, case studies and history, social forms of disease control, eg the sanitation movement, lifestyle related disease, standards of living and health, environmental degradation and health, ecologically sustainable development and health, the social construction of health related terminology, eg 'risk', risk-taking, and risk-imposition, health protection policy, justice and the political economy of health at national and international levels.
References An extensive list of references will be provided at the commencement of lectures.


EAMS304 REGIONAL AND NATIONAL ENVIRONMENTAL ISSUES 10cp
Prerequisites EAMS104 and EAMS114.
Hours 4 hours per week for one semester, field work and directed reading.
Examination Progressive assessment plus final examination.
Content This course covers the rationale and methodology of environmental impact assessment (EIA). Also covered are impact assessment techniques in the practice, the role of International Aid agencies, current developments in environmental management, environmental audits and risk analysis.


EAMS311 ENVIRONMENTAL MANAGEMENT II 10cp
Prerequisite EAMS201 and EAMS211.
Corequisite EAMS301.
Hours 4 hours per week for one semester.

Examination Assignments, field reports and final examination.
Content Environmental management is concerned with the efficient and economic management of natural resources. The principles of good management will be explored in relation to the impact of developments in Australia. Restoration and rehabilitation techniques and practices will be studied in conjunction with cost/benefit analysis and the maintenance of biological diversity, freshwater, soil and marine resources.

Texts Charman, P.E.V. and Murphy, B.W. 1991, Soils Their Properties and Management, Sydney U.P.

EAMS301 ENVIRONMENTAL IMPACT ASSESSMENT 10cp
Prerequisites EAMS104 and EAMS114.
Hours 4 hours per week for one semester, field work and directed reading.
Examination Progressive assessment plus final examination.
Content This course examines case studies of regional and national environmental issues which highlight the major types of environmental assessments. The Commonwealth environmental legislation and environmental law are also covered.


EAMS300 SOIL CONSERVATION AND MANAGEMENT 10cp
Prerequisites EAMS200 and EAMS201.
Hours 4 hours per week lectures and practicals, field work and directed reading for one semester.
Examination Progressive assessment plus final examination.
Content Examination of soils, land use and conservation, particularly in relation to soils of NSW. Soil and water management principles for various types of farm use including urban development. Practical analysis of control structures, sizing and prediction. Use of soils for domestic and industrial wastewater disposal and site rehabilitation.

ENVIRONMENTAL SCIENCE SUBJECT DESCRIPTIONS

EMGT and ENV subjects are available only to candidates who have enrolled in the Bachelor of Environmental Science degree in 1994 and in subsequent years.

EMGT101 FOUNDATIONS OF ENVIRONMENTAL MANAGEMENT 10cp
Prerequisite Nil
Hours 4 hours per week lectures, seminars, fieldwork and directed reading for one semester.
Examination Assignments and final examination
Content
This subject establishes the foundation of environmental management. The need for and approaches to 'state of the environment' reporting, environmental auditing, risk assessment and management and the incorporation of these within effective environmental management systems are explored in relation to the environmental stresses which are currently being generated by human activities at local, regional, national and global scales. Responses to these stresses are compared with the requirements of ecologically sustainable use of natural resources and to the demands of current environmental legislation. The value of an integrated approach to environmental problem solving is emphasised throughout this unit. Concepts will be demonstrated by examination of selected case studies in environmental management; by group analysis of key issues and by directed reading for one semester.
Text
No set text, a complete list of references will be provided at the commencement of the subject. However, prospective students could profit from reading:


EMGT201 SOILS AND HYDROLOGY 10cp
Prerequisite ENV103
Hours 4 hours per week lectures and practicals, fieldwork and directed reading for one semester.
Examination Progressive assessment plus final examination.
Content
This subject provides a general introduction to soil and water concepts in the catchment ecosystem. Topics covered in the soils strand include the nature, properties and classification of soil, soils of NSW, soil survey and soil landscapes, soil erosion and degradation, and an introduction to soil conservation and management. Topics covered in the hydrology strand include rainfall/runoff analysis, IDF curves, peak runoff prediction, soil water and permeability, interception, flood analysis, solute mixing, pollutant loading, instrumentation and small catchment hydrology.

EMGT102 SOCIAL DEVELOPMENT AND THE ENVIRONMENT 10cp
Prerequisites Nil
Hours 2 hours face-to-face, 3 hours directed study per week for one semester.
Examination One written exam, one essay and tutorial assessment.

Text


References


EMGT202 THE SUSTAINABLE SOCIETY 10cp
Prerequisites EMGT102 and/or ENV102
Hours 2 hours face-to-face, 3 hours directed study per week for one semester.
Examination One written examination, one essay and tutorial assessment.

Content
An analysis of the foundations of the public policy orientation that has come to be known as 'Ecologically Sustainable Development'. It examines the biophysical basis to human social life in relation to the thesis that there are limits to economic growth imposed by the finite nature of resources and the ability of natural 'stinks' to absorb and recycle the waste of human enterprise. Students are required to critically evaluate different perspectives on ESD where cultural, ethical and political assumptions are made explicit. The ethical issues associated with ESD are given particular emphasis (eg inter and intra-generational equity, acceptable risk and the precautionary principle and the value of biodiversity). The subject concludes with an analysis of green political thought as part of the evaluation of how humans can create a sustainable society.

Content
(a) An analysis of the foundations of the public policy orientation that has come to be known as sustainable development. The biophysical basis of the limits to economic growth. The different philosophical and political perspectives on sustainable development: The Brundtland Report or Our Common Future, Third World Perspectives, Deep Green perspectives, Australian
policy on Ecologically Sustainable Development (ESD), Industry and ESD. The ethical implications of a policy of ESD, eg an acceptable risk, intra- and intergenerational equity, the value of biodiversity. Visions of the sustainable society, case studies in eg energy policy, agriculture.

(b) Creating the Sustainable Society; the Green Political Spectrum, Ecologism as a new political ideology, participatory democracy and green political action, decentralisation, international governance, green politics in Australia, and international green politics.

References
A complete list of references will be provided at the commencement of the subject. However, prospective students could profit from reading:


EMGT203 AUSTRALIAN FLORA AND FLORA
Prerequisites BIOL101, BIOL102 and ENV103

Hours 4 hours per week for one semester, plus a field excursion for 3 days.

Examination Assignments, field reports and a final examination.

Content
This subject provides an introduction to the systematics and ecology of Australian flora and fauna from an evolutionary perspective. The course will follow the comparative approach for studying diversity and evolution. Topics covered will include: the relationship between distribution and classification, classification of habitats, cospeciation, generalists versus specialists, the genetic basis of evolutionary change, selection and adaptation, reproductive fitness, modes of speciation, hybridisation, desertic and gilled, and genome organisation and evolution. The practical component will emphasise the skills and knowledge required for competence in the identification of taxa and their major characteristics and adaptations. Field work will deal with relevant techniques for survey and monitoring of plants and animals.

Text

References

EMGT204 SYSTEMS AGRICULTURE 10cp

Prerequisites ENV103.

Hours 4 hours per week for one semester.

Examination Assignments and reports.

Content
The effect of human disturbance of natural ecosystems is studied using agriculture as the focus, specifically a series of agricultural production systems of increasing complexity and energy demand. Systems concepts are explored as a way of understanding complexity and of improving complex, problematical situations in agriculture and the environment.

Text

References

EMGT301 COASTAL SYSTEMS MANAGEMENT 10cp

Offered To be offered in 1996.

Prerequisite EMGT201, EMGT203

Hours 4 hours per week lectures, seminars, fieldwork and directed reading for one semester.

Examination Progressive assessment and a final examination.

Content
This subject examines the practicalities of managing selected natural environmental systems within the coastal zone. Beaches, dunes, estuaries and wetlands provide the main focus and their study is set within the broader context of coastal land use planning and total catchment management. Rehabilitation of degraded coastal systems provides a secondary but unifying theme.

Management practicalities are considered in conjunction with the functional principles and policy frameworks governing these environmental systems; case studies of public and private sector initiatives as well as community based programmes such as Dune Care, provide practical insights which are supported by field investigation of selected regional examples.

Text and References
To be advised.

EMGT302 THE POLITICS OF ENVIRONMENTAL HEALTH 10cp

Offered To be offered in 1996.

Prerequisite EMGT202

Hours 2 hours face-to-face, 3 hours directed study per week for one semester.

Examination One written exam, one essay and tutorial assessment.

Content
The social history of disease, traditional public health and the sanitation movement, the biomedical model of health and disease, a "transdisciplinary" view of health and disease. Traditional environmental health, the "new" environmental and public health movements eg Healthy Cities. Health, inequality and the sustainable society. The social construction of "risk" and health-related terminology, risk-taking, risk-imposition and health. Health protection policy and the political economy of health.

References
A complete list of references will be provided at the commencement of the subject. However, prospective students could profit from reading:

Content
A subject that introduces students to the causes of environmental destruction through an analysis of key concepts such as anthropocentrism, patriarchy, mechanisms and reductionism, technocentrism, growth and progress and the responses to these sources of 'dystopia' in the form of late twentieth century environmental philosophies such as Stewart sand, Native Ecology, Animal Liberation, The Land Ethic, Deep Ecology, Ecofeminism, Social Ecology and the Gaia Hypothesis. Students are taken systematically from anthropocentric to eco-centric positions in this subject. Students are exposed to the need to understand the 'history of ideas', key cultural concepts and the rigour of philosophical debate and argument as a vital part of understanding the nature of environmental problems.
References
A complete list of references will be provided at the commencement of the subject. However, prospective students could profit from reading:
- Bookchin, M. 1989, Remaking Society, Montreal, Black Rose Books.

ENV102 ENVIRONMENTAL ISSUES AND PROBLEMS 10cp
Prerequisite Nil
Hours 5 hours per week for one semester.
Examination Progressive assessment plus final examination
Content
A short introduction to environmental problem solving and an analysis of regional environmental issues. The course emphasises integration of the basic sciences, including measurement and statistics to provide solutions to environmental problems. Objectives of the subject include development of library research skills, problem solving skills, communication and writing skills. The assessment will be based on reports and class presentations.

Typical regional environmental issues from which exercises may be drawn include: the environmental impact of coal mining and industry in the Hunter Valley and the impact of sanitary landfill and waste management strategies of local Government.

ENV202 HUMAN VALUES AND THE ENVIRONMENT 10cp
Prerequisite ENV102
Hours 2 hours face-to-face, 3 hours directed study per week for one semester.
Examination One written examination, one essay and tutorial assessment.
A subject that expands on the material presented in ENV102 in the areas of science, technology and economics. A critical understanding of the 'human' values present in these three domains is developed through philosophical and sociological analysis. The philosophy and sociology of science and technology reveals that the traditional view of these domains as being at all times "value free", especially in relation to environmental issues, is not sustainable. Equally, economic analysis of environmental issues is not without its own implicit value orientations. By examining the various positions in the literature, this subject will make explicit the human values in science, technology and economics with specific reference to environmentalism.

Content
(a) The values embedded in science and technology and their relationship to environmentalism. The traditional account of science, philosophies of science, objectivity in environmental science, gender and technology, the military and technology, technology and health, genetic engineering and ethics.
(b) Economic values and their relationship to the environment. Eco-Capitalist (market) responses to environmentalism, the Steady State Economy, Eco-Socialism/Anarchism, Buddhist economics, Feminist economics.

Text
No set text, a complete list of references will be provided at the commencement of the subject. However, prospective students could profit from reading:
Chalmers, A.F. 1976, What is This Thing Called Science?, St Lucia, University of Queensland Press.

ENV203 ENVIRONMENTAL SAMPLING AND DATA ANALYSIS 10cp
Prerequisite ENV103.
Hours 5 hours per week for one semester.

Examination Progressive assessment plus final examination.

ENV301 INTEGRATED ENVIRONMENTAL IMPACT ASSESSMENT 10cp
Offered To be offered in 1996.
Prerequisite ENV201
Hours 4 hours per week lectures and tutorials and directed reading for one semester.
Examination Progressive assessment plus final examination.

This subject covers the rationale and methodology of integrated environmental impact assessment (EIA). This process includes consideration of the relevant bio-physical, social, cultural, economic and human health aspects of development proposals, programs and policies. Topics covered will include impact assessment methodologies, national and international aid agencies, Social Impact Assessment (SIA), health impact assessment, impact prediction and auditing, environmental decision making and dispute resolution, EIA in developing countries and EIA as an applied science. A number of case studies to illustrate aspects of EIA in practice will be examined.

Text
To be advised.

References
Thomas, I. 1987, Environmental Impact Assessment: Australian Perspective and Practice, Graduate School of Environmental Science, Monash University.

ENV303 ENVIRONMENTAL SPECIALIST STUDY 10cp
Offered To be offered in 1996.
Prerequisites ENV201, ENV202, ENV203
Hours 2 hours per week (minimum) for one year
Examination Literature review, maintenance of log book, submission of final report and attendance at seminars.

This course will examine the rationale and methodology of environmental impact assessment (EIA) and will look at a number of impact assessment techniques in practice. The phenomenon of EIA will be discussed and current developments in environmental management will be examined. Reference will also be made to environmental documentation prepared for various developments.

Text
GEOGRAPHY SUBJECT DESCRIPTIONS

GEOG101  INTRODUCTION TO PHYSICAL GEOGRAPHY  10cp
Prerequisites Nil. Students should note that GEOG101 and GEOG102 are prerequisites for the Geography Major in Arts and Science, and for Geography Honours GEOG401 and GEOG402.
Hours 2 hours of lectures and 2 hours of practical work per week for one semester. A one day field excursion.
Examination Progressive assessment and one 2 hour paper at the end of the semester.
Content
An introduction to physical geography including meteorology and climate; the influence of geomorphic processes on landforms; weathering, rivers, ice, frost, wind and the sea; the physical, chemical and biological characteristics of the soil and the development of soil profiles; environmental and historical factors that influence plant distribution.
Practical work includes an introduction to the study of climate maps and data, soil and the development of soil profiles; environmental and historical factors that influence plant distribution. The use of topographic maps and photographic methods is used to study the development of landforms.

Text

GEOG102  INTRODUCTION TO HUMAN GEOGRAPHY  10cp
Prerequisites Nil. Students should note that GEOG101 and GEOG102 are prerequisites for the Geography Major in Arts and Science, and for Geography Honours GEOG401 and GEOG402.
Hours 2 hours of lectures and 2 hours of practical work per week for one semester. A one day field excursion.
Examination Progressive assessment and one 2 hour paper at the end of the semester.
Content
An introduction to human geography including cultural, population, economic, development and urban geography. Practical work includes an introduction to elementary statistical data, maps and graphs, and representations of human landscapes.

Text

GEOG201  METHODS IN PHYSICAL GEOGRAPHY  10cp
Prerequisite GEOG101.
Hours 4 hours per week for one semester.
Examination Progressive assessment and one 2 hour paper at the end of the semester.
Content
An introduction to statistics and computing for Physical Geography. Study of cartographic, photographic and aerial photographic methods in geography.

GEOG202  METHODS IN HUMAN GEOGRAPHY  10cp
Prerequisite GEOG102.
Hours 4 hours per week for one semester.
Examination Progressive assessment and one 2 hour paper at the end of the semester.
Content

GEOG203  BIOGEOGRAPHY AND CLIMATOLOGY  10cp
Prerequisite GEOG101.
Hours 4 hours per week for one semester. 2 days field work.
Examination Progressive assessment and one 2 hour paper at the end of the semester.
Content
An introduction to biogeography; ecological principles as they pertain to the distribution and association of organisms; study of the major plant and animal communities of the world and Australia; changes in distribution; origins of Australian flora and fauna.
An introduction to climatology on global, synoptic and meso­scales including radiation and heat budgets; precipitation processes; general circulation; agricultural climatology; applied climatology; and Australian climate patterns.

Text

GEOG204  GEOMORPHOLOGY OF AUSTRALIA  10cp
Prerequisite GEOG101.
Hours 4 hours per week for one semester. 2 days field work.
Examination Progressive assessment and one 2 hour paper at the end of the semester.
Content
Rocks and their weathering, structural landforms, soils, slope development and mass movements, fluvial, aeolian and coastal processes and landforms, glacial and periglacial processes and landforms.

GEOG205  POPULATION, CULTURE AND RESOURCES  10cp
Prerequisite GEOG102.
Hours 4 hours per week for one semester. 2 days field work.
Examination Progressive assessment and one 2 hour paper at the end of the semester.
Content
The course examines three themes: population and migration; culture and technology; resource use. These themes are illustrated by historical and contemporary case studies at a variety of spatial scales.
Topics include: world and regional population growth; migration; population growth and settlement; culture, plural societies and development; culture, technology and resource use; agricultural origins, diffusion and practices.

GEOG206  CITIES AND REGIONS  10cp
Prerequisite GEOG102.
Hours 4 hours per week for one semester. 2 days field work.
Examination Progressive assessment and one 2 hour paper at the end of the semester.
Content
This course introduces the changing nature and distribution of fundamental aspects of human geography: urban settlement and the mode of production. These themes are illustrated by case studies of cities, industries, regions and communities.
Topics include: regional growth and industrial development; processes of urban and regional change; urban hierarchies; internal structure of the city; social impact of change; policy and planning.

GEOG207  THE BIOSPHERE AND CONSERVATION  10cp
Prerequisites GEOG201, GEOG203 and GEOG204.
Hours 4 hours per week for one semester. 4 days fieldwork.
Examination Progressive assessment and one 2 hour paper at the end of the semester.
Content
Biogeography: Dispersal, colonization and succession processes.

Reference

GEOG301  ADVANCED METHODS IN PHYSICAL GEOGRAPHY  10cp
Prerequisites GEOG201 plus either GEOG203 or GEOG204.
It is strongly recommended that students complete both GEOG203 and GEOG204 before enrolling in GEOG301. This course consists of a 6 day field excursion.
Examination Progressive assessment.
Content
The course includes a field excursion to western New South Wales. The soils, geomorphology and biogeography of the semi-arid and arid zone will be studied. Methods include surveying, mapping, field descriptions and interpretations of physical geography phenomena.

NB The field trip will take place in the mid-year break prior to the beginning of second semester.

GEOG302  ADVANCED METHODS IN HUMAN GEOGRAPHY  10cp
Prerequisites GEOG202 plus either GEOG207 or GEOG208.
This course mainly involves a major field excursion.
Examination Progressive assessment.
Content
This course includes a major field excursion to inner Melbourne to investigate a contemporary human geography issue. Methods include survey design, questionnaire construction, social analysis, qualitative field methods and computer-aided mapping.

NB The field trip will be scheduled prior to the beginning of first semester.
Soils: Processes of soil erosion, soil conservation issues and methods.

References

GEOG305 CLIMATIC PROBLEMS 10cp
Prerequisites GEOG201 and GEOG203.
Hours 4 hours per week for one semester. 1 day fieldwork.
Examination Progressive assessment and one 2 hour paper at the end of the semester.

Content
Introduces palaeoclimates in the Pleistocene and Holocene, and the reasons behind climate changes over those periods. Describes anthropogenic impacts on climate through air pollution, on local, regional and global scales. Evaluates near-future possible climate variations over the next century. Topics include stratospheric ozone depletion, acid rain, greenhouse warming, nuclear winter and air pollution dispersion problems.

Text
Bridgman, H.A. 1990, Global Air Pollution Problems for the 1990s, paperback Belhaven Press.
Recommended Reading
Bradley, R.S. 1985, Quaternary Palaeoclimatology, Allen & Unwin.

GEOG306 GEOGRAPHY OF AUSTRALIA: AN HISTORICAL PERSPECTIVE 10cp
Prerequisites GEOG202 plus either GEOG207 or GEOG208.
Hours 4 hours per week for one semester. 2 days fieldwork. 
Examination Progressive assessment and one 2 hour paper at the end of the semester.

Content
Selected aspects of the population, settlement and land use patterns of Australia. Topics to be studied include exploratory images, image-makers and distorters, and visions of Australia before 1900; migration to the New World; population of Australia 1788-1981; urbanization in Australia; agricultural land use 1788 to 1914.

GEOG309 SOCIETY & SPACE 10cp
Prerequisites GEOG202 plus either GEOG207 or GEOG208.
Hours 4 hours per week for one semester. 2 days fieldwork/ project work.
Examination Progressive assessment and one 2 hour paper at the end of the semester.

Content
This course examines the interaction of social groups with each other and with the urban environment. Groups defined by ethnic and socio-economic status, family structure and gender will be studied. The course will use a variety of methodological approaches to socio-spatial behaviour.

GEOG310 DIRECTED STUDIES IN HUMAN GEOGRAPHY 10cp
Not offered in 1995

GEOG311 HYDROLOGY 10cp
Prerequisites GEOG201 and GEOG203.
Hours 4 hours per week for one semester. 2 days fieldwork.
Examination Progressive assessment and one 3 hour paper at the end of the semester.

Content
The course examines the distribution of water in the environment. Most attention will be given to atmospheric moisture, the hydrologic cycle, catchments, runoff, sediment and solute transport, soil water and water resources.

Text

GEOG315 PRODUCTION, WORK AND TERRITORY 10 cp
Prerequisites GEOG202 plus either GEOG207 or GEOG208.
Hours 4 hours per week for one semester. 2 days fieldwork.
Examination Progressive assessment and one 2 hour paper at the end of the semester.

Content
The course examines contemporary changes in production, distribution and consumption in manufacturing industry and in large cities. It focuses on the geography of industrial and urban change. Topics include the territorial organisation of production, the role of large corporations, technological change, divisions of labour and the changing nature of work, the changing role of the state, urban regeneration, global cities and the urban property market. The course includes a two-day field trip to the Sydney CBD.

Texts

GEOG316 DIRECTED STUDIES IN PHYSICAL GEOGRAPHY 10cp
Not offered in 1995

GEOL101 THE ENVIRONMENT 10cp
Hours 6 hours per week for one semester, including lectures, practicals and field excursions.
Examination One 3 hour paper, assignments and laboratory practicals.

Content
A lecture, field and practical course which examines in the widest context the evolution of our planet and man's environment. Specific topics are the Earth in space; evolution and dynamics of the planet Earth; evolution of the atmosphere, hydrosphere, biosphere and life; the impact of climatic change; structures produced as a result of plate collision; geology and the environment; natural hazards, geology of the Hunter Region.

