Faculty of
Science
and Mathematics

Volume 14
1994
### Faculty of Science and Mathematics

#### Section One

**Faculty Staff**

#### Section Two

**Faculty Information**

#### Section Three

**Undergraduate Degree/Diploma Rules**

- Undergraduate Diploma/Degrees offered in the Faculty
- General Rules
  - Combined Degree Course Rules
- Bachelor of Applied Science Environmental Assessment and Management
- Bachelor of Environmental Science
- Bachelor of Science
- Bachelor of Science (Aviation)
- Bachelor of Mathematics
  - Combined Degree Courses
- Bachelor of Science (Psychology)
- Diploma in Aviation Science

#### Section Four

**Approved Subjects**

#### Section Five

**Undergraduate Degree Subject Descriptions**

- Guide to Undergraduate Subject Entries
- Applied Science and Technology
- Aviation
- Biological Sciences
- Chemistry
- Environmental Science
### Recommended Programs

<table>
<thead>
<tr>
<th>Program</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Science (Honours)</td>
<td>126</td>
</tr>
<tr>
<td>Bachelor of Science Aviation (Honours)</td>
<td>126</td>
</tr>
<tr>
<td>Bachelor of Applied Science (Environmental Assessment and Management)</td>
<td>126</td>
</tr>
<tr>
<td>Bachelor of Environmental Science (Honours)</td>
<td>126</td>
</tr>
<tr>
<td>Bachelor of Mathematics (Honours)</td>
<td>126</td>
</tr>
<tr>
<td>Graduate Diploma in Environmental Studies</td>
<td>126</td>
</tr>
<tr>
<td>Graduate Diploma in Mathematical Studies</td>
<td>126</td>
</tr>
<tr>
<td>Graduate Diploma in Science</td>
<td>126</td>
</tr>
<tr>
<td>Master of Environmental Studies</td>
<td>126</td>
</tr>
<tr>
<td>Master of Mathematics</td>
<td>126</td>
</tr>
<tr>
<td>Master of Psychology (Clinical) / Master of Psychology (Educational)</td>
<td>126</td>
</tr>
<tr>
<td>Master of Science</td>
<td>126</td>
</tr>
<tr>
<td>Master of Scientific Studies</td>
<td>126</td>
</tr>
</tbody>
</table>

### General Information

- Principal Dates 1994
- Advice and Information
- Enrolment and Re-enrolment
- Leave of Absence
- Attendance at Classes
- General Conduct
- Examinations
- Statements of Academic Record
- Unsatisfactory Progress — Rules
- Charges
- Higher Education Contribution Scheme (HECS)
- Loans
- Refund of Charges
- Campus Traffic and Parking
- Miscellaneous Services
  - Banking
  - Cashier
  - Chaplaincy Service
  - Community Programs
  - Convocation
  - Co-op Bookshop
  - Lost Property
  - Noticeboards
  - Post Office
  - Public Transport
  - Student Insurance Cover
  - University Computing Services
  - University Libraries
Dean's Foreword

The Faculty of Science and Mathematics comprises the Departments of Aviation, Applied Science 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 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.
Assistant Deans
J.G. Couper, BSc, PhD(NE)
C.E. Lee, BA, PhD(Adel), MAppS

Assistant Registrar H.R. Hotchkiss, BA, DipEd(NE)

Administrative Assistant K.A. Hodyl, BCom(NSW)
Office Staff N.H. Adams

DEPARTMENT OF APPLIED SCIENCE AND TECHNOLOGY

Senior Lecturers
R. Clark, Teach Cert, BSc, MSc(NSW), FRACI, CChem, MACE (Head of Department)
R. Hosken, BSc(WA), MSc(Monash), MBA, PhD
K. McDonald, OAM, MLitt, MA(NE), MEdStud, FACE, FAE, MEIA

Lecturers
R.G. Farinall, BSc, MEngSc(NSW), GradDipl(Maths) CSU Mitchell
P. Geary, BSc, MSc, DipEd, MEIA, MAWWA
S.A. Grenquist, BA, BS, MSc(Notre Dame)
R.W. Kidd, BSc(NSW), PhD(Macq), MEIA
M. Linich, DipTeach (NTC), BSc, MScStud
J. Ma, BSc(NSW), MSc, PhD(HK), CEng, MIEE, MIE(Aust)
M. Mahoney, BA, DipEd, PhD(Macq)
K. Sutton, BEdStud, GradDiplEdStud(Special Educ), MEdStud, DipTeach(IndArts)
A. Williams, DipTeach(App Arts)(Avondale), BEd(IA)(NCAE)
P.J. Williams, BA, DipTeach, MA, PhD
R.M. Williamson-Haydon, BSc(NSW), AII

Associate Lecturers
H. Farrah, BSc(Qld), DipEd

Honorary Associate J.P. Drinan, BRurSc(Hons), (UNE), PhD(Macq), J.P.

Technical Officers
A. Lieb
J. Wold

Laboratory Craftspersons
M. Chandler
G. Jenkins

Laboratory Assistant C. Walker

Laboratory Attendants
R. Davis
J. Elliott
M. Guest
K. Strong

Departmental Office Staff
K. Allan
L. Linklater

DEPARTMENT OF AVIATION

Professor R.A. Telfer, BA(NSW), MEdAdminHons(NE), PhD, DipEdAdmin(NE) (Head of Department)

Lecturers
D. Christley, BA(Macq) FAIA MRIN
I. Henley, BEd(Alberta), Adult Educ Cert. (Nova Scotia) MA(Alberta), ME(Manitoba)
P. Suren, BA (McGill)
A. Umer, BSc(Phys), BE(Aero)(Syd)
M. Wiggins, BScSci(NE), BAIons (NE)

Technical Officer J. Stephens

DEPARTMENT OF BIOLOGICAL SCIENCES

Professor B. Boettcher, BSc, PhD(Adel)

Associate Professors
R.C. Jones, BSc(NSW), PhD(Syd)
J.W. Patrick, BScAgr(Syd), PhD(Macq)
J.C. Rodger, BSc(NSW), PhD(Syd)
T.K. Roberts, BSc(Adel), PhD(Plin)
R.J. Rose, BScAgr(Syd), PhD(Macq) (Head of Department)

Senior Lecturers
B.A. Conroy, BSc, PhD(Syd)
R.N. Murdoch, BSc(NSW), PhD(Syd)
C.E. Oller, BSc, PhD(Adel)

Lecturer
R.H. Dunstan, B.AgrSc(Adel), D.Phil(Oxf)
D.W. McCurdy, B.Sc, PhD(LaTrobe)

Honorary Associates
D. McNair
K. Myers, BSc, DSc(Syd)
J.D. Stanger, BSc (James Cook), PhD

Associate Lecturers
M.A. Cole, BSc(Syd)
M. Conroy, BSc, Dip Ed(Syd), PGDip Plant & Wildlife Illus(NCAE)
P. Lake, BSc, MSc(Tor)
M. Lin, MScAgrSc(Jiangxi), PhD
C.M.R. Peters, BA, BSc(Syd)

Professional Officers
D.J. Kay, BSc(Adel), PhD
J. Chilow, BSc, BA, PhD

Technical Officers
E. Blajet, M.Sc(Jogleiian)
R. Campbell, B.A, Dip. Ed
J.J. Nairn
E. Stark
R.J. Taylor

Laboratory Craftsperson J.P. Nolan

Laboratory Assistants
D.L. Brennan
J.M. Forbes
T.D. Frost
B. Hayes
L.D. Pezely
K.H. Stokes

Departmental Office Staff
D. Snushall
A. Bulloch

DEPARTMENT OF CHEMISTRY

Professor Vacant

Associate Professors
K.H. Bell, BSc, PhD(NSW), FRACI, CChem
L.K. Dyall, MSc, PhD(Melb)
G.A. Lawrance, BSc, PhD, DSc(Qld), DipEd(Melb), FRACI, CChem (Head of Department)

Senior Lecturers
R.A. Fredlein, BSc, PhD(Qld), MRACI, CChem
M. Maeder, PhD, Habilitation (Basel), MRACI, CChem
E.L. von Nagy-Felsobuk!, BSc, PhD, DipEd(LaT), FRACI, CChem

Lecturers
R.C. Burns, BSc, PhD(Melb), MRACI, CChem
G.L. Orr, BSc(Qld), PhD(NSW), MRACI, CChem
I.A. van Altena, BSc(James Cook), PhD(Alberta), MRACI, CChem

Associate Lecturers
J.A. Ferguson, BSc(Syd)
K.A. Griec, BSc
E.N. Wilkes, BSc

Honorary Research Associate D.A.J. Swinkels, BSc(NSW), PhD(Penn), ASTC, FRACI, CChem

Senior Technical Officer A.J. Beveridge

Technical Officers
R.F. Godfrey
F. McKenzie
J. Slavck
W.J. Thompson

Laboratory Assistants
O. Peters
T. Williams

Departmental Office Staff
E. Slabbert
M. Munns

DEPARTMENT OF GEOGRAPHY

Professor E.A. Colhoun, BA(Bell), MA(Wis), PhD(Bell), MA(Dub)

Associate Professors
H.A. Bridgman, BA(Bell), MA(Hawaii), PhD(Wis)
J.C.R. Camm, MSc(Hull), PhD
R.J. Loughran, BSc(Dunelm), MSc, PhD(NE) (Head of Department)

Senior Lecturers
G.N. McIntyre, BA(Tas), MA(ANU), PhD
J.C. Turner, BScAgr(Syd), MS, PhD(Wis)
H.P.M. Winchett, MA (Oxon), DPhil(Oxon)

Lecturers
K.W. Lee, BA(Liv), MA(NE)
P.M. McGuirk, HDip, PhD (Dublin)
P.M. ONeill, MA (UoT) Macq, DipEd(Macq)

Cartographer O. Rey-Lescure

Technical Officer C.G. Dever

Departmental Office Staff M.B. Lane

DEPARTMENT OF GEOLOGY

Associate Professors
B.A. Engel, MSc(NE), PhD
R. Offer, BSc, PhD(Adel) (Head of Department)
P.K. Seccombe, MSc(Melb), PhD(Mant)

Senior Lecturers
R.L. Boyd, BSc(Syd), PhD(Syd)
W.J. Collins, BSc(ANU), PhD(LaT)

Lecturer J.G. Bailey, BSc, DipEd, PhD

Emeritus Professor and Honorary Associate C.F.K. Diessel, DipGeol, DrRerNat(Berlin), AAusIMM, FAIE

Professional Officer G.L. Dean-Jones, BA, MSc(Macq)

Senior Technical Officer R. Bale, BSc

Technical Officers
E. Krupic
J.A. Crawford

Laboratory Assistant H.L. Ruming, BSc

Departmental Office Staff G.A. MacKenzie

DEPARTMENT OF MATHEMATICS

Professor I. Raeburn, BSc(Edin), PhD(Utah) (Head of Department)

Associate Professors
W. Britzley, BSc(Syd), MSc (NSW), PhD, DipEd(NE)
J.R. Giles, BA(Syd), PhD, DipEd(Syd), ThL
P.K. Smrz, PromPhys, CSc, RND(rCharles[Prague])

Senior Lecturers
I.M. Benn, BSc(Edin), PhD(Lancaster)
R.F. Berghout, MSc(Syd)
J.G. Couper, BSc, PhD(NE)
W.T.P. Lau, MSc(NSW), PhD(Syd)
D.L.S. McElwain, BSc(Qld), PhD(York(Cant), Canada)
A.G. Robertson, BSc(Edin), PhD(Newcastle, UK)
R. Sima, BSc, PhD
J. Summerfield, BSc(Adel), PhD(Perth)
Faculty of Science and Mathematics

Section One

Faculty Staff

W.P. Wood, BSc, PhD(Syd), FRAS

Lecturers
D.A. Pask, BSc(Hons), MSc, PhD(Warwick)
E. Vlachynsky, BSc(Syd), PhD(Syd)
G.A. Willis, BSc(Adel), PhD(Newcastle, UK)

Associate Lecturers
A. Gore, BMath(Hons)
G. Pettet, BSc, DipEd, BMath(Hons)
J. Ramage, BA(Hons), MSc, PhD(Warwick)
J. Ryan, BMath(Hons)(Can)

Research Associate M.E. Laca, BSEE(Uruguay), MA(Santa Barbara), PhD(Berkeley)

Professor Emeritus R.G. Keats, BSc, PhD(Adel), DMath(Waterloo), FIMA, FASA, MACS

Departmental Office Staff
J. Garnsey, BA(Syd)
L. Steel
R. Pease, BEd(Math)(MCAE)

Division of Quantitative Methods
Principal Lecturer W.P. Galvin, BA(Syd), MMath, MEd, MEngSc, FIMA

Senior Lecturers
M.J. Williams, BA, MEngSc, DipEd

Lecturers
T.J. Dalby, MSc(Cant), BMath
J.A. MacDougall, BSc, MA(Dalhousie), MPhil(Waterloo)
M.J. Roberts, BMath, PhD
S.D. Sciffer, BChemEng, BMath, PhD

Division Office Staff
L. Locke
J. Trayhurn

DEPARTMENT OF PHYSICS

Professor R.J. MacDonald, BSc, PhD(Syd), FAIP

Associate Professors
B.J. Fraser, MSc(NZ), PhD(Cant), FAIP, FRAS
C.S.L. Keay, MSc(NZ), PhD(Cant), MA(Tor), CPhys, FInstP(Lond) FAIP, FAAA, FRNZAS, FRAS
D.J. O'Connor, BSc, PhD(ANU), FAIP (Head of Department)
P.V. Smith, BSc, PhD(Man), MAIP

Senior Lecturers
F.T. Bagnull, BSc(NSW), MSc(NZ), PhD, MAIP
J.E.R. Cleary, MSc(NSW), MAIP
B.V. King, BSc, BSc(NSW), MAIP
P.A. McGovern, BE, BSc(Qld), MS, PhD(CaTech), MIEEE, SMIREAust
R.H. Roberts, BE(NSW), MSc, PhD (York), ASTC, MAIP

Lecturer F.W. Menk, BSc, PhD(LoT), MAIP

Research Associates
H.J. Hansen, MSc, PhD(Natal)
Y.D. Hu, MSc (UStC), PhD, MAIP
M. Radny, MSc (Krakow), PhD (Wrocław), PPS(Poland), IUVISTA

Honorary Research Associates
D. Webster, BSc, PhD
J.A. Ramsay, MSc(Melb), PhD, FAIP

Senior Technical Officers
B. Mason
M.K. O'Neill
J.F. Pearson
J.S. Ratcliffe

Technical Officers
T.W. Burns
M.M. Cvetunovski, BSc
J.C. Foster
G. Pizamuk

Senior Laboratory Craftsperson
B. Stevens

Laboratory Craftspersons
P. Greig
L. Clarke

Departmental Office Staff
J. Oyston
N. Smith

DEPARTMENT OF PSYCHOLOGY

Professor D.C. Finlay, MSc, PhD(Melb), MAPsS (Head of Department)
M.G. King, BA, PhD(Ed), FAIPsS

Associate Professor R.A. Heath, BSc, PhD(McM)

Senior Lecturers
M.M. Cotton, MA, PhD(NE), MPych(Clin), MAPsS
M. Hunter, BSc, PhD(Lond), CertEd, MBPsS, MAPsS
N.F. Kafer, BA, PhD(ANU), MAPsS
C.R. Lee, BA, PhD(Adel), MAPsS
S.A. McCadden, BSc, PhD(ANU)
D. Munro, MA(Manc), PhD(Lond), Cert Soc St(Glas), Dip Data(SA)
H.P. Pflaster, BA(Manc), PhD, MAPsS
J.L. Seggie, BA, PhD
J.D.C. Shear, MA(Cant), PhD(Ed), MASH, MACPCP, MASA, MISENIM

Lecturers
R. Brown, BA, PhD, MASA, MISNIM
B. Hayes, BSc, BPsych(Clin), PhD(NSW)
A. Heathcote, BSc(Hons), PhD (Queens)
J. Kenardy, BSc(Hons), PhD(Ed), MAPsS
S. Provost, BSc(Psych), PhD (NSW)

Associate Lecturer J Sprinks, BA, MA(Syd), Dip Sc

Emeritus Professor J.A. Keats, BSc(Adel), BA(Melb), AM, PhD(Prtn), PASSA, FBPSS, FAIPsS

Honorary Associates
Faculty of Science and Mathematics

Section One

Faculty Staff

W. J. Clarke, BA, Dip Psych, MAPsS
D. B. Dunlop, MB, BS(Syd), DO, FRSM, MACO
B. Fenelon, BA(Qld), MA, PhD, MAPsS, AAAN, MSPR
B. G. Frost, BA, PhD, MAPsS
F. Hughes, BA, MSc(Clin)
D. M. Keats, BA, Dip Ed(Syd), M Ed, PhD(Qld), FAPsS
W. Levick, BA, M Psych(Clin), MAPsS
T. Single, BA, M Psych(Clin), MAPsS
F. V. Smith, MA(Syd), PhD(Lond), FIBS, FAPsS, C.Psychol
T. C. Waring, BA, MSc(Clin), MAPsS

Professional Officer D. F. Bull, BSc

Senior Technical Officers
L. Cooke
R. Gleghorn
A. O. Harcombe
J. Lee-Chin, BSc

Technical Officers
D. Golvers, BA
E. M. Huber
P. W. Smith

Laboratory Craftsperson M. Newton

Departmental Office Staff
W. N. Mead
S. Harris
L. Davies

---

Section Two

Faculty Information

FACULTY INFORMATION

The Faculty of Science and Mathematics comprises the Departments of Applied Science and Technology, Aviation, 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: 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. It requires them to be self-disciplined, organized, self-motivated and moreover, 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 & Accommodation Service etc.) which offer assistance with study, personal and housing 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 the 300 level in one Department, and at least forty more credit points at 300 level chosen from subjects approved by Faculty Board.
Subject to the Dean's permission, a candidate may be permitted to enrol in some subjects from amongst 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. For information on these restrictions consult 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 either

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

(II) otherwise satisfy the Admissions & 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; students are advised that lectures will commence on the assumption that all students will have achieved the level indicated.

Subject

Aviation 109-115

2-unit, 3-unit or 4-unit Mathematics. Also, 2-unit Physics or 4-unit Science (including the Physics 'make-up' electives) with a level of performance placing them in the top 50% of the candidate for these subjects.

Chemistry 101

Mathematics 101, 102, 103, 104 or 111.

Geography

Mathematics 101 or 111.

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 Mathematics with performance level in the top 30% of the candidates for this subject.

Physics 113

HSC 3-unit Mathematics with a mark of at least 110/150.

Psychology 101

A quota exists for entry into PSYC101. Candidates 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 the Bachelor of Arts (Psychology) degree, whichever is the less.

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 Physics, Chemistry, Mathematics (3-unit course preferred), and 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 recognised 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 co-ordinators 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 Faculty Secretary in the Faculty of Science and Mathematics in the Science Building.

For personal counselling and study skills training it is suggested that 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 subjects.

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 work load will be rated as 10 credit points per semester. Enrolment in excess of 40 credit points per semester can only be exceeded in exceptional circumstances by students with a good academic record and requires the permission of the Dean.

Students with external commitments, such as part-time employment, should consult the Faculty. 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, the candidate will be asked to show cause as to why the candidate should not be excluded from the Faculty. If the candidate does successfully show cause, a condition will be imposed on re-enrolment, that the candidate's...
program be restricted to a maximum of thirty credit points in each semester.

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 Enrolment, will not be asked to show cause at the end of that year.

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 Admissions and Progression Committee that the candidate’s enrolment in the combined degree course be terminated (i.e. the candidate 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 purpose of this policy.

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 for units 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
  English
  History
  Social Science (Geography, Commerce, Social Science)
  Mathematics
  Science
  Modern Languages (French, German, Japanese)

(b) Primary
Prerequisites
For information about prerequisites, students are invited to contact the Faculty Secretary, Faculty of Education. This contact should be made in the earlier stages of a degree course.

All secondary methods
Normally at least 50 credit points (20-100; 30-200 level) of a degree in the main teaching area and 50 credit points (20-100 level) of a degree in a subsidiary area. Modern Languages, Drama, Science and Social Sciences have additional specific requirements.

Primary method
At least 50 credit points (20-100; 30-200 level) of a degree in a specified area and 20-100 level credit points of a degree in each of two others. The specified area is usually a secondary teaching area.

Further details may be obtained from the Faculty Secretary, 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 Counsellor 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.

Applied Science and Technology
The demand for graduates in areas of environmental monitoring, assessment and management is steadily growing throughout Australia, as the Environmental Impact Assessment (EIA) process has permitted the requirements for development approvals connected with almost all new developments in mining, industry, agriculture, and urban expansion. Surveys of natural and disturbed ecosystems are on the agenda for government at local, state and national levels.

Biological Sciences
The Australian Institute of Biology Incorporated was inaugurated in 1986. Its objectives are to represent the Biology profession in Australia, to promote education and research in Biology and to improve communication between biologists of different disciplines. The Institute confers on its members a status similar to that for other Australian professional institutes. Membership grades are Fellow, Member, Associate and Student. Members and Fellows are able to indicate this by the appropriate letters after their qualifications. Fellowship requires distinction in Biology and nomination from the existing membership. Membership requires a first or second class Honours degree in Biology and three years relevant experience, or a pass degree with five years experience, or a Masters degree with two years relevant experience, or a PhD. An Associate requires an appropriate pass degree or contribution to the advancement of Biology.

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.

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.

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

Graduates holding a Bachelor of Science majoring in Psychology or a Bachelor of Science (Psychology) may join the Australian Psychological Society. Membership normally requires a four year degree in Psychology. Provision is also made for Student Subscribers and Affiliates.

section three

Undergraduate Degree and Diploma Rules

Undergraduate Diploma And Degrees offered in the Faculty of Science and Mathematics
Bachelor of Science (Aviation)
Bachelor of Environmental Science
Bachelor of Science
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 not offered during a particular academic year.

(4) The Faculty Board shall approve the subjects for the award. Any change in the timetable 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 any 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;

(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 a subject which is substantially equivalent to one which that candidate has previously counted towards a degree or diploma.

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 enrol in or is already enrolled in any subject prescribed as its corequisites.

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

(4) A candidate withdrawing from a subject shall be deemed not to have passed that subject for prerequisite purposes.

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 granted credit for more than sixty five per cent of the total number of credit points required to complete the course.

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.

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 to have withdrawn 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 be permitted to withdraw from a subject after the relevant date which shall be

(i) in the case of a semester length subject, the last day of that semester; or

(ii) in the case of a full year subject, the last day of second semester; and/or

(iii) subject to any provision within the schedules; and

(b) a candidate shall not be permitted to withdraw from a subject on more than two occasions.

10 Absence

(1) 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 and with full credit in all subjects successfully completed prior to the period of leave.

(2) For the purposes of sub-rule (1), unless otherwise specified in the schedule, a candidate eligible to re-enrol shall be deemed to be in good academic standing.

(3) A person who has been enrolled in a course but is absent without leave or has been excluded from the course may apply for readmission to that course and may be readmitted to candidature under such conditions and at such time as the Faculty Board may determine, unless otherwise specified in the schedule.
11 Qualification for the Award

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

(2) A subject which has been counted towards a completed award may not be counted towards another award, except to such extent as the Faculty Board may approve.

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.

13 Relaxing Provision

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.
### Subjects for a Biological Sciences Major

#### 200 Level
- Minimum of thirty credit points from:
  - BIOL201: Biochemistry (10 Cp)
  - BIOL202: Animal Physiology (10 Cp)
  - BIOL204: Cell and Molecular Biology (10 Cp)
  - BIOL205: Molecular Genetics (10 Cp)
  - BIOL206: Plant Physiology (10 Cp)
  - BIOL208: Biochemistry 208 (10 Cp)

#### 300 Level
- Minimum of forty credit points from:
  - BIOL302: Reproductive Physiology (10 Cp)
  - BIOL305: Immunology (10 Cp)
  - BIOL309: Molecular Biology (10 Cp)
  - BIOL310: Microbiology (10 Cp)
  - BIOL313: Cellular Biochemistry (10 Cp)
  - BIOL314: Plant Development (10 Cp)
  - BIOL315: Plant Molecular Biology (10 Cp)
  - BIOL316: Cell Biology (10 Cp)

### Subjects for a Chemistry Major

#### 100 Level
- CHEM101: Chemistry 101 (10 Cp)
- CHEM102: Chemistry 102 (10 Cp)

#### 200 Level
- CHEM211: Analytical Chemistry (10 Cp)
- CHEM221: Environmental Chemistry (10 Cp)
- CHEM223: Inorganic Chemistry (10 Cp)
- CHEM231: Organic Chemistry (10 Cp)
- CHEM241: Physical Chemistry (10 Cp)

#### 300 Level
- CHEM311: Analytical Chemistry (10 Cp)
- CHEM313: Industrial Chemical Analysis (5 Cp)
- CHEM321: Inorganic Chemistry (10 Cp)
- CHEM322: Metal-Metal Bonding & Cluster Chemistry (5 Cp)
- CHEM323: Bioorganic Co-ordination Chemistry (5 Cp)
- CHEM331: Organic Chemistry (10 Cp)
- CHEM333: Organic Reaction Mechanism (5 Cp)

---

### Prerequisites and Corequisites

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM334</td>
<td>Identification of Natural Compounds</td>
<td></td>
<td>CHEM231</td>
<td></td>
</tr>
<tr>
<td>CHEM335</td>
<td>Organic Spectroscopy</td>
<td></td>
<td>CHEM231</td>
<td></td>
</tr>
<tr>
<td>CHEM341</td>
<td>Physical Chemistry</td>
<td></td>
<td>CHEM241 MATH102 (or MATH112)</td>
<td></td>
</tr>
<tr>
<td>CHEM342</td>
<td>Electrochemical Solar Energy Conversion</td>
<td></td>
<td>CHEM241 MATH102 (or MATH112)</td>
<td></td>
</tr>
<tr>
<td>CHEM343</td>
<td>Molecular Spectroscopy</td>
<td></td>
<td>CHEM241</td>
<td></td>
</tr>
<tr>
<td>GEOG101</td>
<td>Introduction to Physical Geography</td>
<td></td>
<td>GEOG101</td>
<td></td>
</tr>
<tr>
<td>GEOG102</td>
<td>The Environment</td>
<td></td>
<td>GEOG101</td>
<td></td>
</tr>
<tr>
<td>GEOG201</td>
<td>Methods in Physical Geography</td>
<td></td>
<td>GEOG201</td>
<td></td>
</tr>
<tr>
<td>GEOG203</td>
<td>Biogeography and Climatology</td>
<td></td>
<td>GEOG201</td>
<td></td>
</tr>
<tr>
<td>GEOG204</td>
<td>Geomorphology of Australia</td>
<td></td>
<td>GEOG201</td>
<td></td>
</tr>
<tr>
<td>GEOG213</td>
<td>Ancient Environments and Organisms</td>
<td></td>
<td>GEOG201</td>
<td></td>
</tr>
<tr>
<td>GEOG304</td>
<td>The Biosphere and Conservation</td>
<td></td>
<td>GEOG201 GEOG203 GEOG204</td>
<td></td>
</tr>
<tr>
<td>GEOG305</td>
<td>Climatic Problems</td>
<td></td>
<td>GEOG201 GEOG203</td>
<td></td>
</tr>
<tr>
<td>GEOG313</td>
<td>Hydrology</td>
<td></td>
<td>GEOG201 GEOG203</td>
<td></td>
</tr>
<tr>
<td>GEOG320</td>
<td>Geology of Quaternary Environments</td>
<td></td>
<td>GEOG201 or GEOG204</td>
<td></td>
</tr>
<tr>
<td>EMGT101</td>
<td>Foundations of Environmental Management</td>
<td></td>
<td>EMGT101</td>
<td></td>
</tr>
<tr>
<td>EMGT102</td>
<td>Social Development and the Environment</td>
<td></td>
<td>EMGT101</td>
<td></td>
</tr>
<tr>
<td>EMGT201</td>
<td>Soils and Hydrology</td>
<td></td>
<td>ENV103</td>
<td></td>
</tr>
<tr>
<td>EMGT202</td>
<td>The Sustainable Society</td>
<td></td>
<td>EMGT102</td>
<td></td>
</tr>
<tr>
<td>EMGT203</td>
<td>Australian Flora and Fauna</td>
<td></td>
<td>BIOL101 BIOL102</td>
<td></td>
</tr>
<tr>
<td>EMGT204</td>
<td>Systems Agriculture</td>
<td></td>
<td>ENV103</td>
<td></td>
</tr>
<tr>
<td>EMGT205</td>
<td>Urban and Industrial Systems</td>
<td></td>
<td>EMGT204</td>
<td></td>
</tr>
<tr>
<td>EMGT206</td>
<td>Water and Wastewater Systems</td>
<td></td>
<td>EMGT204</td>
<td></td>
</tr>
<tr>
<td>EMGT207</td>
<td>Occupational Hygiene and Toxicology</td>
<td></td>
<td>BIOL101 BIOL102</td>
<td></td>
</tr>
<tr>
<td>PHYS113</td>
<td>Physics 113</td>
<td></td>
<td>see (I)</td>
<td></td>
</tr>
<tr>
<td>PHYS114</td>
<td>Physics 114</td>
<td></td>
<td>see (I)</td>
<td></td>
</tr>
</tbody>
</table>
## HSC

### Entry Requirements

- **1·1, [II,** Entry requirement -
  - Minimum of thirty credit points from
    - PHYS201 Quantum Mechanics and Electromagnetism
    - PHYS202 Mechanics and Thermal Physics
    - PHYS203 Solid State and Atomic Physics
    - PHYS205 Scientific Measurement Principles, Processes and Applications
    - MATH201 Multivariable Calculus
  - Minimum of forty credit points from
    - PHYS301 Mathematical Methods and Quantum Mechanics
    - PHYS302 Electromagnetism and Electronics
    - PHYS303 Atomic, Molecular and Solid State Physics
    - PHYS304 Statistical Physics and Relativity
    - PHYS305 Nuclear Physics and Advanced Electromagnetism

  (1) Advisory entry requirement - HSC 3 Unit Mathematics with a mark of at least 110/150 and Physics 4 Unit or Science 4 Unit with a performance in the top 50% of candidature for these subjects.

  (2) Entry requirement - HSC 3 Unit Mathematics with a mark of at least 120/150.

  (3) MATH111 and MATH112 may substitute for MATH102 and performance to an acceptable standard (Credit average) in PHYS111 and PHYS112 may substitute for PHYS113 and PHYS114 with the approval of the Head of Department.

### Corequisites

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH102</td>
<td>Mathematics 102</td>
<td>10</td>
<td>see (2) or MATH111</td>
<td></td>
</tr>
<tr>
<td>PHYS103</td>
<td>Quantum Mechanics and Electromagnetism</td>
<td>10</td>
<td>MATH102 PHYS113</td>
<td></td>
</tr>
<tr>
<td>PHYS104</td>
<td>Mechanics and Thermal Physics</td>
<td>10</td>
<td>MATH102 PHYS113</td>
<td></td>
</tr>
<tr>
<td>PHYS105</td>
<td>Solid State and Atomic Physics</td>
<td>10</td>
<td>PHYS101 (see (3))</td>
<td></td>
</tr>
<tr>
<td>PHYS106</td>
<td>Scientific Measurement Principles, Processes and Applications</td>
<td>10</td>
<td>PHYS101 (see (3))</td>
<td></td>
</tr>
<tr>
<td>MATH201</td>
<td>Multivariable Calculus</td>
<td>5</td>
<td>MATH102 &amp; MATH103</td>
<td>(MATH111 &amp; MATH112) or (MATH102 &amp; Permission of H.O.D.)</td>
</tr>
</tbody>
</table>

## BACHELOR OF SCIENCE

### Schedule

1. **Interpretation**
   - In this schedule, "discipline" means a branch of learning recognised 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 at least 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. the 60 credit points at the 100 level comprising at least 20 credit points chosen from each of three disciplines;
     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 shall be chosen from a single discipline;
     c. not more than 160 credit points may be chosen from a single discipline;
     d. subjects at the 300 level may not be chosen from more than three disciplines.

3. **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.

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/Engineering
     - Science/Laws
     - Science/Mathematics.