Texts
Skinner, B.J. & Porter, S.C. 1987, Physical Geology, Wiley or 

GEOL102 EARTH MATERIALS 10cp
Prerequisite GEOL101 The Environment
Hours 6 hours per week for one semester, including lectures, practicals and excursions.
Examination One 3 hour paper, assignments and practical examinations.

Content
A course dealing with the features and internal structure of rock forming minerals, the characteristics of volcanoes and their products, weathering processes and depositional environments of sediments. The metamorphism of rocks in different tectonic settings, energy resources and ore deposits of different origins are also discussed.

Texts
or 

Reference

GEOL211 OPTICAL MINERALOGY 5cp
Prerequisite GEOL102
Not to count for credit with GEOL201
Hours 3 hours per week for one semester, including lectures, practicals and class assignments.
GEOL214 GEOLOGICAL STRUCTURES AND RESOURCES 10cp
Prerequisite: GEOL102
Not to count for credit with GEOL204
Hours 6 hours per week for one semester
Examination One 3 hour paper, class assignments, practical examination
Content
Geological Structures
Structural concepts as well as the origin and interpretation of geological structures (e.g. folds, faults, cleavages, joints). This section is supported by field excursions.
Resources
A course on sedimentary ore deposits, focussing on the nature and origin of economic resources found in sedimentary environments.
Texts

GEOL215 GEOLOGY FIELD COURSE 215 10cp
Prerequisite: GEOL102
Not to count for credit with GEOL205, GEOL206
Hours 14 days field work in two 7 day sessions for one semester (February, week before Semester 1, Easter break) and 2 hours per week class work dealing with the interpretation of geological maps.
Examination By report and practical examination
Content
(i) Analysis of the southern margin of the Sydney Basin, igneous and metamorphic rocks of the Southern Lachlan Fold Belt, and mapping of a composite pluton. Preparation of reports and supporting tutorials, and lectures.
(ii) Mapping of metasedimentary and metapelitic sequences of the Southern Lachlan Fold Belt; integration and presentation in a report.
Text

GEOL216 GEOLOGY FIELD COURSE 216 5cp
Prerequisite GEOL215
Corequisite: GEOL214
Not to count for credit with GEOL207
Hours 7 days field work for one semester (September break)
Examination By report
Content
Mapping of low grade metamorphic rocks of the Cobar area; structural and stratigraphic interpretation; relationship of sulphide rocks to structure and stratigraphy; presentation of results and interpretation in a report.
Text

GEOL311 IGNEOUS PETROLOGY AND CRUSTAL EVOLUTION 10cp
Prerequisite: GEOL212
Not to count for credit with GEOL303, GEOL306
Hours 6 hours per week for one semester
Examination One 3 hour paper and class assignments
Content
Igneous Petrology
Petrology of igneous rocks in relation to the tectonic environment. Changes in igneous petrogenesis throughout time.
Crustal Evolution
Geological evolution of selected Archaean and Proterozoic terrains in Australia: comparisons and contrasts with modern tectonic environments to assess the processes of continental growth throughout geological time.
Text

GEOL312 METAMORPHIC PETROLOGY 10cp
Prerequisite: GEOL212
Not to count for credit with GEOL303, GEOL306
Hours 6 hours per week for one semester
Examination One 3 hour paper, class assignments
Content
Petrogenesis of metaigneous rocks; interpretation of textures of rocks formed during prograde metamorphism, ductile shearing and accretion-subduction; processes involved in the production of grain shapes, intergranular and intercumulus features.
Text

GEOL313 STRUCTURAL GEOLOGY AND GEOPHYSICS 10cp
Prerequisite: GEOL214
Not to count for credit with GEOL301, GEOL302
Hours 6 hours per week for one semester
Examination One 3 hour paper, class assignments
Content
Structural Geology
Analysis of multiply deformed terrains; ductile shear zones, kinematic indicators and analysis, strike slip faulting, thrust and extensional tectonics.
Exploration Geophysics
Geophysical techniques - Interpretation of geophysical data and the application of geophysical methods to exploration for metallic resources and fossil fuels.
Text

GEOL314 STRATIGRAPHIC METHODS 10cp
Prerequisite: GEOL213
Not to count for credit with GEOL304, GEOL305
Hours 6 hours per week for one semester
Examination One 3 hour paper, and class assignments
Content
Stratigraphic Methods
Stratigraphic nomenclature; biostratigraphic zones; factors in lithostratigraphy; stratigraphic breaks; stratigraphic facies changes; catastrophic stratigraphy versus uniformitarianism; correlation; stratigraphic palaeoecology. Types of stratigraphic maps and sections; numerical analysis of data strings; numerical map analysis.

Micropalaeontology
Microfossils; their morphology, stratigraphic dispersal and economic importance.
Geochronology and World Stratigraphy

Prerequisites of age dating; regional geological patterns of selected provinces of the world.

Texts Consult lecturer concerned

GEOL315 SEDIMENTOLOGY 10cp

Prerequisites GEOL212, GEOL213

Not to count for credit with GEOL305

Hours 6 hours per week for one semester

Examination One three hour paper, class assignments

Content Lithologic associations in relation to the depositional facies of their ancient and recent environments of formation with emphasis on the genetic connection between the geological setting of a depositional area and its sedimentary fill (basin analysis). The subject of petroleum maturation indices within the basin will also be covered.


GEOL316 GEOLOGY OF FUELS 10cp

Prerequisite GEOL213

Not to count for credit with GEOL305

Hours 6 hours per week for one semester

Examination One three hour paper, class assignments

Content Coal Geology

A course dealing with coal formation, depositional and tectonic environments and peat mires, coal exploration and utilisation.

Petroleum Geology

Origin, source, migration, entrapment and distribution of petroleum and gas; the exploration and exploitation techniques of its detection, evaluation and recovery.

Texts Consult lecturer concerned

GEOL317 RESOURCE AND EXPLORATION GEOLOGY 10cp

Prerequisites GEOL212, GEOL214

Not to count for credit with GEOL301, GEOL306

Hours 6 hours per week for one semester

Examination One 3 hour paper, class assignments

Content

This course presents fundamental criteria for the formation and characteristics of metallic ore deposits. An emphasis is placed on an understanding of ore-forming processes in magmatic, hydrothermal and metamorphic settings. A computer-assisted learning package 'Exploration Methods' and laboratory study of metallic ore deposits complement the lecture course.


Roberts, B.G & Sheahan, P.A. 1988, Ore Deposit Models, Geol. Ass. Canada

GEOL318 GEOLOGY FIELD COURSE 318 5cp

Prerequisite GEOL213

Hours 7 days fieldwork (early to mid-February)

Examination By report

Content

A field course (Heron Island, north Queensland) involving the study of a modern carbonate depositional environment.

GEOL319 GEOLOGY FIELD COURSE 319 5cp

Prerequisites GEOL216, GEOL313

Corequisite GEOL311

Hours 10 days fieldwork (July break)

Examination By report

Content

Structural analysis of a multiply-deformed high-grade metamorphic terrain (Broken Hill Block). Evaluation of P-T histories in the terrain and integration with tectonic models.

Texts Consult lecturer concerned

GEOL320 QUATERNARY GEOLOGY 10cp

Not offered in 1995.
**MATH103 MATHEMATICS 103** 10cp

**Prerequisites** Either a performance of at least 120 out of 150 in 3 unit Mathematics at the NSW Higher School Certificate or equivalent or MATH102 or MATH111 and MATH112. 

**Hours** 4 lecture hours and 2 tutorial hours per week for one semester.

**Examination** One 3 hour paper.

**Content**


Counting, probability, and an introduction to finite mathematical structures.

**Text**

University of Newcastle Tutorial notes for MATH103 1994.

**Advisory Text**


References


Brisley, W. *Notes for Linear Algebra* [Lecture notes in Mathematics, University of Newcastle, No.5], or *A Basis for Linear Algebra*.


Giles, J.R. *Real Analysis: An Introductory Course*. (Lecture notes in Mathematics, Univ Newcastle, No. 6).


LEVEL 200 MATHEMATICS SEMESTER SUBJECTS

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject Name</th>
<th>Prerequisites</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH201</td>
<td>MULTIVARIABLE CALCULUS</td>
<td>MATH111 and MATH112, or both MATH102 and MATH103, or MATH102 and Permission of Head of Department.</td>
<td>University of Newcastle. Mathematics II Tutorial Notes 1994.</td>
</tr>
<tr>
<td>MATH203</td>
<td>ORDINARY DIFFERENTIAL EQUATIONS 1</td>
<td>MATH111 and MATH112 or both MATH102 and MATH103, or MATH102 and Permission of the Head of Department.</td>
<td>University of Newcastle, Mathematics II Tutorial Notes 1994.</td>
</tr>
<tr>
<td>MATH204</td>
<td>COMPLEX ANALYSIS 1</td>
<td>MATH111 and MATH112 or both MATH102 and MATH103, or MATH102 and Permission of the Head of Department.</td>
<td>University of Newcastle, Mathematics II Tutorial Notes 1994.</td>
</tr>
</tbody>
</table>
MATH213 MATHEMATICAL MODELLING 5cp
Prerequisites (MATH102 and MATH103) or (MATH111 and MATH112).
Hours 2 hours per week for one semester.
Examination One 2 hour paper.
Content
This topic is designed to introduce students to the idea of a mathematical model. Several realistic situations will be treated beginning with an analysis of the non-mathematical origin of the problem, the formulation of the mathematical model, solution of the mathematical problem and interpretation of the theoretical results. The use of computers is an integral part of this subject.
References

MATH215 OPERATIONS RESEARCH 5cp
Prerequisites MATH102 or MATH103 or (MATH111 and MATH112).
Hours 2 hours per week for one semester.
Examination One 2 hour paper.
Content
Operations research involves the application of quantitative methods to the analysis of problems involved in the operation of systems and its aim is to evaluate the consequences of certain decision choices and to improve the effectiveness of the system as a whole.

MATH216 NUMERICAL ANALYSIS 5cp
Prerequisites (MATH102 and MATH103) or (MATH111 and MATH112 and MATH113) and a high level computing language.
Hours 2 hours per week for one semester.
Examination One 2 hour paper.
Content
This course aims to give students a thorough grounding, with emphasis on practical calculations, in the matrix methods which find application in many areas of engineering, science and technology. Vector space R^n, subspaces of R^n, bases and dimension, linear maps from R^n to R^m, Euclidean spaces, Gram-Schmidt process, eigenvalues and eigenvectors, diagonalization, orthogonal matrices, Laplace transforms.

MATH219 MATHEMATICAL MODELLING 5cp
Prerequisites MATH102 or (MATH111 and MATH112)
Not to count for credit with MATH208.
Hours 2 hours per week for one semester.
Examination One 2 hour paper.
Content
This course concentrates on aspects of discrete mathematics which have been successfully applied to problems in a diversity of areas, including industry, commerce and defense. These include such topics as network analysis and linear programming.

References

MATH220 ANALYTIC METHODS 1 5cp
Prerequisite (MATH102 and MATH103) or (MATH111 and MATH112 and MATH113)
Not to count for credit with MATH204.
Hours 2 hours per week for one semester.
Examination One 2 hour paper.
Content
Analysis arose from a need to study the ideas underlying calculus in order to establish a firm foundation for the theory of continuous and differentiable functions. This course is an introduction to the basic techniques of analysis, in the familiar context of functions of one real variable. Analysis is fundamental to much of modern mathematics and so the techniques learned here are essential for many later mathematics courses.

References
Binmore, K.G. 1985, Mathematical Analysis, CUP.
Giles, J.R. Real Analysis: an introductory course, (Lecture Notes in Mathematics, University of Newcastle, No.6)
Spivak, M. 1967, Calculus, Benjamin.

MATH221 ALGEBRAIC METHODS 1 5cp
Prerequisite MATH220
Hours 2 hours per week for one semester.
Examination One 2 hour paper.
Content
This course continues the development of the principles and techniques of analysis, particularly in the context of functions of several variables. The essential features of the one variable theory are extracted and applied to the several variable theory of continuous and differentiable functions. This leads naturally to the modern theory of topology, whose basic concepts are introduced in the setting of Euclidean space.

This is a prerequisite for many 300 level Mathematics subjects.

References
Giles, J.R. 1989, Introduction to the Analysis of Metric Spaces, CUP.
Giles, J.R., Real Analysis: an introductory course (Lecture Notes in Mathematics, University of Newcastle, No.6)

MATH222 ALGEBRAIC METHODS 2 5cp
Prerequisite MATH220
Hours 2 hours per week for one semester.
Examination One 2 hour paper.
Content
This course continues the development of the principles and techniques of analysis, particularly in the context of functions of several variables. The essential features of the one variable theory are extracted and applied to the several variable theory of continuous and differentiable functions. This leads naturally to the modern theory of topology, whose basic concepts are introduced in the setting of Euclidean space.

This is a prerequisite for many 300 level Mathematics subjects.

References
Giles, J.R. 1989, Introduction to the Analysis of Metric Spaces, CUP.
Giles, J.R., Real Analysis: an introductory course (Lecture Notes in Mathematics, University of Newcastle, No.6)
MATH301 LOGIC AND SET THEORY 10cp
Not offered in 1995
Prerequisites Two of MATH208, MATH218, MATH220, MATH222, MATH211, MATH212
Hours 3 hours per week for one semester.
Examination One 2 hour paper.
Content
(An essay: see note at the end of the listing for 300 level subjects).

References
Crossley, J. et al., 1972, _What is Mathematical Logic?_, Oxford.

MATH302 GENERAL TENSORS AND RELATIVITY 10cp
Prerequisites MATH201 and MATH208
Hours 3 hours per week for one semester.
Examination One 2 hour paper.
Content
(An essay: see note at the end of the listing for 300 level subjects).
Covariant and contravariant vectors, general systems of coordinates. Covariant differentiation, differential operators in general coordinates. Riemannian geometry, metric, curvature, geodesics. Applications of the tensor calculus to the theory of elasticity, dynamics, electromagnetic field theory, and Einstein’s theory of gravitation.

References
Lichnerowicz, A. 1962, _Elements of Tensor Calculus_, Methuen.
Tyndall, J.S. 1965, _An Introduction to Tensor Analysis_, Longman.

MATH303 VARIATIONAL METHODS AND INTEGRO-DIFFERENTIAL EQUATIONS 10cp
Not offered in 1995
Prerequisites MATH201, MATH203 and (MATH220 or MATH204).
Hours 3 hours per week for one semester.
Examination One 2 hour paper.
Content
(An essay: see note at the end of the listing for 300 level subjects).
Problems with fixed boundaries: Euler’s equation, other governing equations and their solutions; parametric representation. Problems with movable boundaries: transversality condition; natural boundary conditions; discontinuous solutions; corner conditions. Problems with constraints. Isoperimetric problems. Direct methods. Fredholm equation; Volterra’s equation; existence and uniqueness theorems; method of successive approximations; other methods of solution. Fredholm equation with degenerate kernels and its solutions.

References

MATH304 ORDINARY DIFFERENTIAL EQUATIONS 2 10cp
Prerequisites MATH201, MATH203, MATH220, MATH208
Hours 3 hours per week for one semester.
Examination One 2 hour paper.
Content
(An essay: see note at the end of the listing for 300 level subjects).

References

MATH305 PARTIAL DIFFERENTIAL EQUATIONS 2 10cp
Prerequisites MATH201, MATH202, MATH203 and MATH220.
Hours 3 hours per week for one semester.
Examination One 2 hour paper.
Content
(An essay: see note at the end of the listing for 300 level subjects).
First order equations: linear equations, Cauchy problems; general solutions; nonlinear equations; Cauchy method of characteristics; compatible systems of equations; complete integrals, the methods of Charpit and Jacobi. Higher order equations: linear equations with constant coefficients; reducible and irreducible equations; second order equations with variable coefficients; characteristics, hyperbolic, parabolic and elliptic equations. Special methods: separation of variables; integral transforms; Greens function. Applications in mathematical physics where appropriate.

References
Section Five

Mathematics Subject Descriptions

MATH306 FLUID MECHANICS 10cp
Not offered in 1995

MATH307 QUANTUM AND STATISTICAL MECHANICS 10cp
Prerequisites MATH201, MATH203, MATH206, and (MATH208 or MATH218)
Hours 3 hours per week for one semester.
Examination One 2 hour paper.
Content (An essay: see note at the end of the listing for 300 level subjects.)
Weaver, R.L. 1968, Measure Theory and Integration, Ellis Horwood.
Halmos, P.R. 1950, Measure Theory, Van Nostrand.

MATH312 ALGEBRA 10cp
Not offered in 1995
Prerequisites MATH208 and MATH223
Hours 3 hours per week for one semester.
Examination One 2 hour paper.
Content (An essay: see note at the end of the listing for 300 level subjects.)
In this topic the solution of polynomial equations and their relationships with classical geometrical problems such as duplication of the cube and trisection of angles will be studied. It will further examine the relations between the roots and coefficients of equations, relations which gave rise to Galois theory and the theory of extension fields. Why equations of degree 5 and higher cannot be solved by radicals will be investigated.
References Birkhoff, G.D. & MacLane, S. 1953, A Survey of Modern Algebra, Macmillan.
Herstein, I.N. 1975, Topics in Algebra, Wiley.
Kaplansky, I. 1960, Fields and Rings, Chicago.

MATH313 NUMERICAL ANALYSIS (THEORY) 10cp
Prerequisites MATH201, MATH203, MATH206 and MATH220. Programming ability (high-level language) is assumed.
Hours 3 hours per week for one semester. Examination One 2 hour paper.

MATH314 OPTIMIZATION 10cp
Prerequisites MATH201, MATH208 and MATH220.
Hours 3 hours per week for one semester. Examination One 2 hour paper.

References


Exam. 1 hour paper.
### MATH320 AN INTRODUCTION TO HILBERT SPACE

**Prerequisites** MATH220 and MATH208

**Hours** 3 hours per week for one semester

**Examination** One 2 hour paper

**Content**
Inner product spaces are vector spaces equipped with a "dot product" which gives a notion of angle between vectors; ordinary Euclidean space where "dot product" is the inner product, is the motivating example. This course starts by looking at inner product spaces and linear transformations on them. It then moves on to Hilbert spaces, which are complete inner product spaces, and the natural setting for much of modern analysis, including the theory of Fourier Series.

**Reference**

Notes on Mathematics Level 300 Essay Assignment

Students enrolled in Level 300 Mathematics semester subjects will be required to complete an essay in an approved topic chosen from the history or philosophy of Mathematics. The essay is a requirement for the satisfactory completion of one of the level 300 mathematics subjects taken by a student normally in the first semester of the student's 300 level program.

Two copies of the essay are to be submitted by the 10th week of the semester of which one will be returned to the student after assessment.

**A List of subjects provided by the Division of Quantitative Methods to Bachelor of Education courses in the Faculty of Education in 1995**

These subjects are available only to Bachelor of Education students.

**Bachelor of Education (Mathematics Education)**

<table>
<thead>
<tr>
<th>MAQM135 MATHEMATICS IA</th>
<th>20cp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours</td>
<td>4 Hours per week for a year.</td>
</tr>
<tr>
<td>Content</td>
<td>Differential and integral calculus of functions of a single variable; Applications of Calculus including mechanics.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MAQM136 MATHEMATICS IB</th>
<th>20cp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours</td>
<td>4 Hours per week for a year.</td>
</tr>
<tr>
<td>Content</td>
<td>Algebra, binomial theorem, mathematical induction, complex numbers, matrix algebra, geometry, Euclidean and Analytic Geometry, Computing an introduction to microcomputers.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MAQM235 MATHEMATICS II A</th>
<th>20cp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prerequisite</td>
<td>MAQM135.</td>
</tr>
<tr>
<td>Hours</td>
<td>4 Hours per week for a year.</td>
</tr>
<tr>
<td>Content</td>
<td>Calculus of several variables, vector calculus, Taylor and Fourier series. An analysis of real numbers, sequences, series and functions.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MAQM236 MATHEMATICS II B</th>
<th>10cp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours</td>
<td>2 Hours per week for a year.</td>
</tr>
<tr>
<td>Content</td>
<td>Vector spaces, linear dependence and independence. Linear mappings, kernel and image, matrices. Frequency distribution and graphs, measures of central tendency and measures of dispersion, interpretation of scores, the Normal distribution, Correlation and regression.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MAQM237 MATHEMATICS II C</th>
<th>10cp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours</td>
<td>2 Hours per week for a year.</td>
</tr>
<tr>
<td>Content</td>
<td>A study of spherical trigonometry and its application to navigation, together with the celestial sphere, sidereal time and solar time. The development of problem solving skills and structured programming concepts associated with the implementation of computer based solutions to mathematical problems.</td>
</tr>
</tbody>
</table>

| MAQM335 MATHEMATICS III A | 20cp |
MAQM336 MATHEMATICS IIIB
4 Hours per week for a year.

Content

Sets and classes of sets, sigma rings and sigma algebras construction of the rationals and reals. An introduction to mathematical logic. Elementary group theory. Transformation geometry and non-Euclidean geometry.

MAQM337 MATHEMATICS IIIC
3 Hours per week for a year.

Content

The content covers sets, elementary number theory, geometry, measurement and probability. Number theory, prime numbers, congruences, Diophantine equations, Gaussian integers. The historical development of mathematics - selected topics.

MAQM338 MATHEMATICS IIID
4 Hours per week for a year.

Content

Real variables, differentiability, the mean value theorem, Riemann integration and the Fundamental Theorem of the Calculus. Complex variables, Cauchy's theorem, power and Laurent series, singularities, residues and poles, conformal mappings.

Linear Algebra, inner product spaces, eigenspaces, diagonalisation of a quadratic form and a variety of applications. Ordinary differential equations of the first degree. Solution by series. The methods of Frobenius, Bessel and Legendre.

MAQM339 MATHEMATICS IIIE
4 Hours per week for a year.

Content

Applications to the above topics and to development in construction of the rationals and reals. Ordinary differential equations. Solution by series. The methods of Frobenius, Bessel, Riemann integration and the Fundamental theorem of the Calculus. Applications. Topics in operations research such as linear programming, project scheduling, job sequencing, queueing theory, dynamic programming and decision theory.

Probability distributions, sampling distributions, hypothesis testing. Topics in operations research such as linear programming, project scheduling, job sequencing, queueing theory, dynamic programming and decision theory.


MAQM435 MATHEMATICS IVA
10cp

Available only to Bachelor of Education students.

Hours 2 Hours per week for a year.

Content

Combinatorics, block designs, finite geometries, Latin squares, magic squares and Hadamard matrices. Groups, rings, ideals, integral domains and fields.

MAQM436 MATHEMATICS IVB
10cp

Available only to Bachelor of Education students.

Hours 2 Hours per week for a year.

Content

Number theory, prime numbers, congruences, Diophantine equations, Gaussian integers. The historical development of mathematics - selected topics.

MAQM437 MATHEMATICS IVC
10cp

Available only to Bachelor of Education students.

Hours 2 Hours per week for a year.

Content

Numerical Analysis, solution of systems of equations, numerical differentiation and integration, application to ordinary differential equations. Microcomputing using package software and programming to solve course related problems. Bachelor of Education (Primary Education)

MAQM438 FOUNDATION STUDIES IN ELEMENTARY MATHEMATICS
15cp

Available only to Bachelor of Education students

Hours 3 Hours per week for a year.

Content

This subject provides a background of mathematical content and skills needed by teachers of elementary mathematics. The content covers sets, elementary number theory, geometry, measurement and probability.

Bachelor of Education (Early Childhood)

MAQM440 MATHEMATICS IVE
10cp

Available only to Bachelor of Education students.

Hours 4 Hours per week for one semester.

Content

This subject provides a background of mathematical content and skills needed by teachers in the Early Childhood field. Topics include a study of elementary set theory, natural numbers integers and rational numbers, non decimal systems, number patterns, elementary geometry, measurement and probability.

PHYSICS SUBJECT DESCRIPTIONS

PHYS111

Physics 111

10cp

Not to count for credit with PHYS113.

Assumed knowledge HSC 2 unit Mathematics with a result in the top 30% of the candidature or equivalent.

Hours 6 hours per week for one semester. (3 hours of lectures, and the equivalent of 3 hours of laboratory and tutorial work, per week).

Examination Progressive Assessment during the semester and one three hour paper at the end of semester.

Content


Students who undertake Physics 111 and 112 and achieve a Credit average or better, may, at the discretion of the Head of Department, be allowed to progress to second year Physics.

Students who achieve a Distinction or High Distinction in Physics 111 may, at the discretion of the Head of Department, be allowed to undertake Physics 114.

Text


Reference


PHYS113

Physics 113

10cp

Not to count for credit with PHYS111.

Assumed knowledge HSC 2 unit Physics or 4 unit Science (with a result in the top 50% of the candidature) and HSC 3 unit Mathematics (with a mark of at least 110/ISO) or MATH111.

Hours An average of 6 contact hours per week for one semester.

Examination Progressive Assessment during the semester and one three hour paper at the end of semester.

Content

A rigorous calculus-based course emphasising principles and problem solving in Physics essential for further studies in science and technology. The topics include:


To be advised. See PHYS113 Notice Board.

Text

To be advised.

Reference

Study guide to accompany above text.

PHYS114 PHYSICS 114 10cp

Not to count for credit with PHYS112.

Assumed knowledge Pass in PHYS113. (Students obtaining a distinction or better in PHYS111 may gain entry into PHYS114 at the discretion of Head of Department).

Hours An average of 6 contact hours per week for one semester.

Examination Progressive assessment during the semester and one three hour paper at the end of semester.

Content


Text

To be advised, but the same text as for PHYS113.

Reference

Study guide to accompany above text.

PHYS201 QUANTUM MECHANICS AND ELECTROMAGNETISM 10cp

Prerequisites MATH102, PHYS113 and PHYS114 but performance to acceptable standard in PHYS111 and PHYS112 may substitute for PHYS113 and PHYS114 with the approval of the Head of Department. MATH111 and MATH112 may substitute for MATH102.

Hours 6 hours per week for one semester.

Examination Progressive assessment during semester, and one two hour paper at end of semester.

Content

Basic principles of modern quantum mechanics, and electromagnetic theory. Laboratory, computational and tutorial work in these areas.

Text

See the Physics 200 notice board

References To be advised.

PHYS202 MECHANICS AND THERMAL PHYSICS 10cp

Prerequisites MATH102, PHYS113 and PHYS114 but performance to acceptable standard in PHYS111 and PHYS112 may substitute for PHYS113 and PHYS114 with the approval of the Head of Department. MATH111 and MATH112 may substitute for MATH102.

Hours Up to 6 hours per week for one semester.

Examination Progressive assessment during semester and one two hour paper at end of semester.

Content

Thermal physics, advanced classical mechanics and an introduction to relativity theory.

Texts

See the Physics 200 notice board

References To be advised.

PHYS203 SOLID STATE AND ATOMIC PHYSICS 10cp

Prerequisite PHYS201.

Hours Up to 6 hours per week for one semester.

Examination Progressive assessment during semester and one 2 hour paper at end of semester.

Content

Solid state physics and applications, atomic physics and spectroscopy, optics and laser physics.

Texts

See the Physics 200 Notice Board.

References To be advised.

PHYS205 SCIENTIFIC MEASUREMENT PRINCIPLES, PROCESSES AND APPLICATIONS 10cp

Prerequisite PHYS112 or PHYS113.

Hours Up to 6 hours per week for one semester.

Examination Progressive assessment during semester and one 2 hour paper at end of semester.

Content

Introductory course in analog and digital instrumentation, signal processing principles and computer applications. Emphasis will be on laboratory and environmental applications.

This subject is recommended for students in all areas of science wishing to gain an understanding of the principles and applications of basic electronic instrumentation and computer techniques.

Texts

See the Physics 200 Notice Board.

References To be advised.

PHYS301 MATHEMATICAL METHODS AND QUANTUM MECHANICS 10cp

Prerequisites PHYS201, MATH201 and MATH203.

Hours 2 lectures and 4 hours laboratory/tutorial per week for one semester.

Examination Examination and assessment equivalent to 3 hours examination.

Content

Fourier Transforms, Classical Mechanics, Quantum mechanics.

Texts and References

Refer to the Physics 300 Notice Board.

Students should retain their Physics 200 texts.

PHYS302 ELECTROMAGNETISM AND ELECTRONICS 10cp

Prerequisites PHYS201 and MATH201.

Hours 2 lectures and 4 hours laboratory/tutorial per week for one semester.

Examination and assessment equivalent to 3 hours examination.

Content

Propagation of Electromagnetic Waves, Electronics.

Texts and References

Refer to the Physics 300 Notice Board.

Students should retain their Physics 200 texts.

PHYS303 ATOMIC, MOLECULAR AND SOLID STATE PHYSICS 10cp

Prerequisites PHYS203 and PHYS301.

Hours 2 lectures and 4 hours laboratory/tutorial per week for one semester.

Examination and assessment equivalent to 3 hours examination.

Content

Theory and measurement of Atomic and Molecular Spectra using various Spectro copies. Structure, Binding, Defects and various Models of Metal, Semiconductor and Insulator Crystals.

Texts and References

Refer to the Physics 300 Notice Board.

Students should retain their Physics 200 texts.

PHYS304 STATISTICAL METHODS AND RELATIVITY 10cp

Prerequisites PHYS203 and MATH201.

Hours 2 lectures and 4 hours laboratory/tutorial per week for one semester.

Examination and assessment equivalent to 3 hours examination.

Content

Classical and Quantum Statistical Mechanics, Relativity.

Texts and References

Refer to the Physics 300 Notice Board.

Students should retain their Physics 200 texts.

PHYS305 NUCLEAR PHYSICS AND ADVANCED ELECTROMAGNETISM 10cp

Prerequisite PHYS302.

Hours 2 lectures and 4 hours laboratory/tutorial per week for one semester.
Examination and assessment equivalent to 3 hours examination.

**Nuclear physics. Electromagnetic Content**

Students should retain their texts.

Refer to the Physics 300 Notice Board.

**PSYCHOLOGY SUBJECT DESCRIPTIONS**

**PSYC101 PSYCHOLOGY INTRODUCTION 1 10cp**

**Prerequisite** Enrolment in PSYC101 is restricted.

Students who are not enrolled in Bachelor of Science (Psychology), Bachelor of Arts (Psychology) or Bachelor of Social Work, Bachelor of Speech Pathology degree programs are eligible to enrol in PSYC101 only on achievement of a specific Tertiary Entrance Rank. In 1994 to enrol in PSYC101 students required a TER of 70 or better. The University is currently reviewing the TER required for enrolment in this subject in 1995.

**Hours** 5 hours per week for one semester (3 hours per week lectures, 2 hours per week laboratory)

**Examination** One 3 hour paper.

**Content**

This subject will introduce students to the fundamental concepts of psychology. The topics covered include statistics and Methodology; Perception, with emphasis on the visual system; Learning, with an introduction to Pavlovian conditioning and instrumental learning; Social Psychology, examining individual and group processes.

There will also be Laboratory work which requires the submission of two written reports, as well as the submission of a workbook on a weekly basis.

**Texts**

To be advised.

**PSYC102 PSYCHOLOGY INTRODUCTION 2 10cp**

**Prerequisite** PSYC101

**Hours** 5 hours per week for one semester (3 hours per week lectures, 2 hours per week laboratory)

**Examination** One 3 hour paper.

**Content**

This subject extends the knowledge base gained in PSYC101. Topics covered include: Biological foundations of behaviour; Cognition, including human memory and thought processes; Development, including sexuality, and the ageing process.

There will also be Laboratory work which requires the submission of two written reports, as well as the submission of a workbook on a weekly basis.

**Texts**

To be advised.

**PSYC103 GENERAL PSYCHOLOGY 10cp**

Not available to students enrolled in the Faculty of Science and Mathematics

**PSYC104 PSYCHOLOGY INTRODUCTION 3 10cp**

**Prerequisite** Nil

**Hours** 3 hours per week for two semesters (1 hour lecture, 2 hours tutorial)

**Examination** 50% concurrent assessment, 50% examination (use 3-hour paper in November)

**Content**

This subject is a general introduction to Psychology, suitable both for those who will study aspects of Health Psychology at 200 and 300 level, and those who wish to gain a general appreciation of Psychology without proceeding further. It provides an introduction to contemporary theories of human biological, psychological, and social development, behaviour and adaptation, with some emphasis on their practical implications. It lacks an in-depth introduction to methodology, statistics and neuroscience, and it does NOT lead to courses at 200 and 300 level which are required for a major in Psychology (e.g. PSYC207, 202, 205, 206) and which are laboratory based.

**Texts**

To be advised.

**PSYC202 BASIC PROCESSES 10cp**

**Prerequisite** PSYC102

**Corequisite** PSYC207

**Hours** 2 hours of lectures per week for one semester together with a tutorial and laboratory workshop of 2 hours duration per week.

**Examination** Students will be assessed by class tests, laboratory assignments and end of semester examination.

**Content**

This subject generally examines such psychological processes as perception, human information processing, memory, socio-linguistics, and learning. Both animal and human models may be considered.

The Cognition topic will examine the experimental evidence supporting various models for human memory. Emphasis will be placed on applied aspects of cognition and memory as well as an introduction to neural network concepts.

The Perception section will deal primarily with audition. The following topics will be covered: structure of the auditory system, subjective dimensions of sound, sound localisation and elementary aspects of speech perception.

The learning topic will explore ideas about the nature and mechanism of associative learning. The conditions under which learning occurs and the nature of the representations underlying learning will be described. The implications of these ideas for the application of learning theory to issues such as drug tolerance and addiction will be considered.

Tuturial and laboratory exercises dealing with the above topics will be used to demonstrate these basic psychological processes.

**Texts**

To be advised.

**References**


**PSYC205 APPLIED TOPICS IN PSYCHOLOGY 1 10cp**

Not offered in 1995.

**PSYC206 APPLIED TOPICS IN PSYCHOLOGY 2 10cp**

Not offered in 1995.

**PSYC207 EXPERIMENTAL METHODOLOGY 10cp**

**Prerequisite** PSYC102

**Hours** 2 hours of lectures per week for one semester together with a tutorial and laboratory workshop of 2 hours duration per week.

**Examination** Students will be assessed by class tests, laboratory assignments and end of semester examination.

**Content**

(i) a selection of topics in statistics and computing which will focus on the basics of 4-testing, ANOVA, non-parametric testing, and univariate linear regression. Students will be shown how to use software packages to manipulate data and perform statistical analyses.

(ii) topics in descriptive and graphical analysis of data and research methodology. The first section will deal with graphical and descriptive statistical methods for understanding data patterns as well as methods for
preparing data for inferential analysis. The second section will focus on issues of research methodology and the design of experiments. The lectures will be accompanied by tutorial and laboratory workshop series in which practical experience will be given in the application of the topics described above using computer-assisted packages.

Text

To be advised.

References


PSYC208 PSYCHOBIOLOGY

10cp

Prerequisite PSYC102

Corequisite PSYC207

Hours 2 hours of lectures per week for one semester together with a tutorial and laboratory workshop of 2 hours duration per week.

Examination Students will be assessed by class tests, laboratory assignments and end of semester examination.

Content

This subject comprises two strands. One strand, practical social psychology, will examine current issues such as attitude change, perception of social situations, group decision-making and leadership structures in both lectures and workshop sessions, with an emphasis on the practical work and the development of relevant skills. The other strand will examine a number of approaches to personality which have been influential in terms of theory, methodology and practical applications in clinical and occupational settings.

Text

To be advised.

References


PSYC210 DEVELOPMENTAL PSYCHOLOGY

10cp

Prerequisite PSYC102

Corequisite PSYC207

Hours 2 hours of lectures per week for one semester together with a tutorial and laboratory workshop of 2 hours duration per week.

Examination Students will be assessed by class tests, laboratory assignments and end of semester examination.

Content

This subject will deal with the development of perceptual, psychological, cognitive and social processes during infancy, childhood and adulthood. Topics such as the development of object recognition, memory and categorization, language, problem-solving, aggression, attachment, peer relations, social skills, and sexuality will be covered. Weekly laboratory sessions will be conducted to elaborate on these topics and teach research skills in developmental psychology.

Text

To be advised.

References


PSYC209 PERSONALITY AND SOCIAL PROCESSES

10cp

Prerequisite PSYC102

Corequisite PSYC207

Hours 2 hours of lectures per week for one semester together with a tutorial and laboratory workshop of 2 hours duration per week.

Examination Students will be assessed by class tests, laboratory assignments and end of semester examination.

Content

This subject comprises two strands. One strand, practical social psychology, will examine current issues such as attitude change, perception of social situations, group decision-making and leadership structures in both lectures and workshop sessions, with an emphasis on the practical work and the development of relevant skills. The other strand will examine a number of approaches to personality which have been influential in terms of theory, methodology and practical applications in clinical and occupational settings.

Text

To be advised.

References

ADVANCED APPLIED TOPICS IN PSYCHOLOGY 1

**Content**
A series of topics at the cellular and molecular level will examine the structural and functional mechanisms responsible for neural processing. The course will include synaptic communication, the physiology of neuronal networks and examine how neurons and networks develop and function in the brain.

**Examination**
Assessment will be by a combination of formal examination, essays and written reports.

**Prerequisites**
PSYC207

**Hours**
4 hours per week for one semester.

**References**

ASSOCIATIVE LEARNING

**Prerequisites**
PSYC207, PSYC209

**Hours**
2 hours per week for one semester. Lectures are matched by a seminar and laboratory series. The seminar/laboratory series will provide an opportunity for students to consider topics of particular interest to them in more detail, as well as developing research skills appropriate to continued study in learning.

**Text**
To be advised.

**References**
applied or social Psychology. Each unit will include seminars at which attendance and participation is compulsory, and will be assessed by essay, examination, oral presentation, or a combination. The exact topics of the seminars vary from year to year depending on staff availability. One seminar may be replaced with a practical placement and associated essay. There is some overlap with PSYC403.

Texts and References
To be advised.

PSYC402 PSYCHOLOGY HONOURS 402 (Thesis) 40cp
Prerequisite A completed Bachelor of Arts or Bachelor of Science, or three complete years of a BA (Psych) or BSc (Psych) including the subjects PSYC101 and PSYC102, at least 40 credit points of Psychology at the 200 level including PSYC207, and at least 60 credit points of Psychology at the 300 level including PSYC301 and PSYC312 (or PSYC302) obtaining at least a Credit grade average. Admission is competitive.
Corequisite PSYC401
Hours 12 hours per week for the full year
Examination Thesis will be assessed independently by two members of the Department, other than the supervisor.
Content
PSYC402 comprises one third of the final year of the BA (Psych) or BSc (Psych). Full-time students are expected to enrol in PSYC402 as well. Part-time students complete PSYC402 in the first year and PSYC403 in the second. PSYC402 consists of the development, conduct, analysis, and reporting of a piece of original empirical research. The thesis is a formal presentation of this research and must be in APA format. There is a limit of fifty pages. Each student will be supervised by a member of the Psychology Department. Students must discuss potential projects with appropriate staff members well in advance. Involvement with external agencies must be through official departmental channels.

Texts and References
To be advised.

PSYC403 PSYCHOLOGY 403 30cp
Prerequisite Candidates must be enrolled for the BA (Psych) or BSc (Psych) and must have completed the equivalent of three full time years of the degree, including passes or above in the subjects PSYC101 and PSYC102, at least 40 credit points of Psychology at the 200 level including PSYC207 and at least 60 credit points of Psychology at the 300 level including PSYC301.

Hours 8 hours per week for the full year
Examination To be advised
Content
PSYC403 comprises one third of the final year of the BA (Psych) or BSc (Psych) during the subjects PSYC101 and PSYC102, at least 40 credit points of Psychology at the 200 level including PSYC207 and at least 60 credit points of Psychology at the 300 level including PSYC301.
Corequisite PSYC403
Hours 16 hours per week for the full year
Examination Reports will be assessed by two or more members of the Department. Placement will be assessed on the basis of supervisor’s report and a student essay.
Content
PSYC403 comprises two-thirds of the final year of the BA (Psych) or BSc (Psych). Full-time students are expected to enrol in PSYC403. Part-time students complete PSYC403 in the first year and PSYC404 in the second. PSYC403 consists of two equally-weighted sections: a piece of original empirical research, and a placement. The research project will be supervised by a member of the Psychology Department and must be in an applied area. A report in APA format, of approximately twenty-five pages, is required. Candidates are strongly advised to discuss potential projects with appropriate staff members well in advance. The placement component involves ten days of supervised experience in a community facility in the Newcastle area, and the submission of an essay relating the practical activities to psychological theory and technique.

Texts and References
To be advised.
### COMPLEMENTARY SUBJECTS

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP321</td>
<td>SOFTWARE ENGINEERING AND PROJECT</td>
</tr>
<tr>
<td></td>
<td>This full-year subject presents an in-depth treatment of many software</td>
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<td></td>
<td>engineering topics, including software engineering paradigms, requirements</td>
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<tr>
<td></td>
<td>specification, software verification, and maintenance. Societal implications</td>
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<tr>
<td></td>
<td>as cost of failure and professional responsibilities are considered, and</td>
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<td></td>
<td>the basic principles of technical writing are presented. Students are</td>
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<td></td>
<td>expected to complete a major project.</td>
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<tr>
<td>COMP322</td>
<td>COMPUTER VISION AND ROBOTICS</td>
</tr>
<tr>
<td></td>
<td>The field of robotics provides applications for many different areas of</td>
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<tr>
<td></td>
<td>Artificial Intelligence. Robots have to be able to see, to plan routes, to</td>
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<td>form world models; it is an advantage if they can hear; if they can be</td>
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<td></td>
<td>instructed in natural language rather than esoteric codes; if they can</td>
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<tr>
<td></td>
<td>reason; if they can learn; and so on. This subject will examine some of these</td>
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<tr>
<td></td>
<td>areas of AI with specific reference to their use in robotics.</td>
</tr>
<tr>
<td>COMP323</td>
<td>COMPUTATIONAL LOGIC</td>
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<tr>
<td></td>
<td>The subject covers the concepts of soundness and completeness of refutation</td>
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<td></td>
<td>methods, normal forms, analytic tableaux, resolution, decidability,</td>
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<td></td>
<td>Herbrand sets, strategies for theorem proving, connection graphs,</td>
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<tr>
<td></td>
<td>applications such as program verification, plan generation, deductive</td>
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<tr>
<td></td>
<td>databases, modal logics, temporal logics, processes and dynamic logics,</td>
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<td></td>
<td>non-monotonic logics, rewrite systems, and logic programming.</td>
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<tr>
<td>COMP324</td>
<td>PARALLEL PROCESSING</td>
</tr>
<tr>
<td></td>
<td>The main objective of this subject is to develop an understanding of the</td>
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<tr>
<td></td>
<td>tools and paradigms needed for the design of parallel algorithms for various</td>
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<td></td>
<td>models of computations. In addition, various parallel programming languages</td>
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<td></td>
<td>and systems are briefly discussed as case studies.</td>
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<tr>
<td>COMP325</td>
<td>DATABASE SYSTEMS</td>
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<tr>
<td></td>
<td>This subject covers the three level architecture for database systems, the</td>
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<tr>
<td></td>
<td>relational database model, database normalization, data security and</td>
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<tr>
<td></td>
<td>integrity, recovery and concurrency, and distributed databases. Additionally,</td>
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<td></td>
<td>students learn the SQL query language, and get a hands-on experience of a</td>
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<tr>
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<td>modern relational database management system such as Sybase.</td>
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<tr>
<td>COMP326</td>
<td>DATA SECURITY</td>
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<tr>
<td></td>
<td>This subject covers various topics in data security, including cryptography,</td>
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<tr>
<td></td>
<td>encryption algorithms, Data Encryption Standard, public-key encryption,</td>
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<tr>
<td></td>
<td>cryptanalysis, key exchange protocols, key management, secret sharing</td>
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<tr>
<td></td>
<td>schemes, access controls, authentication, digital signatures, information</td>
</tr>
<tr>
<td></td>
<td>flow controls, security of statistical databases.</td>
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<tr>
<td>COMP327</td>
<td>PRINCIPLES OF OPERATING SYSTEMS</td>
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<tr>
<td></td>
<td>This subject provides a thorough introduction to operating systems. Topics</td>
</tr>
<tr>
<td></td>
<td>include tasking and processes, process coordination and synchronization,</td>
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<tr>
<td></td>
<td>resource scheduling, physical and virtual memory organisation, security issues,</td>
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<tr>
<td></td>
<td>communications and networking, and distributed operating systems.</td>
</tr>
<tr>
<td>COMP328</td>
<td>COMPUTER NETWORKS</td>
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<tr>
<td></td>
<td>An introduction to data communication networks. Topics include data</td>
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<tr>
<td></td>
<td>transmission, transmission media, network protocols, ISO/OSI, public data</td>
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<tr>
<td></td>
<td>networks, local area networks, and distributed systems.</td>
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<tr>
<td>COMP329</td>
<td>COMPILER DESIGN</td>
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<tr>
<td></td>
<td>Introduction to the theory of grammars. Lexical analysers, syntactic</td>
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<td></td>
<td>analysis, elementary semantic analysis. Parsing techniques, object code</td>
</tr>
<tr>
<td></td>
<td>generation and optimisation. Scanner and parser generators.</td>
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<tr>
<td>COMP330</td>
<td>GRAPHIC USER INTERFACES</td>
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<tr>
<td></td>
<td>Almost all computer systems designed in the next 10 years will involve a</td>
</tr>
<tr>
<td></td>
<td>graphic user interface. Graphic user interfaces are an increasingly common</td>
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<tr>
<td></td>
<td>feature of modern computer systems. This subject discusses the use of GUIs</td>
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<tr>
<td></td>
<td>in software engineering; this includes visual programming and some aspects of</td>
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<tr>
<td></td>
<td>CASE tools. Further, we study the fundamental design issues for GUIs,</td>
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<tr>
<td></td>
<td>concentrating on applications to database design and software engineering.</td>
</tr>
<tr>
<td></td>
<td>The subject involves a major project to create a GUI.</td>
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<tr>
<td>COMP331</td>
<td>GEOMETRIC DATA STRUCTURES</td>
</tr>
<tr>
<td></td>
<td>Geometric data structures are used to represent explicitly geometric</td>
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<tr>
<td></td>
<td>structures such as in image analysis and solid modelling, as well as implicitly</td>
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<td></td>
<td>geometric structures such as relational databases. In this subject we study</td>
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<tr>
<td></td>
<td>fundamental data structures which have applications for both implicitly and</td>
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<tr>
<td></td>
<td>explicitly geometric data, in such areas as geographic information</td>
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<tr>
<td></td>
<td>systems and solid modelling.</td>
</tr>
<tr>
<td>COMP332</td>
<td>COMPUTER GRAPHICS</td>
</tr>
<tr>
<td></td>
<td>A graphical interface is a cost effective method to present information in a</td>
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<tr>
<td></td>
<td>fashion that supports rapid exploration and comprehension. The issues to be</td>
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<tr>
<td></td>
<td>studied, all related to the displaying of objects, may include: graphics</td>
</tr>
<tr>
<td></td>
<td>hardware, windows programming, graphics interface formats, 2D drawing</td>
</tr>
<tr>
<td></td>
<td>primitives and their raster algorithms, 2D &amp; 3D</td>
</tr>
</tbody>
</table>