### 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.
<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM101</td>
<td>Chemistry 101</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM102</td>
<td>Chemistry 102</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM211</td>
<td>Analytical Chemistry</td>
<td>10</td>
<td>CHEM101, CHEM102</td>
<td></td>
</tr>
<tr>
<td>CHEM221</td>
<td>Inorganic Chemistry</td>
<td>10</td>
<td>CHEM101, CHEM102</td>
<td></td>
</tr>
<tr>
<td>CHEM231</td>
<td>Organic Chemistry</td>
<td>10</td>
<td>CHEM101, CHEM102</td>
<td></td>
</tr>
<tr>
<td>CHEM241</td>
<td>Physical Chemistry</td>
<td>10</td>
<td>CHEM101, CHEM102</td>
<td></td>
</tr>
<tr>
<td>CHEM251</td>
<td>Applied 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>
<td></td>
</tr>
<tr>
<td>CHEM311</td>
<td>Analytical Chemistry</td>
<td>10</td>
<td>CHEM211</td>
<td></td>
</tr>
<tr>
<td>CHEM321</td>
<td>Inorganic Chemistry</td>
<td>10</td>
<td>CHEM211</td>
<td></td>
</tr>
<tr>
<td>CHEM331</td>
<td>Organic Chemistry</td>
<td>10</td>
<td>CHEM211</td>
<td></td>
</tr>
<tr>
<td>CHEM341</td>
<td>Physical Chemistry</td>
<td>10</td>
<td>CHEM211</td>
<td></td>
</tr>
<tr>
<td>CHEM351</td>
<td>Applied Chemistry</td>
<td>10</td>
<td>CHEM211</td>
<td></td>
</tr>
<tr>
<td>CHEM361</td>
<td>Environmental Chemistry</td>
<td>10</td>
<td>CHEM211</td>
<td></td>
</tr>
<tr>
<td>GEOG101</td>
<td>Introduction to Physical Geography</td>
<td>10</td>
<td>GEOG101</td>
<td></td>
</tr>
<tr>
<td>GEOG102</td>
<td>Introduction to Human Geography</td>
<td>10</td>
<td>GEOG101</td>
<td></td>
</tr>
<tr>
<td>GEOG201</td>
<td>Methods in Physical Geography</td>
<td>10</td>
<td>GEOG102</td>
<td></td>
</tr>
<tr>
<td>GEOG202</td>
<td>Methods in Human Geography</td>
<td>10</td>
<td>GEOG102</td>
<td></td>
</tr>
<tr>
<td>GEOG203</td>
<td>Biogeography &amp; Climatology</td>
<td>10</td>
<td>GEOG102</td>
<td></td>
</tr>
<tr>
<td>GEOG204</td>
<td>Geomorphology of Australia</td>
<td>10</td>
<td>GEOG102</td>
<td></td>
</tr>
<tr>
<td>GEOG207</td>
<td>Population, Culture &amp; Resources</td>
<td>10</td>
<td>GEOG102</td>
<td></td>
</tr>
<tr>
<td>GEOG208</td>
<td>Cities &amp; Regions</td>
<td>10</td>
<td>GEOG102</td>
<td></td>
</tr>
<tr>
<td>GEOG301</td>
<td>Advanced Methods in Physical Geography</td>
<td>10</td>
<td>GEOG201, GEOG203, GEOG204</td>
<td></td>
</tr>
<tr>
<td>GEOG302</td>
<td>Advanced Methods in Human Geography</td>
<td>10</td>
<td>GEOG201, GEOG203, GEOG204</td>
<td></td>
</tr>
<tr>
<td>GEOG304</td>
<td>The Biosphere &amp; Conservation</td>
<td>10</td>
<td>GEOG201, GEOG203, GEOG204</td>
<td></td>
</tr>
<tr>
<td>GEOG305</td>
<td>Climatic Problems</td>
<td>10</td>
<td>GEOG201, GEOG203, GEOG204</td>
<td></td>
</tr>
<tr>
<td>GEOG306</td>
<td>Geography of Australia An Historical Perspective</td>
<td>10</td>
<td>GEOG201, GEOG203, GEOG204</td>
<td></td>
</tr>
<tr>
<td>GEOG309</td>
<td>Society &amp; Space</td>
<td>10</td>
<td>GEOG201, GEOG203, GEOG204</td>
<td></td>
</tr>
<tr>
<td>GEOG310</td>
<td>Directed Studies in Human Geography</td>
<td>10</td>
<td>GEOG201, GEOG203, GEOG204</td>
<td></td>
</tr>
<tr>
<td>GEOG311</td>
<td>Hydrology</td>
<td>10</td>
<td>GEOG201, GEOG203, GEOG204</td>
<td></td>
</tr>
<tr>
<td>GEOG315</td>
<td>Production, Work &amp; Territory</td>
<td>10</td>
<td>GEOG201, GEOG203, GEOG204</td>
<td></td>
</tr>
<tr>
<td>GEOG316</td>
<td>Directed Studies in Physical Geography</td>
<td>10</td>
<td>GEOG201, GEOG203, GEOG204</td>
<td></td>
</tr>
</tbody>
</table>

**Not in 1994 CODES**

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOI01</td>
<td>The Environment</td>
<td>10</td>
<td>GEOI01</td>
<td></td>
</tr>
<tr>
<td>GEOI02</td>
<td>Earth Materials</td>
<td>10</td>
<td>GEOI01</td>
<td></td>
</tr>
<tr>
<td>GEOI11</td>
<td>Optical Mineralogy</td>
<td>10</td>
<td>GEOI02</td>
<td></td>
</tr>
<tr>
<td>GEOI12</td>
<td>Introductory Petrology</td>
<td>10</td>
<td>GEOI02</td>
<td></td>
</tr>
<tr>
<td>GEOI21</td>
<td>Ancient Environments &amp; Organisms</td>
<td>10</td>
<td>GEOI02</td>
<td></td>
</tr>
<tr>
<td>GEOI24</td>
<td>Geological Structures &amp; Resources</td>
<td>10</td>
<td>GEOI02</td>
<td></td>
</tr>
<tr>
<td>GEOI25</td>
<td>Geology Field Course 215</td>
<td>10</td>
<td>GEOI02</td>
<td></td>
</tr>
<tr>
<td>GEOI26</td>
<td>Geology Field Course 216</td>
<td>10</td>
<td>GEOI02</td>
<td></td>
</tr>
</tbody>
</table>
null
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.

Leave of Absence — For the purposes 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, the candidate was eligible to re-enrol without restrictions.
SCHEDULE — BACHELOR OF SCIENCE (AVIATION)

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 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.

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>
</tr>
</thead>
<tbody>
<tr>
<td>GROUP A SUBJECTS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100 Level</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVIA109 Introductory Meteorology</td>
<td>5</td>
<td>AVIA109</td>
<td></td>
</tr>
<tr>
<td>AVIA110 Introductory Navigation</td>
<td>5</td>
<td>AVIA110</td>
<td></td>
</tr>
<tr>
<td>AVIA111 Introductory Aerodynamics</td>
<td>5</td>
<td>AVIA111</td>
<td></td>
</tr>
<tr>
<td>AVIA112 Introductory Human Factors</td>
<td>10</td>
<td>AVIA112</td>
<td></td>
</tr>
<tr>
<td>AVIA113 Aircraft Performance &amp; Systems</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVIA114 Flight Rules &amp; Procedures</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVIA115 Reciprocating Engines</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVIA116 Commercial Meteorology</td>
<td>5</td>
<td>AVIA109</td>
<td></td>
</tr>
<tr>
<td>AVIA117 Navigation</td>
<td>5</td>
<td>AVIA111</td>
<td></td>
</tr>
<tr>
<td>AVIA118 Aerodynamics</td>
<td>5</td>
<td>AVIA112</td>
<td></td>
</tr>
<tr>
<td>AVIA119 Aviation Psychology &amp; Medicine</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVIA120 Aviation Law, Commercial Flight</td>
<td>10</td>
<td>AVIA114</td>
<td></td>
</tr>
<tr>
<td>Rules &amp; Procedures</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVIA121 Aircraft Systems &amp; Propulsion</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVIA123 Aircraft Performance &amp; Loading</td>
<td>5</td>
<td>AVIA113</td>
<td></td>
</tr>
<tr>
<td>200 Level</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVIA207 Aviation Meteorology</td>
<td>5</td>
<td>AVIA116</td>
<td></td>
</tr>
<tr>
<td>AVIA208 Instrument Navigation</td>
<td>5</td>
<td>AVIA117</td>
<td></td>
</tr>
<tr>
<td>AVIA209 Long Range Navigation</td>
<td>5</td>
<td>AVIA117</td>
<td></td>
</tr>
<tr>
<td>AVIA211 Jet Engines</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVIA212 Human Factors</td>
<td>10</td>
<td>AVIA117</td>
<td></td>
</tr>
<tr>
<td>AVIA213 Aircraft Structures &amp; Materials</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVIA214 Jet Aircraft Flight Planning</td>
<td>10</td>
<td>AVIA117</td>
<td></td>
</tr>
<tr>
<td>AVIA218 Advanced Aircraft Performance</td>
<td>5</td>
<td>AVIA123</td>
<td></td>
</tr>
<tr>
<td>AVIA219 High Altitude Meteorology and</td>
<td>5</td>
<td>AVIA207</td>
<td></td>
</tr>
<tr>
<td>Forecasting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVIA221 Human Performance in</td>
<td>5</td>
<td>AVIA121</td>
<td></td>
</tr>
<tr>
<td>Multi-Crew Operations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>300 Level</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVIA306 Advanced Aircraft Operations</td>
<td>10</td>
<td>AVIA214</td>
<td></td>
</tr>
<tr>
<td>AVIA308 Aviation Instruction</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVIA310 Advanced Navigation</td>
<td>10</td>
<td>AVIA209</td>
<td></td>
</tr>
<tr>
<td>AVIA311 Advanced Aviation Instruction</td>
<td>10</td>
<td>AVIA308</td>
<td></td>
</tr>
<tr>
<td>AVIA316 Flight Deck Performance</td>
<td>5</td>
<td>AVIA221</td>
<td></td>
</tr>
<tr>
<td>AVIA318 Aircraft Stability and Control</td>
<td>5</td>
<td>AVIA118</td>
<td></td>
</tr>
<tr>
<td>GROUP B SUBJECTS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>300 Level</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVIA210 Compressible Aerodynamics</td>
<td>5</td>
<td>AVIA118</td>
<td></td>
</tr>
<tr>
<td>AVIA220 Aircraft Fatigue Management</td>
<td>5</td>
<td>AVIA123</td>
<td></td>
</tr>
<tr>
<td>AVIA222 Management of Aviation</td>
<td>5</td>
<td>AVIA120</td>
<td></td>
</tr>
<tr>
<td>AVIA223 Aviation Computing and Electronics</td>
<td>5</td>
<td>AVIA121</td>
<td></td>
</tr>
</tbody>
</table>

*Note: The credit requirements and subject selection must be approved by the Faculty Board.
SCHEDULE — BACHELOR OF MATHEMATICS

1 Qualification for the Degree

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 70 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 subjects; 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 Credit

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 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.

2.2 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

3.1 Except with the permission of the Faculty Board, a candidate shall complete the course within nine years of study, from its commencement.

3.2 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.

4 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:

Mathematics/Arts;

Mathematics/Commerce;

Mathematics/Economics;

Mathematics/Engineering;

Mathematics/Computer Science;

Mathematics/Science;

Mathematics/Surveying.
### 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>MATH102</td>
<td>Mathematics 102</td>
<td>10</td>
<td>See or MATH111</td>
<td></td>
</tr>
<tr>
<td>MATH103</td>
<td>Mathematics 103</td>
<td>10</td>
<td>MATH102 or [MATH111 &amp; MATH12] or permission of H.O.D. of Mathematics.</td>
<td></td>
</tr>
<tr>
<td>MATH112</td>
<td>Mathematics 112</td>
<td>10</td>
<td>MATH111</td>
<td></td>
</tr>
<tr>
<td>MATH201</td>
<td>Multivariable Calculus</td>
<td>5</td>
<td>(MATH102 &amp; MATH103) or (MATH111 &amp; MATH12) 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; MATH12) or (MATH102 &amp; Permission of H.O.D.)</td>
<td></td>
</tr>
<tr>
<td>MATH204</td>
<td>Real Analysis</td>
<td>5</td>
<td>(MATH102 &amp; MATH103) or (MATH111 &amp; MATH12 &amp; MATH103)</td>
<td></td>
</tr>
<tr>
<td>MATH206</td>
<td>Complex Analysis 1</td>
<td>5</td>
<td>(MATH102 &amp; MATH103) or (MATH111 &amp; MATH12) or (MATH102 &amp; Permission of H.O.D.)</td>
<td>MATH201</td>
</tr>
<tr>
<td>MATH218</td>
<td>Linear Algebra 2</td>
<td>5</td>
<td>(MATH102 &amp; MATH103) or (MATH111 &amp; MATH12) or (MATH102 &amp; Permission of H.O.D.)</td>
<td></td>
</tr>
<tr>
<td>MATH301</td>
<td>Logic &amp; Set Theory</td>
<td>10</td>
<td>20 credit points from 200 level MATH incl. one of MATH1204, MATH209, MATH211, MATH212, MATH218 &amp; MATH203.</td>
<td></td>
</tr>
<tr>
<td>MATH302</td>
<td>General Tensors &amp; Relativity</td>
<td>10</td>
<td>MATH201 MATH218 &amp; MATH204</td>
<td></td>
</tr>
<tr>
<td>MATH303</td>
<td>Variational Methods and Integral Equations</td>
<td></td>
<td>MATH204</td>
<td></td>
</tr>
<tr>
<td>MATH304</td>
<td>Ordinary Differential Equations 2</td>
<td>10</td>
<td>MATH201 MATH203</td>
<td></td>
</tr>
<tr>
<td>MATH305</td>
<td>Partial Differential Equations 2</td>
<td></td>
<td>MATH204 MATH218 &amp; MATH204</td>
<td></td>
</tr>
<tr>
<td>MATH306</td>
<td>Fluid Mechanics</td>
<td></td>
<td>MATH204 MATH218 &amp; MATH204</td>
<td></td>
</tr>
<tr>
<td>MATH307</td>
<td>Quantum &amp; Statistical Mechanics</td>
<td></td>
<td>MATH204 MATH218 &amp; MATH204</td>
<td></td>
</tr>
<tr>
<td>MATH308</td>
<td>Geometry 2</td>
<td>10</td>
<td>20 c.p. from 200 level MATH incl. one of MATH209, MATH211 MATH218 &amp; MATH204</td>
<td></td>
</tr>
<tr>
<td>MATH309</td>
<td>Combinatorics</td>
<td></td>
<td>MATH204 MATH218 &amp; MATH204</td>
<td></td>
</tr>
<tr>
<td>MATH310</td>
<td>Functional Analysis</td>
<td></td>
<td>MATH204 MATH218 &amp; MATH204</td>
<td></td>
</tr>
<tr>
<td>MATH311</td>
<td>Measure Theory &amp; Integration</td>
<td>10</td>
<td>MATH204 MATH218 &amp; MATH204</td>
<td></td>
</tr>
<tr>
<td>MATH312</td>
<td>Algebra</td>
<td></td>
<td>MATH204 MATH218 &amp; MATH204</td>
<td></td>
</tr>
</tbody>
</table>

### Faculty of Science and Mathematics

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH313</td>
<td>Numerical Analysis (Theory)</td>
<td>10</td>
<td>MATH201 MATH213</td>
<td></td>
</tr>
<tr>
<td>MATH314</td>
<td>Optimization</td>
<td>10</td>
<td>MATH201 MATH213</td>
<td></td>
</tr>
<tr>
<td>MATH315</td>
<td>Mathematical Biology</td>
<td>10</td>
<td>MATH201 MATH213</td>
<td></td>
</tr>
<tr>
<td>MATH316</td>
<td>Industrial Modelling</td>
<td>10</td>
<td>MATH201 MATH213</td>
<td></td>
</tr>
<tr>
<td>MATH317</td>
<td>Number Theory</td>
<td>10</td>
<td>MATH201 MATH213</td>
<td></td>
</tr>
<tr>
<td>MATH318</td>
<td>Topology</td>
<td>10</td>
<td>MATH201 MATH213</td>
<td></td>
</tr>
<tr>
<td>STAT301</td>
<td>Statistical Inference</td>
<td>10</td>
<td>MATH201 MATH213</td>
<td></td>
</tr>
<tr>
<td>STAT302</td>
<td>Study Design</td>
<td>10</td>
<td>MATH201 MATH213</td>
<td></td>
</tr>
<tr>
<td>STAT303</td>
<td>Generalized Linear Models</td>
<td>10</td>
<td>MATH201 MATH213</td>
<td></td>
</tr>
<tr>
<td>STAT304</td>
<td>Time Series Analysis</td>
<td>10</td>
<td>MATH201 MATH213</td>
<td></td>
</tr>
<tr>
<td>STAT310</td>
<td>Total Quality Management</td>
<td>10</td>
<td>MATH201 MATH213</td>
<td></td>
</tr>
</tbody>
</table>

### GROUP B SUBJECTS

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH213</td>
<td>Mathematical Modelling</td>
<td>5</td>
<td>MATH201 MATH213</td>
<td></td>
</tr>
<tr>
<td>MATH214</td>
<td>Mechanics</td>
<td>5</td>
<td>MATH201 MATH213</td>
<td></td>
</tr>
<tr>
<td>MATH215</td>
<td>Operations Research</td>
<td>5</td>
<td>MATH201 MATH213</td>
<td></td>
</tr>
</tbody>
</table>

### GROUP C SUBJECTS

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH201</td>
<td>2 unit ISc Mathematics</td>
<td>5</td>
<td>MATH201 MATH213</td>
<td></td>
</tr>
<tr>
<td>MATH202</td>
<td>Partial Differential Equations 1</td>
<td>5</td>
<td>MATH201 MATH213</td>
<td></td>
</tr>
<tr>
<td>MATH205</td>
<td>Analysis of Metric Spaces</td>
<td>5</td>
<td>MATH201 MATH213</td>
<td></td>
</tr>
<tr>
<td>MATH207</td>
<td>Complex Analysis 2</td>
<td>5</td>
<td>MATH201 MATH213</td>
<td></td>
</tr>
<tr>
<td>MATH209</td>
<td>Algebra</td>
<td>5</td>
<td>MATH201 MATH213</td>
<td></td>
</tr>
<tr>
<td>MATH210</td>
<td>Geometry 1</td>
<td>5</td>
<td>MATH201 MATH213</td>
<td></td>
</tr>
<tr>
<td>MATH211</td>
<td>Group Theory</td>
<td>5</td>
<td>MATH201 MATH213</td>
<td></td>
</tr>
<tr>
<td>MATH212</td>
<td>Discrete Mathematics</td>
<td>5</td>
<td>MATH201 MATH213</td>
<td></td>
</tr>
<tr>
<td>MATH216</td>
<td>Numerical Analysis</td>
<td>5</td>
<td>MATH201 MATH213</td>
<td></td>
</tr>
</tbody>
</table>

### PHYSICS

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS201</td>
<td>Quantum Mechanics &amp; Electromagnetism</td>
<td>10</td>
<td>MATH201 MATH213</td>
<td></td>
</tr>
<tr>
<td>Code</td>
<td>Name</td>
<td>Cp</td>
<td>Prerequisites</td>
<td>Corequisites</td>
</tr>
<tr>
<td>-------</td>
<td>--------------------------------------------------------</td>
<td>----</td>
<td>----------------------------------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>PHYS202</td>
<td>Mechanics &amp; Thermal Physics</td>
<td>10</td>
<td>MATH102, PHYS113, PHYS114, PHYS201</td>
<td></td>
</tr>
<tr>
<td>PHYS203</td>
<td>Solid State &amp; Atomic Physics</td>
<td>10</td>
<td>MATH12, PHYS201</td>
<td></td>
</tr>
<tr>
<td>PHYS205</td>
<td>Scientific Measurement Principles, Processes and Applications</td>
<td>10</td>
<td>MATH102, PHYS201</td>
<td></td>
</tr>
<tr>
<td>PHYS206</td>
<td>Electromagnetism &amp; Electronics</td>
<td>10</td>
<td>MATH102, PHYS201, PHYS202</td>
<td></td>
</tr>
<tr>
<td>PHYS207</td>
<td>Atomic, Molecular &amp; Solid State Physics</td>
<td>10</td>
<td>MATH102, PHYS201, PHYS202</td>
<td></td>
</tr>
<tr>
<td>PHYS208</td>
<td>Statistical Physics &amp; Relativity</td>
<td>10</td>
<td>MATH102, PHYS201, PHYS202</td>
<td></td>
</tr>
<tr>
<td>PHYS209</td>
<td>Nuclear Physics &amp; Advanced Electromagnetism</td>
<td>10</td>
<td>MATH102, PHYS201, PHYS202</td>
<td></td>
</tr>
<tr>
<td>STAT201</td>
<td>Mathematical Statistics</td>
<td>10</td>
<td>MATH103 or STAT101, MATH112 (or equivalent level of Mathematics)</td>
<td></td>
</tr>
<tr>
<td>STAT202</td>
<td>Regression Analysis</td>
<td>10</td>
<td>STAT201 or STAT101, MATH112 (or equivalent level of Mathematics)</td>
<td></td>
</tr>
<tr>
<td>STAT205</td>
<td>Engineering Statistics</td>
<td>10</td>
<td>MATH112 or MATH102</td>
<td></td>
</tr>
<tr>
<td>STAT206</td>
<td>Design and Analysis of Experiments and Surveys</td>
<td>10</td>
<td>STAT201</td>
<td></td>
</tr>
</tbody>
</table>

**Computer Science**

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP221</td>
<td>Comparative Programming Languages</td>
<td>10</td>
<td>COMP111 (Assumed Knowledge COMP112 or COMP113)</td>
<td></td>
</tr>
<tr>
<td>COMP222</td>
<td>Theory of Computation</td>
<td>10</td>
<td>COMP112 &amp; COMP113</td>
<td></td>
</tr>
<tr>
<td>COMP223</td>
<td>Analysis of Algorithms</td>
<td>10</td>
<td>COMP112</td>
<td></td>
</tr>
<tr>
<td>COMP224</td>
<td>The Unix Operating System</td>
<td>10</td>
<td>COMP112</td>
<td></td>
</tr>
<tr>
<td>COMP225</td>
<td>Artificial Intelligence 2</td>
<td>10</td>
<td>COMP113 (Assumed Knowledge COMP112)</td>
<td></td>
</tr>
<tr>
<td>COMP226</td>
<td>Software Engineering &amp; Project</td>
<td>10</td>
<td>COMP113</td>
<td></td>
</tr>
<tr>
<td>COMP227</td>
<td>Computer Vision and Robotics</td>
<td>10</td>
<td>COMP225 (Assumed Knowledge MATH1112)</td>
<td></td>
</tr>
<tr>
<td>COMP228</td>
<td>Computational Logic</td>
<td>10</td>
<td>COMP225</td>
<td></td>
</tr>
<tr>
<td>COMP229</td>
<td>Parallel Processing</td>
<td>10</td>
<td>COMP225</td>
<td></td>
</tr>
<tr>
<td>COMP230</td>
<td>Database Systems</td>
<td>10</td>
<td>COMP225</td>
<td></td>
</tr>
<tr>
<td>COMP231</td>
<td>Data Security</td>
<td>10</td>
<td>COMP225</td>
<td></td>
</tr>
<tr>
<td>COMP232</td>
<td>Principles of Operating Systems</td>
<td>10</td>
<td>COMP225</td>
<td></td>
</tr>
</tbody>
</table>

**Statistics**

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT201</td>
<td>Mathematical Statistics</td>
<td>10</td>
<td>MATH103 or STAT101, MATH112 (or equivalent level of Mathematics)</td>
<td></td>
</tr>
<tr>
<td>STAT202</td>
<td>Regression Analysis</td>
<td>10</td>
<td>STAT201 or STAT101, MATH112 (or equivalent level of Mathematics)</td>
<td></td>
</tr>
<tr>
<td>STAT205</td>
<td>Engineering Statistics</td>
<td>10</td>
<td>MATH112 or MATH102</td>
<td></td>
</tr>
<tr>
<td>STAT206</td>
<td>Design and Analysis of Experiments and Surveys</td>
<td>10</td>
<td>STAT201</td>
<td></td>
</tr>
</tbody>
</table>

**Footnotes**

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

Leave of Absence — For the purposes 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.

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 MATH208 in 1990.
5 Students who have passed Mathematics I in 1969 or before do not need MATH204.
6 Advisory entry requirement: HSC 2 unit Mathematics with performance in the top 30% of candidates.
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 Students achieving a Credit level or better in PHYS101 and PHYS112 may be admitted with approval of the Head of Department.
9 Credit cannot be obtained for both STAT201 and STAT205.
10 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 (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 520 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 I, Class II and Class III. Class II 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; and
(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.

5 Time Requirements
(1) Except with the permission of the Faculty Board, 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>
</tr>
</thead>
<tbody>
<tr>
<td>100 Level</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSYC101</td>
<td>Psychology Introduction 1</td>
<td>10</td>
<td>See*</td>
<td>PSYC207</td>
</tr>
<tr>
<td>PSYC102</td>
<td>Psychology Introduction 2</td>
<td>10</td>
<td>PSYC101</td>
<td></td>
</tr>
<tr>
<td>200 Level</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSYC202</td>
<td>Basic Processes</td>
<td>10</td>
<td>PSYC102</td>
<td>PSYC207</td>
</tr>
<tr>
<td>PSYC205</td>
<td>Applied Topics in Psychology 1</td>
<td>10</td>
<td>PSYC201</td>
<td>PSYC207</td>
</tr>
<tr>
<td>PSYC206</td>
<td>Applied Topics in Psychology 2</td>
<td>10</td>
<td>PSYC201</td>
<td>PSYC207</td>
</tr>
<tr>
<td>PSYC207</td>
<td>Experimental Methodology</td>
<td>10</td>
<td>PSYC102</td>
<td>PSYC207</td>
</tr>
<tr>
<td>PSYC209</td>
<td>Experimental Methodology</td>
<td>10</td>
<td>PSYC102</td>
<td>PSYC207</td>
</tr>
<tr>
<td>PSYC210</td>
<td>Developmental Psychology</td>
<td>10</td>
<td>PSYC102</td>
<td>PSYC207</td>
</tr>
<tr>
<td>300 Level</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSYC301</td>
<td>Advanced Foundations for Psychology</td>
<td>10</td>
<td>PSYC201, PSYC207</td>
<td></td>
</tr>
<tr>
<td>PSYC302</td>
<td>Independent Project</td>
<td>10</td>
<td>PSYC201, PSYC207</td>
<td></td>
</tr>
<tr>
<td>PSYC303</td>
<td>Basic Processes 1</td>
<td>10</td>
<td>PSYC201, PSYC207</td>
<td></td>
</tr>
<tr>
<td>PSYC304</td>
<td>Basic Processes 2</td>
<td>10</td>
<td>PSYC201, PSYC207</td>
<td></td>
</tr>
<tr>
<td>PSYC305</td>
<td>Individual Processes</td>
<td>10</td>
<td>PSYC201, PSYC207</td>
<td></td>
</tr>
<tr>
<td>PSYC306</td>
<td>Advanced Social Processes</td>
<td>10</td>
<td>PSYC201, PSYC207</td>
<td></td>
</tr>
<tr>
<td>PSYC307</td>
<td>Advanced Applied Topics in Psychology</td>
<td>10</td>
<td>PSYC201, PSYC207</td>
<td></td>
</tr>
<tr>
<td>PSYC308</td>
<td>Advanced Applied Topics in Psychology</td>
<td>10</td>
<td>PSYC201, PSYC207</td>
<td></td>
</tr>
<tr>
<td>PSYC309</td>
<td>Topics in Neural Science</td>
<td>10</td>
<td>PSYC201, PSYC207</td>
<td></td>
</tr>
<tr>
<td>400 Level</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSYC401</td>
<td>Psychology Honours 401</td>
<td>40</td>
<td>See†</td>
<td>PSYC403</td>
</tr>
<tr>
<td>PSYC402</td>
<td>Psychology Honours 402</td>
<td>40</td>
<td>Consult Dept.</td>
<td></td>
</tr>
<tr>
<td>PSYC403</td>
<td>Psychology 403</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSYC404</td>
<td>Psychology 404</td>
<td>50</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Footnotes:
* 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 equivalently) equal to or greater than the TER required for admission to either the Bachelor of Science (Psychology) of Bachelor of Arts (Psychology), whichever is the lesser.
† Entry to PSYC401 and PSYC402 in the Bachelor of Science (Psychology) degree requires completion of 60 credit points at PSYC300 obtaining a Credit grade in each of four 300 level subjects including PSYC301 and PSYC302. Additional conditions apply; see the Department for details.
* PSYC201 may be substituted for PSYC207.

GROUP B SUBJECTS
Group B Subjects are in the following discipline areas: Biological Sciences, Chemistry, Geography, Geology, Mathematics and Physics: they are referred to in the Bachelor of Science Schedule of Approved Group A Subjects (excepting the discipline of Psychology).
SCHEDULE — DIPLOMA IN AVIATION SCIENCE

1 Qualification for the Diploma

(1) To qualify for admission to the diploma a candidate shall pass subjects totaling 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.

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>
</tr>
</thead>
<tbody>
<tr>
<td>AVIA109</td>
<td>Introductory Meteorology</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVIA110</td>
<td>Introductory Navigation</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVIA111</td>
<td>Introductory Aerodynamics</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVIA112</td>
<td>Introductory Human Factors</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVIA113</td>
<td>Aircraft Performance &amp; Systems</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVIA114</td>
<td>Flight Rules &amp; Procedures</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVIA115</td>
<td>Reciprocating Engines</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVIA116</td>
<td>Commercial Meteorology</td>
<td>5</td>
<td>AVIA109</td>
<td></td>
</tr>
<tr>
<td>AVIA117</td>
<td>Navigation</td>
<td>5</td>
<td>AVIA110</td>
<td></td>
</tr>
<tr>
<td>AVIA118</td>
<td>Aerodynamics</td>
<td>5</td>
<td>AVIA111</td>
<td></td>
</tr>
<tr>
<td>AVIA119</td>
<td>Aviation Psychology &amp; Medicine</td>
<td>5</td>
<td>AVIA112</td>
<td></td>
</tr>
<tr>
<td>AVIA120</td>
<td>Aviation Law, Commercial Flight</td>
<td>10</td>
<td>AVIA114</td>
<td></td>
</tr>
<tr>
<td>AVIA121</td>
<td>Aircraft Systems &amp; Propulsion</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVIA123</td>
<td>Aircraft Performance &amp; Loading</td>
<td>5</td>
<td>AVIA113</td>
<td></td>
</tr>
</tbody>
</table>

---

GROUP B SUBJECTS

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVIA207</td>
<td>Aviation Meteorology</td>
<td>5</td>
<td>AVIA116</td>
<td></td>
</tr>
<tr>
<td>AVIA208</td>
<td>Instrument Navigation</td>
<td>5</td>
<td>AVIA117</td>
<td></td>
</tr>
<tr>
<td>AVIA209</td>
<td>Long Range Navigation</td>
<td>5</td>
<td>AVIA117</td>
<td></td>
</tr>
<tr>
<td>AVIA211</td>
<td>Jet Engines</td>
<td>5</td>
<td>60 cp AVIA100 Level</td>
<td></td>
</tr>
<tr>
<td>AVIA212</td>
<td>Human Factors</td>
<td>10</td>
<td>AVIA119</td>
<td></td>
</tr>
<tr>
<td>AVIA213</td>
<td>Aircraft Structures &amp; Materials</td>
<td>5</td>
<td>60 cp AVIA100 Level</td>
<td></td>
</tr>
<tr>
<td>AVIA214</td>
<td>Jet Aircraft Flight Planning</td>
<td>10</td>
<td>AVIA117</td>
<td></td>
</tr>
<tr>
<td>AVIA218</td>
<td>Advanced Aircraft Performance</td>
<td>5</td>
<td>AVIA123</td>
<td></td>
</tr>
<tr>
<td>AVIA219</td>
<td>High Altitude Meteorology and</td>
<td>5</td>
<td>AVIA207</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Forecasting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVIA221</td>
<td>Human Performance in Multi-Crew</td>
<td>5</td>
<td>AVIA212</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operations</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

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 purposes 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.
section four

Approved Subjects for the Bachelor Degrees

List Of Approved Subjects Referred To In Bachelor Degree Schedules
F = Full Year; S1 = Semester 1; S2 = Semester 2

APPLIED SCIENCE AND TECHNOLOGY

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

<table>
<thead>
<tr>
<th>Number</th>
<th>Subject</th>
<th>Points</th>
<th>When</th>
<th>Prerequisites</th>
<th>Corequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAMC203</td>
<td>Environment and Human Values II</td>
<td>10</td>
<td>S1</td>
<td>3</td>
<td>EAMC103 EAMC113</td>
</tr>
<tr>
<td>EAMC213</td>
<td>Development and Social Impact Assessment</td>
<td>10</td>
<td>S2</td>
<td>3</td>
<td>EAMC103 EAMC113</td>
</tr>
<tr>
<td>EAMC303</td>
<td>Occupational H &amp; T</td>
<td>10</td>
<td>F</td>
<td>3</td>
<td>EAMC203</td>
</tr>
<tr>
<td>EAMC313</td>
<td>Social Aspects of Environmental Health</td>
<td>10</td>
<td>S2</td>
<td>3</td>
<td>EAMC203 EAMC213</td>
</tr>
<tr>
<td>EAMS201</td>
<td>Agricultural Systems</td>
<td>10</td>
<td>S1</td>
<td>4</td>
<td>EAMS101 EAMS111</td>
</tr>
<tr>
<td>EAMS211</td>
<td>Industrial and Urban Systems</td>
<td>10</td>
<td>S2</td>
<td>4</td>
<td>EAMS101 EAMS111</td>
</tr>
<tr>
<td>EAMS202</td>
<td>System Dynamics and Data Analysis I</td>
<td>10</td>
<td>S1</td>
<td>5</td>
<td>EAMS102 EAMS112</td>
</tr>
<tr>
<td>EAMS212</td>
<td>System Dynamics and Data Analysis II</td>
<td>10</td>
<td>S2</td>
<td>5</td>
<td>EAMS102 EAMS112</td>
</tr>
<tr>
<td>EAMS290</td>
<td>Hydrology and Soils Analysis</td>
<td>10</td>
<td>S1</td>
<td>4</td>
<td>EAMS102 EAMS112</td>
</tr>
<tr>
<td>EAMS291</td>
<td>Water Resources Management</td>
<td>10</td>
<td>S2</td>
<td>4</td>
<td>EAMS102 EAMS112</td>
</tr>
<tr>
<td>EAMS292</td>
<td>Plant Systematics and Plant Ecology</td>
<td>10</td>
<td>S1</td>
<td>4</td>
<td>EAMS101 EAMS111</td>
</tr>
<tr>
<td>EAMS293</td>
<td>Animal Systematics and Animal Ecology</td>
<td>10</td>
<td>S2</td>
<td>4</td>
<td>EAMS101 EAMS111</td>
</tr>
</tbody>
</table>

Faculty of Science and Mathematics

<table>
<thead>
<tr>
<th>Number</th>
<th>Subject</th>
<th>Points</th>
<th>When</th>
<th>H/W</th>
<th>Prerequisites</th>
<th>Corequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAMS204</td>
<td>Environmental Management I</td>
<td>10</td>
<td>S1</td>
<td>4</td>
<td>EAMS201 EAMS211</td>
<td></td>
</tr>
<tr>
<td>EAMS211</td>
<td>Environmental Management II</td>
<td>10</td>
<td>S2</td>
<td>4</td>
<td>EAMS201 EAMS211</td>
<td></td>
</tr>
<tr>
<td>EAMS202</td>
<td>Specialist Study</td>
<td>20</td>
<td>F</td>
<td>4</td>
<td>All Prescribed 200 level subjects</td>
<td></td>
</tr>
<tr>
<td>EAMS204</td>
<td>Regional and National Environmental Issues</td>
<td>10</td>
<td>S1</td>
<td>4</td>
<td>EAMS104 EAMS114</td>
<td></td>
</tr>
<tr>
<td>EAMS214</td>
<td>Environmental Impact Assessment</td>
<td>10</td>
<td>S2</td>
<td>4</td>
<td>EAMS104 EAMS114</td>
<td></td>
</tr>
<tr>
<td>EAMS290</td>
<td>Soil Conservation and Management</td>
<td>10</td>
<td>F</td>
<td>2</td>
<td>EAMS200</td>
<td></td>
</tr>
<tr>
<td>EAMS294</td>
<td>Flora and Fauna Component of Environmental Impact Assessment</td>
<td>10</td>
<td>F</td>
<td>2</td>
<td>EAMS292 EAMS293</td>
<td></td>
</tr>
</tbody>
</table>