### INFORMATION SCIENCE SUBJECT DESCRIPTION

#### INFO101 INTRODUCTION TO INFORMATION SYSTEMS

**Prerequisite:** Nil

**Hours:** 3 lecture hours per week, 2 tutorial hours per week

**Content:**

This course seeks to provide not only a foundation in understanding information systems but also to impart those skills necessary for solving a wide range of information-based problems. For these reasons the course provides an essential grounding for all students irrespective of their chosen discipline. In particular, the course is guided by the following objectives:

(a) to provide the student with an understanding of the nature of information systems and some of their associated concepts and terminology. In particular, we will examine the following:
   - the components of computer-based information systems
   - the phases involved in information systems development
   - the process of software development
   - database systems
   - management information systems
   - data communications
   - legal and social aspects of information systems

(b) to allow the student to obtain skills in the use of microcomputers as personal productivity tools. In particular, students will be given a practical introduction to systems and application software such as operating systems, spreadsheets, business graphics, database management systems and word processors.

**Text To be advised**

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**Notes:**

- All courses are offered in the 20 credit point mode, unless otherwise specified.
- Prerequisites for each subject are available in the course handbook.
- The full-year subject provides an in-depth treatment of many software engineering topics, including software engineering paradigms, requirements specification, functional and object-oriented design, software verification and maintenance. Societal implications as cost of failure and professional responsibilities are considered, and the basic principles of technical writing are presented. Students are expected to complete a major project.
STATISTICS SUBJECT DESCRIPTIONS

STAT101 INTRODUCTORY STATISTICS 10cp

Prerequisites: This course does not assume knowledge of calculus or matrix algebra.

Hours: 3 lecture hours and 2 laboratory hours per week. The course is offered in Semester 1 and Semester 2.

Content:
- Scales of measurement. Descriptive and exploratory data analysis. Study design, including surveys and controlled experiments. Sampling and randomization. Probability.
- Statistical inference: sampling distributions, confidence intervals and hypothesis tests for means and proportions. Correlation and regression. Time series analysis. Chi-square tests for frequency tables.

Text:

Course material:
- Introductory Statistics - Lecture Notes, 1995, Department of Statistics, University of Newcastle.

References:

STAT201 MATHEMATICAL STATISTICS 10cp

Prerequisites: STAT101 or STAT103 and (MATH112 or MATH113).

Hours: 3 lecture hours and 1 laboratory/tutorial hour per week for one semester.

Content:

Text:

References:
- Freund, J.E. and Walpole, R.E. Mathematical statistics, various edns, Prentice Hall.

STAT202 REGRESSION ANALYSIS 10cp

Prerequisite: STAT201.

Hours: 2 lecture hours, 1 laboratory and 1 tutorial hour per week for one semester.

Content:
- This course covers the practical and theoretical aspects of regression analysis. Emphasis is placed upon diagnostics and remedial measures to be taken when the assumptions are not met, transformations, selection of regressors, alternatives to least squares, and nonlinear regression.

Text:

References:

STAT203 GENERALIZED LINEAR MODELS 10cp

Prerequisite: STAT201 Mathematical Statistics and STAT202 Regression Analysis.

Hours: 2 lecture hours and 2 laboratory hours per week for one semester.

Content:
- This course covers the theory of generalized linear models and illustrates the ways in which methods for analysing continuous, binary, and categorical data fit into this framework. Topics include the exponential family of distributions, maximum likelihood estimation, sampling distributions for goodness-of-fit statistics, and logistic regression.

Text:

References:
STAT304 TIME SERIES ANALYSIS 10cp
Prerequisite STAT201 Mathematical Statistics and STAT202 Regression Analysis. In addition it is strongly recommended that students have passed STAT301 Statistical Inference.
Hours 2 lecture hours, 2 laboratory hours per week for one semester.
Content
This course is about the theory and practice of time series analysis—the analysis of data collected at regular intervals in time. Topics covered include: stationary processes, ARMA models, models for periodic phenomena, analysis using MINITAB, SAS or other Time Series packages.
Text
References

STAT306 METHODS FOR QUALITY IMPROVEMENT 10cp
Prerequisite STAT201 Mathematical Statistics.
Hours 3 lecture hours per week for one semester.
Content
The emphasis is on control charts and other statistical tools that can be used to facilitate quality improvement. The standard Shewhart control charts are covered, in addition to CUSUM procedures and EWMA charts. Process capability and Analysis of Means are other topics covered, in addition to special topics such as methods for charting autocorrelated data.
Text
Reference

STAT310 TOTAL QUALITY MANAGEMENT 10cp
Prerequisites Subjects at Level 200 totalling 40 credit points.
Hours 2 lecture hours per week for one semester.
Content
Total Quality Management (TQM) is an all embracing management and employee involvement philosophy directed towards continuous improvement in the production of goods and services. Students who complete this course will learn to understand the fundamental principles of Total Quality Management (TQM). Choose appropriate statistical techniques for improving processes and write reports to management describing processes and recommending ways to improve them. Specific topics covered include the Deming philosophy, understanding variability through statistical thinking, quality implementation matrices, quality function deployment, the seven tools of quality control, quality improvement teams, the PDCA cycle, standards, the role of management, basic statistical methods and control charts.
Text
To be advised.

section six
Some Recommended Programs

SOME RECOMMENDED PROGRAMS
Advisory Information Only
In order to provide some guidance to students, each Department has provided one or more possible degree patterns which would lead to a suitable professional qualification in their discipline. The patterns are not prescriptive, except in so far as they meet the requirements of the various degree rules. Students may vary their selection to meet the requirements of degree rules, and prerequisites and corequisite requirements as detailed in the semester subject tables.

All semester subjects are identified by a code which includes up to four letters representing the department offering the subject, followed by three numbers, the first of which signifies the level (100, 200, 300, 400) at which the subject is being presented.

The following programs have been set out as recommendations for inclusion in the first, second and third calendar years of a pass degree. Some programs include a separate postgraduate fourth year for the Honours degree.

AVIATION
Students with Commercial Pilot and Airline Transport Licence will be exempted from any subjects which they may have completed at the University standard. These exemptions will be decided in consultation with the lecturer concerned, who may request a form of assessment or interview. The course is available only by attendance on campus.

Students are advised to consult the Departmental Noticeboard and liaise with the Head of the Department concerning course program enquiries or requests for exemptions because of prior study and aviation experience.

BIological SCIENCES
Students wishing to study Biological Sciences are advised to develop capacities in a broad range of the basic sciences, as well as in the Biological Sciences. Additionally, students' interests can change during their University training, and it is advisable to undertake a first-year program which could lead in many directions, depending upon individual experiences and interests developed during the first year at University. Students intending to major in Biology should consider Program A. Those wishing to major in Biology and another discipline might elect to complete Programs B or C.
Biological Sciences — Program A

Year 1
BIOL101, BIOL102, CHEM101, CHEM102 and either MATH111/112 or MATH101/103, plus 2 other subjects from Level 100. (For Environmental Biology select GEOG101 and GEOG102.)

Year 2 & 3
The table below indicates the Biological Science subjects which should be studied to enable students to develop expertise in particular specialised areas. The indicated subjects are the minimum which should be studied. Additional subjects in Biological Sciences or other disciplines must be taken to satisfy subject requirements for the degree. It should be noted that not all 300 level Biological Science subjects will be offered in the one year. Students wishing to do specific subjects should check when they are scheduled before enrolling in their second year.

Year 4
BIOL401 and BIOL402

Area of Biology
Biological Sciences Subjects
Animal Physiology
BIOL201, 202, 204, 205, 208, 302, 309, 312, 313
Animal Science
BIOL301, 202, 204, 205, 207, 208, 202, 205, 312, 313
Biochemistry
BIOL201, 202, 204, 205, 208, 302, 309, 310, 313, 315, 316
Cell & Molecular Biology
BIOL201, 204, 205, 208, 305, 309, 310, 313, 315, 316
Developmental Biology
BIOL202, 204, 205, 206, 302, 312, 313, 314, 315, 316
Environmental Biology
BIOL202, 205, 207, 208, 305, 309, 311, 313, 315, 316
Genetics
BIOL301, 204, 205, 207, 208, 305, 309, 310, 311, 313, 315
Immunology
BIOL101, 202, 204, 205, 208, 305, 309, 310, 312, 313, 316
Molecular Biology
BIOL301, 204, 205, 208, 305, 309, 310, 312, 313, 316
Plant Physiology
BIOL204, 205, 206, 208, 303, 314, 315, 316
Plant Molecular Biology
BIOL204, 205, 206, 208, 303, 309, 314, 315, 316

Environmental Biology and Geography — Program B

Year 1
BIOL101, BIOL102, GEOG101, GEOG102 plus 4 other semester subjects.

Year 2
BIOL202, BIOL206, BIOL207, GEOG201, GEOG203, GEOG204 plus 2 other semester subjects from Biology, Chemistry, Geography, Mathematics or Geology.

Year 3
BIOL303, BIOL311 plus 2 other Biology and 4 Physical Geography semester subjects.

Biological and Chemistry — Program C

Year 1
BIOL101, BIOL102, CHEM101, CHEM102 plus 4 other semester subjects.

Year 2
BIOL201, BIOL204, BIOL205, BIOL208, CHEM231 plus 3 other semester subjects.

Year 3
BIOL305, BIOL309, BIOL313, BIOL315, CHEM331 plus 4 other semester subjects.

CHEMISTRY
Chemistry is a science concerned primarily with matter and the changes that it undergoes. The study of Chemistry is important not only in itself but also as a background to many other sciences.

The study of Chemistry is open to all students who have qualified for admission into the University. However, those who have not studied sufficient sciences at school are advised to do some self-preparation before beginning Level 100 Chemistry subjects. Details on expected backgrounds and suggested remedial reading are provided under the appropriate Level 100 subject descriptions.

The Chemistry Department offers courses over the whole range of the subject. A basic chemical education is available in the traditional areas of analytical, inorganic, organic and physical chemistry together with some more diverse applied subjects. Thus students interested in Environmental Science will find relevant Chemistry subjects to include in their program.

The flexible system of subjects offered by the Department allows a student to major in Chemistry on a broad level or to specialise in certain areas of the subject and to combine these with relevant subjects offered by other Departments.

Thus a student interested primarily in Physical Chemistry may elect to choose Physics and Mathematics subjects as complements. Conversely, students majoring in other Departments may choose companion Chemistry subjects relevant to their interests. Thus some courses in Analytical and Inorganic Chemistry would be useful to Geology majors; Organic Chemistry subjects would be relevant for Biology majors; Physics majors would benefit from study of some courses in Physical Chemistry, etc. At Level 300 specialist topics in active research areas of Chemistry are offered to provide a modern picture of the subject.

Students intending to do a major in Chemistry would have to complete Program A which is regarded as a minimum requirement for a thorough grounding in the subject. Students wishing to devote themselves fully to Chemistry will undertake a double major as in Program B where they can complete up to two-thirds of their degree program in this one discipline. Many subject combinations in between these two programs are possible. Thus for example, a student may choose six Level 300 subjects in Chemistry and two from another Department, etc. Chemistry is a recognised profession which is served by a professional body, the Royal Australian Chemical Institute (RACI). Many employment opportunities for chemists require membership of this organisation. Graduates seeking membership must have completed at least the subjects listed in Program A.

Following either of these programs or combinations thereof may lead to postgraduate study at the Honours standard (Level 400), for which entry requirements are a Credit average in at least four Level 300 semester subjects. The Department strongly recommends the Honours Degree to students both for the additional experience it provides and for its enhancement of employment opportunities and professional standing. Honours students devote most of their time to an independent research project together with some formal course work. The project is selected in an area of interest from lists provided by members of the academic staff. This degree is also the normal entry requirement to the research higher degrees (MSc and PhD) offered by the Department.

Chemistry — Program A

Year 1
CHEM101 and CHEM102; either MATH111/112 or MATH102/103; and four other subjects from Level 100.

Year 2
CHEM211, CHEM221, CHEM231, CHEM241, CHEM251, CHEM261 and two other subjects from Level 200.

Year 3
Choose eight equivalent full subjects from the Level 300 chemistry list. The inclusion of CHEM311, CHEM321, CHEM331, CHEM341 is expected.

Year 4
CHEM401 and CHEM402.

GEOGRAPHY
Geography is the study of the Earth and its people, giving emphasis to the interactions among the physical, economic and social elements of the environment. Modern Geography may be divided into studies in Human Geography (Program A) and Physical Geography (Program B), but students may advantageously combine units from Human and Physical Geography (Program C).

Human Geography (Program A) analyses the factors and processes that govern the distribution of people and their economic, social and cultural activities. Changes in distribution patterns and activities through time require study of past processes and prediction for the future from analysis of present trends and patterns. A wide range of opportunity is available for graduates in private business and public service departments especially in areas that involve planning, social and economic analysis.

Physical Geography (Program B) analyses the factors and processes that influence the distributions of phenomena in the physical environment. Emphasis is placed on the processes that develop landforms and soils, on the meteorological processes that cause variations in climate, and on the factors that influence variations in vegetation communities and animal distributions. Employment opportunities are good both in the private and public sector which is currently demanding graduates with a good
understanding of environmental issues and their management. BIOL101, BIOL102, GEOG101, GEOG103, PHYSI101 and PHYSI102 are useful complementary 100 level subjects.

Geography (Program C) combines units from Human Geography and Physical Geography at the 200 and 300 levels with other subjects from the Faculties of Arts, Economics, Education and Science. This program can be taken to Major level without selecting the Methods courses GEOG301, GEOG302, GEOG303, GEOG304, GEOG305, GEOG306, GEOG309, GEOG311 and GEOG315. Choose four other subjects from Level 300.

**Year 4**
GEOG401 and GEOG402. *NOTE* Prerequisites will restrict some choice according to Year 2 subjects chosen.

**GEOLogy**
Geology provides the ultimate understanding of our planet, its environment and its evolution. As a natural science, a number of components of the course are presented outdoors on field excursions and mapping occurs in a diversity of environments. The course is presented as an integrated study of the major processes, hence field, laboratory and lecture work are intertwined.

Students are strongly advised to choose companion courses, especially if interests are in palaeontology and evolution (biological sciences), surficial processes (geography), geophysics (physics and mathematics), geochemistry, tectonics, mineralogy and petrology (chemistry).

Employment opportunities are good but diverse.

**Major in Human Geography**

**Year 1**
GEOG101 and GEOG102. Choose six other subjects recommended from Level 100 to comply with Bachelor of Science degree requirements.

**Year 2**
GEOG201, GEOG202 and GEOG203. Choose five other subjects from Level 200.

**Year 3**
GEOG301, GEOG302, GEOG304, GEOG305, GEOG306, GEOG307 and GEOG311. Choose four other subjects from Level 300.

**Year 4**
GEOG401 and GEOG402. *NOTE* Prerequisites will restrict some choice according to Year 2 subjects chosen.

**GEOLogy**
Geology provides the ultimate understanding of our planet, its environment and its evolution. As a natural science, a number of components of the course are presented outdoors on field excursions and mapping occurs in a diversity of environments. The course is presented as an integrated study of the major processes, hence field, laboratory and lecture work are intertwined.

Students are strongly advised to choose companion courses, especially if interests are in palaeontology and evolution (biological sciences), surficial processes (geography), geophysics (physics and mathematics), geochemistry, tectonics, mineralogy and petrology (chemistry).

Employment opportunities are good but diverse.

**Major in Physical Geography**

**Year 1**
GEOG101 and GEOG102. Choose six other subjects recommended from Level 100 to comply with Bachelor of Science degree requirements.

**Year 2**
GEOG201, GEOG202 and GEOG203. Choose five other subjects from Level 200.

**Year 3**
GEOG301, GEOG302, GEOG304, GEOG305, GEOG306, GEOG309 and GEOG311. Choose four other subjects from Level 300.

**Year 4**
GEOG401 and GEOG402. *NOTE* Prerequisites will restrict some choice according to Year 2 subjects chosen.

**Mathematics**

The Department of Mathematics offers semester subjects at all levels for the Bachelor of Mathematics degree, the Bachelor of Science degree, the Bachelor of Arts degree and the Bachelor of Engineering degree. However, students wishing to obtain professional qualifications in mathematics should enrol in the Bachelor of Mathematics degree program, where it is possible (although not compulsory) to fill completely their third year with mathematics.

Some Faculties use the word major to describe a complete strand of study which is considered to be appropriate and sufficiently educative that they may quote the name of the discipline as a component of their degree. The program suggested for the Bachelor of Science degree would fulfill the requirements for a major in mathematics.

**Bachelor of Science Degree - with Mathematics as a major**

This is a course of study which includes at least the following semester subjects.

**Year 1**
MATH102, 103 or MATH111, 112, 113, together with other Level 100 subjects to meet the BSc degree requirements.

**Year 2**
MATH201, MATH203, MATH206, MATH208, MATH209 and one chosen from {MATH213, MATH215} together with other Level 200 subjects to meet the BSc degree requirements.

**Year 3**
Four semester subjects from Mathematics Level 300, chosen with advice from the Department, and four further subjects to meet the BSc degree requirements.

**Mathematics - Bachelor of Mathematics Degree**

The Bachelor of Mathematics degree enables a student to complete a full course in Mathematics, or to combine a Mathematics major with Computer Science, Statistics, Physics or another appropriate discipline as set out in the Rules. Note that for the Bachelor of Mathematics degree, certain specific subjects are required at the 200 level, thus providing a base for a double major in Mathematics, or a major in Statistics, with options also for majors in Physics or Computer Science.

Subjects should be chosen according to the requirements of the Bachelor Degree Rules in this handbook. In total, at least 160 credit points must include the subjects in the following list. The remaining credit points for the ordinary degree may include subjects offered elsewhere in the University.

The prescribed components of the degree include:

**Year 1**
MATH103 and approved prerequisites

**Year 2**
MATH201, MATH203, MATH206, MATH208, MATH220, MATH221 and one of {MATH213, MATH215} (55 credit points); and a further 25 credit points from MATH200, STAT200, COMP200 and/or PHYS200.

**Year 3**
MATH300 and/or STAT300 (40 credit points); plus a further 40 credit points from MATH300, STAT300, COMP300 and/or PHYS300.

The Bachelor of Mathematics (Honours) program consists of MATH401 and MATH402.

1. Bachelor of Mathematics with Pure Mathematics as a major interest

To follow the progress of Mathematics is to be well ahead of applications, although Mathematics itself is enriched by those applications. To be able to follow such progress, the student needs to leave as wide an experience in Mathematics as possible, and a thorough grounding in the basic truths. Since the Year 3 program can accommodate no more than 8 different topics, some selection must be made. Although the program does not appear very applied, some graduates with such backgrounds have adapted quickly to careers in industry and commerce as well as in research.

In satisfying the requirements for the degree, a suitable program is:

**Year 1**
MATH102 and MATH103 together with other subjects worth 60 credit points: (Computer Science and/or Physics and/or Statistics and/or Philosophy, in particular PHLM104, is popular but the choice is wide. See No. 6 below).

**Year 2**
All available MATH200 level subjects (except perhaps one or two of MATH213, 215, 216) together with some 200 level subjects to continue a subsidiary interest from Year 1.

**Year 3**
MATH301, MATH302, MATH304, MATH305, MATH306, MATH308, MATH310, MATH311, MATH313, MATH314, MATH320 is a Pure Mathematics selection of subjects but there are variations.

**Year 4**
The Bachelor of Mathematics (Honours) program consists of MATH401 and MATH402.

2. Bachelor of Mathematics with Mathematical Physics as a major interest

A student who wishes to understand current theories of nature, ranging from the quantum world of elementary particles to the large scale structure of the Universe itself, must be familiar with a formidable amount of mathematics. Areas of mathematics previously the preserve of the pure
Banking, biology, geology and the design of industrial processes.

In satisfying the requirements for the degree, a suitable program could be:

Year 1
MATH102 and MATH103 together with other subjects (Physics and Computer Science should be included).

Year 2
MATH201, MATH202, MATH203, MATH206, MATH208, MATH220, MATH221, MATH222, MATH223 together with other MATH200 subjects, and/or other subjects to continue an interest from Year 1.

Year 3
MATH303, MATH304, MATH313 together with most of MATH305, MATH307, MATH316 (or subjects in Physics or Statistics or Computer Science).

Year 4
The Bachelor of Mathematics (Honours) program consists of: MATH401 and MATH402.

Bachelor of Mathematics with Applied Mathematics as a major interest

Applied Mathematics uses mathematics as a tool for investigating problems which come from other disciplines. This interdisciplinary approach to problem-solving has been remarkably successful, but practitioners need both a strong grounding in the technical aspects of Mathematics as well as knowledge of subjects which concentrate on Applied Mathematics. It also includes subjects from the Departments of Statistics and Computer Science which provide additional skills for the professional Applied Mathematician.

It is recommended that a student include at least a first-year-second year combination from another discipline. This provides a further opportunity to see how mathematics can be applied. In the past students have chosen Physics or Chemistry. However there are now career opportunities applying mathematics in economics, psychology, medicine, banking, biology, geology and the design of industrial processes.

In satisfying the requirements for the degree, a suitable program is:

Year 1
MATH102 and MATH103 and COMP101 together with other subjects worth 40 credit points, taking note of the remarks above.

Year 2
MATH201, MATH202, MATH203, MATH206, MATH208, MATH213, MATH215, MATH216, MATH220, COMP201, STAT201 are all recommended, together with continuation of one of the other subjects from Year 1 and, if room, one of MATH221 and MATH222.

Year 3
MATH303, MATH304, MATH313 together with most of MATH305, MATH307, MATH316 (or subjects in Physics or Statistics or Computer Science).

Year 4
The Bachelor of Mathematics (Honours) program consists of: MATH401 and MATH402.

Bachelor of Mathematics with Statistics as a major interest

(Although STAT101 is shown as desirable, it is not a prerequisite for STAT201 for students in BMath). In satisfying the requirements for the degree, a suitable program is:

Year 1
Either STAT101, MATH111 and MATH112 or STAT103, MATH102 and MATH103. INFO101 is recommended. Choose other subjects worth 50 credit points from Level 100.

Year 2
MATH201, MATH203, MATH206, MATH208, MATH220 at least one of (MATH113, MATH213) together with STAT201, STAT202, STAT203, STAT204 together with other Mathematics or Computer Science 200 level subjects for the remaining 20 credit points.

Year 3
STAT301, STAT302, STAT303, STAT304 with four mathematics and/or computer science 300 level subjects for the remaining 40 credit points.

Year 4
The BMath (Hons) program consists of Year 4 STAT400.

Bachelor of Mathematics with Computer Science as a major interest

In satisfying the requirements for the degree, a suitable program would be:

Year 1
MATH102 and MATH103, COMP111, COMP112, COMP113, PHIL104 and other subjects worth 20 credit points.

Year 2
MATH201, MATH203, MATH206, MATH208, MATH215, MATH216, MATH220, MATH222, COMP201, COMP202, COMP203, COMP204, COMP205, COMP206.

PHIL204 (that is a desirable program, but timetable constraints may modify it).

Year 3
Four MATH300 subjects and four COMP300 subjects. There is wide choice for specialisation.

Year 4
The Bachelor of Mathematics (Honours) program consists of: Year 4 MATH401 and MATH402, or see the Rules for Bachelor of Computer Science (Honours) Faculty of Engineering.

First year subjects in the Bachelor of Mathematics Degree

The rules require MATH102 and MATH103 (20 credit points) or MATH111, 102, 103 (30 credit points) or MATH111, 112, 103 (30 credit points) but the remaining credit points can be taken in almost any other discipline. Popular choices include Computer Science (COMP101), Physics (PHYS111/112 or 113/114), Philosophy (PHIL104), Information Science and Statistics (INFO101/STAT101). However, BMath students choose wisely, and the following areas have been approved for them in the past: Accounting, Biology, Chemistry, Classical Civilisation, Drama, Engineering, Economics, English, French, Geography, Geology, German, Greek, History, Japanese, Latin, Legal Studies, Linguistics, Psychology, Social Science, Sociology.

There is room in the BMath course to include Level 200 subjects to continue with one of the choices made during the first year course.

Physics

For employment as a physicist, students must have a minimum of an ordinary Bachelor of Science degree with a major in Physics. An Honours degree in Physics or combined Physics/Mathematics would be preferred.

Physics as a profession is represented by the Australian Institute of Physics. Membership is limited to graduates with a minimum of a major in Physics. The Australian Institute of Physics has a number of grades of membership which are related to experience as a physicist. There is a need for membership for students currently working towards a degree. The Institute monitors courses in Physics at tertiary institutions and judges them in terms of suitability for admission to membership of the Australian Institute of Physics. The Institute also responds on behalf of physicists to matters relating to physicists and their role. There are no formal conditions for registration as a physicist, but a degree is usually necessary for government and industry recognition and status as a professional physicist.

It is advisable for intending physicists to include ample mathematics in their course and pursue a related science such as Chemistry or Geology to Level 300 subjects if at all possible.

For a Physics major in the Bachelor of Science degree at least the following semester subject structure is necessary

Year 1
PHYS113, PHYS114 and MATH102. Choose other subjects from Level 100, preferably leading to Level 200 in at least one other science discipline.

Year 2
PHYS201, MATH201 and MATH203 and at least two subjects chosen from PHYS202, PHYS303 or PHYS305.

Students achieving a Credit level or better in PHYS111 and PHYS112 may be admitted to Level 200 in Physics with the approval of the Head of Department.

Year 3
PHYS301, and any other 3 Physics 300 level subjects. Note that the Level 300 subjects should be passed with a Credit or better for admission to the Bachelor of Science (Honours) degree.

Psychology

Psychology is a broad discipline and it is difficult to state preparatory subjects that should be studied together with Psychology. Note: there are entry quota restrictions placed on enrolment in PSYC101.

New South Wales regulations for Registration as a Psychologist require anyone wishing to practise as a Psychologist to have a minimum of four years training. In the Science and Mathematics Faculty, Psychology can be taken either as a Bachelor of Science or a Bachelor of Science in Psychology (degree) psychology. The Bachelor of Science degree is a three year course which can be followed by a fourth or Honours year. The Bachelor of Science (Psychology) degree is a four year degree. The programs within these two degrees are set out below.

The Department’s aim is to produce psychologists who should by virtue of their training be able to play a unique role such as critically examining research and scholarly literature in the field of psychology, contributing to empirical research.
in psychology, administering and interpreting psychological tests and measurement procedures and prescribing, implementing and evaluating forms of psychological intervention and remediation.

Entry to Psychology 401 and 402 requires completion of 40 credit points of PSYC300 including PSYC207 and 60 credit points at PSYC300 including PSYC201 and PSYC312 (or PSYC302) obtaining at least a Credit grade average. The student’s best six results including PSYC301 and PSYC312 will be averaged on the normal basis of Pass=1, Credit=2, Distinction=3, High Distinction=4 and the students with the highest scores accepted. Admission is competitive.

The Department offers the Master of Psychology (Clinical) degree. It has proposed a Master of Applied Psychology degree which is yet to be approved by Council. The Master of Psychology (Educational) is not available in 1995. The Honours degree is the normal entry into the research degrees of Master of Science and Doctor or Philosophy.

Bachelor of Science with a Psychology Major

Year 1
PSYC101, PSYC102 plus six other semester subjects at level 100.

Year 2
PSYC207 plus other subjects at the 200 level, some of which may also be taken in Psychology.

Year 3
PSYC301 plus at least three other subjects chosen from PSYC312, PSYC303, PSYC304, PSYC305, PSYC306, PSYC307, PSYC308, PSYC309, PSYC310 or PSYC311 and four other subjects chosen at the 300 level.

Bachelor of Science Honours Degree in Psychology

Year 1
PSYC101, PSYC102, plus six other subjects from level 100.

Year 2
Right 200 level subjects including PSYC207 and at least three of PSYC202, PSYC206, PSYC209, PSYC210, plus other 200 level subjects chosen from the scheduled list.

Year 3
PSYC301, PSYC312 and at least four other Psychology subjects at the 300 level, plus other 300 level subjects chosen from the scheduled list including those offered by the Psychology Department.

Year 4
PSYC401 and PSYC402. Entry to the Honours degree requires PSYC301 and PSYC312 and a minimum of sixty credit points Psychology at the 200 level including PSYC207, as well as completion of sixty credit points at PSYC300. Candidates need to have obtained at least a Credit grade average in sixty credit points 300 Psychology including PSYC301 and PSYC312 (or PSYC302). Admission is competitive.

Bachelor of Science (Psychology) awarded at Honours Level

Year 1 and 2
As for Psychology Honours above.

Year 3
PSYC301, PSYC312 and at least four other Psychology subjects at the 300 level, plus other 300 level subjects chosen from the scheduled list including those offered by the Psychology Department.

Year 4
PSYC401 and PSYC402. Entry to the Honours degree requires PSYC301 and PSYC312 and a minimum of forty credit points Psychology at the 200 level including PSYC207, as well as completion of sixty credit points at PSYC300. Candidates need to have obtained at least a Credit grade average in sixty credit points 300 Psychology including PSYC301 and PSYC312 (or PSYC302). Admission is competitive.

BSc (Psychology) Degree

Years 1 and 2
As for Psychology Honours above.

Year 3
PSYC301, and at least five other Psychology subjects at the 300 level, plus other 300 level subjects chosen from the scheduled list including those offered by the Psychology Department.

Year 4
PSYC403 and PSYC404.

STATISTICS

Statistics has been described as the science of turning data into information. This involves collecting, presenting and analysing data, interpreting the results and using them to draw conclusions or make decisions. The principles of Statistics are based on ideas from the philosophy of science and mathematics and, more recently, from developments in computing. Computers play an essential role in Statistics for data management and analysis. Statistics is a practical subject. It involves designing experimental plans and sampling procedures, calculating how many subjects or objects should be studied and determining how the measurements should be made in order to obtain data which is reliable, accurate and relevant. Methods of statistical analysis, based on mathematics including probability theory, are used to decide what conclusions can validly be drawn from the data.

The Statistics Department offers subjects from the 100 level through to the Honours level. Research degrees may be pursued in the area of Statistics.

For a major in Statistics a student should take the following subjects:

Year 1
STAT101 and (MATH 111 and MATH112) or (MATH102 or MATH103). Choose other subjects worth 60 credit points from Level 100.

Year 2
STAT201, STAT202, STAT206 and MATH201. Choose other subjects worth 45 credit points from Level 200.

Year 3
STAT301, STAT303, STAT304, STAT305. Choose other subjects worth 40 credit points from Level 300.

Year 4
STAT421 and STAT422.
POSTGRADUATE DEGREE RULES

SCHEDULE—HONOURS DEGREE OF BACHELOR SCIENCE

Admission to Candidature

1. A candidate may undertake the honours degree in either one or two disciplines.
2. In order to be admitted to candidature for the degree in a single discipline an applicant shall
   (a) have completed the requirements for admission to the Ordinary Degree of Bachelor of Science of the University or to any other degree approved by the Faculty Board; and
   (b) have completed such other work prescribed in accordance with the policy determined by the Faculty Board on the recommendation of the Head of the Department responsible for the discipline.
3. In order to be admitted to candidature for the degree in two disciplines, an applicant shall
   (a) have completed the requirements for admission to the Ordinary Degree of Bachelor of Science of the University or to any other degree approved by the Faculty Board; and
   (b) have completed such other work prescribed in accordance with the policy determined by the Faculty Board on the recommendation of the Heads of the Departments responsible for the disciplines.

Qualification for Admission to the Degree

4. To qualify for admission to the degree a candidate shall pass subjects at the 400 level totalling 80 credit points chosen from the list of Approved Subjects.

Classes of Honours

5. There shall be three classes of honours Class I, Class II and Class III. Class II shall have two divisions, namely Division 1 and Division 2.

Time Requirements

6. Except with the permission of the Faculty Board, a candidate shall complete the course in not more than two years of study.

APPROVED SUBJECTS

<table>
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<th>Code</th>
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<td>Psychology Honours 402(The)</td>
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</table>

A candidate may pursue a combined honours degree in one honours subject from each of two Departments with the approval of the Heads of both Departments.
SCHEDULE — HONOURS DEGREE OF BACHELOR OF SCIENCE (AVIATION)

Admission to Candidature

1. In order to be admitted to candidature for the degree an applicant shall
   (a) have completed the requirements for admission to the Ordinary Degree of Bachelor of Science (Aviation) of the University or to any other degree approved by the Faculty Board, or have already been admitted to that degree; and
   (b) have completed any additional work prescribed in accordance with the policy determined by the Faculty Board on the recommendation of the Head of the Department of Aviation.

Qualification for Admission to the Degree

2. To qualify for admission to the degree a candidate shall pass subjects at the 400 level totalling 80 credit points chosen from the list of Approved Subjects.

Classes of Honours

3. There shall be three classes of honours Class I, Class II and Class III. Class II shall have two divisions, namely Division 1 and Division 2.

Time Requirements

4. Except with the permission of the Faculty Board, a candidate shall complete the course in not more than two years of study.

APPROVED SUBJECTS

The subjects approved by the Faculty Board for the award are

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<tr>
<td>AVIA406</td>
<td>Aviation Honours (Seminars)</td>
<td>40</td>
<td>A completed BSc(Aviation) including at least 40 cp in Aviation at the 200 level and 60cp in Aviation at the 300 level including AVIA314. Candidates must have obtained at least Credit grades in 300 level subjects including AVIA314 to a total of 40 cp.</td>
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<td>AVIA407</td>
<td>Aviation Honours (Thesis)</td>
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SCHEDULE —  HONOURS DEGREE OF BACHELOR OF APPLIED SCIENCE (ENVIRONMENTAL ASSESSMENT AND MANAGEMENT)

This degree program is co-ordinated by the Department of Geography.

Admission to Candidature
1. In order to be admitted to candidature for the degree in a single discipline an applicant shall
   (a) have completed the requirements for admission to the Ordinary Degree of Bachelor of Applied Science (Environmental Assessment and Management) of the University or to any other degree approved by the Faculty Board; and
   (b) have completed any additional work prescribed in accordance with the policy determined by the Faculty Board on the recommendation of the Head of Department of Geography.

Qualification for Admission to the Degree
2. To qualify for admission to the degree a candidate shall pass subjects at the 400 level totalling 80 credit points chosen from the list of Approved Subjects.

Classes of Honours
3. There shall be three classes of Honours, Class I, Class II and Class III. Class II shall have two divisions, namely Division 1 and Division 2.

Time Requirements
4. Except with the permission of the Faculty Board, a candidate shall complete the course in not more than two years of study.

APPROVED SUBJECTS
The subjects approved by the Faculty Board for the award are:

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<td>40cp of 300 level EAMS subjects.</td>
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<td></td>
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<td>Candidates must have obtained at least a Credit grade average</td>
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<td>EAMS402</td>
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<td>EAMS404</td>
<td>Research Project</td>
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</table>
SCHEDULE — HONOURS DEGREE OF BACHELOR OF ENVIRONMENTAL SCIENCE

Interpretation
1. In this schedule "discipline" means a branch of learning recognised by the Faculty Board as constituting a discipline.

Admission to Candidature
2. A candidate may undertake the honours degree in either one or two disciplines.
3. In order to be admitted to candidature for the degree an applicant shall:
   (a) have completed the requirements for admission to the Ordinary Degree of Bachelor of Environmental Science of the University or to any other degree approved by the Faculty Board;
   and
   (b) have completed such other work prescribed in accordance with the policy determined by the Faculty Board on the recommendation of the Head of the Department responsible for the discipline.

Qualification for Admission to the Degree
4. To qualify for admission to the degree a candidate shall pass subjects at the 400 level totalling 80 credit points chosen from the list of Approved Subjects.

Classes of Honours
5. There shall be three classes of honours Class I, Class II and Class III. Class II shall have two divisions, namely Division 1 and Division 2.

Time Requirements
6. Except with the permission of the Faculty Board, a candidate shall complete the course in not more than two years of study.

APPROVED SUBJECTS
The subjects approved by the Faculty Board for the award are

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
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<tr>
<td>BIOL407</td>
<td>Biology Honours 407</td>
<td>40</td>
<td>40 cp 300 BIOL or other 300 level subjects approved by the Department obtaining at least a Credit grade average</td>
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<tr>
<td>CHEM407</td>
<td>Chemistry Honours 407</td>
<td>40</td>
<td>40 cp 300 CHEM or other 300 level subjects approved by the Department obtaining at least a Credit grade average</td>
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<tr>
<td>GEOG407</td>
<td>Geography Honours 407</td>
<td>40</td>
<td>40 cp level 300 GEOG or other 300 level subjects approved by the Department obtaining at least a Credit grade average</td>
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</table>
SCHEDULE — HONOURS DEGREE OF BACHELOR OF MATHEMATICS

Admission to Candidature

1. A candidate may undertake the honours degree in either one or two disciplines.

2. In order to be admitted to candidature for the degree in a single discipline an applicant shall:
   (a) have completed the requirements for admission to the Ordinary Degree of Bachelor of Mathematics of the University or to any other degree approved by the Faculty Board; and
   (b) have completed such other work prescribed in accordance with the policy determined by the Faculty Board on the recommendation of the Head of the Department responsible for the discipline.

3. In order to be admitted to candidature for the degree in two disciplines, an applicant shall:
   (a) have completed the requirements for admission to the Ordinary Degree of Bachelor of Mathematics of the University or to any other degree approved by the Faculty Board; and
   (b) have completed such other work prescribed in accordance with the policy determined by the Faculty Board on the recommendation of the Heads of the Departments responsible for the disciplines.

Qualification for Admission to the Degree

4. To qualify for admission to the degree a candidate shall pass subjects at the 400 level totalling 80 credit points chosen from the list of Approved Subjects.

Classes of Honours

5. There shall be three classes of honours: Class I, Class II and Class III. Class II shall have two divisions, namely Division 1 and Division 2.

Time Requirements

6. Except with the permission of the Faculty Board, a candidate shall complete the course in not more than two years of study.

APPROVED SUBJECTS

The subjects approved by the Faculty Board for the award are:

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Credit Points</th>
<th>Prerequisite</th>
<th>Corequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH401 Mathematics Honours 401</td>
<td>40</td>
<td>40 cp level 300 MATH subjects obtaining at least a Credit grade average</td>
<td>MATH401</td>
<td></td>
</tr>
<tr>
<td>MATH402 Mathematics Honours 402</td>
<td>40</td>
<td>40 cp level 300 STAT obtaining at least a Credit grade average</td>
<td>STAT421</td>
<td></td>
</tr>
<tr>
<td>STAT421 Statistics Honours 421</td>
<td>40</td>
<td>40 cp level 300 STAT obtaining at least a Credit grade average</td>
<td>STAT421</td>
<td></td>
</tr>
<tr>
<td>STAT422 Statistics Honours 422</td>
<td>40</td>
<td>40 cp level 300 STAT obtaining at least a Credit grade average</td>
<td>STAT421</td>
<td></td>
</tr>
</tbody>
</table>

A candidate may pursue a combined honours degree in one honours subject from each of two Departments in one of the following combinations:

- MATH401 Mathematics Honours 401
  - PHYS301 Physics Honours 401
  - As previously stated
    - PHYS300 and any other three PHYS300 subjects obtaining at least a Credit grade average

- MATH401 Mathematics Honours 401
  - ECON401 Economics IV
  - As previously stated
    - Consult Department

- MATH401 Mathematics Honours 401
  - GEOL401 Geology Honours 401
  - As previously stated
    - 40 cp Level 300 GEOL subjects obtaining at least a Credit grade average

- MATH401 Mathematics Honours 401
  - PSYC401 Psychology Honours 401
  - As previously stated
    - Four PSYC200 subjects incl. PSYC207 and 60 cp at PSYC300 including PSYC301 and PSYC312 obtaining at least a Credit grade average
<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Credit Points</th>
<th>Prerequisite</th>
<th>Corequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH401</td>
<td>Mathematics Honours 401</td>
<td>40</td>
<td>As previously stated</td>
<td></td>
</tr>
<tr>
<td>STAT421</td>
<td>Statistics Honours 421</td>
<td>40</td>
<td>40 cp Level 300 STAT subjects obtaining at least a Credit grade average</td>
<td></td>
</tr>
</tbody>
</table>

**SCHEDULE — GRADUATE DIPLOMA IN ENVIRONMENTAL STUDIES**

**Admission to Candidature**

1. In order to be admitted to candidature for the diploma, an applicant shall:
   a) have satisfied all the requirements for admission to a degree of the University or to any other degree approved by the Faculty Board or have achieved at another tertiary institution a standard of performance deemed by the Faculty Board to be equivalent; and
   b) have completed such other work prescribed in accordance with the policy determined by the Faculty Board; or
   c) in exceptional cases, produce evidence of possessing such other qualifications as may be approved by the Faculty Board.

**Qualification for Admission to the Diploma**

2. To qualify for admission to the diploma, a candidate shall complete subjects totalling 80 credit points from the list of Approved Subjects, including 40 credit points in subjects at the 400 level or higher.

**Grading of the Diploma**

3. The diploma shall be conferred as an Ordinary Diploma except that, where the performance of a candidate has reached a standard determined by the Faculty Board to be sufficient, the diploma may be conferred with Merit.