AVIATION

Available only to Bachelor of Science (Aviation) candidates

<table>
<thead>
<tr>
<th>Number</th>
<th>Subject</th>
<th>Points</th>
<th>When</th>
<th>H/W</th>
<th>Prerequisites</th>
<th>Corequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVIA100</td>
<td>Introductory Meteorology</td>
<td>5</td>
<td>S1</td>
<td>3</td>
<td>AVIA109</td>
<td></td>
</tr>
<tr>
<td>AVIA110</td>
<td>Introductory Navigation</td>
<td>5</td>
<td>S1</td>
<td>3</td>
<td>AVIA109</td>
<td></td>
</tr>
<tr>
<td>AVIA111</td>
<td>Introductory Aeronautics</td>
<td>5</td>
<td>S1</td>
<td>3</td>
<td>AVIA109</td>
<td></td>
</tr>
<tr>
<td>AVIA112</td>
<td>Introductory Human Factors</td>
<td>10</td>
<td>S1</td>
<td>4</td>
<td>AVIA109</td>
<td></td>
</tr>
<tr>
<td>AVIA113</td>
<td>Aircraft Performance</td>
<td>5</td>
<td>S1</td>
<td>3</td>
<td>AVIA109</td>
<td></td>
</tr>
<tr>
<td>AVIA114</td>
<td>Flight Rules &amp; Procedures</td>
<td>5</td>
<td>S1</td>
<td>2</td>
<td>AVIA109</td>
<td></td>
</tr>
<tr>
<td>AVIA115</td>
<td>Reciprocating Engines</td>
<td>5</td>
<td>S1</td>
<td>2</td>
<td>AVIA109</td>
<td></td>
</tr>
<tr>
<td>AVIA116</td>
<td>Commercial Meteorology</td>
<td>5</td>
<td>S2</td>
<td>3</td>
<td>AVIA109</td>
<td></td>
</tr>
<tr>
<td>AVIA117</td>
<td>Navigation</td>
<td>5</td>
<td>S2</td>
<td>3</td>
<td>AVIA109</td>
<td></td>
</tr>
<tr>
<td>AVIA118</td>
<td>Aerodynamics</td>
<td>5</td>
<td>S2</td>
<td>3</td>
<td>AVIA109</td>
<td></td>
</tr>
<tr>
<td>AVIA119</td>
<td>Aviation Psychology &amp; Medicine</td>
<td>5</td>
<td>S2</td>
<td>3</td>
<td>AVIA109</td>
<td></td>
</tr>
<tr>
<td>AVIA120</td>
<td>Aviation Law, Commercial Flight Rules and Procedures</td>
<td>10</td>
<td>S2</td>
<td>4</td>
<td>AVIA109</td>
<td></td>
</tr>
<tr>
<td>AVIA121</td>
<td>Aircraft Systems &amp; Propulsion</td>
<td>5</td>
<td>S2</td>
<td>3</td>
<td>AVIA109</td>
<td></td>
</tr>
<tr>
<td>AVIA123</td>
<td>Aircraft Performance &amp; Loading</td>
<td>5</td>
<td>S2</td>
<td>3</td>
<td>AVIA109</td>
<td></td>
</tr>
<tr>
<td>AVIA200</td>
<td>Long Range Navigation</td>
<td>5</td>
<td>S1</td>
<td>3</td>
<td>AVIA109</td>
<td></td>
</tr>
<tr>
<td>AVIA201</td>
<td>Compressible Aerodynamics</td>
<td>5</td>
<td>S1</td>
<td>3</td>
<td>AVIA109</td>
<td></td>
</tr>
<tr>
<td>AVIA211</td>
<td>Jet Engines</td>
<td>5</td>
<td>S2</td>
<td>3</td>
<td>60 cp AVIA100 Level</td>
<td></td>
</tr>
<tr>
<td>AVIA212</td>
<td>Human Factors</td>
<td>10</td>
<td>S1</td>
<td>3</td>
<td>AVIA109</td>
<td></td>
</tr>
<tr>
<td>AVIA213</td>
<td>Aircraft Structures &amp; Materials</td>
<td>5</td>
<td>S1</td>
<td>3</td>
<td>60 cp AVIA100 Level</td>
<td></td>
</tr>
<tr>
<td>AVIA214</td>
<td>Jet Aircraft Flight Planning</td>
<td>10</td>
<td>S2</td>
<td>6</td>
<td>AVIA109</td>
<td></td>
</tr>
<tr>
<td>AVIA218</td>
<td>Advanced Aircraft Performance</td>
<td>5</td>
<td>S1</td>
<td>3</td>
<td>AVIA109</td>
<td></td>
</tr>
</tbody>
</table>
## AVIA 312

**Section Four**

<table>
<thead>
<tr>
<th>Number</th>
<th>Subject</th>
<th>Points</th>
<th>When</th>
<th>H/W</th>
<th>Prerequisites 1994</th>
<th>Corequisites 1994</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVIA219</td>
<td>High Altitude Meteorology and Forecasting</td>
<td>5</td>
<td>S2</td>
<td>3</td>
<td>AVIA207</td>
<td>1994</td>
</tr>
<tr>
<td>AVIA220</td>
<td>Aircraft Fatigue Management</td>
<td>5</td>
<td>S2</td>
<td>3</td>
<td>AVIA210</td>
<td>1994</td>
</tr>
<tr>
<td>AVIA221</td>
<td>Human Performance in Multi-Crew Operation</td>
<td>5</td>
<td>S2</td>
<td>3</td>
<td>AVIA212</td>
<td>1994</td>
</tr>
<tr>
<td>AVIA222</td>
<td>Management of Aviation</td>
<td>5</td>
<td>S2</td>
<td>3</td>
<td>AVIA210</td>
<td>1994</td>
</tr>
<tr>
<td>AVIA223</td>
<td>Aviation Computing and Electronics</td>
<td>5</td>
<td>S2</td>
<td>3</td>
<td>AVIA121</td>
<td>1994</td>
</tr>
<tr>
<td>AVIA315</td>
<td>Advanced Aviation Management</td>
<td>5</td>
<td>S2</td>
<td>3</td>
<td>AVIA222</td>
<td>1994</td>
</tr>
<tr>
<td>AVIA316</td>
<td>Flight Deck Performance</td>
<td>5</td>
<td>S2</td>
<td>3</td>
<td>AVIA221</td>
<td>1994</td>
</tr>
<tr>
<td>AVIA317</td>
<td>Aviation Climatology</td>
<td>5</td>
<td>S2</td>
<td>3</td>
<td>AVIA207</td>
<td>1994</td>
</tr>
<tr>
<td>AVIA318</td>
<td>Aircraft Stability and Control</td>
<td>5</td>
<td>S2</td>
<td>3</td>
<td>AVIA118</td>
<td>1994</td>
</tr>
<tr>
<td>AVIA320</td>
<td>Aviation Instruction</td>
<td>5</td>
<td>S2</td>
<td>3</td>
<td>AVIA038</td>
<td>1994</td>
</tr>
<tr>
<td>AVIA321</td>
<td>Directed Study</td>
<td>5</td>
<td>S2</td>
<td>3</td>
<td>AVIA181 AVIA223</td>
<td>1994</td>
</tr>
</tbody>
</table>

## BIOL 317

**Section Four**

<table>
<thead>
<tr>
<th>Number</th>
<th>Subject</th>
<th>Points</th>
<th>When</th>
<th>H/W</th>
<th>Prerequisites 1994</th>
<th>Corequisites 1994</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL010</td>
<td>Plant &amp; Animal Biology</td>
<td>10</td>
<td>S1</td>
<td>6</td>
<td>—</td>
<td>1994</td>
</tr>
<tr>
<td>BIOL020</td>
<td>Cell Biology, Genetics &amp; Evolution</td>
<td>10</td>
<td>S2</td>
<td>6</td>
<td>—</td>
<td>1994</td>
</tr>
<tr>
<td>BIOL021</td>
<td>Biochemistry</td>
<td>10</td>
<td>S1</td>
<td>6</td>
<td>BIOL01 BIOL02 CHEM0101 CHEM0102 CHEM0102</td>
<td>1994</td>
</tr>
<tr>
<td>BIOL022</td>
<td>Animal Physiology</td>
<td>10</td>
<td>S1</td>
<td>6</td>
<td>BIOL01 BIOL02 CHEM0101 CHEM0102</td>
<td>1994</td>
</tr>
<tr>
<td>BIOL023</td>
<td>Cell &amp; Molecular Biology</td>
<td>10</td>
<td>S2</td>
<td>6</td>
<td>BIOL01 BIOL02 CHEM0101 CHEM0102</td>
<td>1994</td>
</tr>
<tr>
<td>BIOL024</td>
<td>Molecular Genetics</td>
<td>10</td>
<td>S2</td>
<td>6</td>
<td>BIOL01 BIOL02 CHEM0101 CHEM0102</td>
<td>1994</td>
</tr>
<tr>
<td>BIOL025</td>
<td>Plant Physiology</td>
<td>10</td>
<td>S2</td>
<td>6</td>
<td>BIOL01 BIOL02 CHEM0101 CHEM0102</td>
<td>1994</td>
</tr>
<tr>
<td>BIOL026</td>
<td>Ecology</td>
<td>10</td>
<td>S2</td>
<td>6</td>
<td>BIOL01 BIOL02 CHEM0101 CHEM0102</td>
<td>1994</td>
</tr>
<tr>
<td>BIOL027</td>
<td>Biochemistry 208</td>
<td>10</td>
<td>S2</td>
<td>6</td>
<td>BIOL021</td>
<td>1994</td>
</tr>
<tr>
<td>BIOL028</td>
<td>Reproductive Physiology</td>
<td>10</td>
<td>S2</td>
<td>6</td>
<td>Two BIOL200</td>
<td>1994</td>
</tr>
<tr>
<td>BIOL030</td>
<td>Environmental Plant Physiology</td>
<td>10</td>
<td>1994</td>
<td>6</td>
<td>Two BIOL200</td>
<td>1994</td>
</tr>
</tbody>
</table>

### BIOLOGICAL SCIENCES

- **CHEM101** Chemistry 101
- **CHEM102** Chemistry 102
- **CHEM211** Analytical Chemistry
- **CHEM221** Inorganic Chemistry
- **CHEM311** Industrial Chemical Analysis
- **CHEM321** Inorganic Chemistry
- **CHEM322** Metal-Metal Bonding & Cluster Chemistry

### CHEMISTRY

- **CHEM251** Applied Chemical Analysis
- **CHEM261** Environmental Chemistry
- **CHEM311** Analytical Chemistry
- **CHEM312** Chemometrics
- **CHEM321** Inorganic Chemistry
- **CHEM323** Bioinorganic Coord & Analysis

- **CHEM330** Organic Chemistry

---

The table provides a comprehensive overview of subjects offered in the Faculty of Science and Mathematics, including prerequisites and corequisites for Bachelor Degrees.
<table>
<thead>
<tr>
<th>Number</th>
<th>Subject</th>
<th>Points</th>
<th>When</th>
<th>H/W</th>
<th>Prerequisites</th>
<th>Corequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM332</td>
<td>Heterocyclic Chemistry</td>
<td>5</td>
<td>Not in 1994</td>
<td>3</td>
<td>CHEM231</td>
<td></td>
</tr>
<tr>
<td>CHEM333</td>
<td>Organic Reaction Mechanism</td>
<td>5</td>
<td>S2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM334</td>
<td>Identification of Natural Compounds</td>
<td>5</td>
<td>S2</td>
<td>3</td>
<td>CHEM231</td>
<td></td>
</tr>
<tr>
<td>CHEM335</td>
<td>Organic Spectroscopy</td>
<td>5</td>
<td>S2</td>
<td>3</td>
<td>CHEM231</td>
<td></td>
</tr>
<tr>
<td>CHEM341</td>
<td>Physical Chemistry</td>
<td>10</td>
<td>S1</td>
<td>3</td>
<td>CHEM241 MATH102 (or MATH112)</td>
<td></td>
</tr>
<tr>
<td>CHEM342</td>
<td>Electrochemical Solar Energy Conversion</td>
<td>5</td>
<td>S2</td>
<td>3</td>
<td>CHEM241 MATH102 (or MATH112)</td>
<td></td>
</tr>
<tr>
<td>CHEM343</td>
<td>Molecular Spectroscopy</td>
<td>5</td>
<td>S2</td>
<td>3</td>
<td>CHEM241</td>
<td></td>
</tr>
<tr>
<td>CHEM361</td>
<td>Environmental Chemistry</td>
<td>10</td>
<td>S2</td>
<td>6</td>
<td>CHEM261</td>
<td></td>
</tr>
</tbody>
</table>

**ENVIRONMENTAL SCIENCE SUBJECTS**

Available only to Bachelor of Environmental Science Degree candidates who commence in 1994 or thereafter. Consult Departmental lists for other prescribed subjects required. (See Award Rules)

<table>
<thead>
<tr>
<th>Number</th>
<th>Subject</th>
<th>Points</th>
<th>When</th>
<th>H/W</th>
<th>Prerequisites</th>
<th>Corequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGT101</td>
<td>Foundations of Environmental Management</td>
<td>10</td>
<td>S1</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENGT102</td>
<td>Social Development and the Environment</td>
<td>10</td>
<td>S2</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENVI02</td>
<td>Environmental Values and Ethics</td>
<td>10</td>
<td>S1</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENVI03</td>
<td>Environmental Issues and Problems</td>
<td>10</td>
<td>S2</td>
<td>5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Available only to Bachelor of Environmental Science Degree candidates who commenced prior to 1994

- **SCEN201** Environmental Investigations II
- **SCEN202** Environmental Planning & Pollution Control
- **SCEN203** Water Resources
- **SCEN001** Environmental Project
- **SCEN002** Environmental Impact Assessment Techniques

**GEOGRAPHY**

- **GEOG101** Introduction to Physical Geography
- **GEOG102** Introduction to Human Geography
- **GEOG201** Methods in Physical Geography
- **GEOG202** Methods in Human Geography
- **GEOG203** Biogeography & Climatology

Footnote

1. Students should note that GEOG101 and GEOG102 are prerequisites for a major study in Geography, and Geography Honours GEOG401, GEOG402.
<table>
<thead>
<tr>
<th>Number</th>
<th>Subject</th>
<th>Points</th>
<th>When</th>
<th>H/W</th>
<th>1994</th>
<th>Prerequisites</th>
<th>1995</th>
<th>Corequisites</th>
<th>1994</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOL312</td>
<td>Metamorphic Petrology</td>
<td>10</td>
<td>S1</td>
<td>6</td>
<td>1994</td>
<td>GEOL121</td>
<td>1995</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEOL319</td>
<td>Structural Geology &amp; Geophysics</td>
<td>10</td>
<td>S1</td>
<td>6</td>
<td>GEOL124</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEOL314</td>
<td>Stratigraphic Methods</td>
<td>10</td>
<td>S2</td>
<td>6</td>
<td>GEOL123</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEOL315</td>
<td>Sedimentology</td>
<td>10</td>
<td>S2</td>
<td>6</td>
<td>GEOL121, GEOL123</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEOL316</td>
<td>Geology of Fuels</td>
<td>10</td>
<td>S1</td>
<td>6</td>
<td>GEOL123</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEOL317</td>
<td>Resource &amp; Exploration Geology</td>
<td>10</td>
<td>S1</td>
<td>6</td>
<td>GEOL121, GEOL124</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEOL318</td>
<td>Geology Field Course 318</td>
<td>5</td>
<td>S1</td>
<td>7</td>
<td>GEOL123</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEOL319</td>
<td>Geology Field Course 319</td>
<td>5</td>
<td>S2</td>
<td>10</td>
<td>GEOL123, GEOL13</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEOL320</td>
<td>Geology of Quaternary Environments</td>
<td>10</td>
<td>S2</td>
<td>6</td>
<td>GEOL123, GEOL204</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MATHEMATICS**

<table>
<thead>
<tr>
<th>Number</th>
<th>Subject</th>
<th>Points</th>
<th>When</th>
<th>H/W</th>
<th>1994</th>
<th>Prerequisites</th>
<th>1995</th>
<th>Corequisites</th>
<th>1994</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH111</td>
<td>Mathematics 111</td>
<td>10</td>
<td>S1,S2</td>
<td>6</td>
<td>1994</td>
<td>2 unit HSC Math</td>
<td>1995</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH112</td>
<td>Mathematics 112</td>
<td>10</td>
<td>S1,S2</td>
<td>6</td>
<td>MATH111</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH102</td>
<td>Mathematics 102</td>
<td>10</td>
<td>S1</td>
<td>6</td>
<td>see or MATH111</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH103</td>
<td>Mathematics 103</td>
<td>10</td>
<td>S2</td>
<td>6</td>
<td>MATH102 or (MATH111 &amp; MATH112) or permission of H.O.D. of Mathematics (MATH112 &amp; MATH103) or (MATH111 &amp; MATH112) or (MATH112 &amp; permission of H.O.D.)</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH201</td>
<td>Multivariable Calculus</td>
<td>5</td>
<td>S1</td>
<td>2</td>
<td>MATH201</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH202</td>
<td>Partial Differential Equations</td>
<td>5</td>
<td>S2</td>
<td>2</td>
<td>MATH201</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH203</td>
<td>Ordinary Differential Equations</td>
<td>5</td>
<td>S2</td>
<td>2</td>
<td>(MATH102 &amp; MATH103) or (MATH111 &amp; MATH112) or (MATH112 &amp; permission of H.O.D.) or (MATH12 &amp; MATH103) or (MATH111 &amp; MATH112) or (MATH112 &amp; permission of H.O.D.)</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH204</td>
<td>Real Analysis</td>
<td>5</td>
<td>S1</td>
<td>2</td>
<td>MATH201</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH207</td>
<td>Analysis of Metric Spaces</td>
<td>5</td>
<td>S2</td>
<td>2</td>
<td>MATH204 or (MATH111 &amp; MATH112 &amp; MATH103)</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH208</td>
<td>Complex Analysis</td>
<td>5</td>
<td>S1</td>
<td>2</td>
<td>MATH201 or (MATH111 &amp; MATH112) or MATH120 &amp; permission of H.O.D.)</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH209</td>
<td>Algebra</td>
<td>5</td>
<td>S1</td>
<td>2</td>
<td>MATH103</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH210</td>
<td>Geometry</td>
<td>5</td>
<td>S2</td>
<td>2</td>
<td>MATH102, MATH103 or (MATH111 &amp; MATH112 &amp; MATH103)</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH211</td>
<td>Group Theory</td>
<td>5</td>
<td>S1</td>
<td>2</td>
<td>(MATH102 &amp; MATH113) or (MATH111 &amp; MATH112 &amp; MATH103)</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH212</td>
<td>Discrete Mathematics</td>
<td>5</td>
<td>S1</td>
<td>2</td>
<td>MATH102 or MATH103</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH213</td>
<td>Mathematical Modelling</td>
<td>5</td>
<td>S2</td>
<td>2</td>
<td>MATH102 or MATH113 or MATH111 &amp; MATH112</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH214</td>
<td>Mechanics</td>
<td>5</td>
<td>S2</td>
<td>2</td>
<td>MATH102 or MATH113</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH215</td>
<td>Operations Research</td>
<td>5</td>
<td>S2</td>
<td>2</td>
<td>MATH102 or MATH113</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH216</td>
<td>Numerical Analysis</td>
<td>5</td>
<td>S2</td>
<td>2</td>
<td>MATH102 or MATH113</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH217</td>
<td>Linear Algebra 1</td>
<td>5</td>
<td>S1</td>
<td>2</td>
<td>MATH102 or (MATH111 &amp; MATH112)</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH218</td>
<td>Linear Algebra 2</td>
<td>5</td>
<td>S1</td>
<td>2</td>
<td>MATH102 or (MATH112 &amp; MATH103) or (MATH111 &amp; MATH112 &amp; MATH103)</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH301</td>
<td>Logic &amp; Set Theory</td>
<td>10</td>
<td>S1</td>
<td>3</td>
<td>20cp from 200 level MATH incl. one of MATH204 MATH209 MATH121 MATH122</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH302</td>
<td>General Tensors &amp; Relativity</td>
<td>10</td>
<td>S2</td>
<td>3</td>
<td>MATH201 MATH218</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH303</td>
<td>Variational Methods and Integral Equations</td>
<td>10</td>
<td>S1</td>
<td>3</td>
<td>MATH201 MATH203</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH304</td>
<td>Ordinary Differential Equations 2</td>
<td>10</td>
<td>S1</td>
<td>3</td>
<td>MATH201 MATH203</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH305</td>
<td>Partial Differential Equations 2</td>
<td>10</td>
<td>S1</td>
<td>3</td>
<td>MATH201 MATH203</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH306</td>
<td>Fluid Mechanics</td>
<td>10</td>
<td>S1</td>
<td>3</td>
<td>MATH201 MATH203</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH307</td>
<td>Quantum &amp; Statistical Mechanics</td>
<td>10</td>
<td>S1</td>
<td>3</td>
<td>MATH201 MATH203</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH308</td>
<td>Geometry 2</td>
<td>10</td>
<td>S1</td>
<td>3</td>
<td>MATH201 MATH203</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH309</td>
<td>Combinatorics</td>
<td>10</td>
<td>S1</td>
<td>3</td>
<td>MATH201 MATH218</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH310</td>
<td>Functional Analysis</td>
<td>10</td>
<td>S2</td>
<td>3</td>
<td>MATH205</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH311</td>
<td>Measure Theory &amp; Integration</td>
<td>10</td>
<td>S2</td>
<td>3</td>
<td>MATH205</td>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Advisory MATH207**
<table>
<thead>
<tr>
<th>Number</th>
<th>Subject</th>
<th>Points</th>
<th>When</th>
<th>H/W</th>
<th>1994</th>
<th>Prerequisites</th>
<th>1995</th>
<th>Corequisites</th>
<th>1994</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH132</td>
<td>Algebra</td>
<td>10</td>
<td>Not in</td>
<td>3</td>
<td>MATH111</td>
<td>MATH121^p</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH133</td>
<td>Numerical Analysis (Theory)</td>
<td>10</td>
<td>S2</td>
<td>3</td>
<td>MATH101</td>
<td>MATH120^p</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH134</td>
<td>Optimization</td>
<td>10</td>
<td>S1</td>
<td>3</td>
<td>MATH101</td>
<td>MATH121^p</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH135</td>
<td>Mathematical Biology</td>
<td>10</td>
<td>S1</td>
<td>3</td>
<td>MATH101</td>
<td>MATH120^p</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH136</td>
<td>Industrial Modelling</td>
<td>10</td>
<td>S2</td>
<td>3</td>
<td>MATH101</td>
<td>MATH120^p</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH137</td>
<td>Number Theory</td>
<td>10</td>
<td>S2</td>
<td>3</td>
<td>30c0</td>
<td>MATH101^p</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH138</td>
<td>Topology</td>
<td>10</td>
<td>Not in</td>
<td>3</td>
<td>MATH101</td>
<td>MATH120^p</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Footnotes:

^ Entry requirement — HSC 3 Unit Mathematics with a mark of at least 120/150.
^ This option is for certain students who take MATH103 in second semester.
^ MATH1208 in 1990
^ Students who have passed Mathematics I in 1989 or before do not need MATH204.
^ Credit cannot be obtained for both MATH112 and MATH102.
^ Credit cannot be obtained for both MATH121 and MATH128.

DIVISION OF QUANTITATIVE METHODS

Not in

MAQM214*Quantitative Methods 10 1994 4 INFO101 & STAT101

* Credit cannot be obtained for both MATH215 and MAQM214.

Subjects provided by the Division of Quantitative Methods to Bachelor of Education courses in the Faculty of Education in 1994.

These subjects are available only to Bachelor of Education students.

B.Ed (Mathematics Education)

<table>
<thead>
<tr>
<th>Number</th>
<th>Subject</th>
<th>Points</th>
<th>When</th>
<th>H/W</th>
<th>1994</th>
<th>Prerequisites</th>
<th>1995</th>
<th>Corequisites</th>
<th>1994</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAQM135</td>
<td>Mathematics I A</td>
<td>20</td>
<td>F</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAQM136</td>
<td>Mathematics I B</td>
<td>20</td>
<td>F</td>
<td>4</td>
<td></td>
<td>MAQM135</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAQM235</td>
<td>Mathematics IIA</td>
<td>20</td>
<td>F</td>
<td>4</td>
<td></td>
<td>MAQM135</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAQM236</td>
<td>Mathematics II B</td>
<td>10</td>
<td>F</td>
<td>2</td>
<td></td>
<td>MAQM135</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAQM237</td>
<td>Mathematics II C</td>
<td>10</td>
<td>F</td>
<td>2</td>
<td></td>
<td>MAQM135</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAQM335</td>
<td>Mathematics IIIA</td>
<td>20</td>
<td>F</td>
<td>4</td>
<td></td>
<td>MAQM335</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAQM336</td>
<td>Mathematics III B</td>
<td>15</td>
<td>F</td>
<td>3</td>
<td></td>
<td>MAQM135</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAQM337</td>
<td>Mathematics III C</td>
<td>15</td>
<td>F</td>
<td>3</td>
<td></td>
<td>MAQM135</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAQM435</td>
<td>Mathematics IV A</td>
<td>10</td>
<td>F</td>
<td>2</td>
<td></td>
<td>MAQM135</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAQM436</td>
<td>Mathematics IV B</td>
<td>10</td>
<td>F</td>
<td>2</td>
<td></td>
<td>MAQM135</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B.Ed (Primary Education)

<table>
<thead>
<tr>
<th>Number</th>
<th>Subject</th>
<th>Points</th>
<th>When</th>
<th>H/W</th>
<th>1994</th>
<th>Prerequisites</th>
<th>1995</th>
<th>Corequisites</th>
<th>1994</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAQM146</td>
<td>Foundation Studies in Elementary Mathematics</td>
<td>15</td>
<td>F</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Footnotes

* 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.

1994

Additional conditions apply; see the Department for details.

© PSYC201 may be substituted for PSYC207.
<table>
<thead>
<tr>
<th>Number</th>
<th>Subject</th>
<th>Points</th>
<th>When</th>
<th>H/W</th>
<th>1994</th>
<th>1995</th>
<th>Corequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>INFO101</td>
<td>Introduction to Information Systems</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**LAW**

Compulsory Subjects

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

| LL.B.101 | Legal Systems and Method               | 20     |
| LL.B.102 | Criminal Law and Procedure             | 20     |
| LL.B.201 | Torts                                 | 20     |
| LL.B.202 | Property I                            | 10     |
| LL.B.301 | Contracts                             | 20     |
| LL.B.401 | Constitutional Law I                   | 10     |
| LL.B.402 | Administrative Law I                   | 10     |
| LL.B.403 | Equity and Trusts                      | 10     |
| LL.B.404 | Civil Procedure                        | 10     |
| LL.B.405 | Evidence                              | 10     |
| LL.B.406 | Company Law I                         | 10     |
| LL.B.407 | Jurisprudence                         | 10     |
| LL.B.408 | Professional Conduct                  | 10     |

**PHILOSOPHY**

| PHILO207 | Scientific Knowledge and Scientific Method | 10     |

**STATISTICS**

| STAT101  | Introductory Statistics                | 10     |
| STAT103  | Introductory Mathematical Statistics    | 10     |
| STAT201  | Mathematical Statistics                | 10     |
| STAT202  | Regression Analysis                    | 10     |
| STAT205  | Engineering Statistics                 | 5      |
| STAT206  | Design and Analysis of Experiments and Surveys | 10     |
| STAT301  | Statistical Inference                  | 10     |
| STAT302  | Study Design                           | 10     |
| STAT303  | Generalized Linear Models              | 10     |
| STAT304  | Time Series Analysis                   | 10     |
| STAT310  | Total Quality Management               | 10     |

**Footnote**

*Credit cannot be obtained for both STAT201 and STAT205.

---

**section five**

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. **Prerequisites** are subjects which must be passed at a Pass level or better before a candidate enrols in a particular subject.
2. **Corequisites** refer to subjects or topics which the candidate must either pass before enrolling in the particular subject or be taking concurrently.
3. **Examination rules** include 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.
Introduction to computer modelling, rate and level equations. Dynamo language.

Data analysis runs parallel and involves computer applications of group developed models and their analysis.

Reference

EAMC203 ENVIRONMENT AND HUMAN VALUES II 10cp
Prerequisite: EAMC103, EAMC113.

Hours 2 Hours per week for one semester.

Examination Tutorial assessment, essay, take-home examination.

Content
Public policy and environmental issues: eg energy policy, ecologically sustainable development, ethics and a sustainable society, ethics and acceptable risk, ideology and green political thought in the national and international contexts.

References
An extensive set of references for this subject will be given to students at the commencement of the semester.

EAMC213 DEVELOPMENT AND SOCIAL IMPACT ASSESSMENT 10cp
Prerequisites EAMC103, EAMC113.

Corequisite: EAMC203.

Hours 2 Hours per week for one semester.

Examination Tutorial assessment, essay, take-home examination.

Content
The role of Social Impact Assessment (SIA) in Environmental Impact Assessment (EIA), theory and methods of SIA, social variables studies by SIA, Heritage considerations and the National Estate. Cultural values and SIA.

References
An extensive set of references for this subject will be given to students at the commencement of the semester.
EAMS292 PLANT SYSTEMATICS AND PLANT ECOLOGY 10cp
Prerequisites EAMS101, EAMS111.
Hours 4 Hours per week for one semester.
Examination Assignments, laboratory and field reports, and final examination.
Content
A study of botanical concepts and principles with particular emphasis upon Australian species and ecosystems. Students will acquire knowledge in plant identification and classification. Physiological processes and evolutionary adaptations will be studied along with checklists, distributions, and plant associations reflecting environmental factors. Current theories in plant ecology will be examined.
Text
To be advised.
Reference

EAMS293 ANIMAL SYSTEMATICS AND ANIMAL ECOLOGY 10cp
Prerequisites EAMS101, EAMS111.
Corequisites EAMS292.
Hours 4 Hours per week for one semester.
Examination Assignments, laboratory and field reports and final examination.
Content
A study of the systematics, evolution, ecology and distribution of the Australian fauna. The identification of Australian vertebrates to at least the level of sub-class or order. Diagnostic structures such as skeletal and dental features will be studied along with trapping and tagging techniques to estimate population size and distribution. Terrestrial and aquatic systems will be examined for life histories and ecological relationships.
Text
To be advised.

EAMS301 ENVIRONMENTAL MANAGEMENT I 10cp
Prerequisites EAMS201, EAMS211.
Hours 4 Hours per week for one semester.
Examination Assignments, field reports and final examination.
Content
The principles of land management and people 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.
Text
To be advised.
Reference
IUCN, WWF, and UNEP. 1991, Caring for the Earth, United Nations Environment Program.

EAMS302 SPECIALIST STUDY 20cp
Prerequisite All prescribed Level 200 subjects.
Hours 4 Hours per week (minimum) for one year.
Examination Maintenance of logbook, performance at viva, and submission of final report.
Content
The student is assigned to a co-operating host organisation and placed in a problem solving or team situation to study an issue or set of issues currently being addressed by that organisation. The student will report on the structure and functions of the host organisation and on progress made towards the resolution of the particular issue(s) under study.
Reference
List will be provided by the student's supervisor and by the host organisation.

EAMS304 REGIONAL AND NATIONAL ENVIRONMENTAL ISSUES 10cp
Prerequisites EAMS104, EAMS114.
Hours 4 Hours per week, 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 assessment. The Commonwealth environmental legislation and environmental law are also covered.
Reference

EAMS314 ENVIRONMENTAL IMPACT ASSESSMENT 10cp
Prerequisites EAMS104, EAMS114.
Hours 4 Hours per week, 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.
Text
Reference

EAMS390 SOIL CONSERVATION AND MANAGEMENT 10cp
Prerequisites EAMS290, EAMS291.
Hours 4 Hours per week lectures and practicals, field work and directed reading.
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 land use including urban development. Practical analysis of control structures, sizing and prediction. Use of soils for domestic and industrial wastewater disposal and site rehabilitation.
Text
Charman, P.E.V. and Murphy, B.W. 1991, Soils Their Properties and Management, Sydney U.P.
Reference

EAMS394 FLORA AND FAUNA COMPONENT OF ENVIRONMENTAL IMPACT ASSESSMENT 10cp
Prerequisites EAMS202 and EAMS293 (or equivalent)
Hours 2 hours per week over two semesters
Assessment Assignments, field reports; and final examination.
Content
A study of the skills and knowledge required for competence in the compilation of flora and fauna...
surveys in connection with environmental impact studies and plans of management in connection with forestry operations, development projects, rehabilitation after mining, and the conservation and management of natural ecosystems. The use of relevant field techniques of transect studies, species composition analyses, assessment of animal populations, and monitoring of physical and chemical factors will be studied. Fluctuations in plant and animal populations due to such factors as seasonal change, drought, fire, migration, competition due to introduced flora and fauna, and developmental impact will provide a major focus for theoretical studies and field observations. Some existing EISs will be selected as case studies. The work will be set against the background of the needs for development and for the maximum retention of global biodiversity.

Text
No set text.

References

**EAMC303 OCCUPATIONAL HYGIENE AND TOXICOLOGY 10cp**

Prerequisites EAMC203, 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
A study of human organ systems and the nature of environmental pollutants and their adverse effects on human health. This subject also studies hazard identification, hygiene standards and the control of environmental conditions in the workplace. Visits to industrial sites are undertaken together with practice in the use of monitoring and protective devices.

Text

**References**
An extensive list of references will be provided at the commencement of lectures.

**EAMC313 THE SOCIAL ASPECTS OF ENVIRONMENTAL HEALTH 10cp**

Prerequisites EAMC203, EAMC213.

Corequisites EAMC303

Hours 2 hours per week for one semester.

Examination Tutoralexamination, 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.

**Aviation Subject Descriptions**

**AVIA subjects are available only to candidates enrolled in the Bachelor of Science (Aviation) degree**

**100 Level Aviation Syllabus**

The aviation syllabus is based upon four broad areas of study

1. **Aeronautical Engineering** (aerodynamics, engines, systems and design);
2. **Aviation Science** (meteorology and navigation);
3. **Human Factors** (aviation psychology, medicine, and ergonomics);
4. **Aviation Management** (aviation law, administration, and computer applications).

The syllabus has a spiral design with a broad foundation in first year proceeding to in-depth and more individualised study in the third year. The project in third year is designed as background to pursue a postgraduate Bachelor of Science (Aviation) Honours program. Group or individual projects are problem-based and require students to gain industry experience to link theory and practice.

The set and scheduling of aviation subjects is determined by the needs of integration with flight training and commercial pilot licensing over the first two years of the degree.

**AVIA109 INTRODUCTORY METEOROLOGY 5cp**

Hours 3 Hours per week for one semester.

Examination Progressive assessment plus examination.

Content

References

**AVIA110 INTRODUCTORY NAVIGATION 5cp**

Hours 3 Hours per week for one semester.

Examination Progressive assessment based on assignments and tutorials plus a 2 hour final examination.

Content
Introduction to atmospheric pressure, wind, humidity, thermodynamics, cloud, precipitation and icing; Structure of the atmosphere; Introduction to Aviation forecasts and meteorological reports.

Text
P.P.L. Meteorology

**AVIA111 INTRODUCTORY AERODYNAMICS 8cp**

Hours 3 Hours per week for one semester.