**Time Requirements**

4. Except with the permission of the Faculty Board, a candidate shall complete the course in not more than two years of study.
### APPROVED SUBJECTS

The subjects approved by the Faculty Board for the award are:

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG0491</td>
<td>Environmental Studies Seminar 1</td>
<td>20</td>
<td>CHEM101 and CHEM102</td>
<td></td>
</tr>
<tr>
<td>PHIL391</td>
<td>Technology and Human Values I</td>
<td>10</td>
<td>CHEM102</td>
<td></td>
</tr>
<tr>
<td>PHIL502</td>
<td>Technology, Human Values and The Environment</td>
<td>10</td>
<td>CHEM102</td>
<td>CHEM102</td>
</tr>
</tbody>
</table>

**Supporting Subjects**

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL311</td>
<td>Environmental Biology</td>
<td>10</td>
<td>BIOL207</td>
<td></td>
</tr>
<tr>
<td>CHEM201</td>
<td>Environmental Chemistry</td>
<td>10</td>
<td>CHEM101 and CHEM102</td>
<td>CHEM101 and CHEM102</td>
</tr>
<tr>
<td>CHEM301</td>
<td>Environmental Chemistry</td>
<td>10</td>
<td>CHEM102</td>
<td>CHEM102</td>
</tr>
<tr>
<td>CHEE342</td>
<td>Safety and Environment</td>
<td>10</td>
<td>Consult Head of Department</td>
<td>CHEM102</td>
</tr>
<tr>
<td>EAMS290</td>
<td>Soil Conservation and Management</td>
<td>10</td>
<td>EAMS290 and EAMS291</td>
<td>CHEM102</td>
</tr>
<tr>
<td>EDGS612</td>
<td>The Scope of Environmental Education</td>
<td>10</td>
<td>Consult Department of Education</td>
<td>CHEM102</td>
</tr>
<tr>
<td>EDGS613</td>
<td>Issues and Research in Environmental Education</td>
<td>10</td>
<td>Consult Department of Education</td>
<td>CHEM102</td>
</tr>
<tr>
<td>GEOG207</td>
<td>The Biosphere and Conservation</td>
<td>10</td>
<td>GEOG201, GEOG203 and GEOG204</td>
<td>CHEM102</td>
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<tr>
<td>GEOG208</td>
<td>Climatic Problems</td>
<td>10</td>
<td>GEOG201, GEOG203</td>
<td>CHEM102</td>
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<tr>
<td>GEOG209</td>
<td>Geography of Australia: an Historical Perspective</td>
<td>10</td>
<td>GEOG202, GEOG204</td>
<td>CHEM102</td>
</tr>
<tr>
<td>GEOG210</td>
<td>Society and Space</td>
<td>10</td>
<td>GEOG202, GEOG204</td>
<td>CHEM102</td>
</tr>
<tr>
<td>GEOG211</td>
<td>Hydrology</td>
<td>10</td>
<td>GEOG202, GEOG204</td>
<td>CHEM102</td>
</tr>
<tr>
<td>GEOG212</td>
<td>Environmental Studies Minor Project</td>
<td>10</td>
<td>GEOG202, GEOG204</td>
<td>CHEM102</td>
</tr>
<tr>
<td>GEOG213</td>
<td>Environmental Studies Seminar 2</td>
<td>20</td>
<td>GEOG202, GEOG204</td>
<td>CHEM102</td>
</tr>
<tr>
<td>GEOG214</td>
<td>Directed Environmental Study 1</td>
<td>10</td>
<td>GEOG201</td>
<td>CHEM102</td>
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<tr>
<td>GEOG215</td>
<td>Directed Environmental Study 2</td>
<td>10</td>
<td>GEOG201</td>
<td>CHEM102</td>
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<tr>
<td>MCHS509</td>
<td>Introduction to Noise Pollution Control</td>
<td>5</td>
<td>Consult Department of</td>
<td>CHEM102</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Mechanical Engineering</td>
<td>CHEM102</td>
</tr>
<tr>
<td>MECH407</td>
<td>Environmental Engineering</td>
<td>5</td>
<td>Consult Department of</td>
<td>CHEM102</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Mechanical Engineering</td>
<td>CHEM102</td>
</tr>
<tr>
<td>OHS502</td>
<td>Occupational Hygiene and Toxicology</td>
<td>10</td>
<td></td>
<td>CHEM102</td>
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<tr>
<td>SCA219</td>
<td>Sociology of Health and Illness</td>
<td>10</td>
<td>SCA111</td>
<td>CHEM102</td>
</tr>
<tr>
<td>SURV473</td>
<td>Town Planning</td>
<td>10</td>
<td>Consult Department</td>
<td>CHEM102</td>
</tr>
</tbody>
</table>

* Or such subjects considered necessary upon approval of the Dean.
**APPROVED SUBJECTS**

The subjects approved by the Faculty Board for the award are:

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSYC571</td>
<td>Principles in Rehabilitation</td>
<td>10</td>
<td>PSYC571</td>
<td></td>
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<tr>
<td>PSYC579</td>
<td>Rehabilitation Counselling 1</td>
<td>10</td>
<td></td>
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<tr>
<td>HOLHS01</td>
<td>Holistic Health</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSYC573</td>
<td>Principles in Rehabilitation 11</td>
<td>10</td>
<td>PSYC573</td>
<td></td>
</tr>
<tr>
<td>PSYC574</td>
<td>Rehabilitation Counselling 11</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HOLHS02</td>
<td>Health Research Design</td>
<td>10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SCHEDULE — GRADUATE DIPLOMA IN MATHEMATICAL STUDIES**

**Admission to Candidature**

1. An applicant for admission to candidacy for the Diploma shall:
   (a) have satisfied all the requirements for admission to a degree of the University or to a degree of any other tertiary institution approved for this purpose by the Faculty Board, or
   (b) in exceptional circumstances have other qualifications approved for this purpose by the Faculty Board.

**Qualification for Admission to the Diploma**

2. (1) To qualify for the diploma a candidate shall pass a program of study approved by the Faculty Board, totalling not less than 80 credit points.
   (2) The program shall consist of subjects from levels above 100 level offered by the Department of Mathematics and the Department of Statistics or other subjects with considerable mathematical content, as determined by the Dean, offered by other departments of the University.
   (3) Not more than 20 credit points from 200 level subjects may be counted by a candidate towards the diploma.

**Grading**

3. In cases where a candidate’s performance in the program has reached a level determined by the Faculty Board, the diploma may be awarded with Merit.

**Time Requirements**

4. Except with the permission of the Faculty Board, a candidate shall complete the course in not more than two years of study.
APPROVED SUBJECTS

The subjects approved by the Faculty Board for the award are:

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL405</td>
<td>Biology Diploma 405</td>
<td>40</td>
<td>40 cp level 300 BIOL or other subjects approved by the Department</td>
<td>RIOLA05</td>
</tr>
<tr>
<td>BIOL406</td>
<td>Biology Diploma 406</td>
<td>40</td>
<td>40 cp level 300 CHEM</td>
<td>CHEM405</td>
</tr>
<tr>
<td>CHEM405</td>
<td>Chemistry Diploma 405</td>
<td>40</td>
<td>40 cp level 300 GEOG</td>
<td>GEOG405</td>
</tr>
<tr>
<td>CHEM406</td>
<td>Chemistry Diploma 406</td>
<td>40</td>
<td>40 cp level 300 GEOL</td>
<td>GEOL405</td>
</tr>
<tr>
<td>GEOG405</td>
<td>Geography Diploma 405</td>
<td>40</td>
<td>40 cp level 300 PHYS</td>
<td>PHYS405</td>
</tr>
<tr>
<td>GEOG406</td>
<td>Geography Diploma 406</td>
<td>40</td>
<td>40 cp level 300 PSYC</td>
<td>PSYC405</td>
</tr>
<tr>
<td>GEOL405</td>
<td>Geology Diploma 405</td>
<td>40</td>
<td>40 cp level 300 PSYC</td>
<td></td>
</tr>
<tr>
<td>GEOL406</td>
<td>Geology Diploma 406</td>
<td>40</td>
<td>40 cp level 300 PSYC</td>
<td></td>
</tr>
<tr>
<td>PHYS405</td>
<td>Physics Diploma 405</td>
<td>40</td>
<td>40 cp level 300 PSYC</td>
<td></td>
</tr>
<tr>
<td>PHYS406</td>
<td>Physics Diploma 406</td>
<td>40</td>
<td>40 cp level 300 PSYC</td>
<td></td>
</tr>
<tr>
<td>PSYC405</td>
<td>Psychology Diploma 405</td>
<td>40</td>
<td>40 cp level 300 PSYC</td>
<td></td>
</tr>
<tr>
<td>PSYC406</td>
<td>Psychology Diploma 406</td>
<td>40</td>
<td>40 cp level 300 PSYC</td>
<td></td>
</tr>
</tbody>
</table>

SCHEDULE — MASTER OF HEALTH SCIENCE
(REHABILITATION COUNSELLING)

Classification
1. The Master of Health Science shall be a degree by coursework offered in the Faculty of Science and Mathematics.

Areas of Specialisation
2. (1) The program of studies for the degree shall be pursued in such specialisations as the Academic Senate, on the recommendation of the Faculty Board, may approve from time to time.
   (2) Applicants for admission to candidature will be required to nominate the specialisation in which they wish to pursue their program of study.

Admission to Candidature
3. To qualify for admission to candidature an applicant shall:
   (a) have satisfied the requirements for the Graduate Diploma in Health Science of the University and passed the examinations in the Diploma at such standards as the Board may prescribe; or
   (b) have satisfied the requirements for admission to a Bachelor degree, approved for this purpose by the faculty Board; or
   (c) in exceptional cases produce evidence of possessing such other qualifications as may be approved by the Faculty Board.

Qualification for the Degree
4. To qualify for admission to the degree a candidate shall pass subjects totalling not less than 160 credit points, from the List of Approved Subjects.

Credit
5. A candidate who has completed all requirements for the award of the Graduate Diploma in Health Science may be granted credit of up to 80 credit points.

Time Requirements
6. (1) The program shall be completed in not less than two years and not more than five years except with the permission of the Faculty Board.
   (2) A candidate who has been granted credit shall be deemed to have commenced the course from a date determined by the Dean at the time the credit is granted.

Footnote
The following areas of specialisation have been approved by the Academic Senate in the Faculty of Medicine and Health Sciences:
Clinical Drug Dependence Studies
Primary Health Care
Women's Health
The following area of specialisation has been approved by the Academic Senate in the Faculty of Science and Mathematics:
Rehabilitation Counselling.
APPROVED SUBJECTS

Years 1 and 2
As for the Graduate Diploma in Health Science (Rehabilitation Counselling)

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSYC681</td>
<td>Thesis - Rehabilitation Counselling I</td>
<td>20</td>
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<tr>
<td>PSYC682</td>
<td>Thesis - Rehabilitation Counselling II</td>
<td>20</td>
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<tr>
<td>PSYC683</td>
<td>Thesis - Rehabilitation Counselling III</td>
<td>20</td>
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<td>PSYC684</td>
<td>Thesis - Rehabilitation Counselling IV</td>
<td>20</td>
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</tr>
</tbody>
</table>

SCHEDULE — MASTER OF ENVIRONMENTAL STUDIES

Classification
1. The degree of Master of Environmental Studies shall be a degree by coursework offered in the Faculty of Science and Mathematics.

Interpretation
2. In this Schedule unless the context or subject matter otherwise indicates or requires:
   "Co-ordinator" means the Co-ordinator for the Master of Environmental Studies degree appointed by the Faculty Board.

Admission to Candidature
3. An applicant for admission to candidature shall:
   (a) have satisfied all the requirements for admission to a Bachelor of Science degree of the University or any other degree approved for this purpose by the Faculty Board; or
   (b) in exceptional cases produce evidence of possessing such other qualifications as may be approved by the Faculty Board.

Qualification for the Degree
4. (a) To qualify for admission to the degree the candidate shall complete a program prescribed by the Faculty Board totalling not less than 100 credit points of which 60 credit points shall be a project on a subject approved by the Faculty Board on the recommendation of the Co-ordinator.

Credit
5. The Faculty Board may grant credit to a candidate on such conditions as it may determine for up to 80 credit points.

Time Requirements
6. The program shall be completed in not less than two years unless otherwise permitted by the Faculty Board.
### APPROVED SUBJECTS

The subjects approved by the Faculty Board for the award are:

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Corequisites</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL311</td>
<td>Environmental Biology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM261</td>
<td>Environmental Chemistry</td>
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</tr>
<tr>
<td>CHEM262</td>
<td>Environmental Chemistry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEE342</td>
<td>Safety and Environment</td>
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<tr>
<td>CIVL241</td>
<td>Environmental Engineering 2</td>
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<td></td>
</tr>
<tr>
<td>EAMS290</td>
<td>Soil Conservation and Management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EDGS612</td>
<td>The Scope of Environmental Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EDGS613</td>
<td>Issues and Research in Environmental Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEOG201</td>
<td>The Biosphere and Conservation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEOG305</td>
<td>Quaternary Geology</td>
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</tr>
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<td>GEOG356</td>
<td>Geography of Australia: An Historical Perspective</td>
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</tr>
<tr>
<td>GEOG359</td>
<td>Society and Space</td>
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<td>GEOG591</td>
<td>Environmental Studies Major Project I</td>
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<td>GEOG592</td>
<td>Environmental Studies Major Project II</td>
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<td>GEOG593</td>
<td>Directed Environmental Study 1</td>
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<tr>
<td>GEOG594</td>
<td>Directed Environmental Study 2</td>
<td></td>
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<td>GEOL320</td>
<td>Introduction to Noise Pollution Control</td>
<td></td>
<td></td>
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<td>GEOR309</td>
<td>Environmental Engineering</td>
<td></td>
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</tr>
<tr>
<td>GSOS302</td>
<td>Occupational Hygiene and Toxicology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOCIA19</td>
<td>Sociology of Health and Illness</td>
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</tr>
<tr>
<td>SURV473</td>
<td>Town Planning</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Or such subjects considered necessary upon approval of the Dean.
Section Seven

Admission to Candidature

2. (1) To be eligible for admission to candidature in the Faculty of Science and Mathematics an applicant shall:
(a) have satisfied all the requirements for admission to the degree of Bachelor of Science with Honours Class 1 or Class 11 of the University or to a degree, approved for this purpose by the Faculty Board, of this or any other university; or
(b) have satisfied all the requirements for admission to the degree of Bachelor of Science of the University or other approved university and have completed such work and passed such examinations as the Faculty Board may have determined and have achieved a standard at least equivalent to that required for admission to a degree of Bachelor with second class Honours; or
(c) in exceptional cases produce evidence of possessing such other qualifications as may be approved by the Faculty Board on the recommendation of the Head of the Department in which the applicant proposes to carry out the program.

(2) To be eligible for admission to candidature in the Faculty of Engineering an applicant shall:
(a) have satisfied the requirements for admission to a relevant professional Bachelor degree of the University or to a degree approved for this purpose by the Faculty Board; or
(b) have completed such work and passed such examinations as the Faculty Board may have determined and have achieved a standard at least equivalent to that required for admission to a degree of Bachelor with second class Honours; or
(c) in exceptional circumstances produce evidence of possessing such other qualifications and experience as may be approved by the Faculty Board.

Qualification for the Degree

3. (1) To qualify for admission to the degree the candidate shall complete a program prescribed by the Faculty Board totalling not less than 160 credit points of which 40 credit points shall be a project on a subject approved by the Faculty Board on the recommendation of the relevant Head of Department.

Credit

4. A candidate may be granted credit by the Faculty Board on such conditions as it may determine for up to 60 credit points.

Time Requirements

5. The degree shall be completed in not less than two years unless otherwise permitted by the Faculty Board.
### APPROVED SUBJECTS

The subjects approved by the Faculty Board for the award are:

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASTK695</td>
<td>Foundations of Applied Science and Technology</td>
<td>40</td>
<td>Appropriate undergraduate subjects</td>
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</tr>
<tr>
<td>ASTK696</td>
<td>Topics in Applied Science and Technology</td>
<td>40</td>
<td>ASTK695</td>
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</tr>
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<td>ASTK697</td>
<td>Advanced Topics in Applied Science and Technology</td>
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<td>ASTK696</td>
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<td>ASTK698</td>
<td>Project</td>
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<td>EAMS695</td>
<td>Foundations of Environmental Assessment and Management</td>
<td>Not in 1995</td>
<td>Appropriate undergraduate subjects</td>
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<td>EAMS696</td>
<td>Topics in Environmental Assessment and Management</td>
<td>Not in 1995</td>
<td>EAMS695</td>
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<tr>
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<td>Advanced Topics in Environmental Assessment and Management</td>
<td>Not in 1995</td>
<td>EAMS696</td>
<td></td>
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<tr>
<td>EAMS698</td>
<td>Project</td>
<td>Not in 1995</td>
<td>EAMS696</td>
<td></td>
</tr>
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<td>BIOL695</td>
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A candidate may pursue subjects in two disciplines with the approval of the Heads of both Departments and the Dean of the Faculty of Science and Mathematics.
Section Eight

Postgraduate Degree Subject Descriptions

Notes on Subject and Topic Descriptions

The subject and topic outlines and reading lists which follow are set out in a standard format to facilitate easy reference. An explanation is given below of some of the technical terms used in this Handbook.

Prerequisites are subjects which must be passed at a Pass grade or better before a candidate enrols in a particular subject. The only prerequisites noted for topics are any topics or subjects which must be taken before enrolling in the particular topic. To enrol in any subject which the topic may be part of, the prerequisites for that subject must still be satisfied.

Where a prerequisite is marked as advisory, lectures will be given on the assumption that the subject or topic has been completed as indicated.

Corequisites for subjects or topics are those which the candidate must pass before enrolment or be taking concurrently.

Examination Under examination rules “examination” includes mid-year examinations, assignments, tests or any other work by which the final grade of a candidate in a subject is assessed. Some attempt has been made to indicate for each subject how assessment is determined.

Texts are essential books recommended for purchase.

References are books relevant to the subject or topic which, however, need not be purchased.

List of Approved Subjects Referred to in Honours Degrees in the Faculty of Science and Mathematics

Entry to an Honours degree requires a Credit or better average in appropriate 300 level subjects. See prerequisite requirements for relevant subjects.

HONOURS DEGREE OF BACHELOR OF SCIENCE

BIOL (401) HONOURS IN BIOLOGICAL SCIENCES 40+40cp

Prerequisites: 40 cp Level 300 BIOL (or other 300 level subjects approved by Department), obtaining at least a Credit grade average.

Content

The Honours program extends over two semesters of full-time study or four semesters of part-time study and consists of:

(i) An original thesis limited to a 100 pages of text, embodying the results of a supervised research project (60%)
(ii) A review essay (15%)
(iii) Seminar and thesis defence (15%)
(iv) A viva involving discussion of selected biological topics (10%)

Note: A candidate who wishes to proceed to Honours should notify the Head of Department by 30th November in the year preceding intake into the Honours year.

CHEMISTRY

CHEM (401) HONOURS IN CHEMISTRY 40+40cp

Prerequisites: Completion of ordinary degree requirements and permission of the Head of Department. An average Credit grade in at least four Level 300 chemistry subjects is the normal minimum entry requirement. It will be expected that a student undertaking project work in a particular area will have completed the corresponding Level 300 core subject at a minimum of a Credit grade. Students intending to undertake the Honours program should notify the Head of Department of their intention by 1 November in their final undergraduate year and confirm this as soon as final examination results are known.

Content

The Honours program extends over two semesters or its part-time equivalent, and consists of:

(i) a thesis embodying the results of an original investigation on a topic approved by the Head of Department (approximately 48-50 Hours)
(ii) coursework, consisting of reviews of research progress in major subject areas of Chemistry. Each student will, under supervision, select a subject area for review, and present it as a seminar and as an essay.

Note: A candidate who wishes to proceed to Honours should notify the Head of the Department by 1 October in the final year of the undergraduate degree and must confirm this as soon as final results for the year are known. Candidates are expected to commence work on their thesis after completion of their undergraduate degree.

GEOGRAPHY

GEOG (401) HONOURS IN GEOGRAPHY 40+40cp

Prerequisites: GEOG101 and GEOG102 plus either GEOG201 and GEOG301 or GEOG202 and GEOG302 including 30 cp from 200 level and 40 cp from 300 GEOG level obtaining at least a Credit grade average. To qualify for admission to Geography Honours, a student must normally have completed sufficient training in geographical methods (i.e. GEOG101 and GEOG301 for Physical Geography; GEOG202 and GEOG302 for Human Geography), and have completed a Major in Geography that includes GEOG101, GEOG102, 30 credit points from level 200 courses and 40 credit points from level 300 courses. To proceed to Geography Honours a candidate must have obtained at least a Credit grade average in the 300 level Geography subjects taken for the major plus at least 20 other points at Credit level in their university courses. The student must also satisfy the Head of the Department of her/his ability in the area of study within which the proposed research topic lies.

Hours: 48 hours per week for two semesters.

Examination: External and internal examination of a research thesis, and internal examination of the coursework.

Content

The Honours program extends over two semesters of full-time study or its part-time equivalent, and consists of:

(i) a thesis embodying the results of an original investigation on a topic approved by the Head of Department (approximately 48-50 Hours)
(ii) coursework, consisting of reviews of research progress in major subject areas of Geography. Each student will, under supervision, select a subject area for review, and present it as a seminar and as an essay.

Note: A candidate who wishes to proceed to Honours should notify the Head of the Department by 1 October in the final year of the undergraduate degree and must confirm this as soon as final results for the year are known. Candidates are expected to commence work on their thesis after completion of their undergraduate degree.
MATH401) HONOURS IN MATHEMATICS 40+40cp
Prerequisites Completion of Ordinary Degree requirements and permission of the Heads of the Departments of Geology and Mathematics
Content At least 40 credit points chosen from those available to Honours students in Mathematics together with work equal to 40 credit points at 400 Level offered by the Department of Geology. Geology 401 will also include a major thesis which embodies the results of a field research project involving the application of mathematical studies to a particular geological problem. Other work, eg. seminars and assignments may be required by either Department.