Examination Progressive assessment plus examination.

Content
Practical methods of pilot navigation flight planning. The theoretical aspects of navigation; the form of the earth; map projections, scale and scale variation, conformality; navigational astronomy; the vector triangle and its solution by plotting and by computing; flight and navigational instruments, theoretical aspects, accuracy, errors and use.

Text
To be advised
Reference

AVIA113 AIRCRAFT PERFORMANCE AND SYSTEMS 5cp
Hours 3 Hours lectures and 2 Hours tutorial a week for one semester.
Examination Progressive assessment plus a final examination.
Content
Principles of operation of aircraft fuel, hydraulic and electrical systems, undercarriage and flight controls. The application of mechanical linkages, and electrical circuits to these systems. Basic circuit theory.
(b) Aircraft weight and balance, performance and structural weight limitations, determination of take-off and landing weight and centre of gravity, aerodynamic reasons of centre of gravity limitations, use of aircraft loading systems (mathematical and graphical approaches), adjustment of weight and centre of gravity, regulatory requirements.
(c) International Standard Atmosphere, factors affecting aircraft performance, use of performance charts for take-off and landing, limitations and safety considerations, regulations and requirements for Authorised Landing Areas.
Texts
Civil Aviation Regulations CAA.
Civil Aviation Orders 20-99 CAA
Aeronautical Information Publication CAA.

AVIA111 RECIPROCATING ENGINES 5cp
Hours 2 Hours per week for one semester.
Examination Progressive assessment based on assignments plus end of semester examination.
Content
Air standard thermodynamic cycles, two and four stroke cycles, petrol and diesel engines, construction features, induction, lubrication and cooling, engine instrumentation, effect of altitude and mixture on combustion, power output, aircraft engine operation, turbo/superchargers, thermodynamic efficiency, vibrations and balancing.
Text

AVIA116 COMMERCIAL METEOROLOGY 5cp
Prerequisite AVIA109.
Hours 3 Hours per week for one semester.
Examination Progressive assessment based on assignments, tutorials, seminars, and a 2 hour final examination.
Content
Atmospheric pressure; wind, humidity and thermodynamics; cloud, precipitation and icing; orographic effects; thunderstorms; tropical meteorology; synoptic situations and fronts; jet streams. Hazardous weather windshear, microbursts and macrobursts.
Text

AVIA117 NAVIGATION 5cp
Prerequisite AVIA110.
Hours 3 Hours per week for one semester.
Examination Progressive assessment based on assignments, tutorials, and a 2 hour final examination.
Content
Text
To be advised.
Reference

AVIA118 AERODYNAMICS 5cp
Prerequisite AVIA111.
Hours 3 Hours per week for one semester.
Examination Progressive assessment based on laboratory reports and assignments plus a final examination.

AVIA120 AVIATION LAW, COMMERCIAL FLIGHT RULES & PROCEDURES 10cp
Prerequisite AVIA114.
Hours 4 Hours per week for one semester.
Examination Progressive assessment based on assignments and tutorials plus a 2 hour final examination on Part A and a 3 hour final examination on Part B.

AVIA121 AIRCRAFT SYSTEMS AND PROPULSION 5cp
Prerequisite AVIA112.
Hours 3 Hours per week for one semester.
Examination Assessment based on assignments and laboratory reports plus a final examination.

Medicine altitude, atmosphere and respiration; acceleration, vision, hearing, air sickness; health, drugs; first aid, pilot fitness; fatigue; Psychology attention, workload, stress, personality, communications.

O'Haire, D. and Roscoe, S. 1990, Flightdeck Performance — The Human Factor Iowa U.P.

Faculty of Science and Mathematics

Section Five

Aviation Subject Descriptions

**AVIA123 AIRCRAFT PERFORMANCE AND LOADING** 5cp
Prerequisite AVIA113.
Hours 3 Hours per week for one semester.
Examination Progressive assessment plus a final examination.
Content
(a) Mean Aerodynamic Chord; advanced use of
loading charts; adjustment of weight and centre
of gravity.
(b) Multi-engine operations and performance
considerations; use of take-off enroute; and
landing performance charts for single and multi-
engine aircraft, knowledge of the performance
and operation of the Echo MK IV aeroplane.
Texts
Civil Aviation Regulations CAA.
Civil Aviation Orders 20-99 CAA.
Aeronautical Information Publication CAA.
Abridged Performance and Operation Manual for
Echo MK IV.

**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.
Text
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
Radio Navigation Systems and Aids; Radio Navigation
techniques using conventional aids; ADF/NDB, VOR,
DME, ILS, Flight Director, Radar; Principles and errors
of radio and radar aids.
Instrument Flight Procedures; Departure, Approach,
and 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.
References
Heel, S. 1992, Instrument Rating Course, Action
Aviation Supplies.
Aviation Theory Centre.

**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
construction 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.
Text
To be advised.
<table>
<thead>
<tr>
<th>Faculty of Science and Mathematics</th>
<th>Section Five</th>
<th>Aviation Subject Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Examination</strong></td>
<td>Progressive assessment and a 2 hour final examination.</td>
<td></td>
</tr>
<tr>
<td><strong>Content</strong></td>
<td>This course provides the core component of the study of flight planning, bringing together jet aircraft performance; safety requirements; legal requirements; the economics of aircraft operations; the route structure. The requirements for all stages of the flight, (including emergency operations) are considered and evaluated.</td>
<td></td>
</tr>
<tr>
<td><strong>Text</strong></td>
<td>B727 Performance Manual, CAA Canberra.</td>
<td></td>
</tr>
</tbody>
</table>

**AVIA218 ADVANCED AIRCRAFT PERFORMANCE** 5cp

**Prerequisite** AVIA123.

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

**Examination** Progressive assessment plus a final examination.

**Content**
- Application of knowledge and skills gained in principles of flight; engines, systems, and instrumentation; aircraft performance and operations; navigation; meteorology; and flight rules and procedures to the operation of charter flights in multi-engine aeroplanes.

(a) Concepts and considerations which are distinctive to multi-engine flight.

(b) Determining the performance that can be expected following an engine failure and explaining the aerodynamic factors and piloting techniques involved with single-engine flight.

(c) Fuel requirements, fuel planning for holding or alternate requirements, fuel planning for multi-stage flights, finding the minimum or maximum fuel.

(d) Determining the maximum take-off weight, establishing a performance limited or landing weight, finding the maximum payload, picking up/dropping off weight at intermediate landing points.

(e) Weight and Balance, adding weight while keeping the centre of gravity constant, shifting weight to place the C of G on forward or aft limits.

(f) Flight planning and operations requirements, critical point, planning for alternate and/or holding requirements, use of flow charts.

**AVIA221 HUMAN PERFORMANCE IN MULTI-CREW OPERATIONS** 5cp

**Prerequisite** AVIA212.

**Hours** 3 Hours for one semester.

**Examination** Progressive assessment based on seminars, exercises (including demonstrated instruction), assignments and a final examination.

**Content**
- Personality; communications; group processes; leadership; cabin safety.

**Text**

**AVIA222 MANAGEMENT OF AVIATION** 5cp

**Prerequisite** AVIA120.

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

**Examination** Progressive assessment based on seminars, projects, exercises, plus a final examination.

**Content**
- Airworthiness regulatory requirements for the establishment and operation of organisations involved in various aviation activities.

**References**
- Civil Aviation Regulations 80 and 82, 100 - 104 series CAA.
- Civil Aviation Regulations CAA.

**AVIA223 AVIATION COMPUTING AND ELECTRONICS** 5cp

**Prerequisite** AVIA121.

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

**Examination** Progressive assessment plus a final examination.

**Content**
- Amplification and switching circuits using p-n junctions. Boolean logic, logic gates, TTL and CMOS logic devices, multiplexers, comparators, analog-digital converters, computer architecture, interfacing standards. The application of electronic circuits and computers in the control of aircraft systems; an overview of the glass cockpit.
- Transducers; the application of electronic circuits and computers in data acquisition and the control of servo devices.

**References**
### Faculty of Science and Mathematics

#### Section Five

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVIA308</td>
<td>AVIATION INSTRUCTION</td>
<td>10cp</td>
</tr>
<tr>
<td>AVIA310</td>
<td>ADVANCED NAVIGATION</td>
<td>10cp</td>
</tr>
<tr>
<td>AVIA311</td>
<td>ADVANCED AVIATION INSTRUCTION</td>
<td>10cp</td>
</tr>
<tr>
<td>AVIA312</td>
<td>APPLIED AERODYNAMICS</td>
<td>4cp</td>
</tr>
<tr>
<td>AVIA315</td>
<td>ADVANCED AVIATION MANAGEMENT</td>
<td>4cp</td>
</tr>
<tr>
<td>AVIA316</td>
<td>FLIGHT DECK PERFORMANCE</td>
<td>4cp</td>
</tr>
<tr>
<td>AVIA318</td>
<td>AIRCRAFT STABILITY AND CONTROL</td>
<td>4cp</td>
</tr>
<tr>
<td>AVIA319</td>
<td>DIRECTED STUDY</td>
<td>10cp</td>
</tr>
<tr>
<td>AVIA320</td>
<td>AVIATION INSTRUCTION PRACTICUM I</td>
<td>5cp</td>
</tr>
<tr>
<td>AVIA321</td>
<td>AVIATION CLIMATOLOGY</td>
<td>5cp</td>
</tr>
</tbody>
</table>

**Prerequisites and Corequisites:**

- **AVIA308:** 60 credit points AVIA200 level
- **AVIA310:** AVIA209
- **AVIA311:** AVIA306, AVIA308, AVIA310, AVIA311, AVIA316, AVIA318.
- **AVIA312:** AVIA306, AVIA223
- **AVIA315:** AVIA222
- **AVIA316:** AVIA306, AVIA223
- **AVIA318:** AVIA209.
- **AVIA319:** AVIA208.

**Additional Information:**

- **AVIA308:** 4 Hours per week for one semester.
- **AVIA310:** 4 Hours per week for one semester.
- **AVIA311:** 4 Hours per week for one semester.
- **AVIA312:** 3 Hours per week for one semester.
- **AVIA315:** 3 Hours per week for one semester.
- **AVIA316:** 3 Hours per week for one semester.
- **AVIA318:** 2 Hours per week for full year.
- **AVIA319:** 2 Hours per week for one semester.
- **AVIA321:** 2 Hours per week for full year.

**Corequisites:**

- **AVIA308:** At least two of the following AVIA306, AVIA308, AVIA310, AVIA311, AVIA316, AVIA318.
- **AVIA316:** AVIA306, AVIA223.

**Content:**

- **AVIA308:** Progressive assessment based on seminar preparation and presentations, practice teaching, assignments and examination.
- **AVIA310:** Seminar preparation and presentation, practice teaching, assignments and examinations.
- **AVIA311:** Seminar preparation and presentation, practice teaching, assignments and examination.
- **AVIA312:** Seminar preparation and presentation, practice teaching, assignments and examination.
- **AVIA315:** Seminar preparation and presentation, practice teaching, assignments and examination.
- **AVIA316:** Seminar preparation and presentation, practice teaching, assignments and examination.
- **AVIA318:** Seminar preparation and presentation, practice teaching, assignments and examination.
- **AVIA319:** Seminar preparation and presentation, practice teaching, assignments and examination.
- **AVIA321:** Seminar preparation and presentation, practice teaching, assignments and examination.

**References:**

- **AVIA310:** Telfer, R.A. (ed) 1993, Aviation Instruction and Training, Ashgate.
- **AVIA311:** Cole, P & Chan, L. 1989, Teaching Principles and Practice, Prentice Hall.
- **AVIA312:** Aeronautical Engineering, Prentice Hall.
- **AVIA316:** Katz, J. and Plotkin, A. 1990, Low Speed Aerodynamics, McGraw Hill.

**To be advised:**

- **AVIA319:** 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.

**To be advised:**

- **AVIA321:** Seminar preparation and presentation, practice teaching, assignments and examination.

**To be advised:**

- **AVIA320:** Seminar preparation and presentation, practice teaching, assignments and examination.

**To be advised:**

- **AVIA330:** Seminar preparation and presentation, practice teaching, assignments and examination.
A problem-based approach will be used, through small group discussion and team teaching, to examine the teaching practices and problems encountered in flight instruction. Special emphasis will be placed on teaching in a non-traditional and often threatening environment.

**Texts**
- Civil Aviation Authority 1988, *Flight Instructor’s Manual*.

**References**

**AVIA321 AVIATION INSTRUCTION PRACTICUM II** 5cp

**Prerequisites** AVIA308, AVIA320.

**Corequisite** AVIA311

**Hours** 2 Hours per week.

**Examinations** Progressive assessment based on seminars, presentations, and practice teaching.

**Content**
The purpose of the practicum is to enable prospective flight instructors to practice their teaching skills and apply their knowledge of learning and teaching principles in the flight training environment under the supervision of practising flight instructors and university supervisors.

The practicum will offer demonstrations by practising instructors, followed by discussions, and supervised practical teaching experience for the students. It offers practical links for the academic components of the aviation instruction courses and provides the opportunity to integrate the knowledge gained to the aviation instruction context. It will expose student instructors to the variety and complexity of working in the flight training environment and allow them to gain professional experience and development.

**Texts**
- Civil Aviation Authority 1988, *Flight Instructor’s Manual*, CAA.

**Biological Sciences Subject Descriptions**

**BIOLO1 PLANT & ANIMAL BIOLOGY 10cp**

**Prerequisites** Nil — see notes on BIO101 under "Assumed Knowledge for Entry to the Faculty".

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

**Examination** One 3 hour paper.

**Content**
The course is organised into 2 units.

**Unit 1**
- Plant Diversity — Form and Function.

**Topics**
- The Plant Life Cycle - alternation of generations.
- Plant Structure and Function - assimilation, transport and utilization of nutrients, development and developmental control. Plant Phyla - diversity as a consequence of adaptation for survival in a range of environments.

**Unit 2**
- Animal Diversity — Form and Function.

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

**Texts**

**References**

**BIOLO2 CELL BIOLOGY, GENETICS & EVOLUTION 10cp**

**Prerequisite** See notes on BIO101 under "Assumed Knowledge for Entry to the Faculty".

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

**Examination** One 3 hour paper.

**Content**
The course is organised into 3 units.

**Unit 1**
- Cell Biology

**Topics**
- The evolution and functional organization of cells.

**Texts**

**References**

**BIOLO3 BIOCHEMISTRY 10cp**

**Prerequisite** Nil — see notes on BIO101 under "Assumed Knowledge for Entry to the Faculty".

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

**Examination** One 3 hour paper.

**Content**

**Topics**
- Biological molecules - the structure of proteins, carbohydrates and lipids.
- Cell organization - emphasis on organelle ultrastructure and principal function, evolution of cells.
- Biological energy processes - photosynthesis, cellular respiration.
- Genetics and Evolution
- Cell division, Mendelian genetics, Scientific method.
- An Introduction to ecology.

**Texts**

**References**
<table>
<thead>
<tr>
<th>Faculty of Science and Mathematics</th>
<th>Section Five</th>
<th>Biological Sciences Subject Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prerequisites</strong> BIOL101, BIOL102, CHEM101, CHEM102 (in 1994 CHEM101 and CHEM102 may be taken as corequisites)**</td>
<td><strong>BIOL204 CELL AND MOLECULAR BIOLOGY</strong> 10cp</td>
<td></td>
</tr>
<tr>
<td><strong>Hours</strong> 6 Hours per week for one semester.</td>
<td><strong>Prerequisites</strong> BIOL101, BIOL102.</td>
<td>Content</td>
</tr>
<tr>
<td><strong>Examination</strong> One 2 hour paper.</td>
<td><strong>Hours</strong> 6 Hours per week for one semester.</td>
<td><strong>Content</strong></td>
</tr>
<tr>
<td><strong>Content</strong></td>
<td><strong>Examination</strong> One 2 hour paper.</td>
<td>Cellular organisation and inter-relationships. Organelles, their structure &amp; function. Cellular processes.</td>
</tr>
<tr>
<td><strong>Text</strong></td>
<td><strong>Content</strong></td>
<td></td>
</tr>
<tr>
<td><strong>References</strong></td>
<td><strong>Recombinant DNA technology and genetic engineering.</strong></td>
<td>Recombinant DNA technology and genetic engineering.</td>
</tr>
<tr>
<td><strong>Prerequisites</strong> BIOL101, BIOL102.</td>
<td><strong>Hours</strong> 6 Hours per week for one semester.</td>
<td><strong>Hours</strong> 6 Hours per week for one semester.</td>
</tr>
<tr>
<td><strong>Examination</strong> One 2 hour paper.</td>
<td></td>
<td><strong>Examination</strong> One 2 hour paper.</td>
</tr>
<tr>
<td><strong>Content</strong></td>
<td></td>
<td><strong>Content</strong></td>
</tr>
<tr>
<td>Consideration of 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 and the effects of the environment on physiological functions.</td>
<td><strong>Texts</strong></td>
<td>Tamarin, R. 1991, <em>Principles of Genetics</em>, 3rd edn. Wm. C. Brown.</td>
</tr>
<tr>
<td><strong>BIOL206 PLANT PHYSIOLOGY</strong> 10cp</td>
<td><strong>Prerequisites</strong> BIOL101, BIOL102.</td>
<td><strong>Prerequisites</strong> BIOL101, BIOL102.</td>
</tr>
<tr>
<td><strong>Hours</strong> 6 Hours per week for one semester.</td>
<td><strong>Hours</strong> 6 Hours per week for one semester.</td>
<td><strong>Hours</strong> 6 Hours per week for one semester.</td>
</tr>
<tr>
<td><strong>Examination</strong> One 2 hour paper.</td>
<td><strong>Examination</strong> One 2 hour paper.</td>
<td><strong>Examination</strong> One 2 hour paper.</td>
</tr>
<tr>
<td><strong>Content</strong></td>
<td></td>
<td><strong>Content</strong></td>
</tr>
<tr>
<td>Fundamental processes peculiar to plant cells are examined. These include cell water relations, membrane transport of solutes, fixation of atmospheric nitrogen, and photosynthesis. Cellular regulation of the processes is emphasized.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>References</strong></td>
<td></td>
<td><strong>References</strong></td>
</tr>
<tr>
<td><strong>BIOL207 ECOLOGY</strong> 10cp</td>
<td><strong>Prerequisites</strong> BIOL101, BIOL102.</td>
<td><strong>Prerequisites</strong> BIOL101, BIOL102.</td>
</tr>
<tr>
<td><strong>Hours</strong> Average of 6 Hours per week for one semester, plus a two-day field excursion in July.</td>
<td><strong>Hours</strong> Average of 6 Hours per week for one semester, plus a two-day field excursion in July.</td>
<td><strong>Hours</strong> Average of 6 Hours per week for one semester, plus a two-day field excursion in July.</td>
</tr>
<tr>
<td><strong>Examination</strong> One 2 hour paper.</td>
<td><strong>Examination</strong> One 2 hour paper.</td>
<td><strong>Examination</strong> One 2 hour paper.</td>
</tr>
<tr>
<td><strong>Content</strong></td>
<td></td>
<td><strong>Content</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BIOL208 REPRODUCTIVE PHYSIOLOGY</strong> 10cp</td>
<td><strong>Prerequisites</strong> Two BIOL200.</td>
<td><strong>Prerequisites</strong> Two BIOL200.</td>
</tr>
<tr>
<td><strong>Hours</strong> 6 Hours per week for one semester.</td>
<td><strong>Hours</strong> 6 Hours per week for one semester.</td>
<td><strong>Hours</strong> 6 Hours per week for one semester.</td>
</tr>
<tr>
<td><strong>Examination</strong> One 2 hour paper.</td>
<td><strong>Examination</strong> One 2 hour paper.</td>
<td><strong>Examination</strong> One 2 hour paper.</td>
</tr>
<tr>
<td><strong>Content</strong></td>
<td></td>
<td><strong>Content</strong></td>
</tr>
<tr>
<td>Biology of reproduction with particular emphasis on sexual differentiation andgamete physiology. Particular emphasis is given to physiological adaptations to the environment.</td>
<td></td>
<td>Biology of reproduction with particular emphasis on sexual differentiation and gamete physiology. Particular emphasis is given to physiological adaptations to the environment.</td>
</tr>
</tbody>
</table>
B10L303 ENVIRONMENTAL PLANT PHYSIOLOGY 10cp
Not offered in 1994

B10L305 IMMUNOLOGY 10cp
Prerequisites Two B10L200.
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 phylogeny, reproductive and tumour immunology.

Texts

B10L309 MOLECULAR BIOLOGY 10cp
Prerequisites B10L201 and B10L205.
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. The generation of immunological specificity. The control of cell proliferation. The origins and genetic basis of cancer. The origins of life.

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

B10L310 MICROBIOLOGY 10cp
Prerequisites B10L201 and one other B10L200 [B10L204 advisable].
Hours 6 Hours per week for one semester.
Examination One 2 hour paper.
Content Bacteria, fungi, viruses, mycoplasma, protozoa and algae; comparative biochemistry; nutrient cycles; pathogenicity (interactions of agricultural and human significance); industrial microbiology/biotechnology.

Text

References
Cano, R.J. & Colome, J.S. 1986, Microbiology, West.

B10L311 ENVIRONMENTAL BIOLOGY 10cp
Prerequisites B10L207
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.

References

Section A Topics include
Island ecology - the reduction in species diversity of communities and genetic variability within populations. Evolutionary prospects of island populations. Nature Reserves as ecological islands.
Community change - succession, eutrophication and fire in the Australian environment.
Evaluation of pest control methods (including biological control) on environmental and economic grounds as well as their short and long-term effectiveness.
Under population effects, particularly the relevance of threshold levels for endangered species.

Section B A selection of topics will be taken from:
The threat of modern agricultural practices to genetic diversity. The potential of microbiology for waste management. Methods for detecting biological pollution; The principles of conservation: Environmental animal and plant physiology studies; The interaction between vegetation, water-table, irrigation and soil salt levels; The commercial harvesting of natural populations - fish, whale and kangaroo models; Evolution of plant-herbivore and predator-prey systems and other interspecific interactions - implications for control programs.

Environmental consequences of the release of genetically engineered species.
The choice of topics in Section B should be determined in consultation with the Head of Department.

Text

References
Mathews, C.K. 1990, Biochemistry, Benjamin/Cummings, Publishing Co. & Van Holde, K.E.

B10L312 ANIMAL DEVELOPMENT 10cp
The subject replaces B10L301 Cell Processes. Students who have successfully completed B10L301 cannot enrol in this subject. Only one of B10L301 and B10L312 can be credited towards a degree.

Prerequisites Two B10L200.

Hours 6 Hours per week for one semester.
Examination One 2 hour paper.
Content The co-ordinated development of the structural organization and functional capacity of plants from their meristems. The role of environmental....
parameters, plant growth regulators and selective gene expression in regulation of developmental patterns.

References
Esau, K. 1960, Anatomy of Seed Plants, Wiley.

BIOL315 PLANT MOLECULAR BIOLOGY 10cp
This subject replaces BIOL207 Molecular Biology Of Plant Development. Students who have successfully completed BIOL207 cannot enrol in this subject. Only one of BIOL207 and BIOL315 can be credited towards a degree.
Prerequisites Two BIOL200 including one of BIOL204, BIOL205, BIOL206 or BIOL208
Hours 6 hours per week for one semester
Examination One 2-hour paper

Content
Plant Molecular Biology emphasizes 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.


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.


or

(Recommended for students proceeding to Level 300 subjects)


**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; adsorption isotherms; Langmuir model; types of isotherms; determination of surface area of adsorbents (BET); applications of adsorptions.

Atomic & Molecular Spectroscopy — structure of free atom; Bohr model; electronic structure of diatomic molecules; potential energy curves; rotational spectroscopy; vibrational spectroscopy; vibration-rotation spectroscopy.

Text

**CHEM251 APPLIED CHEMISTRY 10cp**

Not offered in 1994.

**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 subject is an introduction to environmental chemistry, focusing 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 work is a prerequisite for a pass in the subject.

**Content**
Principles of selected instrumental techniques (e.g. emission spectroscopy and electro-analytical procedures). Solvent extraction; chromatography (theory and techniques).

Text

**CHEM312 CHEMOMETRICS 6cp**

**Prerequisites** CHEM211, MATH1102 (or MATH1112).

**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 in the laboratory/assignment work is a prerequisite for a pass in the subject.

**Content**
Use of computers in chemistry to improve the performance of procedures using optimisation methods and to enhance the analysis of measurements using linear and non-linear regression and factor analysis. Theory is exemplified with typical everyday problems.

Text
No formal text; material to be advised.

**CHEM313 INDUSTRIAL CHEMICAL ANALYSIS 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**
A survey of selected techniques for specialised 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 robots; X-ray/electron microprobe analysis; radiothermal analysis; kinetic and enzymatic methods of analysis.

Text
No formal text; material to be advised.

**CHEM314 TRACE ANALYSIS IN ENVIRONMENTAL SYSTEMS 5cp**

Not available in 1994.

**CHEM321 INORGANIC CHEMISTRY 10cp**

**Prerequisite** CHEM221.

**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 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.

Metal Chemistry — transition elements and coordination chemistry; isomerism, f-block elements, inorganic reaction mechanisms, electron transfer and voltammetry.

Organometallic Chemistry — main group and transition metal; structure and bonding; cyclic donors; carbonyl and olefin complexes; applications to industrial catalysis.

Inorganic Spectroscopy — electronic spectroscopy; vibrational spectroscopy; nuclear magnetic
CHEM322 METAL-METAL BONDING AND CLUSTER CHEMISTRY 5cp
Prerequisite CHEM221.
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 nucleity clusters; clusters and catalysts; 21stl species.
Text No formal text; material to be advised.

CHEM332 BIOINORGANIC COORDINATION CHEMISTRY 5cp
Prerequisite CHEM221.
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 Synthesis of complexes of multidentate and macrocyclic ligands; metal-directed reactions and stereochemistry; metalloproteins and metalloenzymes; biocatalysis and redox proteins.
Text No formal text; material to be advised.

CHEM331 ORGANIC CHEMISTRY 10cp
Prerequisite CHEM231.
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 2 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 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 chemistry and stereo-selectivity and mechanisms of these reactions. Systematic approach to synthesis - the disconnection/synthesis method. Examples of syntheses and discussion of some literature classics.
Text As for CHEM231.

CHEM333 HETEROCYCLIC CHEMISTRY 5cp
Not available in 1994.

CHEM333 ORGANIC REACTION MECHANISM 5cp
Prerequisite CHEM231.
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 The course will cover a selection of topics such as neighbouring group participation, oxidation mechanisms, azido-benzene pyrolysis, and the identification of reactive intermediates. The use of these reactive intermediates in organic synthesis will be emphasised.
Text No formal text; material to be advised.

CHEM334 IDENTIFICATION OF NATURAL COMPOUNDS 5cp
Prerequisite CHEM231.
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 2 hour paper. The laboratory 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 explores several case studies from the chemical literature in which the isolation, purification and identification of bacterial, fungal, plant or marine secondary metabolites are reported. Topics such as chromatographic methods, spectroscopy, simple derivatisation procedures and biosynthesis will be discussed in the context of the identification of small organic compounds, for example, terpenes, steroids and oligopeptides.
Text No formal text; material to be advised.

CHEM335 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 1 hour paper. The laboratory/ workshop work will count for 20% of the final assessment but a pass in the laboratory/workshop work is a prerequisite for a pass in the subject.
Content The course will cover applications of ultraviolet/ visible, infrared, "H and "C nuclear magnetic resonance and mass spectrometry in the structural elucidation of organic compounds.

CHEM341 PHYSICAL CHEMISTRY 10cp
Prerequisites CHEM241, MATH1102 (or MATH1112).
Hours 2 hours of lectures, 1 hour of tutorials/ workshops and 3 hours of laboratory work/ assignments each week for one semester.
Examination One 1 hour paper. The laboratory/ assignment 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 Topics such as electronic structure of solids; semiconductor/ solution interfaces; photoselection and charge transfer at semiconductor solution interfaces; electrochemical photovoltaic cells and electrochemical photovoltaic cells.
Text No formal text; material to be advised.

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 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 Electrons - the metal solution interface and structure of the double layer, rates of charge transfer reactions; determination of charge transfer reaction mechanisms; electrochemical techniques; introduction to corrosion.

Molecular and Electronic Structure - the use of quantum mechanics and molecular group theory in chemistry; matter waves; free electron and particle in a box; atomic and molecular Schrodinger equation and solutions thereof; symmetry elements and point groups of molecules; symmetry adapted linear combination of atomic orbitals; Hückel molecular orbital theory.
Text No formal text; material to be advised.
### Environmental Science Subject Descriptions

#### EMGT102 SOCIAL DEVELOPMENT AND THE ENVIRONMENT 10cp

**Prerequisite** Nil

**Hours** 2 hours face-to-face, 6 hours directed study per week.

**Examination** One written exam, one essay and tutorial assignment.

**Content**

The idea of "Green History", the distinction between development and growth, the concepts of development and underdevelopment, western versus 'native' perspectives on development, Australian aboriginals and their impact on the environment, European perceptions of Australia, impact of European development of Australia on native Australians and the environment, Indigenous and European archaeology, Heritage values.

**Text**

No set text, a complete list of references will be provided at the commencement of the subject. However, students might usefully consult:


#### ENV102 ENVIRONMENTAL ISSUES AND PROBLEMS 10cp

**Prerequisite** Nil

**Hours** 5 hours per week for one semester.

**Examination** Progressive assessment.

**Content**

A problem solving approach to regional issues which emphasises integration of the basic sciences. 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 urbanisation on the ecosystems associated with Lake Macquarie and selected wetlands areas.

**Text**

To be advised.

**References**

- Various Environmental Impact Statements
### 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 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 climatic data and maps, and the use of topographic maps and aerial photographs for landform analysis.

**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 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 and its presentation by thematic maps in human geography.

**Text**


**GEOG201 METHODS IN PHYSICAL GEOGRAPHY** 10cp

**Prerequisites** GEOG101.

**Hours** 4 hours per week for one semester.

**Examination** Progressive assessment.

**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

**Prerequisites** GEOG102.

**Hours** 4 hours per week for one semester.

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

**Content**

Introductory methods appropriate to Human Geography descriptive and inferential statistics will be emphasised and there will be an introduction to computing, survey analysis and research design.

**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. Definition and scope of the subject is examined and its interdisciplinary nature emphasised. Ways of describing and analysing the range of organisms in space and time are explored. Some emphasis is placed on rainforest for the illustration of principles and for the gaining of field experience.

An introduction to climatology on a synoptic and meso-scale including radiation and heat budgets; precipitation processes; general circulation; agricultural climatology; applied climatology.
Texts


Reference


GEOG204 GEOMORPHOLOGY OF AUSTRALIA 10cp

Prerequisites 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.

GEOG207 POPULATION, CULTURE AND RESOURCES 10cp

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.

GEOG208 CITIES AND REGIONS 10cp

Prerequisites 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.

GEOG304 THE BIOSPHERE AND CONSERVATION 10cp

Prerequisites GEOG201 plus 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

The course examines 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.

GEOG301 ADVANCED METHODS IN PHYSICAL GEOGRAPHY 10cp

Prerequisites GEOG201 plus either GEOG203 or GEOG204.

This course consists of a 5-day field excursion (i.e. 40 hours of the 56-hour course) together with 2 hours per week for 8 weeks.

Examination Progressive assessment.

Content

The course includes a field excursion to Sydney's air pollution problems. Emissions, sources, air pollution monitoring, meteorology and possible preventative measures will be assessed. The remaining time will be devoted to methodology and analysis related to data collected on the field trip.

NB: The field trip will take place prior to the first 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 investigate a contemporary human geography issue. Methods include survey design, questionnaire construction, social analysis, qualitative field methods, computer-aided mapping and geographic information systems.

NB: The field trip may be scheduled prior to the beginning of second semester.

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

This course 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.

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

This course examines 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.

Biogeography: Emphasis on plant geography, with examination of both the ecological and historical aspects of the subject. A small herbarium collection is required of each student.

Biological Conservation: An introduction to the subject, in which the importance of a genetically-based approach is emphasised.

Soils: Processes of soil erosion, soil conservation issues and methods.

Texts

Houghton, P.D. & Charman, P.E.V. 1986, Glossary of Terms used in Soil Conservation, Soil Conservation Service of N.S.W.


Williams, J.B. and Harden, G.J. 1980, Rainforest Climbing Plants, University of New England.

Reference

Kellman, M.C. 1980, Plant Geography, 2nd edn, Methuen.

GEOG307 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. A variety of social 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

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 will normally be given by a visiting lecturer - the subject to be advised.

GEOG311 HYDROLOGY 10cp
Prerequisites GEOG201 and GEOG203.
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
This 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 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
The course examines contemporary changes in production, distribution and consumption, by referring to agriculture, manufacturing and services. It focuses on the geography of employment and industrial change; and the evolution of food supply systems.

Topics include: the territorial organisation of production, the role of large corporations, technological change, divisions of labour and the changing nature of work, and the changing role of the state.

Case studies of impacts of economic change on people and communities are drawn from the Asia-Pacific basin and from site visits.

Texts
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOL216</td>
<td>GEOLOGY FIELD COURSE 216 5cp</td>
<td></td>
<td>GEOL215</td>
<td>Petrogenesis of metamorphic 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 intragranular features.</td>
</tr>
<tr>
<td>GEOL311</td>
<td>IGNEOUS PETROLOGY AND CRUSTAL EVOLUTION 10cp</td>
<td>GEOL312</td>
<td>Not to count for credit with GEOL303, GEOL306</td>
<td>Structural Geology: Analysis of multiply-deformed terrains; ductile shear zones, kinematic indicators and analysis, strike slip faulting, thrust and extensional tectonics.</td>
</tr>
<tr>
<td>GEOL14</td>
<td>STRATIGRAPHIC METHODS 10cp</td>
<td>GEOL13</td>
<td>Not to count for credit with GEOL304, GEOL305</td>
<td>Stratigraphic Methods: Stratigraphic nomenclature; biostratigraphic zones; factors in litostratigraphy; stratigraphic breaks; stratigraphic facies changes; catastrophic stratigraphy versus uniformitarianism; correlation; stratigraphic palaeontology; Types of stratigraphic maps and sections; numerical analysis of data strings; numerical map analysis.</td>
</tr>
<tr>
<td>GEOL15</td>
<td>SEDIMENTOLOGY 10cp</td>
<td>GEOL12, GEOL13</td>
<td>Not to count for credit with GEOL305</td>
<td>Sedimentology: 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.</td>
</tr>
<tr>
<td>GEOL21</td>
<td>GEOLOGY OF FUELS 10cp</td>
<td>GEOL213</td>
<td>Not to count for credit with GEOL305</td>
<td>Coal Geology: A course dealing with coal formation, depositional and tectonic environments and peat mires, coal exploration and utilisation.</td>
</tr>
</tbody>
</table>
GEOL30 GEOLGY OF QUATERNARY ENVIMONS 10cp

Prerequisites GEOL213 or GEOG204

Hours 6 hours per week for one semester

Examination One 3 hour paper, class assignments

Content Topics covered include an overview of the general characteristics of the Pleistocene and Holocene, oceanic and terrestrial paleoclimatic records, the fossil record and Pleistocene faunal extinctions. Quaternary dating methods, sea-level change and coastal evolution, glaciation, aridity, analysis of Quaternary sediments and stratigraphic nomenclature.