MATH401) HONOURS IN MATHEMATICS PSYC401) AND PSYCHOLOGY 40+40cp
Prerequisites Soc entry for each subject and consult the Head of both Departments.
HONOURS DEGREE OF BACHELOR OF SCIENCE (AVIATION) AVIATION AVIA406 AVIATION HONOURS (SEMINARS) 40cp
Prerequisites A completed Bachelor of Science (Aviation) including at least 40 cp in Aviation at the 200 level and 60cp in Aviation at the 300 level including AVIA314. Candidates must have obtained at least Credit grades in 300 level subjects including AVIA314 to a total of 40 cp.

Hours 12 Hours per week for the full year
Examination To be advised
Content AVIA406 comprises half of the Honours program for the BSc(Aviation)(Honours). Full-Time students enrol in AVIA407 concurrently. Part-Time students complete AVIA406 in the first year and AVIA407 in the second. AVIA406 consists of a three seminar series including a choice of units from Aviation Instruction, Aviation Psychology, Technology and Aviation and Aviation Management. Each unit will include seminars at which active participation is required, and will be assessed by essay, examination, oral presentation, or a combination. The exact topics and availability of seminars will vary from year to year depending on staff availability. One seminar may be replaced with a practical placement and associated essay. There is some overlap with PSYC403.
AVIA407 AVIATION HONOURS (THESES) 40cp
Prerequisites A completed BSc(Aviation) including at least 40 credit points at the 200 level and 60cp in Aviation at the 300 level including AVIA314. Candidates must have obtained at least Credit grades in 300 level subjects including AVIA314 to a total of 40cp.
Corequisites AVIA406
Hours 12 Hours per week for the full year
Examination The thesis will be examined by no less than 2 reviewers in line with Faculty policy.
Content AVIA407 comprises half of the Honours program for the Bachelor of Science (Aviation) (Honours). Full-Time students enrol in AVIA406 concurrently. Part-Time students complete AVIA406 in the first year and AVIA407 in the second. AVIA407 consists of the development, conduct, analysis, and reporting of a piece of original empirical research. The thesis is a formal presentation of the research and should be

[HONOURS DEGREE OF BACHELOR OF ENVIRONMENTAL SCIENCE]

BIOLOGICAL SCIENCES

BIOL407) BIOLOGICAL SCIENCES HONOURS 407 40+40cp

BIOL408) BIOLOGICAL SCIENCES HONOURS 408

Prerequisites Completion of ordinary degree requirements of the Bachelor of Environmental Science and permission of the Head of Department. 40 credit points Level 300 Biology or other 300 Level subjects approved by Department, obtaining at least a Credit grade average.

Content The Honours program extends over two semesters of full-time study or four semesters of part-time study and consists of

(i) an original thesis limited to a 100 pages of text, embodying the results of a supervised research project (60%) (ii) a review essay (15%) (iii) two seminar presentations (15%) (iv) a viva involving discussion of selected topics of general environmental interest (10%)

Note A candidate who wishes to proceed to Honours should notify the Head of the Department by 30th November in the year preceding intake into the Honours year.

GEOGRAPHY

GEOG407) GEOGRAPHY HONOURS 407 40+40cp

GEOG408) GEOGRAPHY HONOURS 408

Prerequisites Completion of ordinary degree requirements of the Bachelor of Environmental Science and permission of the Head of Department. 40 credit points Level 300 Geography or other 300 Level subjects approved by the Head of Department, obtaining at least a Credit grade average. The student must also satisfy the Head of the Department of his/her ability in the area of study within which the proposed research topic lies.

Content The Honours program extends over two semesters of full-time study or its part-time equivalent and consists of

(i) a thesis embodying the results of an original investigation on a topic approved by the Head of Department

Chemistry

CHEM407) CHEMISTRY HONOURS 407 40+40 cp

CHEM408) CHEMISTRY HONOURS 408

Prerequisites Completion of ordinary degree requirements of the Bachelor of Environmental Science and permission of the Head of Department. 40 credit points Level 300 Chemistry or other 300 Level subjects approved by the Department, obtaining at least a Credit grade average. The student will, under supervision, select a subject area for review, and present it as a seminar and as an essay.

Examination External and internal examination of a research thesis, and internal assessment of the coursework.

Note A candidate who wishes to proceed to Honours should notify the Head of Department by 30th November in the year preceding intake into the Honours year.

HONOURS DEGREE OF BACHELOR OF MATHEMATICS

MATH401) HONOURS IN MATHEMATICS 40+40p

MATH402

Prerequisites Completion of ordinary degree or equivalent requirements of Bachelor of Mathematics with a major sequence of Mathematics subjects, including at least 40 credit points at the 300 level obtaining at least a Credit grade average, and favourable assessment by the Head of Department.

Hours At least 8 lecture hours per week over one full time year or 4 lecture hours per week over two part-time years.

Examination At least eight 2 hour papers, and a study under direction of a special topic using relevant published material and presented in written form. Work on this thesis normally starts early in February.

Content A selection of at least eight Mathematics topics. The topics offered may be from any branch of Mathematics including Pure Mathematics, Applied Mathematics, Statistics, Computer Science and Operations Research as exemplified in the publication Mathematical Reviews. Summaries of some topics are given later in this section of the Handbook, listed as “500 level subjects”, but the Department should be consulted for further details. Students desiring admission to this program should contact the Head of the Department well in advance of the semester in which they intend to start.

Note A meeting will be held on the first Tuesday of the first and second semesters in Room V107 at 8:00 pm to determine which of the topics are to be offered during that semester, and the timetable for these topics.

Statistics

STAT421) STATISTICS HONOURS 421 40cp

STAT422) STATISTICS HONOURS 422 40cp

Prerequisite Completion of ordinary degree requirements of Bachelor of Mathematics or equivalent including 40 credit points from Level 300 subjects offered by the Department of Statistics obtaining at least a Credit grade average.

Content Students are required to take four to six topics (each of which will be of 10 credit point value). At least three must be chosen from the topics offered by the Department of Statistics. See the Faculty of Economics and Commerce Handbook for a full description of the topics. Up to three topics can be chosen.
from other sections of the University provides the topics have a predominantly mathematical or statistical component.

Approval for these topics will be given by the Head of the Department of Statistics and the Head of the relevant Department involved.

Students are also required to complete a project for the remainder of the 80 credit points. The results of the project are to be presented as a seminar and a project which may be a practical one involving the analysis of data, or a theoretical one. Work on the project is determined by consultation with the Head of the Department of Statistics and normally begins in February.

BIOL405) BIOLOGY DIPLOMA 405 40cp

Prerequisite Completion of an approved degree including 40 credit points Level of 300 Biology or other Level 300 subjects approved by the Head of Department.

A Graduate Diploma in Science in Biological Sciences is designed to develop those skills required for continuing self education and to develop the attributes required in the investigation of a topic in a particular area of Biology. A Graduate Diploma can serve as an entry into a Master of Science degree, so it can be thought of as a Master's qualifying for those wishing to undertake further study.

At the end of a Graduate Diploma program, a student should be proficient at:

(i) investigating a biological problem or phenomenon in a productive manner
(ii) communicating the results of a scientific investigation in writing
(iii) communicating scientific information to a scientific audience
(iv) obtaining information on a particular topic from a number of different sources, and synthesizing it into a coherent overview of the field.

To achieve these aims the following tasks will be undertaken during the year. The exact mix of requirements will depend on your background and will be determined by consultation with the Head of the Department and your Major supervisor.

(i) Coursework Component:
A minimum of 25% and a maximum of 50% of the work will be from (a) and/or (b).

(2) Up to two of the following selected topics. Each topic will involve a reading list which is examined by a written paper or an essay not exceeding 3000 words.

Animal Development Immunology
Animal Physiology Microbiology
Biochemistry Molecular Biology
Cell Biology Plant Development
Ecology Plant Physiology
Environmental Biology Plant Molecular Biology
Genetics

(ii) Project Component:
The project component will account for 50% to 75% of the Graduate Diploma, depending on choices in (i) "the coursework component". It will consist of a research project which will involve studies in either a single or two different areas, resulting in a Minor thesis. A seminar will be presented on the work undertaken in the project(s).

CHEMISTRY
CHEM405) CHEMISTRY DIPLOMA 405 40cp

CHEM406) CHEMISTRY DIPLOMA 406 40cp

CHEM400) CHEMISTRY DIPLOMA 400 40cp

Prerequisite Completion of an approved degree including 40 credit points Level of 300 Chemistry and permission of the Head of Department.

Candidates will choose eight topics from a list, details of which are available from the Department of Chemistry. Topics will be presented either as a tutorial course with additional reading or as directed readings. Topic titles are presented below but not all may be offered in a particular year:

Infrared and Raman Spectra; Molecular Spectroscopy; Nuclear Magnetic Resonance; Mass Spectrometry; Inorganic Chemistry; Organic Chemistry; Physical Chemistry; Quantum Mechanics.

A minor research project to be performed under the supervision of a member of the academic staff of the Department of Chemistry. A topic of interest to the candidate will be selected. Candidates are required to contact the Head of Department prior to commencement to discuss a suitable project.

Assessment A minor thesis reporting on results of the project of not more than fifty typed, doublespaced A4 pages is the basis of assessment. In addition, candidates will be required to present results orally in a research seminar.

GEOGRAPHY
GEOG405) GEOGRAPHY DIPLOMA 405 40cp

GEOG406) GEOGRAPHY DIPLOMA 406 40cp

Prerequisites Completion of an approved degree including 40 credit points Level 300 Geography and permission of Head of Department. The student must also satisfy the Head of the Department of History ability in the area of study within which the proposed research topic lies.

Assessment Consists of an external and internal examination of a research thesis, and internal assessment of the coursework.

Content
The Diploma program extends over two semesters of full-time study or its part-time equivalent and consists of:

(i) A thesis embodying the results of an original investigation on a topic approved by the Head of Department
(ii) coursework consisting of review of research progress in major subject areas of geography. Each student will, under supervision, select a subject area for review and present it as a seminar and as an essay.

Note A candidate who wishes to proceed to Honours should notify the Head of the Department by 30 November in the year preceding intake into the Diploma year.

Assessment An internal examination in each selected topic.

CHEM406) CHEMISTRY DIPLOMA 406 40cp

Corerequisite CHEM405

A thesis based on the investigations carried out by the candidate during the year in the selected field of research is to be presented. It will be marked by at least two staff members and one external examiner, including a viva voce examination of the research project.

PHYSICS
PHYS405) PHYSICS DIPLOMA 405 40cp

PHYS406) PHYSICS DIPLOMA 406 40cp

Prerequisites Completion of an approved degree including 40 credit points Level of 300 Physics, and permission of the Head of Department.

Candidates will be required to complete a selection of topics amounting to 100 lectures. Students must consult with the Head of Department about their subject choice before enrolling. Each student will also undertake a research project under the supervision of an academic member of staff in an area of joint interest, and present a seminar on the outcome.

Assessment By coursework (50%) and a project (40%).

GRADUATE DIPLOMA IN ENVIRONMENTAL STUDIES AND MASTER OF ENVIRONMENTAL STUDIES

GEOG491) ENVIRONMENTAL STUDIES SEMINAR I 20cp

This course examines the environmental planning system in NSW and the rationale and methodology of impact assessment as an environmental management tool. The second semester involves an introduction to environmental assessment, management and decision making using specific examples from the Hunter Region, such as waste management, total catchment management and recreational management.

GEOG492) ENVIRONMENTAL STUDIES MINOR PROJECT 10cp

One semester length project under individual supervision required for the Diploma in Environmental Studies. The topic is determined by the student's interest and background.

GEOG591) ENVIRONMENTAL STUDIES MAJOR PROJECT 30cp

One half of the project under individual supervision required for the Master of Environmental Studies. Simultaneous...
enrollment with GEOG592 required for full-time students. Part-time students may take GEOG591 and GEOG592 in separate years. The topic is determined by the student’s interest and background.

GEOG592 ENVIRONMENTAL STUDIES
MAJOR PROJECT II
30cp
One half of the project under individual supervision required for the Master of Environmental Studies. Simultaneous interest and background.

Directed research and reading courses under individual supervision for students with specific interests or needs in the area of Environmental Studies. Part-time students may take GEOG591 and GEOG592 in separate years. The topic is determined by the student’s interest and background.

GEOG594 ENVIRONMENTAL STUDIES
SEMINAR 2
20cp
Prerequisite GEOG491
Extends the evaluation of environmental impact assessment, planning, management and decision making from GEOG491. The second semester is devoted to group development and application of a conflict resolution model, with a formal presentation of the results to the Board of Environmental Studies.

GEOG595 DIRECTED ENVIRONMENTAL
STUDY I
10cp
Directed research and reading courses under individual supervision for students with specific interests or needs in the area of Environmental Studies.

GEOG596 DIRECTED ENVIRONMENTAL
STUDY 2
10cp
Directed research and reading courses under individual supervision for students with specific interests or needs in the area of Environmental Studies.

GRADUATE DIPLOMA AND MASTER OF HEALTH
SCIENCE (REHABILITATION COUNSELLING)
APPROVED PROGRAM OF STUDY - GRADUATE DIPLOMA IN HEALTH SCIENCE (REHABILITATION COUNSELLING)

Year 1 Part-time only
PSYC571 Principles in Rehabilitation 1 10
PSYC579 Rehabilitation Counselling 1 10
HOLH501 Holistic Health 20
Year 2 Part-time only
PSYC573 Principles in Rehabilitation II 10
PSYC574 Rehabilitation Counselling II 20
HOLH503 Health Research Design 10

HOLH501 HOLISTIC HEALTH
See 1995 Faculty of Medicine and Health Sciences Handbook

HOLH502 HEALTH RESEARCH DESIGN
See 1995 Faculty of Medicine and Health Sciences Handbook

MASTER OF HEALTH SCIENCE - REHABILITATION COUNSELLING
This program is an extension of the Graduate Diploma in Health Science (Rehabilitation Counselling). The degree has a wide range of activities, a multi-professional core of health subjects and a longer, guided period for development and completion of its research project than most Honours programs. Under normal admission, candidates will enter the second full-time equivalent year of the Masters program (the research thesis year). Those who have completed the Graduate Diploma in Health Science (Rehabilitation Counselling) will be given credit for the first full-time equivalent year of the Masters degree program.

APPROVED PROGRAM OF STUDY
Years 1 and 2
Duration Two years part-time
As for Graduate Diploma in Health Science (Rehabilitation Counselling)

Year 3
Duration One year full time or equivalent part time
Consists of the Research Thesis subjects of PSYC571, PSYC579, PSYC683 and PSYC684 totaling eighty credit points.

PSYC571 PRINCIPLES IN REHABILITATION I
20cp
Prerequisite Nil
Corequisite Nil
Content
This subject builds on knowledge and skills gained in PSYC571. Topics will include the application of a variety of rehabilitation perspectives (physical, psychosocial, vocational/avocational) to the resolution of rehabilitation problems, which occur in different occupational environments including home and leisure as well as work settings. Students will also explore some aspects of rehabilitation medicine and legal studies pertinent to rehabilitation.

Library research and empirical data collection and analysis, directed by the supervisor, attendance at research seminars as directed by the supervisor.

PSYC574 REHABILITATION COUNSELLING II
20cp
Prerequisite PSYC571
Corequisite PSYC579
Content
This subject extends studies by emphasising advanced counselling theory and practice. Part of the practice will be in the student’s place of work (if deemed appropriate) and part would be undertaken in other venues where vocational counselling services are offered. In both placements, students would report to an approved supervisor who would be an accredited rehabilitation counsellor. It is expected that the work will be supervised and would include opportunities for students to have practical experience in case work management of individuals, specialised groups and/or facilities. Opportunities would be provided for students to develop skills in job marketing and placement in co-ordination, resource management and/or net working in the other agencies.

Assessment Class seminar presentations and essays.

PSYC579 REHABILITATION COUNSELLING
10cp
Prerequisite Nil
Corequisite Nil
Content
This subject consists of two strands which focus on Models of Rehabilitation Service Delivery and Social Policy and Rehabilitation. These strands are designed to provide participants with knowledge of the history, development and principles of rehabilitation and the social welfare system in a multi-disciplinary context.

Assessment Class seminar presentations and essays.

PSYC581 THESIS - REHABILITATION COUNSELLING I
20cp
Prerequisite Successful completion of the Diploma in Rehabilitation Counselling at a level indicative of capacity to complete a Masters thesis by empirical research.
Corequisite Normally none, but on the advice of the supervisor or the Head of the Department of Psychology the candidate may be directed to attend courses of lectures or seminars, or undertake other studies, which might be necessary for successful completion of the research or the thesis.

Content
Library research and empirical data collection and analysis, directed by the supervisor, attendance at research seminars as directed by the supervisor.

Assessment *

PSYC583 THESIS - REHABILITATION COUNSELLING III
20cp
Prerequisite Successful completion of the Diploma in Rehabilitation Counselling at a level indicative of capacity to complete a Masters thesis by empirical research.
Corequisite Normally none, but on the advice of the supervisor or the Head of the Department of Psychology, the candidate may be directed to attend courses of lectures or seminars, or undertake other studies, which might be necessary for successful completion of the research or the thesis.

Content
Library research and empirical data collection and analysis, directed by the supervisor, attendance at research seminars as directed by the supervisor.

Assessment *
Section Eight

Postgraduate Degree Subject Descriptions

PSYC684 THESIS - REHABILITATION COUNSELLING IV 20cp
Prerequisite Successful completion of the Diploma in Rehabilitation Counselling at a level indicative of capacity to complete a Masters thesis by empirical research.

Content
- Library research and empirical data collection and analysis, directed by the supervisor.
- Attendance at research seminars directed by the supervisor.
- The candidate shall present three bound copies of the research or the thesis, and may be directed to attend courses of lecture or seminars, or undertake other studies, which may be necessary for successful completion of the research or the thesis.

Assessment
- The candidate shall present three bound copies of a thesis of approximately 25,000 words in length, on the basis of the library and empirical work conducted. This will be examined by two examiners with expertise in the topic, one from within the University and one from outside.

Primary materials
- A4 typed, double-spaced report will be supervised by an examiner.
- Paper is required to be submitted to the Head of Department in making their selection of strands.

FOOTNOTE FOR PSYC681, PSYC682 AND PSYC683
- For the completion of the eighty credit points for this course the Assessment PSYC681, PSYC682, PSYC683 and PSYC684 of a thesis of approximately 25,000 words in length is required.

MASTERS OF SCIENTIFIC STUDIES

APPLIED SCIENCE AND TECHNOLOGY

ASTK695 FOUNDATIONS OF APPLIED SCIENCE AND TECHNOLOGY 40cp
Prerequisite An approved degree including subjects in Applied Science and Technology.

Content
- This subject provides the foundation for further studies in two broad areas of Applied Science and Technology: product research and development and manufacturing systems.
- The subject is presented as a series of strands or topics from which students will select 40 credit points of studies appropriate to their area of specialisation in Applied Science and Technology. In order to pass ASTK695 Foundations of Applied Science and Technology, students must pass each of the strands making up the forty credit points of work.

Assessment
- The candidate shall present three bound copies of a thesis of approximately 25,000 words in length, based on project work (70%) and examinations (30%).

Primary materials
- A4 typed, double-spaced report will be supervised by an examiner.
- Paper is required to be submitted to the Head of Department in making their selection of strands.

In order to pass ASTK695 Foundations of Applied Science and Technology, students must pass each of the strands totalling the forty credit points of work.

ASTK696 TOPICS IN APPLIED SCIENCE AND TECHNOLOGY 40cp
Prerequisite ASTK695 Foundations of Applied Science and Technology.

Content
- This subject, students select strands of studies from selected areas of Applied Science and Technology. The selection of strands is in consultation with the Head of Department so as to enable a student to specialise in a selected area of Applied Science and Technology.

Assessment
- Based on project work (70%) and examinations (30%).

Primary materials
- A4 typed, double-spaced report will be supervised by an examiner.
- Paper is required to be submitted to the Head of Department in making their selection of strands.

ASTK697 ADVANCED TOPICS IN APPLIED SCIENCE AND TECHNOLOGY 40cp
Prerequisite ASTK696 Topics in Applied Science and Technology.

Content
- This subject, students select strands of studies from selected areas of Applied Science and Technology. The selection of strands is in consultation with the Head of Department so as to enable a student to specialise in a selected area of Applied Science and Technology.

Assessment
- Based on project work (70%) and examinations (30%).

Primary materials
- A4 typed, double-spaced report will be supervised by an examiner.
- Paper is required to be submitted to the Head of Department in making their selection of strands.

ASTK698 PROJECT 40cp
Prerequisite ASTK696 Topics in Applied Science and Technology.

Content
- This subject, the student will participate in a research or industry based project. The project will be supervised by an academic member of the Department. The project will focus on product research and development or manufacturing technology appropriate to the students selected area of specialisation.

Assessment
- Based on a seminar and written report of the investigation. The report should be less than 100 pages of typed, double-spaced A4 pages.

BIOLOGICAL SCIENCES

BIOI695 FOUNDATIONS OF BIOLOGICAL SCIENCES 40cp
Prerequisite An approved degree

Content
- Forty credit points of undergraduate subjects are chosen so as to upgrade and augment the student's basic science knowledge in the chosen area of specialisation. If appropriate, these subjects may be chosen from outside BIOL subjects.

Assessment
- Topics will be examined by essays, seminars and reports.

BIOI697 ADVANCED TOPICS IN BIOLOGICAL SCIENCES 40cp
Prerequisite BIOI695 Foundations of Biological Sciences.

Content
- The topics and subjects may be chosen from outside BIOL subjects. Each topic involves ten to twelve lectures or directed reading and in some cases associated tutorials. Details of each topic are available on request. Students must consult with the Head of Department concerning subject choice and availability before enrolment.

CHEMISTRY

CHEM695 FOUNDATIONS OF CHEMISTRY 40cp
Prerequisite Approved three year degree with at least first year University Chemistry.