Texts Consult lecturers concerned.

Mathematics Subject Descriptions

LEVEL 100 MATHEMATICS SEMESTER SUBJECTS

The usual route for study of Mathematics beyond first year – for example, to obtain a "Major in Mathematics" starts with MATH1102 in first semester, followed by MATH103 in second semester. However, entry at this point requires an adequate level of knowledge and skill. The minimum level is a mark of at least 120 out of 150 in 3-unit Mathematics at the New South Wales H.S.C. examination. Any student with less than this level of knowledge or skill can pursue MATH111, followed by MATH112. This combination allows entry to seven of the seventeen level-200 subjects in Mathematics. Such a student could take MATH103 in a later year to meet the prerequisites for further mathematics subjects.

Note: MATH111 is not appropriate for a student who has performed substantially above the minimum level for entry to MATH102/103.

MATH111 MATHEMATICS 111 10cp

Prerequisites Either MATH11 or MATH101.

Not to count for credit with MATH102.

Hours 4 lecture hours and 2 tutorial hours per week for one semester. The subject is repeated in each semester.

Examination One 3 hour paper plus progressive assessment.


Texts University of Newcastle Tutorial Notes for MATH11 2014.


MATH102 MATHEMATICS 102 10cp

Prerequisites Either MATH11 or MATH101.

Not to count for credit with MATH102.

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

Examination One 3 hour paper.

MATH202 PARTIAL DIFFERENTIAL EQUATIONS 1 5cp
Prerequisite MATH112. Corequisite MATH203.
Hours 2 hours per week for one semester.
Examination One 2 hour paper.
Content
Text
University of Newcastle, Mathematics II Tutorial Notes (1994).
References

MATH203 ORDINARY DIFFERENTIAL EQUATIONS 5cp
Prerequisite Both MATH111 and MATH112 or both MATH102 and MATH103, or MATH102 and Permission of the Head of Department.
Hours 2 hours per week for one semester.
Examination One 2 hour paper.
Content
Linear differential equations with constant coefficients, Linear differential equations — general case, Series solutions — special functions, Laplace transforms, Applications.
Text
University of Newcastle Mathematics II Tutorial Notes (1994).

References
Hochstadt, H. Differential Equations, Dover.
Martin, W.T. & Reissner, Elementary Differential Equations, Dover.

MATH103 MATHEMATICS 103 10cp
Prerequisites MATH102 or (MATH111 and MATH112) or permission of H.O.D. of Mathematics.
Hours 4 lecture hours and 2 tutorial hours per week for one semester.
Examination One 3 hour paper.
Content
Text
University of Newcastle Tutorial notes for MATH103 (1994).
Advisory Text
References
Binmore, K.G. 1985, Mathematical Analysis, CUP.
Brisley, W., Notes for Linear Algebra, Lecture notes in Mathematics, University of Newcastle, No.5.
### Mathematics

<table>
<thead>
<tr>
<th>Subject Description</th>
<th>Faculty of Science and Mathematics</th>
<th>Section Five</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH205 ANALYSIS OF METRIC SPACES</td>
<td>5cp</td>
<td>Wadsworth-Brooks.</td>
</tr>
<tr>
<td>Prerequisite MATH204.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hours 2 hours per week for one semester.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Examination One 2 hour paper.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Content</td>
<td></td>
<td>Study in an axiomatic way of the analysis of more abstract spaces: metric and normed linear spaces. Convergence of sequences and series in R^n with Euclidean and other norms. Convergence of sequences and series in function spaces with uniform and integral norms, the three fundamental theorems on uniform convergence involving continuity, integration and differentiation and application to power series. Completeness, closedness and density in metric spaces; Banach Fixed Point Theorem and its application to functions on the real line and to the solution of integral equations. Local and global continuity of mappings on metric spaces and topological characterisations. Sequential compactness and application in approximation theory. Text</td>
</tr>
<tr>
<td>References</td>
<td></td>
<td>Giles, J.R. 1988, Introduction to the Analysis of Metric Spaces, CUP.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Giles, J.R., Real Analysis: An Introductory Course (Lecture Notes in Mathematics, Univ. Newcastle, No.6).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Goldberg, R.R.1964, Methods of Real Analysis, Ginn Blaisdell.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>White, A.J. 1968, Real Analysis, Addison-Wesley.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Corequisite MATH1201.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hours 2 hours per week for one semester.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Examination One 2 hour paper.</td>
</tr>
<tr>
<td>MATH206 COMPLEX ANALYSIS 1</td>
<td>5cp</td>
<td>Holt, Rinehard and Winston.</td>
</tr>
<tr>
<td>Prerequisite Both MATH111 and MATH112 or both MATH102 and MATH103, or MATH102 and Permission of the Head of Department.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hours 2 hours per week for one semester.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Examination One 2 hour paper.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Content</td>
<td></td>
<td>Taylor and Laurent power series expansions, meromorphic functions, analytic continuation. Residue theory, singular points, evaluation of some real integrals and power series, the Argument Principle and Rouche's Theorem. Conformal mapping and applications. Harmonic functions, Laplace's equation.</td>
</tr>
<tr>
<td>Hours 2 hours per week for one semester.</td>
<td></td>
<td>Pennisi, L.L. 1963, Elements of Complex Variables, Holt, Rinehard and Winston.</td>
</tr>
<tr>
<td>Content</td>
<td></td>
<td>Books related to algebraic structures. Groups, rings, fields, polynomials over fields. Applications.</td>
</tr>
<tr>
<td>Prerequisite (MATH102 and MATH103) or (MATH111 and MATH112 and MATH103).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hours 2 hours per week for one semester.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Examination One 2 hour paper.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Content</td>
<td></td>
<td>An elementary approach, using models, touching Euclidean plane geometry, Hyperbolic plane geometry, Projective geometry, and their relationship to one another.</td>
</tr>
<tr>
<td>Text</td>
<td></td>
<td>Notes for Geometry, Mathematics Department[1994]</td>
</tr>
<tr>
<td>Prerequisite MATH102 or MATH103 or (MATH111 and MATH112).</td>
<td></td>
<td>MATH211 GROUP THEORY</td>
</tr>
<tr>
<td>Hours 2 hours per week for one semester.</td>
<td></td>
<td>Prerequisites MATH102 and MATH1103 or (MATH111 and MATH112 and MATH103).</td>
</tr>
<tr>
<td>Examination One 2 hour paper.</td>
<td></td>
<td>Hours 2 hours per week for one semester.</td>
</tr>
<tr>
<td>Content</td>
<td></td>
<td>Groups, subgroups, isomorphism. Permutation groups, groups of linear transformations and matrices, isometries, symmetry groups of regular polygons and polyhedra. Cosets, Lagrange's theorem, normal subgroups, isomorphism theorems.</td>
</tr>
<tr>
<td>MATH212 DISCRETE MATHEMATICS</td>
<td>5cp</td>
<td>Weyl, H. 1952, Symmetry, Princeton.</td>
</tr>
<tr>
<td>Prerequisite MATH102 or MATH103 or (MATH111 and MATH112).</td>
<td></td>
<td>Hours 2 hours per week for one semester.</td>
</tr>
<tr>
<td>Examination One 2 hour paper.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Content</td>
<td></td>
<td>An introduction to various aspects of discrete mathematics: Graphs, set theory, relations and functions, logic, counting and recurrence equations.</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
Clements, R.R. 1989, Mathematical Modelling, CUP.

MATH214 MECHANICS 5cp
Prerequisites (MATH102 and MATH103) or (MATH111 and MATH112 and MATH103).
Hours 2 hours per week for one semester.
Examination One 2 hour paper.

Content

References
(See also references for MATH 201, 202, 203).

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 involving 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.

The course concentrates on aspects of discrete mathematics which have been successfully applied to problems in a diversity of areas, including industry, commerce and defence. These include such topics as network analysis and linear programming.

References

MATH216 NUMERICAL ANALYSIS 5cp
Prerequisites (MATH102 and MATH103) or (MATH111 and MATH112) or (MATH111 and MATH112 and COMP101).
Hours 2 hours per week for one semester.
Examination One 2 hour paper.

Content

References
(See also references for MATH 201, 202, 203).

MATH217 LINEAR ALGEBRA 1 5cp
Prerequisite (MATH102 and MATH103) or (MATH111 and MATH112 and MATH113).
Not to count for credit with MATH218.
Hours 2 hours per week for one semester.
Examination One 2 hour paper.

Content

References
Roman, S. 1985, An Introduction to Linear Algebra, Saunders.

MATH218 LINEAR ALGEBRA 2 5cp
Prerequisite (MATH102 and MATH103) or (MATH111 and MATH112 and MATH103).
Not to count for credit with MATH217.
Hours 2 hours per week for one semester.
Examination One 2 hour paper.

Content

References
Bloom, D.M. 1979, Linear Algebra and Geometry, Cambridge.
University of Newcastle Computing Centre, Handbook for VAX/VMS.
University of Newcastle Computing Centre, VAX-11 Fortran.

MATH218 Lecture Notes and Exercises (1994)

References
Bloom, D.M. 1979, Linear Algebra and Geometry, Cambridge.
# Mathematics

**MATH201**
**Logic and Set Theory**

**Prerequisites:** 20 credits points from 200 level Mathematics, including at least one of MATH1204, 209, 211, 212, 218.

**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.
- Set Theory: Elementary concepts, relations and functions, Partially and totally ordered sets, Similarity and equivalence, Axiom of choice, Zermelo’s postulate, Well-ordering theorem and Zorn’s Lemma.
- Cardinality, Cantor’s theorem, Schrëder-Bernstein theorem.

**References**

**MATH202**
**General Tensors and Relativity**

**Prerequisites:** MATH1201 and MATH1218

**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**

---

**MATH205**
**Measure Theory and Integration**

**Prerequisites:** MATH205.

**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.
- Algebras of sets, Borel sets. Measures, outer measures, measurable sets, extension of measures.

References

MATH312 ALGEBRA 10cp
Not offered in 2004
MATH313 NUMERICAL ANALYSIS (THEORY) 10cp
Prerequisites MAT1201, MAT1203, MAT1204 and MATH218. Programming ability (high-level language) is assumed.

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).

Solution of linear systems of algebraic equations by direct and linear iterative methods; particular types of errors on the numerical result, to the general theory of convergence of the latter class of methods and to the concept of "condition" of a system. Solution by both one step and multistep methods of initial value problems involving ordinary differential equations. Investigation of stability of linear marching schemes. Boundary value problems. Finite-difference (and finite-element) methods of solution of partial differential equations. If time permits, other numerical analysis problems such as integration, solution of non-linear equations etc. will be treated.

Text

References


MATH314 OPTIMIZATION 10cp
Prerequisites MAT1201 and MAT2128
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).

Many situations in Economics, Engineering, Experimental and Pure Science are reducible to questions of Optimization. The course is introduced by considering some simple examples of this. The basic analysis and theory of convex sets and convex functions underlying optimization are then developed. The theory of linear programming, including Bland's anticycling rule and duality, is examined. Constrained nonlinear optimization in both the convex and the smooth case are developed from a common separation argument. Ekeland's variational principle, descent methods and the one dimensional Fibonacci search for unconstrained problems form the final section of the course.

Text
University of Newcastle 1990, Lecture Notes, Optimization.

References
Holmes, R.B. 1972, A Course on Optimization and Best Approximation, Springer.
Luenberger, D.G. 1989, Optimization by Vector Space Methods, Wiley.

MATH315 MATHEMATICAL BIOLOGY 10cp
The use of computers is an integral part of this subject.
Prerequisites MAT1201, MAT203 and MATH213.
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).

This subject will show the use of mathematical models to enhance the understanding of certain biological phenomena. A number of biological situations will be investigated and students will be expected to use both analytical and computational techniques to obtain results which can be compared with experimental findings.

References
Murray, J.D. 1989, Mathematical Biology, Springer.

MATH316 INDUSTRIAL MODELLING 10cp
Prerequisites MAT1201, MAT1202, MATH203, MATH213, MATH216 and permission of the Head of Department. Programming ability (high level language) is assumed.

Hours Normally 3 hours per week for one semester.
Examination Depending on course content either one 2 hour paper or one paper of less than 2 hours duration plus project.
Content (An essay: see note at the end of the listing for 300 level subjects).

Several "industrial" models will be examined, each commencing with the problem in non-rigorous verbal form, proceeding to a mathematical formulation, solving the latter and terminating with a discussion of the 'industrial' interpretation of the mathematical results. Here, 'industrial' is meant in the widest possible sense. Models may be taken from some or all of the following industries: finance, commerce, manufacturing, mining, exploration, defence, scientific, travel and service.

At the same time small groupings of students will be involved in either a journal-based or an industry-based project. Each group will present a written report on its project, and probably a seminar too.

The following reference list will be supplemented by other materials (e.g. journal references) as required.

References
## Subject Descriptions

### MAQM214 QUANTITATIVE METHODS 10cp

**Prerequisites** 30 credit points from 200 level Mathematics.

**Hours** 4 hours per week for a year.

**Content**
- 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.

### MAQM135 MATHEMATICS IA 20cp

**Hours** 4 hours per week for a year.

**Content**
- Differential and integral calculus of functions of a single variable; Applications of Calculus including mechanics.

### MAQM136 MATHEMATICS IB 20cp

**Hours** 4 hours per week for a year.

**Content**

### MAQM235 MATHEMATICS IIA 20cp

**Prerequisite** MAQM135.

**Hours** 4 hours per week for a year.

**Content**
- Calculus of several variables, vector calculus. Taylor and Fourier series. An analysis of real numbers, sequences, series and functions.

### MAQM236 MATHEMATICS IIB 10cp

**Hours** 2 hours per week for a year.

**Content**
- 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.

### MAQM237 MATHEMATICS IIC 10cp

**Hours** 2 hours per week for a year.

**Content**
- 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.

### MAQM337 MATHEMATICS IIB 15cp

**Hours** 3 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.

### MAQM338 MATHEMATICS IIC 15cp

**Hours** 3 hours per week for a year.

**Content**
- Probability distributions, sampling distributions, hypothesis testing. Topics in operations research such as linear programming, project scheduling, job sequencing, queuing theory, dynamic programming and decision theory. Computer applications to the above topics and to development in computer aided learning.

### MAQM435 MATHEMATICS IVA 10cp

**Available only to Bachelor of Education students.**

**Hours** 2 hours per week for a year.

**Content**
- Combinatorics, block design, finite geometrics, latin squares, magic squares and Hadamard matrices. Groups, rings, ideals, integral domains and fields.

### MAQM438 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.
Available only to Bachelor of Education students.

**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.

**Educational Subject Descriptions**

**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.

**MAQM145 FOUNDATION STUDIES IN ELEMENTARY MATHEMATICS** 16cp

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.

**MAQM147 MATHEMATICS IEC** 16cp

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 I** 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.

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

**Content**

Basic Mechanics - Motion in one and two dimensions. Laws of motion, objects in equilibrium, work and energy, momentum and collisions.

Electricity - Electric forces and fields, electric energy and capacitance, current and resistance, DC circuits.

Rotational Mechanics - Circular motion and gravity, rotational dynamics, derivation of moment of inertia, rotational kinetic energy.

Simple Harmonic Motion & Waves - Vibration & Waves, sound, simple harmonic oscillator, energy and simple harmonic motion, simple pendulum, classical wave equation, superposition principle, waves on strings, standing waves, beats.

There will also be 3 hrs/week of laboratory and tutorial work.

**Text**


**Reference**


**PHYS112 PHYSICS II** 10cp

Not to count for credit with PHYS114.

**Assumed knowledge** Pass in PHYS111 or HSC 2 unit Mathematics with a result in top 30% of candidature or equivalent.

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

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

**Content**

Mechanics - Introduction. What the subject of Physics involves, its aims and relationship to other...


Thermal Physics - Definitions of internal energy, heat, work, thermal equilibrium, and temperature. The first law of thermodynamics. The first law of thermodynamics. The constant volume gas thermometer. The triple point cell. The Ideal Gas Scale. The International Practical Temperature Scale. Practical thermometers.


The equation of state of an ideal gas. Isothermal, isobaric and adiabatic processes and the equations relating P and V for each. Work done when a gas changes volume. Reversible and irreversible processes. The Carnot cycle. The PV diagram for the Carnot cycle using an ideal gas as the working substance. The conversion of heat into work. The efficiency of a heat engine.

Text

To be advised. See PHYS113 Notice Board.

PHYS114 PHYSICS 114 10cp

Not to count for credit with PHYS112.

Assumed knowledge Pass in PHYS113. Students obtaining a distinction or better in PHYS111 can gain entry into PHYS114 at the discretion of the 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


Natural Radioactivity. Historical perspective.

Early observations, alpha, beta and gamma rays minus scattering. Alpha scattering and the Rutherford nucleus atom (qualitative only).


Thermal Physics - Introductory kinetic theory. The relationship between internal energy and temperature for ideal gases.

The second law of thermodynamics. Entropy. The thermodynamic temperature scale.

Text

To be advised. See the PHYS114 Notice Board.

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 2 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 2 hour paper at end of semester.

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

**References**
- See the Physics 200 Notice Board.

**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.

**References**
- See the Physics 200 Notice Board.

**PHYS205 SCIENTIFIC MEASUREMENT PRINCIPLES, PROCESSES AND APPLICATIONS** 10cp

**Prerequisite** PHYS112.

**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**

**References**
- See the Physics 200 Notice Board.

---

**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(s) and assessment equivalent to 3 hours examination.

**Content**
- Mathematical methods. Quantum mechanics.

**Texts**
- Refer to the Physics 300 Notice Board.

**PHYS302 ELECTROMAGNETISM AND ELECTRONICS** 10cp

**Prerequisites** PHYS201 and MATH201.

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

**Examination** Examination(s) and assessment equivalent to 3 hours examination.

**Content**
- Electromagnetism. Electrons.

**Texts**
- Refer to the Physics 300 Notice Board.

**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** Examination(s) and assessment equivalent to 3 hours examination.

**Content**
- Atomic and molecular physics. Solid state physics.

**Texts**
- Refer to the Physics 300 notice board.

**PHYS304 STATISTICAL PHYSICS AND RELATIVITY** 10cp

**Prerequisites** PHYS202 and MATH201.

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

**Examination** Examination(s) and assessment equivalent to 3 hours examination.

**Content**
- Statistical physics. Relativity.

**Texts**
- Refer to the Physics 300 Notice Board.

---

**PSYC101 PSYCHOLOGY INTRODUCTION I** 10cp

**Prerequisite** A Tertiary Entrance Rank, or equivalent, equal to or greater than the TER required for admission to enter either the Bachelor of Science (Psychology) or the Bachelor of Arts (Psychology), whichever is the lesser.

**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**
- General

**For Methodology and Statistics**

**Other texts to be advised.**

**PSYC102 PSYCHOLOGY INTRODUCTION II** 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
General

Other texts to be advised.

PSYC202 BASIC PROCESSES 10cp
Prerequisite PSYC102
Corequisite PSYC207 (or PSYC201)

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.

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

Text

References


St. James, J. & Schneider, W. 1991, MEL LAB: Experiments in perception, cognition, social psychology and human factors, Psychology Software Tools, Pittsburgh, PA.


PSYC205 APPLIED TOPICS IN PSYCHOLOGY 1 10cp

Not offered in 1994.

PSYC206 APPLIED TOPICS IN PSYCHOLOGY 2 10cp

Not offered in 1994.

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 t-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 a tutorial and laboratory workshop series in which practical experience will be gained in the application of the topics described above using computer-assisted packages.

Texts


References

PSYC208 PSYCHOBIOLoGY 10cp

Prerequisite PSYC102
Corequisite PSYC207 (or PSYC201)

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 examines the biological basis of psychology, including neuroanatomy, psychobiology and neuroscience. The aim is to broaden the understanding of some of these topics introduced in the first year and to examine their relevance to psychology. The laboratory program will focus primarily on neuroanatomy and research methods in psychology.

Texts
To be advised.

References


PSYC209 PERSONALITY AND SOCIAL PROCESSES 10cp

Prerequisite PSYC102
Corequisite PSYC207 (or PSYC201)

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


This course consists of the following topics:

(a) Experimental design principles in psychology ranging from naturalistic observation to experimental and quasi-experimental designs, including single-case studies.
(b) Practical computational techniques for the analysis of experimental designs in psychological research, using MINITAB, BMDP, and SPSS/X.
(c) Introduction to multivariate statistical techniques such as Multiple Linear Regression, Discriminant Analysis, and Cluster Analysis.
(d) The MELI laboratory programs will be used to collect data in tutorial periods.

References


**PSYC302 INDEPENDENT PROJECT** 10cp

**Prerequisite** PSYC201 (or PSYC207)

**Corequisite** PSYC301

**Hours** 2 hours per week for the full year.

**Examination** Submission of a written report containing introduction, methods, results and discussion not more than thirty pages in length due early October.

Content

This subject will extend the examination of basic processes covered in PSYC303. The subject will be complemented by either a laboratory or workshop program run over about 4-5 weeks.

**References**

Readings and references will be available during the lecture series.

**PSYC307 ADVANCED APPLIED TOPICS IN PSYCHOLOGY** 10cp

**Prerequisite** PSYC201 (or PSYC207)

**Hours** 4 hours per week for one semester.

**Examination** One 2 hour exam paper plus hurdle requirements.

Content

This course will examine a number of different areas in which Psychology is applied. It will examine behavioural health care with particular emphasis on community-based interventions in establishing behavioural change. In addition, topics in psychological pathology, psychotherapy and abnormal psychology will be covered. The unit will be complemented with some practical experience in applied settings.

**References**


Additional references will be made available throughout the course.

**PSYC401 PSYCHOLOGY HONOURS 401 (SEMINARS)** 40cp

**Prerequisite** A completed BA or BSc 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 (or PSYC201), and at least 60 credit points of Psychology at the 300 level including PSYC301 and PSYC302. Candidates must have obtained at
At least a Credit grade or better in each of four 300 level Psychology subjects including PSYC 301 and PSYC 302.

Hours 12 hours per week for the full year

Examination To be advised

Content PSYC 401 comprises half of the final Honours in Psychology. Full-time students enrol in PSYC 402 as well. Part-time students complete PSYC 401 in the first year and PSYC 402 in the second. PSYC 401 consists of five seminar series, including one compulsory unit on theoretical issues in Psychology, a choice of two units in mathematical or physiological Psychology, and a choice of two units in 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 PSYC 403.

Texts and References To be advised.

PSYC 402 PSYCHOLOGY HONOURS 402 (THESIS) 40cp

Prerequisite A completed BA or BSc, or three complete years of a BA (Psych) or BSc (Psych) including the subjects PSYC 101 and PSYC 102, at least 40 credit points of Psychology at the 200 level including PSYC 207 (or PSYC 201), and at least 60 credit points of Psychology at the 300 level including PSYC 301 and PSYC 302. Candidates must have obtained at least a Credit grade or better in each of four 300 level Psychology subjects including PSYC 301 and PSYC 302.

Corequisite PSYC 401

Hours 12 hours per week for the full year

Examination Theses will be assessed independently by two members of the Department, other than the supervisor.

Content PSYC 402 comprises half of the final Honours in Psychology. Full-time students enrol in PSYC 402 as well. Part-time students complete PSYC 401 in the first year and PSYC 402 in the second. PSYC 402 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 are strongly advised to 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.

PSYC 403 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 PSYC 101 and PSYC 102, at least 40 credit points of Psychology at the 200 level including PSYC 207 (or PSYC 201), and at least 60 credit points of Psychology at the 300 level including PSYC 301.

Hours 8 hours per week for the full year

Examination To be advised

Content PSYC 403 comprises one third of the final year of the BA (Psych) or BSc (Psych). Full-time students are expected to enrol in PSYC 403 as well. Part-time students complete PSYC 403 in the first year and PSYC 404 in the second. PSYC 403 consists of three seminar series, including one compulsory unit on theoretical issues in psychology, and a choice of two optional units. 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. There is some overlap with PSYC 401.

Texts and References To be advised.

PSYC 404 PSYCHOLOGY 404 50cp

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 PSYC 101 and PSYC 102, at least 40 credit points of Psychology at the 200 level including PSYC 207 (or PSYC 201), and at least 60 credit points of Psychology at the 300 level including PSYC 301.

Corequisite PSYC 403

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 PSYC 404 comprises two-thirds of the final year of the BA (Psych) or BSc (Psych). Full-time students are expected to enrol in PSYC 404 as well. Part-time students complete PSYC 404 in the first year and PSYC 404 in the second. PSYC 404 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 introductory seminars on ethical and professional issues; 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.

Computer Science Subject Descriptions

COMP 110 INTRODUCTION TO PROGRAMMING 5cp

This subject is not available to candidates enrolled in Computer Science degree programs, or to students who have passed or been exempted from COMP 101, COMP 201 prior to 1991, COMP 212 or COMP 111. An introduction to structured programming and the design of algorithms using a procedural language.

COMP 111 INTRODUCTION TO COMPUTER SCIENCE I 10cp

This subject introduces the computer as a system by which problems may be solved. Students are introduced to the process of designing and implementing algorithms to solve problems. Data types are covered, and sorting and searching techniques are introduced to help motivate the methodological issues. Students are introduced to control structures, data types and procedural abstraction. An overview is also given of the basic hardware and software components of a computer system, including operating systems, compilers, memory and control logic. The social implications of computing is discussed, and an overview of the curriculum is given.

COMP 112 DISCRETE STRUCTURES 10cp

Prerequisite COMP 111 and either MATH 111 or Prerequisite MATH 102.

Content This subject continues the development of fundamental ideas in algorithm design and complexity analysis. In conjunction with an introduction to discrete mathematics. The concept of an abstract data type is contrasted with that of a data structure implementation, beginning with stacks, queues, and binary trees. Classical algorithms using these structures are investigated and analysed, using tools drawn from areas of discrete mathematics such as recurrence relations, set theory, combinatorics, probability, and elementary graph theory.

COMP 113 INTRODUCTION TO ARTIFICIAL INTELLIGENCE 10cp

Corequisite COMP 111

Content This subject deals with problem solving and artificial intelligence. It begins with a discussion of reasoning
This subject introduces the student to the nature of programming languages and systems. Including Important results from the study of automata and formal languages. The subject begins with the concepts of binding, type checking and run-time controls. and proceeds to a study of proof techniques. 12 cp

COMP223 THEORY OF COMPUTATION 10 cp

This subject introduces the theory of computability, decidability and undecidability. The subject begins with the concepts of Turing machines, recursive functions and lambda calculus. Notions of logic and decision theory are discussed. 12 cp

COMP224 ARTIFICIAL INTELLIGENCE 2 10 cp

A look at the broad scope of Artificial Intelligence. With particular attention to the topics of knowledge representation, expert systems, natural language processing, expert systems, and robotics. 10 cp

COMP225 DATABASE SYSTEMS 10 cp

The subject covers the three level architecture for database systems. Additionally, students learn the SQL database language. 10 cp

COMP226 PARALLEL PROCESSING 10 cp

The subject introduces the student to the concept of parallel processing. In addition, the student is introduced to the concepts of multiprocessor systems and systems being designed as case studies. 10 cp

COMP227 COMPUTER SECURITY 10 cp

This subject covers the fundamentals of computer security. Including the concepts of cryptography, authentication, and access control. 10 cp

COMP228 COMPUTER NETWORKS AND OPERATING SYSTEMS 10 cp

The subject covers the concepts of communication methods, including the concepts of communication networks and systems. 12 cp

COMP229 COMPUTER DESIGN 10 cp

An introduction to the theory of computer design. Including the concepts of data communication networks and systems. 10 cp

COMP230 GRAPHIC USER INTERFACES 10 cp

This subject introduces the student to the nature of graphic user interfaces. Including the concepts of window management systems and object-oriented systems. 10 cp
### Faculty of Science and Mathematics

#### Section Five

#### Computer Science Subject Descriptions

<table>
<thead>
<tr>
<th>Subject Description</th>
<th>INFO 101 INTRODUCTION TO INFORMATION SYSTEMS</th>
<th>10cp</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prerequisite</strong></td>
<td>Nil</td>
<td></td>
</tr>
<tr>
<td><strong>Hours</strong></td>
<td>3 Lecture hours and two tutorial hours</td>
<td></td>
</tr>
<tr>
<td><strong>Examination</strong></td>
<td>To be advised</td>
<td></td>
</tr>
</tbody>
</table>

#### COMP331 GEOMETRIC DATA STRUCTURES 10cp

**Prerequisite** COMP212

**Assumed Knowledge** COMP223

**Content**

Geometric data structures are used to represent explicitly geometric structures such as image analysis and solid modelling, as well as implicitly geometric structures such as relational databases. In this subject we study fundamental data structures which have applications for both implicitly and explicitly geometric data, in such areas as geographic information systems and solid modelling.

#### COMP332 COMPUTER GRAPHICS 10cp

**Prerequisite** COMP112 and MATH117

**Assumed Knowledge** MATH121

**Content**

A graphical interface is a cost effective method to present information in a fashion that supports rapid exploration and comprehension. The issues to be studied, all related to the displaying of objects, may include: graphics hardware, windows programming, graphics interface formats, 2D drawing primitives and their raster algorithms, 2D & 3D geometric transformations, projections, geometric models, colour theory, 3D viewing, visible-surface determination, illumination and shading, ray tracing and radiosity, and computer animation.

### Faculty of Science and Mathematics

#### Section Five

#### Information Science Subject Descriptions

The course provides a solid grounding in computers and their use which today is important for all students, irrespective of the discipline which they are studying.

#### Philosophy Subject Description

**PHIL207 SCIENTIFIC KNOWLEDGE AND SCIENTIFIC METHOD 10cp**

Not offered in 1994
**Statistics Subject Descriptions**

**STAT101 Introductory Statistics** 10cp

Not to count for credit with STAT103.

**Prerequisites:**
This course does not assume knowledge of calculus or matrix algebra.

**Hours:**
3 lecture hours, 1 laboratory hour and 1 tutorial hour per week. The course is offered in semester 1 and semester 2.

**Purpose:**
To introduce students to the principles of study design, data analysis and interpretation; the statistical computing program MINITAB will be used extensively.

**Content:**

**Text:**

**References:**

**STAT201 MATHEMATICAL STATISTICS** 10cp

This course covers the practical and theoretical aspects of multiple regression analysis, including the assumptions underlying linear models, use of matrix notation, prediction and confidence intervals, stepwise methods, and an examination of the adequacy of models. The statistical computer packages MINITAB and SAS are used.

**Content:**

**Text:**

**References:**

**STAT205 ENGINEERING STATISTICS** 5cp

This course covers the practical and theoretical aspects of multiple regression analysis, including the assumptions underlying linear models, use of matrix notation, prediction and confidence intervals, stepwise methods, and an examination of the adequacy of models. The statistical computer packages MINITAB and SAS are used.

**Content:**

**Text:**

**References:**

**STAT203 INTRODUCTORY MATHEMATICAL STATISTICS** 10cp

This course covers the practical and theoretical aspects of multiple regression analysis, including the assumptions underlying linear models, use of matrix notation, prediction and confidence intervals, stepwise methods, and an examination of the adequacy of models. The statistical computer packages MINITAB and SAS are used.

**Content:**

**Text:**

**References:**

**STAT202 REGRESSION ANALYSIS** 10cp

This course covers the practical and theoretical aspects of multiple regression analysis, including the assumptions underlying linear models, use of matrix notation, prediction and confidence intervals, stepwise methods, and an examination of the adequacy of models. The statistical computer packages MINITAB and SAS are used.

**Content:**

**Text:**
This course contrasts two methods for collecting and analysing data: experimental studies and non-experimental studies including surveys. The principles of experimental design are illustrated by studying completely randomised designs, randomised block designs and factorial designs. For surveys the topics include: simple random sampling, stratified and cluster sampling, ratio and regression estimators. Class projects are used to illustrate practical problems and the statistical packages MINITAB and SAS are used to carry out analyses.

**References**


**STAT302 STUDY DESIGN** 10cp

**Prerequisites** STAT201 and STAT202

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

**Content**

This course contrasts two methods for collecting and analysing data: experimental studies and non-experimental studies including surveys. The principles of experimental design are illustrated by studying completely randomised designs, randomised block designs and factorial designs. For surveys the topics include: simple random sampling, stratified and cluster sampling, ratio and regression estimators. Class projects are used to illustrate practical problems and the statistical packages MINITAB and SAS are used to carry out analyses.

**References**


**STAT303 GENERALIZED LINEAR MODELS** 10cp

**Prerequisite** STAT201 and STAT202. In addition it is strongly recommended that students have Passed STAT301.

**Hours** 3 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, linear models for continuous data (regression and analysis of variance), logistic regression, and log-linear models. Students will implement these methods using various computer packages, including GLIM.

**Text**


**References**


**STAT304 TIME SERIES ANALYSIS** 10cp

**Prerequisite** STAT201 and STAT202. In addition it is strongly recommended that students have Passed STAT301.

**Hours** 3 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 (or space). Topics covered include: stationary processes, ARMA models, models for periodic phenomena, analysis using MINITAB, SAS and other time series packages.

**Text**


**References**


**STAT310 TOTAL QUALITY MANAGEMENT** 10cp

**Prerequisites** MNGT111 and subjects at Level 200 totalling 40 credit points chosen from subjects offered by the Departments of Economics, Management and/or Statistics.

**Hours** 2 lecture hours per week.

**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

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 in conformity with degree rules and prerequisite and corequisite requirements as detailed in the semester subject tables. All courses selected must aggregate to 240 credit points for a pass degree or 320 credit points for the four year Bachelor of Science (Psychology) degree.

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 fourth year for the Honours Degree which is generally a postgraduate degree.

AVIATION

Students with Commercial Pilot and Airline Transport Licence will be exempted from any subjects which they may have completed to 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 Noteboard and liaise with the Head of the Department concerning course programme 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.
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 (e.g. CHEM261, CHEM361) 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 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.

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, plus four other subjects from Level 200.

Year 3

Choose at least forty credit points from the Level 300 chemistry list and up to forty credit points of other subjects from Level 300. The inclusion of at least two of CHEM301, CHEM321, CHEM331, CHEM341 is recommended.

Year 4

CHEM401 and CHEM402.

Chemistry — Program B

Year 1

CHEM101 and CHEM102; either MATH111/112 or MATH102/103, and four other subjects from Level 100.

Year 2

CHEM211, CHEM221, CHEM231, CHEM241, CHEM261 and three other subjects from Level 200.

Year 3

Choose eighty credit points from the Level 300 chemistry list. The inclusion of CHEM331, CHEM321, CHEM331, CHEM341 is recommended.

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 study of the processes that develop landforms and soils, 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, GEOG102, PHYS111 and PHYS112 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 and Mathematics. This program can be taken to Major level without selecting the Methods courses GEOG201, GEOG202, GEOG301 and GEOG302, but for Honours a Methods stream (GEOG201 plus GEOG301 or GEOG202 plus GEOG302 is necessary). 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

GEOG202, GEOG207 and GEOG208

Choose five other subjects from Level 200.

Year 3

GEOG302, GEOG306, GEOG309, and GEOG315

Choose four other subjects from Level 300.

Year 4

GEOG401 and GEOG402.

Major in Physical Geography

Year 1

GEOG101 and GEOG102.

Choose six other subjects from Level 100. BIOL101, BIOL102, GEOG101, GEOG102, PHYS111 and PHYS112 recommended.

Year 2

GEOG201, GEOG203 and GEOG204.

Choose five other subjects from Level 200.

Year 3

GEOG301, GEOG304, GEOG305 and GEOG311

Choose four other subjects from Level 300.

Year 4

GEOG401 and GEOG402.

Major in Geography

Year 1

GEOG101 and GEOG102.

Choose six other subjects from Level 100.

Year 2

Choose THREE subjects from GEOG201, GEOG202, GEOG203, GEOG204, GEOG207, GEOG208.

Choose five other subjects from Level 200.

Year 3

Choose FOUR subjects from GEOG301, GEOG302, GEOG304, GEOG305, GEOG306, GEOG309, GEOG310, 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, much of the course is held 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 integrated.

Students are strongly advised to choose companion courses, especially if interests are in palaeontology and evolution. The course laboratory and lecture work are integrated study of the major processes. Hence, fieldwork is required.

The Department very strongly recommend geochemistry, tectonics, mineralogy and petrology subjects for the Bachelor of Mathematics degree. These subjects are required at the 200 level, thus providing a basis for a double major in Mathematics, or a major in Geology, with options also for majors in Physics or Computer Science.

Subjects should be chosen according to the requirements of the Bachelor of Science 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

MATH1201, MATH1203, MATH204, MATH208. MATH218, and one chosen from MATH1213, MATH1214, MATH1215 plus 5 other subjects from Level 300.

Year 2

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 basis for a double major in Mathematics, or a major in Statistics, with options also for majors in Physics or Computer Science.

Students should be chosen according to the requirements of the Bachelor of Science 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

MATH1201 and MATH1203 (20 credit points) or MATH111, 103, 105 (20 credit points) or MATH112, 113, 105 (50 credit points)

Year 2

MATH1201, MATH1203, MATH204, MATH206, MATH218 and one of MATH1213, MATH1214, MATH1215 (50 credit points); and a further 30 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.

Year 4

The BMATH (Hons) program consists of MATH400 and MATH402.

Section Six

Some Recommended Programs

1. BMATH with "Pure" Mathematics as the 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 have an extensive 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", nonetheless 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

MATH1201 and MATH1203 together with other subjects worth 60 credit points: (Computer Science and/or Physics and/or Statistics and/or Philosophy are popular but the choice is wide. See No.6 below).

Year 2

All available MATH200 level subjects (except perhaps one or two of MATH212, 214, 215, 216) together with some 200 level subjects to continue a subsidiary interest from Year 1.

Year 3

MATH301, MATH302. MATH304, MATH305. MATH306, MATH307, MATH310, MATH311, MATH312, MATH313 or MATH314, is a "Pure Mathematics" selection of subjects but there are variations.

Year 4

The BMATH (Hons) program consists of MATH401 and MATH402.

2. BMATH with Mathematical Physics or a major interest

Nowadays 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 mathematician have found fruitful application in modern physics. Now the standard tools include functional analysis, group theory, algebra, differential geometry and topology, and the list is continually changing.

Students wishing to study the exciting developments in modern mathematical physics need a strong grounding in these subjects, and the ability to quickly assimilate new mathematics as required, which can only come from a firm grounding in basic 'pure' mathematics.

In satisfying the requirements for the degree, a suitable program could be:

Year 1

MATH1201 and MATH1203 together with other subjects.

Year 2

MATH1201, MATH1203, MATH204, MATH205, MATH206, MATH218, MATH209, MATH210, MATH211, MATH214 together with other MATH200 subjects, and/or other subjects to continue an interest from Year 1.

Year 3

MATH302, MATH303, MATH304, MATH305, MATH306, MATH307, MATH310, MATH312.

Year 4

The BMATH (Hons) program consists of MATH401 and MATH402.

3. BMATH 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, MATH204, MATH206, MATH216, MATH213, MATH214, MATH215, MATH216, COMP201, STAT201 are all recommended, together with continuation of one of the “other” subjects from Year 1 and, if room, one of MATH209, MATH211, or MATH212. |
| Year 3 | MATH303, MATH304, MATH305, MATH313 together with most of MATH306, MATH307, MATH315, MATH316 (or subjects in Physics or Statistics or Computer Science). |
| Year 4 | The BMath (Hon) program consists of MATH401 and MATH402. |

### 4 BMath with Statistics as a major interest

In satisfying the requirements for the degree, a suitable program is:

| Year 1 | Either STAT101, MATH111 and MATH112 or STAT103, MATH112 and MATH113. INFO101 is recommended. Choose other subjects worth 50 credit points from Level 100. |
| Year 2 | MATH201, MATH203, MATH204, MATH206, MATH218, at least one of MATH213, MATH214, MATH215, 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 (Hon) program consists of eighty credit points of STAT400 subjects from the list of Approved Subjects. |

### 5 BMath with Computer Science as a major interest

In satisfying the requirements for the degree, a suitable program would be:

| Year 1 | MATH102 and MATH103, COMP101 (or equivalent) and other subjects worth 40 credit points. |
| Year 2 | MATH201, MATH203, MATH204, MATH206, MATH216, MATH212, MATH215, MATH216, COMP211, COMP222, COMP232, STAT203, PHIL242 (that is a desirable program, but timetable constraints may modify it). |
| Year 3 | Four MATH300 subjects and forty credit points of appropriate COMP300 subjects. (There is wide choice for specialisation). |
| Year 4 | The BMath (Hon) program consists of MATH401 and MATH402, or see the Rules for BCompSci(Hons) Faculty of Engineering. |

### First year subjects in the BMath Degree

The rules demand MATH102 and MATH103 (20 credit points) or MATH111, 102, 103 (30 credit points) or MATH111, 112, 113 (50 credit points) but the remaining credit points can be taken in almost any other discipline. Popular choices include 100 Level Computer Science, Physics (PHYS101/102 or 102/103), Information Science and Statistics (INFO101/STAT101). However, BMath students choose widely, 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, Philosophy, Psychology, Sanskrit, 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 and status as a professional physicist. There are no formal grades of membership which are related to experience. However, BMath students have chosen Physics as a major discipline. There is a grade of membership for those who should by virtue of their training and measurement procedures and prescribing.
an undergraduate degree with a major in Psychology as an entry requirement, a teaching qualification and in addition, two years teaching (or other relevant) experience. The Honours degree is the normal entry into the research degrees of Master of Science and Doctor of Philosophy.

BSc 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 chosen from PSYC302, PSYC303, PSYC304, PSYC305, PSYC306, PSYC307, PSYC308 or PSYC309, and four other subjects chosen at the 300 level.

BSc Honours Degree in Psychology

**Year 1**
PSYC101, PSYC102, plus six other subjects from level 100.

**Year 2**
Eight 200 level subjects including PSYC207 and at least three of PSYC202, PSYC208, PSYC209, PSYC210, plus other 200 level subjects chosen from the scheduled list.

**Year 3**
PSYC301, PSYC302 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 passes in four Psychology subjects at the 200 level including PSYC207, as well as completion of three credit points at PSYC300 obtaining at least a Credit grade average in each of four 300 Level Psychology subjects at the 300 level including PSYC301 and PSYC302.

BSc (Psychology) Degree

**Tears 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.

---

**Postgraduate Degree Rules**

**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>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL401</td>
<td>Biology Honours 401</td>
<td>40</td>
</tr>
<tr>
<td>CHEM401</td>
<td>Chemistry Honours 401</td>
<td>40</td>
</tr>
<tr>
<td>CHEM402</td>
<td>Chemistry Honours 402</td>
<td>40</td>
</tr>
<tr>
<td>GEOG401</td>
<td>Geography Honours 401</td>
<td>40</td>
</tr>
<tr>
<td>GEOG402</td>
<td>Geography Honours 402</td>
<td>40</td>
</tr>
<tr>
<td>GEOL401</td>
<td>Geology Honours 401</td>
<td>40</td>
</tr>
<tr>
<td>GEOL402</td>
<td>Geology Honours 402</td>
<td>40</td>
</tr>
<tr>
<td>MATH401</td>
<td>Mathematics Honours 401</td>
<td>40</td>
</tr>
<tr>
<td>MATH402</td>
<td>Mathematics Honours 402</td>
<td>40</td>
</tr>
<tr>
<td>PHYS401</td>
<td>Physics Honours 401</td>
<td>40</td>
</tr>
<tr>
<td>PHYS402</td>
<td>Physics Honours 402</td>
<td>40</td>
</tr>
<tr>
<td>PSYC401</td>
<td>Psychology Honours 401(Seminars)</td>
<td>40</td>
</tr>
<tr>
<td>PSYC402</td>
<td>Psychology Honours 402(Thesis)</td>
<td>40</td>
</tr>
</tbody>
</table>

Prerequisites
40cp 300 BIOL or other 300 level subjects approved by the Department, obtaining at least a Credit grade average

Corequisites

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
A candidate may enrol in 80 credit points including AVIA405 to be chosen from:

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVIA401</td>
<td>Aviation Honours 401</td>
<td>20</td>
<td>B.Sc.(Aviation) with a Credit grade or better in AVIA306, AVIA310, AVIA311 and AVIA314</td>
</tr>
<tr>
<td>AVIA402</td>
<td>Aviation Research &amp; Methodology</td>
<td>10</td>
<td>AVIA314</td>
</tr>
<tr>
<td>AVIA403</td>
<td>Technology in Aviation</td>
<td>10</td>
<td>AVIA310 and AVIA312</td>
</tr>
<tr>
<td>AVIA404</td>
<td>The Human Variable in Aviation</td>
<td>40</td>
<td>AVIA221 and AVIA311</td>
</tr>
<tr>
<td>AVIA405</td>
<td>Aviation Honours — Thesis</td>
<td></td>
<td>B.Sc.(Aviation) with an average obtaining Credit grades in AVIA306, AVIA310, AVIA311 and AVIA314</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pre requisites</th>
<th>Corequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVIA401</td>
<td>AVIA401 and AVIA405 and either AVIA403 or AVIA404</td>
</tr>
</tbody>
</table>
SCHEDULE — HONOURS DEGREE OF BACHELOR OF APPLIED SCIENCE (ENVIRONMENTAL ASSESSMENT AND MANAGEMENT)

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 Applied Science and Technology.

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:

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAMS401</td>
<td>Environmental Management</td>
<td>20</td>
<td>EAMS301, EAMS311</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Forty credit points level</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>300 EAMS obtaining at least a Credit grade average</td>
<td></td>
</tr>
<tr>
<td>EAMS402</td>
<td>Seminar Series</td>
<td>20</td>
<td></td>
<td>EAMS401</td>
</tr>
<tr>
<td>EAMS404</td>
<td>Research Project</td>
<td>40</td>
<td></td>
<td>EAMS401</td>
</tr>
</tbody>
</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 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>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL407</td>
<td>Biology Honours 407</td>
<td>40</td>
<td>40cp 300 BIOL or other 300 level subjects approved by the Department, obtaining at least a Credit grade average</td>
</tr>
<tr>
<td>BIOL408</td>
<td>Biology Honours 408</td>
<td>40</td>
<td>40cp 300 BIOL or other 300 level subjects approved by the Department, obtaining at least a Credit grade average</td>
</tr>
<tr>
<td>CHEM407</td>
<td>Chemistry Honours 407</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>CHEM408</td>
<td>Chemistry Honours 408</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>GEOG407</td>
<td>Geography Honours 407</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>GEOG408</td>
<td>Geography Honours 408</td>
<td>40</td>
<td></td>
</tr>
</tbody>
</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:

Mathematics

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH401</td>
<td>Mathematics Honours 401</td>
<td>40</td>
<td>40cp level 300 MATH subjects obtaining at least a Credit grade average</td>
<td></td>
</tr>
</tbody>
</table>

Statistics

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Cp</th>
<th>Prerequisites</th>
<th>Corequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT401</td>
<td>Probability Theory</td>
<td>10</td>
<td>40cp from level 300 STAT subjects obtaining at least a Credit grade average</td>
<td></td>
</tr>
<tr>
<td>STAT402</td>
<td>Mathematics Honours 402</td>
<td>40</td>
<td></td>
<td>MATH401</td>
</tr>
</tbody>
</table>

A candidate may enrol in 80 credit points, to be chosen from:

- STAT401 Probability Theory
- STAT402 Mathematics Honours 402
- STAT403 Analysts of Categorical Data
- STAT405 Demography and Survival Analysis
- STAT404 Robust Regression and Smoothing
- STAT406 Statistical Consulting
- STAT407 Methods for Quality Improvement
- STAT408 Advanced Topics in Statistics
- STAT408 Project
- STAT409 Project
- STAT410 Project
- STAT411 Project

A candidate may pursue a combined honours degree in one honours subject from each of two Departments in the following combinations:

- Mathematics Honours 401
- Physics Honours 401
- Mathematics Honours 401
- Economics Honours IV
- Mathematics Honours 401
- Geology Honours 401
- Mathematics Honours 401
- Psychology Honours 401

A candidate may enrol in 80 credit points in each of the following subjects:

- MATH401 Mathematics Honours 401
- PHYS401 Physics Honours 401
- MATH401 Mathematics Honours 401
- ECON401 Economics IV
- MATH401 Mathematics Honours 401
- GEOLE401 Geology Honours 401
- MATH401 Mathematics Honours 401
- PSYC401 Psychology Honours 401

Any three PHYS 300 subjects and PHYS 301 subjects obtaining at least a Credit grade average

Four PSYC 200 subjects incl. PSYC 207 (or PSYC 201) and 60cp at PSYC 300 subjects obtaining at least a Credit grade in each of four PSYC 300 including PSYC 301 and PSYC 302.
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>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL303</td>
<td>Environmental Plant Physiology</td>
<td>10</td>
<td>Two BIOL200, BIOL207 or BIOL303. Students who have completed BIOL306 are not eligible to do this subject</td>
</tr>
<tr>
<td>BIOL311</td>
<td>Environmental Biology</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>CHEM261</td>
<td>Environmental Chemistry</td>
<td>10</td>
<td>CHEM101, CHEM102</td>
</tr>
<tr>
<td>CHEM361</td>
<td>Environmental Chemistry</td>
<td>10</td>
<td>CHEM261</td>
</tr>
<tr>
<td>CIVL342</td>
<td>Safety and Environment</td>
<td>10</td>
<td>Consult Head of Department</td>
</tr>
<tr>
<td>EAMS290</td>
<td>Water Resources Management</td>
<td>10</td>
<td>EAMS102, EAMS112</td>
</tr>
<tr>
<td>EAMS291</td>
<td>Soil Conservation Management</td>
<td>10</td>
<td>EAMS290, EAMS291</td>
</tr>
<tr>
<td>EDUC612</td>
<td>The Scope of Environmental Education</td>
<td>10</td>
<td>Consult Education Department</td>
</tr>
<tr>
<td>EDUC613</td>
<td>Issues and Research in Environmental Education</td>
<td>10</td>
<td>Consult Education Department</td>
</tr>
<tr>
<td>GEOG305</td>
<td>Climatic Problems</td>
<td>10</td>
<td>GEOG201, GEOG203</td>
</tr>
<tr>
<td>GEOG306</td>
<td>Geography of Australia: an Historic Perspective</td>
<td>10</td>
<td>GEOG202 plus either GEOG207 or GEOG208</td>
</tr>
<tr>
<td>GEOG309</td>
<td>Society and Space</td>
<td>10</td>
<td>GEOG202 plus either GEOG207 or GEOG208</td>
</tr>
<tr>
<td>GEOG311</td>
<td>Hydrology</td>
<td>10</td>
<td>GEOG201, GEOG203</td>
</tr>
<tr>
<td>GEOG491</td>
<td>Environmental Studies Seminar 1</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>GEOG492</td>
<td>Environmental Studies Minor Project</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>GEOG504</td>
<td>Environmental Studies Seminar 2</td>
<td>20</td>
<td>GEOG491</td>
</tr>
<tr>
<td>GEOG505</td>
<td>Directed Environmental Study 1</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>GEOG506</td>
<td>Directed Environmental Study 2</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>GECH407</td>
<td>Environmental Engineering</td>
<td>5</td>
<td>Consult Department of Mechanical Engineering</td>
</tr>
<tr>
<td>HIL591</td>
<td>Technology and Human Values 1</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>HIL592</td>
<td>Technology, Human Values and The Environment</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>SOCA219</td>
<td>Sociology of Health and Illness</td>
<td>10</td>
<td>SOCA111</td>
</tr>
<tr>
<td>SURV473</td>
<td>Town Planning</td>
<td>10</td>
<td>Consult Department</td>
</tr>
</tbody>
</table>

Or such subjects considered necessary upon approval of the Dean.
SCHEDULE — GRADUATE DIPLOMA IN MATHEMATICAL STUDIES

Admission to Candidature

1. An applicant for admission to candidature 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. 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.

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.

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 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>BIOL405</td>
<td>Biology Diploma 405</td>
<td>40</td>
<td>40 c.p. level 300 BIOL or other subjects approved by the Department</td>
<td>BIOL405</td>
</tr>
<tr>
<td>BIO406</td>
<td>Biology Diploma 406</td>
<td>40</td>
<td>40 c.p. level 300 CHEM</td>
<td>CHEM405</td>
</tr>
<tr>
<td>CHEM405</td>
<td>Chemistry Diploma 405</td>
<td>40</td>
<td>40 c.p. level 300 GEOG</td>
<td>GEO405</td>
</tr>
<tr>
<td>GEO405</td>
<td>Geography Diploma 405</td>
<td>40</td>
<td>40 c.p. level 300 GEOL</td>
<td>GEOL405</td>
</tr>
<tr>
<td>GEO406</td>
<td>Geography Diploma 406</td>
<td>40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHYS405</td>
<td>Physics Diploma 405</td>
<td>40</td>
<td>40 c.p. level 300 PHYS</td>
<td>PHYS405</td>
</tr>
<tr>
<td>PSYC405</td>
<td>Psychology Diploma 405</td>
<td>40</td>
<td>40 c.p. level 300 PSYC</td>
<td>PSYC405</td>
</tr>
<tr>
<td>PSYC406</td>
<td>Psychology Diploma 406</td>
<td>40</td>
<td></td>
<td></td>
</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. (1) 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>Cp</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL203</td>
<td>Environmental Plant Physiology</td>
<td>10</td>
<td>Two BIOL200, BIOL207 or BIOL203. Students who have completed BIOL206 are not eligible to do this subject</td>
</tr>
<tr>
<td>BIOL311</td>
<td>Environmental Biology</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>CHEM261</td>
<td>Environmental Chemistry</td>
<td>10</td>
<td>CHEM101, CHEM281</td>
</tr>
<tr>
<td>CHEM361</td>
<td>Environmental Chemistry</td>
<td>10</td>
<td>CHEM101, CHEM281</td>
</tr>
<tr>
<td>CHEK342</td>
<td>Safety and Environment</td>
<td>10</td>
<td>Consult Head of Department</td>
</tr>
<tr>
<td>CIVL242</td>
<td>Environmental Engineering 2</td>
<td>5</td>
<td>CIVL141</td>
</tr>
<tr>
<td>EAMS291</td>
<td>Water Resources Management</td>
<td>10</td>
<td>EAMS102, EAMS112</td>
</tr>
<tr>
<td>EAMS390</td>
<td>Soil Conservation Management</td>
<td>10</td>
<td>EAMS290, EAMS291</td>
</tr>
<tr>
<td>EDUC612</td>
<td>The Scope of Environmental Education</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>EDUC613</td>
<td>Issues and Research in Environmental Education</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>GEOG304</td>
<td>The Biosphere and Conservation</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>GEOG305</td>
<td>Climatic Problems</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>GEOG306</td>
<td>A Geography of Australia, Historical Perspective</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>GEOG309</td>
<td>Society and Space</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>GEOG311</td>
<td>Hydrology</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>GEOG491</td>
<td>Environmental Studies Seminar 1</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>GEOG492</td>
<td>Environmental Studies</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>GEOG591</td>
<td>Environmental Studies Major Project I</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>GEOG592</td>
<td>Environmental Studies Major Project II</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>GEOG594</td>
<td>Environmental Studies Seminar 2</td>
<td>20</td>
<td>GEOG491</td>
</tr>
<tr>
<td>GEOG595</td>
<td>Directed Environmental Study 1</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>GEOG696</td>
<td>Directed Environmental Study 2</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>GEOG320</td>
<td>Geology of Quaternary</td>
<td>10</td>
<td>GEOG213 or GEOG204</td>
</tr>
<tr>
<td>GEOG309</td>
<td>Noise Pollution</td>
<td>10</td>
<td>Consult Department of Mechanical Engineering</td>
</tr>
<tr>
<td>GEOG407</td>
<td>Environmental Engineering</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>GEOG502</td>
<td>Occupational Hygiene and Toxicology</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>GEOG591</td>
<td>Technology and Human Values</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>GEOG502</td>
<td>Technology, Human Values and the Environment</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>GEOG519</td>
<td>Sociology of Health and Illness</td>
<td>10</td>
<td>SOCA111</td>
</tr>
<tr>
<td>GEOG793</td>
<td>Town Planning</td>
<td>10</td>
<td>Consult Department of Sociology of Health and Illness</td>
</tr>
</tbody>
</table>

...and many more subjects considered necessary upon approval of the Dean.
SCHEDULE — MASTER OF MATHEMATICS

Classification
1. The Faculty of Science and Mathematics shall be responsible for the course leading to the degree of Master of Mathematics.

Admission to Candidature
2. To be eligible for admission to candidature an applicant shall:
   (a) have satisfied all the requirements for admission to a degree of Bachelor of the University of Newcastle with Honours in the area of study in which the applicant proposes to carry out research or to an Honours degree, approved for this purpose by the Faculty Board, of another university; or
   (b) have satisfied all the requirements for admission to a degree of the University of Newcastle or to a degree, approved by the Faculty Board, of another tertiary institution and have completed such work and sat for 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 in an appropriate subject; or
   (c) in exceptional cases produce evidence of possessing such academic and professional qualifications as may be approved by the Faculty Board.

Qualification for the Degree
3. To qualify for admission to the degree a candidate shall complete to the satisfaction of the Faculty Board a program consisting of:
   (a) such examinations and such work as may be prescribed by the Faculty Board; and
   (b) a thesis embodying the results of an original investigation or design.

Time Requirements
4. The program shall be completed in not less than two years except that, in the case of a candidate who has completed the requirements for a degree of Bachelor with Honours or for a qualification deemed by the Faculty Board to be equivalent or who has had previous research experience, the Faculty Board may reduce this period by up to one year.

SCHEDULE — MASTER OF PSYCHOLOGY (CLINICAL)

Classification
1. The degree of Master of Psychology (Clinical) shall be a degree by research offered in the Faculty of Science and Mathematics.

Interpretation
2. In this Schedule unless the context or subject matter otherwise indicates or requires:
   "Board" means the Board of Studies in Psychology;
   "Co-ordinator" means the Co-ordinator for the Master of Psychology (Clinical) degree appointed by the Board on the recommendation of the Head of the Department of Psychology.

Admission to Candidature
3. (1) An applicant for admission to candidature shall:
   (a) have satisfied the requirements for admission to a Bachelor degree in the University with Honours Class I or Class II in Psychology, or to any other degree approved for this purpose by the Board; or
   (b) in exceptional cases, produce evidence of possessing such other qualifications as may be approved by the Board.

Examiners
6. Any third examiner shall be an external examiner.

SCHEDULE — MASTER OF PSYCHOLOGY (EDUCATIONAL)

Not offered in 1994

SCHEDULE — MASTER OF SCIENCE

Classification
1. The Master of Science shall be a degree by research offered by the Faculty of Science and Mathematics, the Faculty of Engineering or the Faculty of Health Sciences. The Faculty in which the candidate is enrolled shall be responsible for the program.

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 I or Class II 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 in an appropriate subject; 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 of Psychology.

Time Requirements
The program shall be completed in not less than two years of study and, not more than six years of study unless the Board otherwise permits.

Examiners
Examiners shall be appointed by the Committee on the recommendation of the Head of the Department of Psychology. One examiner may be an internal examiner being a member of the staff of the University.

Examination of Thesis
The Board shall consider:
   (a) the examiner's reports on the thesis; and
   (b) a report by the Co-ordinator on the candidate's performance in the work prescribed under Clause 4(a); and
   (c) the report of the examiner's reports on the thesis; and
   (d) any other selection procedures applied under Regulation 9 of the University;

(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 degree with Honours in the University or other university approved for this purpose by the Faculty Board in the area in which the applicant proposes to carry out research; or
(b) have satisfied the requirements for admission to a degree in the University or other university approved for this purpose by the Faculty Board and have completed the satisfaction of the Faculty Board such work and examinations as 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 on the recommendation of the Head of the Department in which the candidate proposes to carry out the program.

(3) To be eligible for admission to candidature in the Faculty of Health Sciences 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 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 candidate proposes to carry out the program.

Qualification for the Degree
3. To qualify for admission to the degree a candidate shall complete to the satisfaction of the Faculty Board a program consisting of:
(a) such work and examinations as may be prescribed by the Faculty Board; and
(b) a thesis embodying the results of an original investigation or design.

Credit
4. A candidate may be granted credit by the Faculty Board on such conditions as it may determine for up to 80 credit points.

Time Requirements
4. The program shall be completed:
(a) in not less than two academic years except that, in the case of a candidate who has completed the requirements for a degree of Bachelor with Honours or a qualification deemed by the Faculty Board to be equivalent or who has had previous research experience, the Faculty Board may reduce this period to not less than one academic year; and
(b) in not more than 5 years, except with the permission of the Faculty Board.

SCHEDULE - MASTER OF SCIENTIFIC STUDIES
Classification
1. The degree of Master of Scientific Studies shall be a degree by coursework offered in the Faculty of Science and Mathematics.

Admission to Candidature
2. An applicant for admission to candidature shall:
(a) have satisfied the requirements for admission to the degree of Bachelor of Science of the University or any other degree approved for this purpose by the Faculty Board; and
(b) have completed such other work prescribed in accordance with the policy determined by the Faculty Board; 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 totaling not less than 160 credit points of which at least 80 credit points shall be a project on a subject approved by the Faculty Board on the recommendation of the relevant Head of the Department.

Credit
4. A candidate may be granted credit by the Faculty Board on such conditions as it may determine for up to 80 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>ASTX695</td>
<td>Foundations of Applied Science and Technology</td>
<td>40</td>
<td>Appropriate undergraduate subjects</td>
<td></td>
</tr>
<tr>
<td>ASTX696</td>
<td>Topics in Applied Science and Technology</td>
<td>40</td>
<td>ASTX695</td>
<td></td>
</tr>
<tr>
<td>ASTX697</td>
<td>Advanced Topics in Applied Science and Technology</td>
<td>40</td>
<td>ASTX696</td>
<td></td>
</tr>
<tr>
<td>EAMS695</td>
<td>Project</td>
<td>40</td>
<td>EAMS696</td>
<td></td>
</tr>
<tr>
<td>EAMS696</td>
<td>Foundations of Environmental Assessment and Management</td>
<td>40</td>
<td>EAMS696</td>
<td></td>
</tr>
<tr>
<td>BIOL695</td>
<td>Foundations of Biological Sciences</td>
<td>40</td>
<td>BIOL695</td>
<td></td>
</tr>
<tr>
<td>BIOL696</td>
<td>Topics in Biological Sciences</td>
<td>40</td>
<td>BIOL696</td>
<td></td>
</tr>
<tr>
<td>BIOL697</td>
<td>Advanced Topics in Biological Sciences</td>
<td>40</td>
<td>BIOL696</td>
<td></td>
</tr>
<tr>
<td>BIOL698</td>
<td>Project</td>
<td>40</td>
<td>BIOL696</td>
<td></td>
</tr>
<tr>
<td>CHEM695</td>
<td>Foundations of Chemistry</td>
<td>40</td>
<td>CHEM695</td>
<td></td>
</tr>
<tr>
<td>CHEM696</td>
<td>Topics in Chemistry</td>
<td>40</td>
<td>CHEM695</td>
<td></td>
</tr>
<tr>
<td>CHEM697</td>
<td>Advanced Topics in Chemistry</td>
<td>40</td>
<td>CHEM695</td>
<td></td>
</tr>
<tr>
<td>CHEM698</td>
<td>Project</td>
<td>40</td>
<td>CHEM695</td>
<td></td>
</tr>
<tr>
<td>GEOG695</td>
<td>Foundations of Geography</td>
<td>40</td>
<td>GEOG695</td>
<td></td>
</tr>
<tr>
<td>GEOG696</td>
<td>Topics in Geography</td>
<td>40</td>
<td>GEOG695</td>
<td></td>
</tr>
<tr>
<td>GEOG697</td>
<td>Advanced Topics in Geography</td>
<td>40</td>
<td>GEOG695</td>
<td></td>
</tr>
<tr>
<td>GEOG698</td>
<td>Project</td>
<td>40</td>
<td>GEOG695</td>
<td></td>
</tr>
<tr>
<td>MATH695</td>
<td>Foundations of Mathematics</td>
<td>40</td>
<td>MATH695</td>
<td></td>
</tr>
<tr>
<td>MATH696</td>
<td>Topics in Mathematics</td>
<td>40</td>
<td>MATH696</td>
<td></td>
</tr>
<tr>
<td>MATH697</td>
<td>Advanced Topics in Mathematics</td>
<td>40</td>
<td>MATH696</td>
<td></td>
</tr>
<tr>
<td>MATH698</td>
<td>Project</td>
<td>40</td>
<td>MATH696</td>
<td></td>
</tr>
<tr>
<td>PHYS695</td>
<td>Topics in Physics</td>
<td>40</td>
<td>PHYS695</td>
<td></td>
</tr>
<tr>
<td>PHYS696</td>
<td>Advanced Topics in Physics</td>
<td>40</td>
<td>PHYS696</td>
<td></td>
</tr>
<tr>
<td>PHYS697</td>
<td>Project</td>
<td>40</td>
<td>PHYS696</td>
<td></td>
</tr>
<tr>
<td>PHYS698</td>
<td>Foundations of Psychology</td>
<td>40</td>
<td>PHYS696</td>
<td></td>
</tr>
</tbody>
</table>

Appropriate undergraduate subjects
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.

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 subject. To enrol in any subject for 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 APPLIED SCIENCE (ENVIRONMENTAL ASSESSMENT AND MANAGEMENT)

EAMS401 ENVIRONMENTAL MANAGEMENT 20cp
Prerequisites EAMS301, EAMS311. Forty credit points level 300 EAMS obtaining at least a Credit grade average.
Assessment (a) Two major essays (b) Presentation by each student of two seminar topics (c) Satisfactory standard reached in a two hour written examination at the end of the year.
Content Policy making in environmental assessment and management, administrative and state environmental legislation, role of relevant government agencies and commissions, government policies and reports, national and international conventions, the roles of the United Nations Environment Program and the World Commission on Environment and Development, the professional practice of environmental management, procedures for consultancy, policy making in private industry, codes of ethics, the environmental audit, environmental risk analysis, trends in environmental management, the public consultation process, conflict resolution in environmental decision making.
Text To be advised.
References


Journals
Journal of Environmental Management
Journal of Environmental Planning
The Environmentalist

EAMS402 SEMINAR SERIES 20cp
Corequisite EAMS401
Assessment (a) Presentation of a written paper based on each seminar topic 80% (b) Satisfactory presentation of seminar topic 20%
Content
Attendance and participation at seminars with a written paper to be presented. Additionally, the student will prepare and present a seminar on an approved topic.
References
To be provided.

List of Seminar Topics
Water Resources Management in Australia
Principles and Practices of Wastewater Treatment and Disposal Procedures
Radiation in the Environment
Exotic Plants and Associated Environmental Problems
Endangered Animals in Australia
Ethics in Environmental Decision-Making

EAMS404 RESEARCH PROJECT 40cp
Corequisite EAMS401
Assessment An internal supervisor and an external examiner will assess the research project.
Content
The project will describe research and findings on an original investigation approved by the supervisor.

The project is worth 50% of the year's mark for Honours. It must be prepared in standard thesis format, and include raw data, questionnaire diagrams of experimental apparatus, computer programs, in appendices. Three unbound copies are to be submitted to the Department of Applied Science and Technology by 30 October. These copies will later be bound; one is retained by the student's supervisor, one is placed in the departmental library for future reference, and the third is returned to the student after final assessment has been made.

HONOURS DEGREE OF BACHELOR OF SCIENCE (AVIATION)

AVIA401 AVIATION HONOURS 401 20cp
Prerequisites B.Sc.(Aviation) with a Credit grade average or better in AVIA308, AVIA310, AVIA311 and AVIA314.
Hours 8 hours per week for the full year.
Examination Progressive assessment based upon written reports, seminar presentations and examination.
Content
Students will present seminars which relate to their project work in terms of a review of literature and methodology. Attendance and participation is compulsory.

AVIA402 AVIATION RESEARCH AND METHODOLOGY 10cp
Corequisite AVIA314.
Hours 6 hours per week for Semester 1.
Examination Progressive assessment based on seminar presentations, assignments and examination.
Content
Simple statistical procedures such as frequency distributions, cross-tabulations, correlations, t-tests, b-squared tests and simple ANOVAs and regression will be introduced. Reviews and reports of research will be discussed. Also covered will be qualitative approaches such as self-reports, observational and thematic research and historical research. Case-studies, questionnaire construction and interview skills will be covered.

AVIA403 TECHNOLOGY IN AVIATION 10cp
Prerequisites AVIA310, AVIA312.
Hours 6 hours per week for Semester 1.
Examination Progressive examination based on seminars, assignments and tests.

Content
The subject is designed to permit wide interpretation and application to the range of related topics covered in the BSc (Aviation). These topics include aeronautical engineering, design, systems and flight operations such as flight planning, navigation and meteorology.

Texts and References
To be advised.