Content
- This subject contains a number of modern topics drawn from a wide area of Chemistry. Students must choose eight topics. Programs will be tailored to the needs and background of individual students. Depending on staff availability, not all included topics may be offered in any one year and some are not available for part-time (evening) study. The topics listed have varying individual prerequisites. Each topic involves ten to twelve lectures or directed reading and in some cases associated tutorials. Details of each topic are available on request. Students must consult with the Head of Department concerning subject choice and availability before enrolment.
**List of Topics**

<table>
<thead>
<tr>
<th>Name</th>
<th>Cp</th>
<th>Semester</th>
<th>Prerequisite</th>
</tr>
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<tbody>
<tr>
<td>Nuclear Magnetic Resonance</td>
<td>5</td>
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<tr>
<td>Physical Organic Chemistry</td>
<td>5</td>
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<tr>
<td>Organosulfur Chemistry</td>
<td>5</td>
<td>2</td>
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<td>Ionic Solutions 5</td>
<td>1</td>
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<td>Coordination Chemistry</td>
<td>5</td>
<td>2</td>
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<tr>
<td>Solution Equilibria</td>
<td>5</td>
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<tr>
<td>Water and Waste Chemistry</td>
<td>5</td>
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<td>Organic Structure Elucidation by NMR</td>
<td>5</td>
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<tr>
<td>Laser Spectroscopy</td>
<td>5</td>
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<tr>
<td>Chemometrics 5</td>
<td>2</td>
<td>2,3</td>
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<td>Industrial Chemical Analysis</td>
<td>5</td>
<td>2</td>
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<tr>
<td>Environmental Trace Analysis</td>
<td>5</td>
<td>2</td>
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<tr>
<td>Cluster Chemistry</td>
<td>5</td>
<td>2</td>
<td>2</td>
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<tr>
<td>Bioinorganic Coordination</td>
<td>5</td>
<td>2</td>
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<td>Chemistry</td>
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<td></td>
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<tr>
<td>Organic Reaction Mechanisms</td>
<td>5</td>
<td>2</td>
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<td>Electrochemical Solar Energy</td>
<td>5</td>
<td>2</td>
<td>2,3</td>
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<tr>
<td>Molecular Spectroscopy</td>
<td>5</td>
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<td>Heterocyclic Chemistry</td>
<td>5</td>
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<td>Identification of Natural Compounds</td>
<td>5</td>
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<td>Organic Spectroscopy</td>
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<td>Computational Chemistry</td>
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<td>Industrial Metal Chemistry</td>
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<td>Organic Analysis</td>
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<td>Electrochemical Technology</td>
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<td>Solid-state Chemistry</td>
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<tr>
<td>Photochemistry / Solar Energy</td>
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<td>1 or 2</td>
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<tr>
<td>Polymer Chemistry</td>
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</tbody>
</table>

**Key to Prerequisites**

1. Bachelor's Degree with Major in Chemistry
2. Minimum of two years University Chemistry
3. At least first year University Mathematics
4. At least first year University Chemistry

*Assessment* One 1 hour examination in each topic.
### List of Topics

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<thead>
<tr>
<th>Name</th>
<th>Cp</th>
<th>Semester</th>
<th>Prerequisite (for all)</th>
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<tbody>
<tr>
<td>Inorganic Spectroscopy</td>
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<td>CHEM695</td>
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<tr>
<td>X-Ray Crystallography</td>
<td>10</td>
<td>1 or 2</td>
<td>CHEM696</td>
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<tr>
<td>Inorganic Oxo Clusters</td>
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<td>1 or 2</td>
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<td>Medicinal Chemistry</td>
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<td>1 or 2</td>
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<td>Australian Natural Products</td>
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<td>1 or 2</td>
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<tr>
<td>Reactions of Small Molecules</td>
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<tr>
<td>Photoelectron Spectroscopy</td>
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<td>1 or 2</td>
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<tr>
<td>Impedance Spectroscopy</td>
<td>10</td>
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<tr>
<td>Applied and Industrial Chemistry</td>
<td>10</td>
<td>1 or 2</td>
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</tbody>
</table>

**Assessment** For each topic, a critical essay or literature review of no less than 5000 words.

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**CHEM698 PROJECT**  
Prerequisites: CHEM695 Topics in Chemistry.  
A research project in an area of interest to the student which will be undertaken with supervision by an academic member of the Department.  
Assessment: Minor thesis on the work of more than forty typed, double spaced A4 pages to be presented at the end of the project and oral presentation of the results in a research seminar.

**ENVIRONMENTAL ASSESSMENT AND MANAGEMENT**

**EAMS695 FOUNDATIONS OF ENVIRONMENTAL ASSESSMENT AND MANAGEMENT**  
Prerequisite: CHEM696 Topics in Chemistry  
Not offered in 1995

**EAMS696 TOPICS IN ENVIRONMENTAL ASSESSMENT AND MANAGEMENT**  
Corequisite: EAMS695 Foundations of Environmental Assessment and Management  
Not offered in 1995

**EAMS697 ADVANCED TOPICS IN ENVIRONMENTAL ASSESSMENT AND MANAGEMENT**  
Corequisite: EAMS696 Topics in Environmental Assessment and Management  
Not offered in 1995

**GEOLOGY**

**GEO695 FOUNDATIONS OF GEOLOGY**  
Prerequisite: GEO696 Topics in Geology  
Not offered in 1995

**GEO696 TOPICS IN GEOLOGY**  
Corequisite: GEO695 Foundations of Geology  
Not offered in 1995

**GEO697 ADVANCED TOPICS IN GEOLOGY**  
Corequisite: GEO696 Topics in Geology  
Not offered in 1995

**GEO698 PROJECT**  
Corequisite: GEO696 Topics in Geology  
The student will undertake a research project on an area of interest under the supervision of a member of staff. The results of the project will be embodied in a thesis no more than forty typed, double spaced pages and will also be presented as a seminar.
MATH695 FOUNDATIONS OF MATHEMATICS 40cp
Prerequisite: An approved degree with a substantial amount of Mathematics, and approval of the Head of Department of Mathematics.

Content
Subjects of a Mathematical nature totalling forty credit points and approved by the Head of Department of Mathematics.

MATH696 TOPICS IN MATHEMATICS 40cp
Corequisite: MATH695 Foundations of Mathematics

Content
Subjects of a Mathematical nature totalling forty credit points and approved by the Head of Department of Mathematics.

MATH697 ADVANCED TOPICS IN MATHEMATICS 40cp
Prerequisite: MATH696 Topics in Mathematics

Content
Subjects of a Mathematical nature totalling forty credit points and approved by the Head of Department of Mathematics.

MATH698 PROJECT 40cp
Prerequisite: MATH696 Topics in Mathematics

Content
Work under the guidance of a supervisor appointed by the Head of Department of Mathematics. A written report on the work must be presented by the student.

PHYS695 FOUNDATIONS OF PHYSICS 40cp
Prerequisite: An approved three-year degree including at least twenty credit points of 200 Level Physics.

Content
Forty credit points of undergraduate offerings, consistent with the student's background and proposed area of specialisation, to be approved by the Head of Department. Assessment: By written examination plus some progressive assessment.

PHYS696 TOPICS IN PHYSICS 40cp
Prerequisite: PHYS695 Foundations of Physics

Content
Forty credit points (or approximately 100 lecture Hours) chosen from the current list of Physics 300 and Physics 400 lecture topics, but excluding Physics 300 topics already included in PHYS695, and subject to approval by the Head of Department. Assessment: By formal examination of each course plus assignment work.

PHYS697 ADVANCED TOPICS IN PHYSICS 40cp
Prerequisite: PHYS696 Topics in Physics

Content
Extensive study of four topics relevant to the student's chosen area of specialisation as developed in PHYS695 and PHYS696. These topics should be decided upon in consultation with the Head of Department and, if appropriate, the candidate's project supervisor. Assessment: By formal examination of each course plus assignment work.

PHYS698 PROJECT 40cp
Prerequisite: PHYS696 Topics in Physics

Content
A substantial research project under the supervision of an academic member of the department in an area of joint interest.

PSYCHOLOGY
PSY695 FOUNDATIONS OF PSYCHOLOGY 40cp
Not offered in 1995.

PSY696 TOPICS IN PSYCHOLOGY 40cp
Not offered in 1995.

PSY697 ADVANCED TOPICS IN PSYCHOLOGY 40cp
Not offered in 1995.

PSY698 PROJECT 40cp
Not offered in 1995.

STATISTICS
STAT695 FOUNDATION OF STATISTICS 40cp
Prerequisite: An approved degree

Content
Consists of four STAT300 level subjects (plus additional work as required) approved by the Head of Department of Statistics.

STAT696 TOPICS IN STATISTICS 40cp
Consists of four STAT400 level subjects (plus additional work as required) approved by the Head of Department of Statistics.

STAT697 ADVANCED TOPICS IN STATISTICS 40cp
Prerequisite: STAT696 Topics in Statistics

Content
Consists of four STAT400 level subjects (plus additional work as required) approved by the Head of Department of Statistics.

STAT698 PROJECT 40cp
Prerequisite: STAT696 Topics in Statistics

Content
Forty credit points undertaken after liaison with the Head of Department of Statistics.
MATHS01 ASTROPHYSICAL APPLICATIONS OF MAGNETOHYDRODYNAMICS 10cp

Prerequisites: Background in Calculus and Partial Differential Equations.

Hours: About 27 lecture hours. Full Year.

Examination: One 2 hour paper.

Content:

The aim of this course is to investigate the effects of astrophysical magnetic fields. Topics to be covered include: pre-Greek concepts of exactness and approximation; Greek concepts of continuity, irrationality, infinity, infinitesimals, magnitude, ratio, proportion, and their treatment in Elements V, XII and the works of Archimedes; developments of number systems and their equivalents; scholastic mathematics; virtual motion; Renaissance quadrature/cubature by infinitesimals and by geometry; Cartesian geometry; 17th and 18th century calculus; rigorous analysis in the 19th century with stress on the developments of number systems, continuity, function concept, differentiability, integrability.

References:


MATHS05 FOUNDATIONS OF MODERN DIFFERENTIAL GEOMETRY 10cp

Prerequisite: MATH201, MATH202 and MATH310.

Hours: About 27 lecture hours. Full Year.

Examination: One 2 hour paper.

Content:


References:


MATHS06 HISTORY OF ANALYSIS TO AROUND 1900 10cp

Hours: About 27 lecture hours. Full Year.

Examination: One 2 hour paper.

Content:

A course of lectures on the history of mathematics with emphasis on analysis. Other branches of mathematics will be referred to for putting the analysis into context. Where feasible, use will be made of original material, in translation. The course will be assessed by essays and a final 2-hour examination.

Topics to be covered include: pre-Greek concepts of exactness and approximation; Greek concepts of continuity, irrationality, infinity, infinitesimals, magnitude, ratio, proportion; and their treatment in Elements V, XII and the works of Archimedes; developments of number systems and their equivalents; scholastic mathematics; virtual motion; Renaissance quadrature/cubature by infinitesimals and by geometry; Cartesian geometry; 17th and 18th century calculus; rigorous analysis in the 19th century with stress on the developments of number systems, continuity, function concept, differentiability, integrability.

References:


The choice of Topic may vary from year to year, in part based on student interests.

MATHS08 MATHEMATICAL PHYSIOLOGY 10cp

Hours: About 27 lecture hours. Full Year.

Examination: One 2 hour paper.

Content:

Physiology: the study of the body works based on the knowledge of how it is constructed - essentially dates from early in the seventeenth century when the English physician Harvey showed that blood circulates constantly through the body. The intrusion of engineering into this field is well known through the wide publicity given to (for example) heart by-pass and kidney dialysis machines, cardiac assist pace makers, and prosthetic devices such as hip and knee joints; the obviously beneficial union has led to the establishment of Bioengineering Departments within Universities and Hospitals. Perhaps the earliest demonstration of mathematics useful application in (some areas of) physiology is the mid nineteenth century derivation of Hagen, from the basic equations of continuum motion, of Poiseuille's empirical formula for flow through narrow straight tubes; detailed models of the cardiovascular circulatory system have recently been developed.

Mathematical models have also been formulated for actions such as coughing, micturition and walking, as well as for the more vital processes involved in gas exchange in the lungs, mass transport between lungs and blood and blood and tissue, metabolic exchanges within tissues, enzyme kinetics, signal conduction along nerve fibres, sperm transport in the cervix.

Indeed, mathematical engineering might now be said to be part of the conspiracy to produce super humans (e.g. see Fast Running Tracks in Dec. 1978 issue of Scientific American) This course will examine in some detail a few of the previously mentioned mathematical models; relevant physiological material will be introduced as required.

References:


MATHS10 LINEAR OPERATORS 10cp

Prerequisites: MATHS10 and MATHS11.

Hours: About 27 lecture hours. Full Year.

Examination: One 2 hour paper.

Content:

This will usually be a choice of one of the following:

Operator Theory: Linear operators on Hilbert and general Banach spaces will be studied. The course will largely concentrate on spectral theory, in particular for compact and compact normal operators.

References:


The Geometric Theory of Banach Spaces: The contents will include: reflexivity, dualities between convexity and smoothness, the external structure of convex sets, basic sequences, superreflexivity, renormings, the theory of type and operator ideals.

References
- Busch, A.W. 1992, Perturbation Methods for Engineers and Scientists, CRC.

MATH511 QUANTUM MECHANICS 10cp

Prerequisites MATH304, MATH205

Hours About 27 lecture Hours Full Year

Examination One 2 hour paper.

Content
- State vectors and operators in Dirac formalism, observables and measurement, Schrödinger’s equation, Schrödinger and Heisenberg pictures, harmonic oscillator by ladder operators, angular momentum, rotation, plus a selection of more specialized topics.

References
- Sakurai, J.J. 1985, Modern Quantum Mechanics, Addison Wesley.

MATH512 RADICALS & ANNihilATORS 10cp

Prerequisites MATH312

Hours About 27 lecture Hours Full Year.

Examination One 2 hour paper.

Content
- This topic will briefly outline the classical theory of finite dimensional algebras and the emergence of the concepts of radical, idempotence, ring, chain conditions, etc. Hopefully thus set in perspective, the next part will deal with the Artin-Hecke-Jacobi ring theory and the significance of other radicals when finiteness conditions are dropped. The relations between various radicals, noetherian rings, left and right

annihilators and the Goldie-Small theorems will be considered.

References

MATH514 VISCOS FLOW THEORY 10cp

Prerequisites MATH 306, MATH305

Hours About 27 lecture Hours Full Year

Examination One 2 hour paper, and assessment.

Content
- Basic equations. Some exact solutions of the Navier-Stokes equations. Approximate solution theories: theory of slow motion, boundary layer theory, etc.

References

MATH515 GEOMETRICAL MECHANICS 10cp

Recommended Companion Foundations of Modern Differential Geometry.

Hours About 27 lecture Hours Full Year

Examination One 2 hour paper.

Content
- For all but the simplest systems Lagrangian or Hamiltonian formulations of mechanics are vastly superior (albeit equivalent) to Newton’s equations. Initially the course will introduce Lagrangian and Hamiltonian formulations, and apply them to systems of particles with constraints and to rigidbody systems.

The second part of the course will present the modern geometrical formulations of Lagrangian and Hamiltonian mechanics. An ab initio introduction will be given to smooth vector fields and their flows, differential forms, the tangent and cotangent bundles. Lagrangian mechanics will then be presented in terms of flows on the tangent bundle of configuration space, with Hamiltonian mechanics taking place on the cotangent bundle.

If time (and student interest) permits topics that might be touched upon include: HamiltonJacobi theory, actionangle variables, approximation methods, classical field theory, geometrical quantisation.

References

MATH518 LIE GROUPS AND ALGEBRAS WITH APPLICATIONS TO DIFFERENTIAL EQUATIONS 10cp

Prerequisite MATH504.

Hours Approximately 27 lecture Hours Full Year

Examination One 2 hour paper.

Content

MATH519 GENERAL RELATIVITY 10cp

Recommended Companion Foundations of Modern Differential Geometry.

Hours Approximately 27 lecture Hours Full Year

Examination One 2 hour paper.

Content
- This topic presents an introduction to general relativity: the current theory of gravitation. The subject will be presented using methods of modern differential geometry. Relativity may be (and will be) regarded as a special application of pseudo-Riemannian geometry, where the manifold, here space-time, has a metric that is not positive definite.

Particles, fields and electromagnetic fields will be introduced into arbitrary space-time. It will then be shown how these sources of "matter" can generate the geometry of space-time
via Einstein's field equations. Applications of the theory will include introductions to black holes and to relativistic cosmology.

References

MATH520 C*ALGEBRAS 10cp
Prerequisite Some background in real and functional analysis is required.
Hours About 27 lecture Hours Full Year.
Examination One 3 hour paper.

Content
The object of the course is to explain the basic properties of C*algebras, and to see some of the ways they arise in different areas of mathematics. We aim to minimise the technical background required, and to assume only a very basic background in functional analysis.

We start with a brief look at the more general Banach algebras, and to see some of the ways they arise in functional analysis.

It will be seen that every C*algebra is a C*algebra, the Gelfand transform is an isomorphism, and that this can always be done due to Gelfand, Naimark and Segal. References

MATH522 INTRODUCTION TO CATEGORY THEORY 10cp
Prerequisite MATH211
Hours About 27 lecture Hours Full year.
Examination One 2 hour paper.

Content
This course is geared to an examination of the concept of "naturalness" in mathematics. Categories and functors will be introduced as unifying concepts underlying much of mathematics. Some connections with, and applications to, computer Science will be explored.

Adjunctions and the notion of duality will be introduced.

References

MATH523 CLIFFORD ALGEBRAS AND SPINORS 10cp
Hours Approx. 27 Hours Full Year.
Examination One 2 hour paper.

Content
Clifford called the algebras that now bear his name "geometrical algebras". This is because these algebras are tailored to the geometry of an orthogonal space. These algebras are a vehicle for the study of the (pseudo) orthogonal groups and their simply connected covers the Spin groups.

The Clifford algebras are useful examples of associative linear algebras. They will be used as a paradigm in the study of such algebras. The course will include Wedderburn's structure theorem for semisimple associative algebras and Frobenius' theorem for real division algebras.

The orthogonal and Spin groups will provide concrete examples of Lie groups. Their representations will be studied, in particular the irreducible representations of the various Spin groups, the space representations, will be classified.

Reference

MATH524 DEVELOPMENT OF CONTEMPORARY ALGEBRA 10cp
Prerequisite MATH210 or MATH211
Hours About 27 lecture Hours Full year.
Examination One 2 hour paper.

Content
An in-depth study of Greek mathematics from about 500 BC to 500 AD. There will be 27 lectures. In addition students will be expected to read, in translation, substantial parts of original works and to interpret and comment upon those works verbally and in writing.

Links with the mathematics of other cultures will also be explored.

References
Adam Hilger.

MATH525 ADVANCED TOPIC IN ANALYSIS 10cp
Prerequisite MATH310
Hours About 27 lecture Hours Full year.
Examination One 3 hour paper.

Content
This will usually be a choice of one of the following.

Fixed Point Theory and Applications: The basic theorems of Brouwer, Schauder-Tychonoff, Kakutani and Leray-Schauder degree theory will be developed, extended and applied.

References


MATH526 GREEK MATHEMATICS AND ITS HISTORY 10cp
Hours About 27 lecture Hours Full year.
Assessment The course will be assessed by essays and seminars.

Reference

MATH527 ALGEBRAIC TOPOLOGY 10cp
Prerequisite MATH218 or equivalent
Hours About 27 lecture Hours Full year.
Examination One 2 hour paper, and assessment.

Content
Fundamental group for graphs, complexes and topological spaces. Higher homotopy groups. Homology groups and applications.

References

MATH528 DYNAMICAL SYSTEMS 10cp
Prerequisite MATH218 or equivalent
Hours About 27 lecture Hours Full year.
Examination One 3 hour paper.

Content
This course is designed to introduce students to abstract dynamical systems by means of studying various fundamental examples. The key systems we shall investigate are various measure-preserving transformations of groups and Markov Shifts on finite symbol spaces. The underlying abstract system involves the action of a group (usually the integers) on a measure space. The course will begin with a detailed study of the motivating examples, describing the orbits of these measure-preserving transformations. We shall introduce the notion of ergodicity, and give the ergodic theorems of Birkhoff, with its various applications. Then we shall develop the spectral theory of measure-preserving transformations, paying particular attention to the case when they are ergodic. Finally, we shall concentrate on dynamical systems based on compact metric spaces, and investigate their invariant probability measures.

To this end, we shall show that these systems have a unique invariant probability measure for which the system is ergodic.
References

**MATH530** MATHEMATICAL LOGIC 10cp
Hours About 27 lecture hours Full year.
Examination One 2 hour paper.
Content
References include

**MATH531** TOPICS IN NUMBER THEORY 10cp
Prerequisite MATH317
Hours 27 lecture hours Full year.
Examination One 2 hour paper, and assessment.
Content
Number theory is one of the oldest branches of mathematics, yet is an area of very active research of both pure and applied importance. This course will deal with topics chosen from the wide range of the classical and the modern areas of number theory. Topics will be chosen, in part, to suit the interests of the students, from the following list: quadratic forms, diophantine equations, elliptic curves, factorisation and primality testing, algebraic numbers.
References:


### Subject Computer Numbers

#### LEVEL 100 SUBJECTS

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<th>Number</th>
<th>Subject</th>
<th>Points</th>
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<tr>
<td>ASTK101</td>
<td>Introduction to Computing for Scientists</td>
<td>10</td>
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<tr>
<td>AVIA124</td>
<td>Aviation I: Private Pilot Licence</td>
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<tr>
<td>AVIA125</td>
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<tr>
<td>BIOL101</td>
<td>Plant &amp; Animal Biology</td>
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<td>BIOL102</td>
<td>Cell Biology, Genetics &amp; Evolution</td>
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<td>COMP110</td>
<td>Introduction to Programming</td>
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<td>COMP111</td>
<td>Introduction to Computer Science I</td>
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<td>COMP112</td>
<td>Discrete Structures</td>
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<td>COMP113</td>
<td>Introduction to Artificial Intelligence</td>
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<td>EMGT101</td>
<td>Foundations of Environmental Management</td>
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<td>EMGT102</td>
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<td>Environmental Values and Ethics</td>
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<td>ENV103</td>
<td>Environmental Issues and Problems</td>
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<tr>
<td>GEOG101</td>
<td>Introduction to Physical Geography</td>
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<td>GEOG102</td>
<td>Introduction to Human Geography</td>
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<td>GEOG103</td>
<td>The Environment</td>
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