AVIA404 THE HUMAN VARIABLE IN AVIATION 10cp
Prerequisites AVIA221 and AVIA311.
Hours 6 hours per week for Semester 1.
Examination Progressive assessment based on seminars, assignments and examinations.
Content
This subject is intended to permit a range of interpretations to enable students to make a study of an area in which the human variable is the focus. Such a focus includes ergonomics, aviation psychology, aviation medicine, instruction and learning.

Texts and References
To be advised.

AVIA405 AVIATION HONOURS—THESIS 40cp
Prerequisites B.Sc.(Aviation) with a Credit grade average or better in AVIA308, AVIA310, AVIA311 and AVIA314.
Corequisites AVIA401 and either AVIA403 or AVIA404.
Hours 12 sessions per week for the full year.
Examination The thesis will be assessed by two Examiners one of whom may be external.

Content
AVIA405 is half the Honours in Aviation. It consists of the development, conduct, analysis and reporting of a piece of original empirical research. The thesis (of about 75 pages) formally presents this research in conventional format.

Students are supervised by members of the Department of Aviation and are advised to discuss possible projects well in advance with potential supervisors. Nominated topics are submitted to a meeting of the staff of the Department of Aviation chaired by the Head of Department, for approval.
HONOURS DEGREE OF BACHELOR OF ENVIRONMENTAL SCIENCE

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) A course of advanced lectures (approximately 50 hours) (30%)
ii) A reading list in the main area of interest (30%)
iii) A supervised research project, the results of which are embodied in a thesis and presented as a seminar (40%).

Examination Half each of the lecture course and the reading list will be examined at the end of semester one and the remainder at the end of the second semester. The thesis will be assessed by a committee of three (one of whom shall be the project supervisor) appointed by the Department. Part-time students will have their assessment spread accordingly over two academic years.

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.

CHEM407  CHEMISTRY HONOURS 407  40-40cp
CHEM408  CHEMISTRY HONOURS 408  40cp

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. 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 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 (40%)
ii) Coursework, consisting of reviews of major subject areas of geography and internal assessment, 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 30 November in the year preceding intake into the Honours year.

HONOURS DEGREE OF BACHELOR OF SCIENCE

BIOL401  HONOURS IN BIOLOGICAL SCIENCES  40-40cp

Prerequisites Completion of ordinary degree requirements of 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 reading list in the main area of interest (30%)
iii) A seminar presentation (15%)

Examination Each of the courseworks and the reading list will be examined at the end of semester one and the remainder at the end of the second semester. The thesis will be assessed by a committee of three (one of whom shall be the project supervisor) appointed by the Department. Part-time students will have their assessment spread accordingly over two academic years.

GEOG401  HONOURS IN GEOGRAPHY  40-40cp

Prerequisites GEOG101 and GEOG102 plus either GEOG201 and GEOG301 or GEOG202 and GEOG302 including 30cp from 200 level and 40cp from 300 Level Geography 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. GEOG201 and GEOG301 for Physical Geography; GEOG202 and GEOG302 for Human Geography), and have completed a Major in Geography that includes GEOG101, GEOG102, thirty credit points from Level 200 courses and forty 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 twenty 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.

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 (40%)
ii) Coursework, consisting of reviews of major subject areas of geography and internal assessment, 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 20th November in the year preceding intake into the Honours year.
(i) 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.

GEOL401 HONOURS IN GEOLOGY 40-40cp GEOL402
Prerequisites: 40cp Level 300 GEOl obtaining at least a Credit grade average. For GEOL402, co-requisite of GEOL401, completion of ordinary degree requirements.

Hours: To be advised
Examination
(i) a viva voce examination
(ii) research work carried out and its presentation in a thesis

Content
Part A
Lecture-tutorial work with directed reading in the following fields of geology: mineralogy and crystallography; geochemistry; igneous petrology; metamorphic petrology; coal petrology; sedimentology; stratigraphy; palaeontology; structural geology; economic geology; engineering geology. Presentation of a seminar.

Part B
A research project, the results of which are to be embodied in a thesis, presentation of a seminar on the results of the research project.

PHYSICS
PHYS401 HONOURS IN PHYSICS 40-40cp PHYS402
Prerequisites: PHYS301 plus any other three PHYS300 subjects. It is expected that the level 300 Physics subjects will have been passed at Credit level or better.

Hours: PHYS401 and PHYS402 together comprise 115 hours of lectures plus a project.

Examination:
Content: PHYS401 and PHYS402 are intended to give students an advanced understanding of the fundamentals of modern physics appropriate for an Honours graduate in the discipline as well as exposure to the current interests of the Department viz. solid state physics, radar meteor physics, electromagnetic signal propagation and aspects of applied physics.

These aims will be achieved by offering three compulsory core topics, Quantum Mechanics, Theoretical Solid State Physics and Plasma Physics, and a number of optional topics. The latter include Relativity, Applied Nuclear Physics, Surface Physics, Space Physics, Atomic collisions In Solids, Laser Physics, Fourier Transforms, Ionospheric Physics, Medical Physics and the Detection of Particles and Radiation. While not all of these topics may be offered in any one year, other optional topics may be available depending on visitors to the department.

Texts

Referenced:

To be advised.

PHYS402 PSYCHOLOGY HONOURS 402 (THESIS) 40cp

Prerequisite: A completed BA or BSc, or three complete years of a BA(Psych) or BSc(Psych) including the units 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 PSYC302. Prerequisites must have obtained at least a Credit in each of four 300 level Psychology subjects including PSYC301 and PSYC302.

Examination: To be advised

Content:
PSYC401 comprises half of the final Honours in Psychology. Full-time students enrol in PSYC401 as well. Part-time students complete PSYC401 in the first year and PSYC402 in the second. PSYC401 consists of five seminar series, including one compulsory unit on theoretical issues in Psychology, a choice of two units in mathematical or physiological Psychology, and a choice of two units in 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 practical placement and associated essay. There is no overlap with PSYC403.

Texts and References:

To be advised.

MATH401 HONOURS IN MATHEMATICS 40-40cp

Prerequisite: Completion of Ordinary Degree requirements at the appropriate level and permission of the Heads of the Departments of Mathematics and Mathematics

Examination:
Content:

To be advised.

MATH402 HONOURS IN MATHEMATICS 40-40cp

Prerequisite: A major sequence of Mathematics subjects, including at least 40 credit points at the 200 level in Mathematics together with 400 Level offered by the Department of Mathematics. Mathematics 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, as for example seminars and assignments, may be required by either Department.

TEXTS:

To be advised.

REFERENCES:

To be advised.

To be advised.

To be advised.

To be advised.

To be advised.

To be advised.

To be advised.
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, including the current list of other topics which are not available as "500 level subjects."

Students seeking admission to this subject should apply in writing to the Head of the Department before 30 December of the preceding year. A meeting will be held on the first Tuesday of the first semester in Room V107 at 1.00 p.m. to determine both the timetable for topics, and which topics will be covered.

HONOURS COURSE IN STATISTICS
This is a Level 400 course consisting of several coursework subjects and a project.

Prerequisite: 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 subjects worth 40-60 credit points of which at least three subjects must be chosen from Level 400 subjects offered by the Department of Statistics.

Students are also required to complete project work which can be worth 20, 30 or 40 credit points, to be determined by consultation with the Head of Department. The results of the project are to be presented in a thesis. The project may be a practical one involving the analysis of data, or a theoretical one. Work on the project normally starts early in February. Level 400 units which may be offered are:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Cp</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT401 PROBABILITY THEORY</td>
<td>10</td>
</tr>
<tr>
<td>STAT402 ANALYSIS OF CATEGORICAL DATA</td>
<td>10</td>
</tr>
<tr>
<td>STAT403 DEMOGRAPHY AND SURVIVAL ANALYSIS</td>
<td>10</td>
</tr>
<tr>
<td>STAT404 ROBUST REGRESSION AND SMOOTHING</td>
<td>10</td>
</tr>
<tr>
<td>STAT405 STATISTICAL CONSULTING</td>
<td>10</td>
</tr>
<tr>
<td>STAT406 METHODS FOR QUALITY IMPROVEMENT</td>
<td>10</td>
</tr>
<tr>
<td>STAT407 ADVANCED TOPICS IN STATISTICS</td>
<td>10</td>
</tr>
</tbody>
</table>

References


STAT403 DEMOGRAPHY AND SURVIVAL ANALYSIS 10cp

Prerequisite: Forty credit points Level 300 STAT subjects obtaining at least a Credit grade average.

This course presents a mathematical treatment of the techniques used in population projections, gain and survival studies and the survival models used in demography and biostatistics.

Text

Lawless, J. 1982, Statistical Models and Methods for Lifetime Data, Wiley

References


Haldan-Johnson, R.C. and Johnson, N.L. 1980, Survival Models and Data Analysis, Wiley


Yitzhak, N. 1977, Applied Mathematical Demography


STAT404 ROBUST REGRESSION AND SMOOTHING 10cp

Prerequisite: Forty credit points Level 300 STAT subjects obtaining at least a Credit grade average.

The main theme is the use of the computer to fit robust regression models to data when the assumptions of traditional methods may not be satisfied or when it is not known what form of model is appropriate. Concepts of robustness, high breakdown estimation in linear regression, scatterplot smoothers (E.g. ACE, LOESS and M-estimation), kernel regression and methods for estimating the amount of smoothing and radically different approaches (E.G. CART and projection pursuit).

References

Agresti, A. 1990, Categorical Data Analysis, Wiley


References

Eubank, R.L. 1988, Spline Smoothing and Nonparametric Regression, M.Dekker


Rousseeuw, P.J. and Leroy, A.M. 1987, Robust Regression and Outlier Detection

STAT405 STATISTICAL CONSULTING 10cp

Prerequisite: Forty credit points Level 300 STAT subjects obtaining at least a Credit grade average.

The aim of this course is to develop both the statistical and nonstatistical skills required for a successful consultant. The course includes a study of the consulting literature, a review of commonly-used statistical procedures, problem formulation and solving, analysis of data sets, report writing and oral presentation, role-playing and consulting with actual clients.

STAT406 METHODS FOR QUALITY IMPROVEMENT 10cp

Prerequisite: Forty credit points Level 300 STAT subjects obtaining at least a Credit grade average.

The course will cover the concepts of total quality management, the Deming philosophy and relevant statistical techniques. Simple methods such as flow charts and Pareto diagrams will be covered in addition to the various types of control charts and process capability analysis. Modern experimental design techniques for optimizing process performance will be included. The course is a practical one and the issues involved in actually implementing a quality and productivity improvement program in an organisation will be addressed.

Course readings provided.

STAT407 ADVANCED TOPICS IN STATISTICS 10cp

Prerequisite: Forty credit points Level 300 STAT subjects obtaining at least a Credit grade average.

This course consists of four modules that are selected from the following topics: Multivariate methods; randomization, bootstrapping and other computer
intensive methods: analysis of repeated measurements; sample size estimation, analysing large data sets; meta-analyses.

STAT408 PROJECT 10cp
Prerequisite Forty credit points Level 300 STAT subjects obtaining at least a Credit grade average.

STAT409 PROJECT 20cp
Prerequisite Forty credit points Level 300 STAT subjects obtaining at least a Credit grade average.

STAT410 PROJECT 30cp
Prerequisite Forty credit points Level 300 STAT subjects obtaining at least a Credit grade average.

STAT411 PROJECT 40cp
Prerequisite Forty credit points Level 300 STAT subjects obtaining at least a Credit grade average.

POSTGRADUATE AND HIGHER DEGREE SUBJECTS

GRADUATE DIPLOMA IN SCIENCE
BIOL405 BIOLOGY DIPLOMA 405
BIOL406 BIOLOGY DIPLOMA 406 40+40cp
Prerequisites Completion of ordinary degree requirements of the Bachelor of Science and permission of the Head of Department. 40 credit points Level 300 Biology or other 300 Level subjects approved by the Department.

A Graduate Diploma in Science in Biological Sciences is designed to develop those skills required for continuing self education and to develop the skills required in the investigation of a topic in a particular area of biology. At the end of the Graduate Diploma program, a student should be proficient at:

i) Investigating a biological problem or phenomenon in an appropriate and productive manner
ii) communicating the results of a scientific investigation in writing in an appropriate way
iii) communicating scientific information to a scientific audience
iv) obtaining information on a particular topic from a number of different sources and synthesising it into a coherent overview of the field.

To achieve these aims the following tasks will be undertaken during the year:

a) a research project or an investigation which will involve studies in either a single or two different areas resulting in a report which will be presented as a thesis (60%)
b) a seminar to be presented at the end of the second semester in which details are given of the work undertaken on the project or investigations (10%)
c) two essays (30%)

CHEM405 CHEMISTRY DIPLOMA 405
CHEM406 CHEMISTRY DIPLOMA 406 40+40cp

Prerequisites Completion of ordinary degree requirements of the Bachelor of Science and permission of the Head of Department. 40 credit points Level 300 Chemistry.

Candidates will choose eight topics from a list, details of which are available from the Department of Chemistry. Topics will be presented either as ten lecture courses with additional reading or as directed readings. Topic titles are presented below but not required.

1. Infrared and Raman Spectra
2. Natural Products Biosynthesis: Principles of Environmental Sampling
3. Automated Methods of Analysis: Technetium Chemistry
4. Electrochemical Techniques: Pyrolytic Methods and Organic Photochemistry
5. Gold Cluster Chemistry: Boron and Silicon in Organic Synthesis
7. Water and Waste Chemistry: Solution Equilibria
8. Polydentate Ligands and Coordination Chemistry: Ironics
10. Organosulfur Chemistry

Assessment A one hour examination in each selected topic.

CHEM406 CHEMISTRY DIPLOMA 406
Corequisite CHEM405

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, double spaced A4 pages is the basis of assessment. In addition candidates will be required to present results orally in a research seminar.

GEOG405 GEOGRAPHY DIPLOMA 405 (GEOG406)
40+40cp
Prerequisites Completion of ordinary degree requirements of the Bachelor of Science and permission of the Head of Department. 40 credit points Level 300 Geography. 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.

Examination 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 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 the Diploma should notify the Head of Department by 50 November in the year preceding intake into the Diploma year.

GEOG405 GEOLOGY DIPLOMA 405 (GEOG406) 40+40cp

Prerequisites Completion of ordinary degree requirements of the Bachelor of Science and permission of the Head of Department. 40 credit points Level 300 Physical Geology.

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 minor research project under the supervision of an academic member of staff in an area of joint interest and present a seminar on the outcomes.

Assessment By coursework (60%) and a project (40%).

GRADUATE DIPLOMA IN ENVIRONMENTAL STUDIES AND MASTER OF ENVIRONMENTAL STUDIES

GEOG491 ENVIRONMENTAL STUDIES SEMINAR 1 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 the thesis topic. The assignment will be presented as a seminar which will be worth 25% and the seminar 15% of the total mark for Geology 405.

GEOG405 GEOLOGY DIPLOMA 405
Corequisite GEOG406

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 and together with its oral presentation counts 50% towards the final mark.

PHYS405 PHYSICS DIPLOMA 405 (PHYS406) 40+40cp

Prerequisites Completion of ordinary degree requirements of the Bachelor of Science and permission of the Head of Department. 40 credit points Level 300 Physics.

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 minor research project under the supervision of an academic member of staff in an area of joint interest and present a seminar on the outcomes.

Assessment By coursework (60%) and a project (40%).

GRADUATE DIPLOMA IN ENVIRONMENTAL STUDIES AND MASTER OF ENVIRONMENTAL STUDIES

GEOG491 ENVIRONMENTAL STUDIES SEMINAR 1 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 the thesis topic. The assignment will be presented as a seminar which will be worth 25% and the seminar 15% of the total mark for Geology 405.
Environmental Studies. The topic is determined by the student's interest and background.

GEOG501 ENVIRONMENTAL STUDIES MAJOR PROJECT I 30cp
One-half of the project under individual supervision required for the Master of Environmental Studies. Simultaneous enrolment with GEOG502 required for full-time students. Part-time students may take GEOG501 and GEOG502 in separate years. The topic is determined by the student's interest and background.

GEOG502 ENVIRONMENTAL STUDIES MAJOR PROJECT II 30cp
One-half of the project under individual supervision required for the Master of Environmental Studies. Simultaneous enrolment with GEOG502 required for full-time students. Part-time students may take GEOG501 and GEOG502 in separate years. The topic is determined by the student's interest and background.

GEOG504 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.

GEOG505 DIRECTED ENVIRONMENTAL STUDY 1 10cp
Directed research and reading courses under individual supervision for students with specific interests or needs in the area of Environmental Studies.

GEOG506 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.

MASTER OF SCIENTIFIC STUDIES
Applied Science and Technology

ASTK695 FOUNDATIONS OF APPLIED SCIENCE AND TECHNOLOGY 40cp
Prerequisite An approved degree containing subjects in Applied Science and Technology. 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 subjects 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 Based on Project work (70%) and Examinations (30%).

ASTK697 ADVANCED TOPICS IN APPLIED SCIENCE AND TECHNOLOGY 40cp
Prerequisite ASTK696 Topics in Applied Science and Technology. In 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. Depending on the availability of staff, not all strands may be offered in a year. Students must consult with the Head of Department in selecting strands. In order to pass ASTK697 Advanced Topics in Applied Science and Technology, students must pass each of the strands making up the forty credit points of work.

Assessment Based on Project work (70%) and Examinations (30%).

ASTK698 PROJECT 40cp
Prerequisite ASTK697 Advanced Topics in Applied Science and Technology. In 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

BIO695 FOUNDATIONS OF BIOLOGICAL SCIENCES 40cp
Forty credit points of the following selected topics can be chosen. Each topic can be taken at a ten credit point or a twenty credit point level:

Animal Development
Immunology
Animal Physiology
Microbiology
Biochemistry
Molecular Biology
Cell Biology
Plant Development
Ecology
Plant Physiology
Environmental Biology
Plant Molecular Biology
Genetics

Assessment Topics will be examined by essays, seminar and reports.

BIO697 ADVANCED TOPICS IN BIOLOGICAL SCIENCES 40cp
Literature search and reading lists in the area of specialisation in which there has been the appropriate preparation in BIOL695 and BIOL696. Assessment Examination will be by oral presentation and formal written material. It is expected for this subject that a teaching or technical promotional display (e.g. posters, video, computer disc) will result.

BIO698 PROJECT 40cp
The student will undertake a supervised program to enable exposure to the research process. The results will be embodied in a formal report.

CHEMISTRY

CHEM695 FOUNDATIONS OF CHEMISTRY 40cp
Prerequisite Approved three year degree with at least first year University Chemistry. 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 listed topics may be offered in any one year and some are not available for part-time evening study. The topics listed have different degree of individual prerequisites. Each topic involves a sustained lecture 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 as regards subject choice and availability before enrolling.
List of Topics

<table>
<thead>
<tr>
<th>Name</th>
<th>Cp</th>
<th>Semester</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nuclear Magnetic Resonance</td>
<td>5</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Physical Organic Chemistry</td>
<td>5</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Organosulfur Chemistry</td>
<td>5</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Ionic Solutions</td>
<td>5</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Coordination Chemistry</td>
<td>5</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Solution Equilibria</td>
<td>5</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Water and Waste Chemistry</td>
<td>5</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Organic Structure Elucidation by NMR</td>
<td>5</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Laser Spectroscopy</td>
<td>5</td>
<td>2</td>
<td>2.3</td>
</tr>
<tr>
<td>Chemometrics</td>
<td>5</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Industrial Chemical Analysis</td>
<td>5</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Environmental Trace Analysis</td>
<td>5</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Cluster Chemistry</td>
<td>5</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Biominorganic Coordination</td>
<td>5</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Chemistry</td>
<td>5</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Organic Reaction Mechanisms</td>
<td>5</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Electrochemical Solar Energy</td>
<td>5</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Molecular Spectroscopy</td>
<td>5</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Heterocyclic Chemistry</td>
<td>5</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Identification of Natural Compounds</td>
<td>5</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Organic Spectroscopy</td>
<td>5</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Computational Chemistry</td>
<td>5</td>
<td>1 or 2</td>
<td>4</td>
</tr>
<tr>
<td>Industrial Metal Chemistry</td>
<td>5</td>
<td>1 or 2</td>
<td>4</td>
</tr>
<tr>
<td>Industrial Organic Chemistry</td>
<td>5</td>
<td>1 or 2</td>
<td>4</td>
</tr>
<tr>
<td>Organic Analysis</td>
<td>5</td>
<td>1 or 2</td>
<td>4</td>
</tr>
<tr>
<td>Electrochemical Technology</td>
<td>5</td>
<td>1 or 2</td>
<td>4</td>
</tr>
<tr>
<td>Solid-state Chemistry</td>
<td>5</td>
<td>1 or 2</td>
<td>4</td>
</tr>
<tr>
<td>Photochemistry / Solar Energy</td>
<td>5</td>
<td>1 or 2</td>
<td>4</td>
</tr>
<tr>
<td>Polymer Chemistry</td>
<td>5</td>
<td>1 or 2</td>
<td>4</td>
</tr>
</tbody>
</table>

Key to Prerequisites
1. Bachelors 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

<table>
<thead>
<tr>
<th>Name</th>
<th>Cp</th>
<th>Semester</th>
<th>Prerequisite (for all)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inorganic Spectroscopy</td>
<td>10</td>
<td>1 or 2</td>
<td>CHEM695</td>
</tr>
<tr>
<td>X-Ray Crystallography</td>
<td>10</td>
<td>1 or 2</td>
<td></td>
</tr>
<tr>
<td>Inorganic Oxo Clusters</td>
<td>10</td>
<td>1 or 2</td>
<td>CHEM696</td>
</tr>
<tr>
<td>Medicinal Chemistry</td>
<td>10</td>
<td>1 or 2</td>
<td></td>
</tr>
<tr>
<td>Australian Natural Products</td>
<td>10</td>
<td>1 or 2</td>
<td>B.Sc (Hons)</td>
</tr>
<tr>
<td>Organic Reactions</td>
<td>10</td>
<td>1 or 2</td>
<td></td>
</tr>
<tr>
<td>Photoelectron Spectroscopy</td>
<td>10</td>
<td>1 or 2</td>
<td></td>
</tr>
<tr>
<td>Impedance Spectroscopy</td>
<td>10</td>
<td>1 or 2</td>
<td></td>
</tr>
</tbody>
</table>

Assessment: For each topic, a critical essay or literature review of no less than 5000 words.

CHEM698 PROJECT 40cp
Prerequisite: CHEM695 and CHEM696 or alternatively B.Sc (Hons) with a Chemistry major.
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 not 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 40cp
Not offered in 1994.
EAMS696 TOPICS IN ENVIRONMENTAL ASSESSMENT AND MANAGEMENT 40cp
Not offered in 1994.
EAMS697 ADVANCED TOPICS IN ENVIRONMENTAL ASSESSMENT AND MANAGEMENT 40cp
Not offered in 1994.
EAMS698 PROJECT 40cp
Not offered in 1994.

GEOGRAPHY

GEOG695 FOUNDATIONS OF GEOGRAPHY 40cp
Not offered in 1994.
GEOG696 TOPICS IN GEOGRAPHY 40cp
Not offered in 1994.
GEOG697 ADVANCED TOPICS IN GEOGRAPHY 40cp
Not offered in 1994.
GEOG698 PROJECT 40cp
Not offered in 1994.

GEOLOGY

GEOI695 FOUNDATIONS OF GEOLOGY 40cp
Prerequisite: Approved three year degree with Geography as a major.
Forty credit points of appropriate undergraduate subjects are chosen to upgrade the basic science knowledge of the student in the chosen area of specialisation. With permission of the Head of Department these subjects may be chosen from subjects offered by other departments.
GEOI696 TOPICS IN GEOLOGY 40cp
Corequisite: GEOI695
Students may choose topics from the list outlined below. Each topic may be taken at a ten credit point or twenty credit point level:

Basin Analysis
Sedimentology
Low grade metamorphism and Stratigraphy
Crustal Evolution Structural and metamorphic
Coal Utilisation aspects of subduction
Carbonaceous Sedimentary rocks complex sequences
Coal Geology Ore deposit geology
Geochemistry Environmental Geology
Carboniferous Stratigraphy and Palaeontology

Assessment: Literature reviews (2500 words for a ten credit point topic, 5000 words for a twenty credit point topic) and a seminar.

GEOL697 ADVANCED TOPICS IN GEOLOGY 40cp
Prerequisite: GEOL696
Students will be expected to critically review a paper in an area of interest, present a seminar on a topic provided by the supervisor and a 6000 word essay on one of the topics listed for GEOL696.

GEOL698 PROJECT 40cp
Corequisite: GEOL697
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 40 typed, double spaced pages and will also be presented as a seminar.

MATHEMATICS

MATH695 FOUNDATIONS OF MATHEMATICS 40cp
Prerequisite: A degree with a substantial amount of Mathematics, and approval of the Head of Department of Mathematics.
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
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
Subjects of a Mathematical nature totalling forty credit points and approved by the Head of Department of Mathematics.

PHYSICS

PHYS695 FOUNDATIONS OF PHYSICS 40cp
Prerequisite: An approved three year degree with at least twenty credit points of 200 Level physics.
Forty credit points of undergraduate offerings, consistent with the students 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: An approved three year degree with at least twenty credit points of 200 Level physics.
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: PHYS695 and PHYS696 or a B.Sc (Hons) in Physics.
A literature search, extensive reading and a critical review of four topics relevant to the students 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 candidates project supervisor.
Assessment: Via an essay of 5000 words and an oral examination on each topic.
PHYS698 PROJECT 40cp
Prerequisite: PHYS695 and PHYS696 or a B.Sc (Hons) in Physics.
A substantial research project under the supervision of an academic member of the department in an area of joint interest.
### Mathematics: Postgraduate and Higher Degree Subjects in Mathematics

**Note:** A meeting will be held on the first Tuesday of the first and second semesters in Room V107 at 1:00 pm to determine both which of the subjects are to be offered during the year, and the timetable for these subjects.

#### MATHS501 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 normal state of matter in the universe is that of a plasma, or ionized gas, permeated by magnetic fields. Moreover, these fields (unlike that of the earth) may be dominant, or at least significant, in controlling the structure of the region. The aim of this course is to investigate the effects of astrophysical magnetic fields.

**References:**

#### MATHS502 Banach Algebra 10cp

**Corequisite:** MATH310. **Hours:** About 27 lecture hours — Full Year. **Examination:** One 2 hour paper.

**Content:**
- A Banach Algebra is a mathematical structure where two main strands of pure mathematical study, the topological and the algebraic, are united.

#### MATHS603 Convex Analysis 10cp

**Corequisite:** MATH1310. **Hours:** About 27 lecture hours — Full Year. **Examination:** One 2 hour paper.

**Content:**
- Convexity has become an increasingly important tool in optimization of functional analysis concerning generalizing to convex functions, properties previously studied for the norm; much of interest in convexity has arisen from areas of applied mathematics related to fixed point theory and optimisation problems. We begin with a study of convex sets and functions defined on linear spaces: gauges of convex sets, separation properties. We then study topology on linear spaces generated by convex sets: metrisability, normality and finite dimensional cases. We examine continuity and separation for locally convex spaces, convexity for convex spaces and Banach-Alaoglu Theorem. We study extreme points of convex sets, the Krein-Milman theorem. We give particular attention to the study of differentiation of convex functions on normed linear spaces: Gateaux and Fréchet derivatives, the Mazur's and Asplund's theorems.

**Text**

**References**

#### MATHS504 Fluid Statistical Mechanics 10cp

**Hours:** About 27 lecture hours — Full Year. **Examination:** One 2 hour paper.

**Content:**
- Cluster-diagrammatic expansions - low density solutions; integrals of differential equations (BGY, HNC, PY) - high density solutions; quantum liquids - Wuefenburg fermion extension; numerical solution of integral equations; phase transitions - diagrammatic.
approach; critical phenomena; the liquid surface; liquid metals; liquid crystals; molecular dynamics and Monte Carlo computer simulation; irreversibility; transport phenomena. Polymeric systems.

Text
Croxton, C.A. 1975, Introduction to Liquid State Physics, Wiley.

References

MATH506 FOUNDATIONS OF MODERN DIFFERENTIAL GEOMETRY 10cp
Prerequisite MATH201, MATH202 and MATH203.
Hours About 27 lecture hours — Full Year.
Examination One 2 hour paper.

Content

References


MATH506 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; rigorization of analysis in the 19th century with stress on the developments of number systems, continuity, function concept, differentiability, integrability.

References
List will be presented during the course.

Students interested in this or other topics on aspects of the History of Mathematics should approach the lecturer concerned as soon as possible.

MATH507 LINEAR OPERATORS 10cp
Prerequisites MATH310 and MATH311.
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.

Reference


MATH508 MATHEMATICAL PHYSIOLOGY 10cp
Hours About 27 lecture hours — Full Year.
Examination One 2 hour paper.

Content
Physiology — the study of how 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 bypass and kidney dialysis machines, cardiac assist space-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 by 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, micrutterming and walking, as well as more vital processes involved in gas exchange in the lungs, mass transport between lungs and blood and blood and tissue, metabolic changes within tissues, enzyme kinetics, signal production along nerve fibres, sperm transport in the cervices. Indeed, mathematical engineering might be said to be part of the conspiracy to produceuper humans (e.g. see “Fast Running Tracks” in 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


Hansen, H.N. 1975, Biological Transport, W.A. Benjamin.


Examinaion One 2 hour paper.

Content
Regular perturbation methods, including parameter and coordinate perturbations. A discussion of the sources of nonuniformity in perturbation expansions. The method of scaled coordinates and the methods of matched and composite asymptotic expansions. The method of multiple scales.

References
Bush, A.W. 1992, Perturbation Methods for Engineers and Scientists, CRC.

MATHS11 QUANTUM MECHANICS 10cp

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, symmetry, plus a selection of more specialised topics.

References
Sakurai, J.J. 1985, Modern Quantum Mechanics, Addison Wesley.

MATHS12 RADICALS & ANNIHILATORS 10cp

Prerequisite MATHS12

Hours About 27 lecture hours — Full year.

Examination One 2 hour paper.

MATHS14 VISCOUS 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 solutions: theory of very slow motion, boundary layer theory, etc.

References

MATHS15 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. The second part of the course will introduce Lagrangian and Hamiltonian formulations, and apply them to systems of particles with constraints and to rigid-body systems.

References

If time (and student interest) permits topics that might be touched upon include: Hamilton-Jacobi theory, action-angle variables, approximation methods, classical field theory, geometrical quantisation.

References
Crampin, M., Pirani, F.A.E. 1986, Applicable Differential Geometry, CUP. (and others to be advised).

MATHS16 CONCRETE GROUP THEORY 10cp

Prerequisites MATHS11.

Hours About 27 lecture hours — Full Year.

Examination One 2 hour paper, and assessment.

Content
A course on some aspects of group construction, which will include discussion of: presentation of a group by generators and relations; presentation of a group as a group of permutations, and as a symmetry group or structure-preserving group; relations between groups and some geometrical objects; representation of a group as a group of matrices; construction of groups in various ways from known groups; constructions, preserving varetal and categorical properties; construction of “generating” groups of certain classes.

References
Feit, W.J. 1969, Characters of Finite Groups, Benjamin.
MATH517 ANALYSIS OF TOPOLOGICAL STRUCTURES 10cp

Prerequisites: MATH205.

Hours: Approximately 27 lecture hours — Full Year.

Examination: One 2 hour paper.

Content:

MATH519 GENERAL RELATIVITY 10cp

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 regarded as a special application of pseudo-Riemannian geometry, where the manifold, here space-time, has a metric that is not positive definite. Particles, fluids 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:


Others to be advised.

MATH520 C*-ALGEBRAS 10cp

Prerequisite: Some background in real and functional analysis is required.

Hours: Approximately 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, where we discuss the basic properties of the spectrum, and the Gelfand transform, which embeds a commutative Banach algebra in an algebra of continuous functions. The Gelfand-Neumark theorem says that, when the algebra is a C*-algebra, the Gelfand transform is an isomorphism, and we shall look at this theorem and its applications in operator theory. We shall then discuss representations of C*-algebras — roughly speaking, the ways of realising an abstract C*-algebra as an algebra of operators on Hilbert space. There is a general construction which shows this can always be done — due to Gelfand, Neumark and Segal — but we shall focus on the way in which C*-algebras are used in the representation theory of groups and/or dynamical systems.

References:


MATH521 CLIFFORD ALGEBRAS AND SPINORS 10cp

Hours: Approximately 27 lecture hours — Full Year.

Examination: One 2 hour paper.

Content:
Clifford called the algebras that now bear his name "geometric 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 model in the study of such algebras. The course will include Weitzenbohm's structure theorem for semi-simple associative algebras and Processt's theorem for real division algebras.

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 spinor representations, will be classified.

Reference:

Others to be advised.

MATH522 INTRODUCTION TO CATEGORY THEORY 10cp

Prerequisite: MATH211

Hours: Approximately 27 lecture hours — Full year.

Examination: One 2 hour paper.

Content:
This course is geared to an examination of the concept of "natural" 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. Adjoint functors will be discussed in some depth and illustrated by applications to various branches of mathematics, particularly group theory. The existence of adjoint functors under certain conditions and a monadic approach to universal algebra will end the course.

Text:
MacLane, S. 1971, Categories for the Working Mathematician, Springer.

References:


MATH523 GREEK MATHEMATICS AND ITS HISTORY 10cp

Hours: Approximately 27 lecture hours — Full year.

Assessment: The course will be assessed by essays and seminars.

Content:
An in-depth study of Greek mathematics from about 500BC to 500AD. 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
Presented during the course.

MATH524 DEVELOPMENT OF CONTEMPORARY ALGEBRA 10cp
Prerequisite MATH209 or MATH211
This course of 27 lectures will examine what mathematics can be considered "algebra" and how it has developed from Babylonian times to about 1930. It will concentrate on those streams which appear to have had a bearing on the present state of certain groups. 

Hours About 27 lecture hours — Full year.
Assessment The course will be assessed by essays and seminars.

MATH525 ADVANCED TOPIC IN ANALYSIS 10cp
Prerequisite MATH310
Hours About 27 lecture hours — Full year.
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
Representation theory: Representations of groups and algebras by linear operators on Hilbert space. Classification of the irreducible representations of certain groups.
The choice of Topic may vary from year to year, in part based on student interests.

MATH526 MODELS OF BIOLOGICAL PATTERN FORMATION 10cp
Prerequisites MATH201, MATH202, MATH203, MATH213, MATH315.
Hours About 27 lecture hours — Full Year.
Examination One 2 hour paper
Content
In 1952, Turing suggested that, under certain conditions, chemicals can react and diffuse in such a manner as to produce steady state heterogeneous spatial patterns of colour or "morphogen" concentration. This topic will discuss a number of models of pattern generation which lead to a system of reaction-diffusion equations. These will be analyzed in detail and the conditions under which patterns are likely to occur will be characterized.
References
Murray, J.D. 1989, Mathematical Biology, Springer.

MATH527 COMBINATORICS 10cp
Prerequisite MATH218
Hours About 27 lecture hours — Full year.
Examination One 2 hour paper and assessment.
Content
Basic counting ideas. Generating functions. Polya methods and extensions. Equivalence of some "classical numbers". Construction of some designs and codes and some recent combinatorial theorems.
References

MATH528 ALGEBRAIC TOPOLOGY 10cp
Prerequisite MATH318 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
Gilbkn, P.J. 1977, Graphs, Surfaces and Homology, Chapman and Hall.

MATH529 DYNAMICAL SYSTEMS 10cp
Prerequisite Some Measure Theory or Topology e.g. MATH311 or MATH318.
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 certain 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 theorem 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. In this end, we shall show that these systems have unique invariant probability measure for which the system is ergodic.
References
### Section Nine

#### Subject Computer Numbers

<table>
<thead>
<tr>
<th>Number</th>
<th>Subject</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>LEVEL 100 SUBJECTS</strong></td>
<td></td>
</tr>
<tr>
<td>EMGT101</td>
<td>Foundations of Environmental Management</td>
<td>10</td>
</tr>
<tr>
<td>EMGT102</td>
<td>Social Development and the Environment</td>
<td>10</td>
</tr>
<tr>
<td>ENV102</td>
<td>Environmental Values and Ethics</td>
<td>10</td>
</tr>
<tr>
<td>ENV103</td>
<td>Environmental Issues and Problems</td>
<td>10</td>
</tr>
<tr>
<td>AVIA109</td>
<td>Introductory Meteorology</td>
<td>5</td>
</tr>
<tr>
<td>AVIA110</td>
<td>Introductory Navigation</td>
<td>5</td>
</tr>
<tr>
<td>AVIA111</td>
<td>Introductory Aerodynamics</td>
<td>5</td>
</tr>
<tr>
<td>AVIA112</td>
<td>Introductory Human Factors</td>
<td>10</td>
</tr>
<tr>
<td>AVIA113</td>
<td>Aircraft Performance &amp; Systems</td>
<td>5</td>
</tr>
<tr>
<td>AVIA114</td>
<td>Flight Rules &amp; Procedures</td>
<td>5</td>
</tr>
<tr>
<td>AVIA115</td>
<td>Reciprocating Engines</td>
<td>5</td>
</tr>
<tr>
<td>AVIA116</td>
<td>Commercial Meteorology</td>
<td>5</td>
</tr>
<tr>
<td>AVIA117</td>
<td>Navigation</td>
<td>5</td>
</tr>
<tr>
<td>AVIA118</td>
<td>Aerodynamics</td>
<td>5</td>
</tr>
<tr>
<td>AVIA119</td>
<td>Aviation Psychology &amp; Medicine</td>
<td>5</td>
</tr>
<tr>
<td>AVIA120</td>
<td>Aviation Law, Commercial Flight Rules and Procedures</td>
<td>10</td>
</tr>
<tr>
<td>AVIA121</td>
<td>Aircraft Systems &amp; Propulsion</td>
<td>5</td>
</tr>
<tr>
<td>AVIA123</td>
<td>Aircraft Performance &amp; Loading</td>
<td>5</td>
</tr>
<tr>
<td>BIOL101</td>
<td>Plant &amp; Animal Biology</td>
<td>10</td>
</tr>
<tr>
<td>BIOL102</td>
<td>Cell Biology, Genetics &amp; Evolution</td>
<td>10</td>
</tr>
<tr>
<td>CHEM101</td>
<td>Chemistry 101</td>
<td>10</td>
</tr>
<tr>
<td>CHEM102</td>
<td>Chemistry 102</td>
<td>10</td>
</tr>
<tr>
<td>COMP110</td>
<td>Introduction to Programming</td>
<td></td>
</tr>
<tr>
<td>COMP111</td>
<td>Introduction to Computer Science 1</td>
<td>10</td>
</tr>
<tr>
<td>COMP112</td>
<td>Discrete Structures</td>
<td>10</td>
</tr>
<tr>
<td>COMP113</td>
<td>Introduction to Artificial Intelligence</td>
<td>10</td>
</tr>
<tr>
<td>GEOG101</td>
<td>Introduction to Physical Geography</td>
<td>10</td>
</tr>
<tr>
<td>GEOG102</td>
<td>Introduction to Human Geography</td>
<td>10</td>
</tr>
<tr>
<td>GEOL101</td>
<td>The Environment</td>
<td>10</td>
</tr>
<tr>
<td>GEOL102</td>
<td>Earth Materials</td>
<td>10</td>
</tr>
<tr>
<td>INFO101</td>
<td>Introduction to Information Systems</td>
<td>10</td>
</tr>
<tr>
<td>MAQM135</td>
<td>Mathematics IA</td>
<td>20</td>
</tr>
<tr>
<td>MAQM136</td>
<td>Mathematics IB</td>
<td>20</td>
</tr>
<tr>
<td>MAQM146</td>
<td>Foundation Studies In Elementary Mathematics</td>
<td>15</td>
</tr>
<tr>
<td>MATH111</td>
<td>Mathematics I1</td>
<td>10</td>
</tr>
<tr>
<td>MATH112</td>
<td>Mathematics I2</td>
<td>10</td>
</tr>
<tr>
<td>MATH113</td>
<td>Mathematics I3</td>
<td>10</td>
</tr>
<tr>
<td>MATH114</td>
<td>Mathematics I4</td>
<td>10</td>
</tr>
<tr>
<td>PHYS111</td>
<td>Physics I1</td>
<td>10</td>
</tr>
<tr>
<td>PHYS112</td>
<td>Physics I2</td>
<td>10</td>
</tr>
<tr>
<td>PHYS113</td>
<td>Physics I3</td>
<td>10</td>
</tr>
<tr>
<td>PHYS114</td>
<td>Physics I4</td>
<td>10</td>
</tr>
<tr>
<td>PSYC101</td>
<td>Psychology Introduction 1</td>
<td>10</td>
</tr>
<tr>
<td>PSYC102</td>
<td>Psychology Introduction 2</td>
<td>10</td>
</tr>
<tr>
<td>STAT101</td>
<td>Introductory Statistics</td>
<td>10</td>
</tr>
<tr>
<td>STAT103</td>
<td>Introductory Mathematical Statistics</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td><strong>LEVEL 200 SUBJECTS</strong></td>
<td></td>
</tr>
<tr>
<td>EAMS201</td>
<td>Agricultural Systems</td>
<td>10</td>
</tr>
<tr>
<td>EAMS211</td>
<td>Industrial and Urban Systems</td>
<td>10</td>
</tr>
<tr>
<td>EAMS202</td>
<td>System Dynamics and Data Analysis I</td>
<td>10</td>
</tr>
<tr>
<td>EAMS212</td>
<td>System Dynamics and Data Analysis II</td>
<td>10</td>
</tr>
<tr>
<td>EAMC203</td>
<td>Environment and Human Values II</td>
<td>10</td>
</tr>
<tr>
<td>EAMC213</td>
<td>Development and Social Impact Assessment</td>
<td>10</td>
</tr>
<tr>
<td>EAMS290</td>
<td>Hydrology and Soils Analysis</td>
<td>10</td>
</tr>
<tr>
<td>EAMS291</td>
<td>Water Resources Management</td>
<td>10</td>
</tr>
<tr>
<td>EAMS292</td>
<td>Plant Systematics and Plant Ecology</td>
<td>10</td>
</tr>
<tr>
<td>EAMS293</td>
<td>Animal Systematics and Animal Ecology</td>
<td>10</td>
</tr>
<tr>
<td>AVIA207</td>
<td>Aviation Meteorology</td>
<td>5</td>
</tr>
<tr>
<td>AVIA208</td>
<td>Instrument Navigation</td>
<td>5</td>
</tr>
<tr>
<td>AVIA209</td>
<td>Long Range Navigation</td>
<td>5</td>
</tr>
<tr>
<td>Number</td>
<td>Subject</td>
<td>Points</td>
</tr>
<tr>
<td>----------</td>
<td>----------------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>AVIA210</td>
<td>Compressible Aerodynamics</td>
<td>5</td>
</tr>
<tr>
<td>AVIA211</td>
<td>Jet Engines</td>
<td>5</td>
</tr>
<tr>
<td>AVIA212</td>
<td>Human Factors</td>
<td>10</td>
</tr>
<tr>
<td>AVIA213</td>
<td>Aircraft Structures &amp; Materials</td>
<td>5</td>
</tr>
<tr>
<td>AVIA214</td>
<td>Jet Aircraft Flight Planning</td>
<td>10</td>
</tr>
<tr>
<td>AVIA218</td>
<td>Advanced Aircraft Performance</td>
<td>5</td>
</tr>
<tr>
<td>AVIA219</td>
<td>High Altitude Meteorology and Forecasting</td>
<td>5</td>
</tr>
<tr>
<td>AVIA220</td>
<td>Aircraft Fatigue Management</td>
<td>5</td>
</tr>
<tr>
<td>AVIA221</td>
<td>Human Performance in Multi-Crew Operations</td>
<td>5</td>
</tr>
<tr>
<td>AVIA222</td>
<td>Management in Aviation</td>
<td>5</td>
</tr>
<tr>
<td>AVIA223</td>
<td>Aviation Computing and Electronics</td>
<td>10</td>
</tr>
<tr>
<td>BIOL201</td>
<td>Biochemistry</td>
<td>10</td>
</tr>
<tr>
<td>BIOL202</td>
<td>Animal Physiology</td>
<td>10</td>
</tr>
<tr>
<td>BIOL204</td>
<td>Cell and Molecular Biology</td>
<td>10</td>
</tr>
<tr>
<td>BIOL205</td>
<td>Molecular Genetics</td>
<td>10</td>
</tr>
<tr>
<td>BIOL206</td>
<td>Plant Physiology</td>
<td>10</td>
</tr>
<tr>
<td>BIOL207</td>
<td>Ecology</td>
<td>10</td>
</tr>
<tr>
<td>BIOL208</td>
<td>Biochemistry 208</td>
<td>10</td>
</tr>
<tr>
<td>CHEM211</td>
<td>Analytical Chemistry</td>
<td>10</td>
</tr>
<tr>
<td>CHEM221</td>
<td>Inorganic Chemistry</td>
<td>10</td>
</tr>
<tr>
<td>CHEM231</td>
<td>Organic Chemistry</td>
<td>10</td>
</tr>
<tr>
<td>CHEM241</td>
<td>Physical Chemistry</td>
<td>10</td>
</tr>
<tr>
<td>CHEM251</td>
<td>Applied Chemistry Not In 1994</td>
<td>10</td>
</tr>
<tr>
<td>CHEM261</td>
<td>Environmental Chemistry</td>
<td>10</td>
</tr>
<tr>
<td>COMP221</td>
<td>Comparative Programming Languages</td>
<td>10</td>
</tr>
<tr>
<td>COMP222</td>
<td>Theory of Computation</td>
<td>10</td>
</tr>
<tr>
<td>COMP223</td>
<td>Analysis of Algorithms</td>
<td>10</td>
</tr>
<tr>
<td>COMP224</td>
<td>The Unix Operating System</td>
<td>10</td>
</tr>
<tr>
<td>COMP225</td>
<td>Artificial Intelligence 2</td>
<td>10</td>
</tr>
<tr>
<td>GEOG201</td>
<td>Methods in Physical Geography</td>
<td>10</td>
</tr>
<tr>
<td>GEOG202</td>
<td>Methods in Human Geography</td>
<td>10</td>
</tr>
<tr>
<td>GEOG203</td>
<td>Biogeography &amp; Climatology</td>
<td>10</td>
</tr>
<tr>
<td>GEOG204</td>
<td>Geomorphology of Australia</td>
<td>10</td>
</tr>
<tr>
<td>GEOG207</td>
<td>Population, Culture &amp; Resources</td>
<td>10</td>
</tr>
<tr>
<td>GEOG208</td>
<td>Cities and Regions</td>
<td>5</td>
</tr>
<tr>
<td>GEOC211</td>
<td>Optical Mineralogy</td>
<td>10</td>
</tr>
<tr>
<td>GEOC212</td>
<td>Introductory Petrology</td>
<td>10</td>
</tr>
<tr>
<td>GEOC213</td>
<td>Ancient Environments &amp; Organisms</td>
<td>10</td>
</tr>
<tr>
<td>Number</td>
<td>Subject</td>
<td>Points</td>
</tr>
<tr>
<td>---------</td>
<td>----------------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>STAT205</td>
<td>Engineering Statistics</td>
<td>10</td>
</tr>
<tr>
<td>STAT206</td>
<td>Design and Analysis of Experiments and Surveys</td>
<td>10</td>
</tr>
</tbody>
</table>

**LEVEL 300 SUBJECTS**

<table>
<thead>
<tr>
<th>Number</th>
<th>Subject</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAMC313</td>
<td>Social Aspects of Environmental Health</td>
<td>10</td>
</tr>
<tr>
<td>EAMS301</td>
<td>Environmental Management I</td>
<td>10</td>
</tr>
<tr>
<td>EAMS302</td>
<td>Specialist Study</td>
<td>20</td>
</tr>
<tr>
<td>EAMS303</td>
<td>Occupational Hygiene and Toxicology</td>
<td>10</td>
</tr>
<tr>
<td>EAMS304</td>
<td>Regional and National Environmental Issues</td>
<td>10</td>
</tr>
<tr>
<td>EAMS311</td>
<td>Environmental Management II</td>
<td>10</td>
</tr>
<tr>
<td>EAMS314</td>
<td>Environmental Impact Assessment</td>
<td>10</td>
</tr>
<tr>
<td>EAMS390</td>
<td>Soil Conservation and Management</td>
<td>10</td>
</tr>
<tr>
<td>EAMS394</td>
<td>Flora and Fauna Component of Environmental Impact Assessment</td>
<td>10</td>
</tr>
<tr>
<td>AVIA305</td>
<td>Aircraft Design</td>
<td>5</td>
</tr>
<tr>
<td>AVIA306</td>
<td>Advanced Aircraft Operations</td>
<td>10</td>
</tr>
<tr>
<td>AVIA308</td>
<td>Aviation Instruction</td>
<td>10</td>
</tr>
<tr>
<td>AVIA310</td>
<td>Advanced Navigation</td>
<td>10</td>
</tr>
<tr>
<td>AVIA311</td>
<td>Advanced Aviation Instruction</td>
<td>10</td>
</tr>
<tr>
<td>AVIA312</td>
<td>Applied Aerodynamics</td>
<td>5</td>
</tr>
<tr>
<td>AVIA314</td>
<td>Directed Study</td>
<td>10</td>
</tr>
<tr>
<td>AVIA315</td>
<td>Advanced Aviation Management</td>
<td>5</td>
</tr>
<tr>
<td>AVIA316</td>
<td>Flight Deck Performance</td>
<td>5</td>
</tr>
<tr>
<td>AVIA317</td>
<td>Aviation Climatology</td>
<td>5</td>
</tr>
<tr>
<td>AVIA318</td>
<td>Aircraft Stability and Control</td>
<td>5</td>
</tr>
<tr>
<td>AVIA320</td>
<td>Aviation Instruction Practicum I</td>
<td>5</td>
</tr>
<tr>
<td>AVIA321</td>
<td>Aviation Instruction Practicum II</td>
<td>5</td>
</tr>
<tr>
<td>BIOL302</td>
<td>Reproductive Physiology</td>
<td>10</td>
</tr>
<tr>
<td>BIOL303</td>
<td>Environmental Plant Physiology Not in 1994</td>
<td>10</td>
</tr>
<tr>
<td>BIOL305</td>
<td>Immunology</td>
<td>10</td>
</tr>
<tr>
<td>BIOL309</td>
<td>Molecular Biology</td>
<td>10</td>
</tr>
<tr>
<td>BIOL310</td>
<td>Microbiology</td>
<td>10</td>
</tr>
<tr>
<td>BIOL311</td>
<td>Environmental Biology</td>
<td>10</td>
</tr>
<tr>
<td>BIOL312</td>
<td>Animal Development Not in 1994</td>
<td>10</td>
</tr>
<tr>
<td>BIOL313</td>
<td>Cellular Biochemistry</td>
<td>10</td>
</tr>
<tr>
<td>BIOL314</td>
<td>Plant Development</td>
<td>10</td>
</tr>
<tr>
<td>BIOL315</td>
<td>Plant Molecular Biology</td>
<td>10</td>
</tr>
<tr>
<td>BIOL316</td>
<td>Cell Biology</td>
<td>10</td>
</tr>
<tr>
<td>CHEM311</td>
<td>Analytical Chemistry</td>
<td>10</td>
</tr>
<tr>
<td>CHEM312</td>
<td>Chemometrics</td>
<td>5</td>
</tr>
<tr>
<td>CHEM313</td>
<td>Industrial Chemical Analysis</td>
<td>5</td>
</tr>
<tr>
<td>CHEM314</td>
<td>Trace Analysis in Environmental Systems Not in 1994</td>
<td>5</td>
</tr>
<tr>
<td>CHEM321</td>
<td>Inorganic Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>CHEM322</td>
<td>Metal-Metal Bonding in Cluster Chemistry</td>
<td>10</td>
</tr>
<tr>
<td>CHEM323</td>
<td>Bioinorganic Co-ordination Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>CHEM331</td>
<td>Organic Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>CHEM332</td>
<td>Heterocyclic Chemistry Not in 1994</td>
<td>5</td>
</tr>
<tr>
<td>CHEM333</td>
<td>Organic Reaction Mechanism</td>
<td>5</td>
</tr>
<tr>
<td>CHEM334</td>
<td>Identification of Natural Compounds</td>
<td>5</td>
</tr>
<tr>
<td>CHEM335</td>
<td>Organic Spectroscopy</td>
<td>5</td>
</tr>
<tr>
<td>CHEM341</td>
<td>Physical Chemistry</td>
<td>10</td>
</tr>
<tr>
<td>CHEM342</td>
<td>Electrochemical Solar Energy Conversion</td>
<td>10</td>
</tr>
<tr>
<td>CHEM343</td>
<td>Molecular Spectroscopy</td>
<td>5</td>
</tr>
<tr>
<td>CHEM361</td>
<td>Environmental Chemistry</td>
<td>10</td>
</tr>
<tr>
<td>COMP321</td>
<td>Software Engineering and Project</td>
<td>20</td>
</tr>
<tr>
<td>COMP322</td>
<td>Computer Vision and Robotics</td>
<td>10</td>
</tr>
<tr>
<td>COMP323</td>
<td>Computational Logic</td>
<td>10</td>
</tr>
<tr>
<td>COMP324</td>
<td>Parallel Processing</td>
<td>10</td>
</tr>
<tr>
<td>COMP325</td>
<td>Database Systems</td>
<td>10</td>
</tr>
<tr>
<td>COMP326</td>
<td>Data Security</td>
<td>10</td>
</tr>
<tr>
<td>COMP327</td>
<td>Principles of Operating Systems</td>
<td>10</td>
</tr>
<tr>
<td>COMP328</td>
<td>Computer Networks</td>
<td>10</td>
</tr>
<tr>
<td>COMP329</td>
<td>Compiler Design</td>
<td>10</td>
</tr>
<tr>
<td>COMP330</td>
<td>Graphic User Interfaces</td>
<td>10</td>
</tr>
<tr>
<td>COMP331</td>
<td>Geometric Data Structures</td>
<td>10</td>
</tr>
<tr>
<td>COMP332</td>
<td>Computer Graphics</td>
<td>10</td>
</tr>
<tr>
<td>GEOG301</td>
<td>Advanced Methods in Physical Geography</td>
<td>10</td>
</tr>
<tr>
<td>GEOG302</td>
<td>Advanced Methods in Human Geography</td>
<td>10</td>
</tr>
<tr>
<td>GEOG304</td>
<td>The Biosphere and Conservation</td>
<td>10</td>
</tr>
<tr>
<td>GEOG305</td>
<td>Climatic Problems</td>
<td>10</td>
</tr>
<tr>
<td>GEOG306</td>
<td>Geography of Australia: An Historical Perspective</td>
<td>10</td>
</tr>
<tr>
<td>GEOG309</td>
<td>Society &amp; Space</td>
<td>10</td>
</tr>
<tr>
<td>GEOG310</td>
<td>Directed Studies in Human Geography</td>
<td>10</td>
</tr>
<tr>
<td>GEOG311</td>
<td>Hydrology</td>
<td>10</td>
</tr>
<tr>
<td>GEOG315</td>
<td>Production, Work &amp; Territory</td>
<td>10</td>
</tr>
<tr>
<td>GEOG316</td>
<td>Directed Studies in Physical Geography</td>
<td>10</td>
</tr>
<tr>
<td>GEOL311</td>
<td>Igneous Petrology &amp; Crustal Evolution</td>
<td>10</td>
</tr>
<tr>
<td>GEOL312</td>
<td>Metamorphic Petrology</td>
<td>10</td>
</tr>
<tr>
<td>Number</td>
<td>Subject</td>
<td>Points</td>
</tr>
<tr>
<td>--------</td>
<td>-------------------------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>GEOL313</td>
<td>Structural Geology &amp; Geophysics</td>
<td>10</td>
</tr>
<tr>
<td>GEOL314</td>
<td>Stratigraphic Methods</td>
<td>10</td>
</tr>
<tr>
<td>GEOL315</td>
<td>Sedimentology</td>
<td>10</td>
</tr>
<tr>
<td>GEOL316</td>
<td>Geology of Fuels</td>
<td>10</td>
</tr>
<tr>
<td>GEOL317</td>
<td>Resource and Exploration Geology</td>
<td>10</td>
</tr>
<tr>
<td>GEOL318</td>
<td>Geology Field Course 318</td>
<td>5</td>
</tr>
<tr>
<td>GEOL319</td>
<td>Geology Field Course 319</td>
<td>5</td>
</tr>
<tr>
<td>GEOL320</td>
<td>Geology of Quaternary Environments</td>
<td>10</td>
</tr>
<tr>
<td>MAQM335</td>
<td>Mathematics IIIA</td>
<td>20</td>
</tr>
<tr>
<td>MAQM336</td>
<td>Mathematics IIIIB</td>
<td>15</td>
</tr>
<tr>
<td>MAQM337</td>
<td>Mathematics IIIIC</td>
<td>15</td>
</tr>
<tr>
<td>MATH301</td>
<td>Logic &amp; Set Theory</td>
<td>10</td>
</tr>
<tr>
<td>MATH302</td>
<td>General Tensors &amp; Relativity</td>
<td>10</td>
</tr>
<tr>
<td>MATH303</td>
<td>Variational Methods and Integral Equations</td>
<td>10</td>
</tr>
<tr>
<td>MATH304</td>
<td>Ordinary Differential Equations 2</td>
<td>10</td>
</tr>
<tr>
<td>MATH305</td>
<td>Partial Differential Equations 2 Not In 1994</td>
<td>10</td>
</tr>
<tr>
<td>MATH306</td>
<td>Fluid Mechanics Not In 1994</td>
<td>10</td>
</tr>
<tr>
<td>MATH307</td>
<td>Quantum and Statistical Mechanics Not In 1994</td>
<td>10</td>
</tr>
<tr>
<td>MATH308</td>
<td>Geometry 2</td>
<td>10</td>
</tr>
<tr>
<td>MATH309</td>
<td>Combinatorics Not In 1994</td>
<td>10</td>
</tr>
<tr>
<td>MATH310</td>
<td>Functional Analysis</td>
<td>10</td>
</tr>
<tr>
<td>MATH311</td>
<td>Measure Theory &amp; Integration</td>
<td>10</td>
</tr>
<tr>
<td>MATH312</td>
<td>Algebra Not In 1994</td>
<td>10</td>
</tr>
<tr>
<td>MATH313</td>
<td>Numerical Analysis (Theory)</td>
<td>10</td>
</tr>
<tr>
<td>MATH314</td>
<td>Optimization</td>
<td>10</td>
</tr>
<tr>
<td>MATH315</td>
<td>Mathematical Biology</td>
<td>10</td>
</tr>
<tr>
<td>MATH316</td>
<td>Industrial Modelling</td>
<td>10</td>
</tr>
<tr>
<td>MATH317</td>
<td>Number Theory</td>
<td>10</td>
</tr>
<tr>
<td>MATH318</td>
<td>Topology Not In 1994</td>
<td>10</td>
</tr>
<tr>
<td>PHYS301</td>
<td>Mathematical Methods &amp; Quantum Mechanics</td>
<td>10</td>
</tr>
<tr>
<td>PHYS302</td>
<td>Electromagnetism and Electronics</td>
<td>10</td>
</tr>
<tr>
<td>PHYS303</td>
<td>Atomic, Molecular and Solid State Physics</td>
<td>10</td>
</tr>
<tr>
<td>PHYS304</td>
<td>Statistical Physics and Relativity</td>
<td>10</td>
</tr>
<tr>
<td>PHYS305</td>
<td>Nuclear Physics and Advanced Electromagnetism</td>
<td>10</td>
</tr>
<tr>
<td>PSYC301</td>
<td>Advanced Foundations for Psychology</td>
<td>10</td>
</tr>
<tr>
<td>PSYC302</td>
<td>Independent Project</td>
<td>10</td>
</tr>
<tr>
<td>PSYC303</td>
<td>Basic Processes 1</td>
<td>10</td>
</tr>
<tr>
<td>PSYC304</td>
<td>Basic Processes 2</td>
<td>10</td>
</tr>
</tbody>
</table>

**Faculty of Science and Mathematics**

**Section Nine**

**Subject Computer Numbers**

<table>
<thead>
<tr>
<th>Number</th>
<th>Subject</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSYC305</td>
<td>Individual Processes</td>
<td>10</td>
</tr>
<tr>
<td>PSYC306</td>
<td>Advanced Social Processes</td>
<td>10</td>
</tr>
<tr>
<td>PSYC307</td>
<td>Advanced Applied Topics in Psychology 1</td>
<td>10</td>
</tr>
<tr>
<td>PSYC308</td>
<td>Advanced Applied Topics in Psychology 2</td>
<td>10</td>
</tr>
<tr>
<td>PSYC309</td>
<td>Topics in Neural Science Not In 1994</td>
<td>10</td>
</tr>
<tr>
<td>STAT301</td>
<td>Statistical Inference</td>
<td>10</td>
</tr>
<tr>
<td>STAT306</td>
<td>Study Design</td>
<td>10</td>
</tr>
<tr>
<td>STAT307</td>
<td>Generalized Linear Models</td>
<td>10</td>
</tr>
<tr>
<td>STAT308</td>
<td>Time Series Analysis</td>
<td>10</td>
</tr>
<tr>
<td>STAT309</td>
<td>Total Quality Management</td>
<td>10</td>
</tr>
</tbody>
</table>

**LEVEL 400 SUBJECTS**

<table>
<thead>
<tr>
<th>Number</th>
<th>Subject</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAMS401</td>
<td>Environmental Management</td>
<td>20</td>
</tr>
<tr>
<td>RAMS402</td>
<td>Seminar Series</td>
<td>20</td>
</tr>
<tr>
<td>RAMS404</td>
<td>Research Project</td>
<td>40</td>
</tr>
<tr>
<td>AVIA401</td>
<td>Aviation Honours 401</td>
<td>20</td>
</tr>
<tr>
<td>AVIA402</td>
<td>Aviation Research Methodology</td>
<td>10</td>
</tr>
<tr>
<td>AVIA403</td>
<td>Technology In Aviation</td>
<td>10</td>
</tr>
<tr>
<td>AVIA404</td>
<td>The Human Variable In Aviation</td>
<td>10</td>
</tr>
<tr>
<td>AVIA405</td>
<td>Aviation Honours — Thesis</td>
<td>40</td>
</tr>
<tr>
<td>BIOL401</td>
<td>Biology Honours 401</td>
<td>40</td>
</tr>
<tr>
<td>BIOL402</td>
<td>Biology Honours 402</td>
<td>40</td>
</tr>
<tr>
<td>BIOL405</td>
<td>Biology Diploma 405</td>
<td>40</td>
</tr>
<tr>
<td>BIOL406</td>
<td>Biology Diploma 406</td>
<td>40</td>
</tr>
<tr>
<td>BIOL407</td>
<td>Biology Honours 407</td>
<td>40</td>
</tr>
<tr>
<td>BIOL408</td>
<td>Biology Honours 408</td>
<td>40</td>
</tr>
<tr>
<td>CHEM401</td>
<td>Chemistry Honours 401</td>
<td>40</td>
</tr>
<tr>
<td>CHEM402</td>
<td>Chemistry Honours 402</td>
<td>40</td>
</tr>
<tr>
<td>CHEM405</td>
<td>Chemistry Diploma 405</td>
<td>40</td>
</tr>
<tr>
<td>CHEM406</td>
<td>Chemistry Diploma 406</td>
<td>40</td>
</tr>
<tr>
<td>CHEM407</td>
<td>Chemistry Honours 408</td>
<td>40</td>
</tr>
<tr>
<td>CHEM408</td>
<td>Chemistry Honours 408</td>
<td>40</td>
</tr>
<tr>
<td>GEOG401</td>
<td>Geography Honours 401</td>
<td>40</td>
</tr>
<tr>
<td>GEOG402</td>
<td>Geography Honours 402</td>
<td>40</td>
</tr>
<tr>
<td>GEOG403</td>
<td>Geography Diploma 405</td>
<td>40</td>
</tr>
<tr>
<td>GEOG404</td>
<td>Geography Diploma 406</td>
<td>40</td>
</tr>
<tr>
<td>GEOG405</td>
<td>Geography Honours 407</td>
<td>40</td>
</tr>
<tr>
<td>GEOG406</td>
<td>Geography Honours 408</td>
<td>40</td>
</tr>
<tr>
<td>GEOG407</td>
<td>Geography Honours 408</td>
<td>40</td>
</tr>
<tr>
<td>GEOG408</td>
<td>Geography Honours 408</td>
<td>40</td>
</tr>
<tr>
<td>GEOG409</td>
<td>Environmental Studies Seminar 1</td>
<td>20</td>
</tr>
<tr>
<td>Number</td>
<td>Subject</td>
<td>Points</td>
</tr>
<tr>
<td>--------</td>
<td>-------------------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>GEOG492</td>
<td>Environmental Studies Minor Project</td>
<td>10</td>
</tr>
<tr>
<td>GEOL401</td>
<td>Geology Honours 401</td>
<td>40</td>
</tr>
<tr>
<td>GEOL402</td>
<td>Geology Honours 402</td>
<td>40</td>
</tr>
<tr>
<td>GEOL405</td>
<td>Geology Diploma 405</td>
<td>40</td>
</tr>
<tr>
<td>GEOL406</td>
<td>Geology Diploma 406</td>
<td>40</td>
</tr>
<tr>
<td>MAQM435</td>
<td>Mathematics IVA</td>
<td>10</td>
</tr>
<tr>
<td>MAQM436</td>
<td>Mathematics IVE</td>
<td>10</td>
</tr>
<tr>
<td>MAQM437</td>
<td>Mathematics IVC</td>
<td>10</td>
</tr>
<tr>
<td>MATH1401</td>
<td>Mathematics Honours 401</td>
<td>40</td>
</tr>
<tr>
<td>MATH1402</td>
<td>Mathematics Honours 402</td>
<td>40</td>
</tr>
<tr>
<td>MATH1405</td>
<td>Mathematics Diploma 405</td>
<td>40</td>
</tr>
<tr>
<td>MATH1406</td>
<td>Mathematics Diploma 406</td>
<td>40</td>
</tr>
<tr>
<td>PHYS401</td>
<td>Physics Honours 401</td>
<td>40</td>
</tr>
<tr>
<td>PHYS402</td>
<td>Physics Honours 402</td>
<td>40</td>
</tr>
<tr>
<td>PHYS405</td>
<td>Physics Diploma 405</td>
<td>40</td>
</tr>
<tr>
<td>PHYS406</td>
<td>Physics Diploma 406</td>
<td>40</td>
</tr>
<tr>
<td>PSYC401</td>
<td>Psychology Honours 401</td>
<td>40</td>
</tr>
<tr>
<td>PSYC402</td>
<td>Psychology Honours 402</td>
<td>40</td>
</tr>
<tr>
<td>PSYC403</td>
<td>Psychology 403</td>
<td>30</td>
</tr>
<tr>
<td>PSYC404</td>
<td>Psychology 404</td>
<td>50</td>
</tr>
<tr>
<td>PSYC405</td>
<td>Psychology Diploma 405</td>
<td>40</td>
</tr>
<tr>
<td>PSYC406</td>
<td>Psychology Diploma 406</td>
<td>40</td>
</tr>
</tbody>
</table>

**LEVEL 500 SUBJECTS**

<table>
<thead>
<tr>
<th>Number</th>
<th>Subject</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG591</td>
<td>Environmental Studies Major Project I</td>
<td>30</td>
</tr>
<tr>
<td>GEOG592</td>
<td>Environmental Studies Major Project II</td>
<td>30</td>
</tr>
<tr>
<td>GEOG594</td>
<td>Environmental Studies Seminar 2</td>
<td>20</td>
</tr>
<tr>
<td>GEOG595</td>
<td>Directed Environmental Study 1</td>
<td>10</td>
</tr>
<tr>
<td>GEOG596</td>
<td>Directed Environmental Study 2</td>
<td>10</td>
</tr>
<tr>
<td>GEOL501</td>
<td>Foundations of Postgraduate Geology I</td>
<td>40</td>
</tr>
<tr>
<td>GEOL502</td>
<td>Foundations of Postgraduate Geology II</td>
<td>40</td>
</tr>
<tr>
<td>GEOL503</td>
<td>Postgraduate Geology I</td>
<td>40</td>
</tr>
<tr>
<td>GEOL504</td>
<td>Postgraduate Geology II</td>
<td>40</td>
</tr>
<tr>
<td>MATH501</td>
<td>Astrophysical Applications of Magnetohydrodynamics</td>
<td>10</td>
</tr>
<tr>
<td>MATH502</td>
<td>Banach Algebra</td>
<td>10</td>
</tr>
<tr>
<td>MATH503</td>
<td>Convex Analysis</td>
<td>10</td>
</tr>
<tr>
<td>MATH504</td>
<td>Fluid Statistical Mechanics</td>
<td>10</td>
</tr>
<tr>
<td>MATH505</td>
<td>Foundations of Modern Differential Geometry</td>
<td>10</td>
</tr>
<tr>
<td>MATH506</td>
<td>History of Analysis to Around 1900</td>
<td>10</td>
</tr>
</tbody>
</table>

**LEVEL 600 SUBJECTS**

<table>
<thead>
<tr>
<th>Number</th>
<th>Subject</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH507</td>
<td>Linear Operators</td>
<td>10</td>
</tr>
<tr>
<td>MATH508</td>
<td>Mathematical Physiology</td>
<td>10</td>
</tr>
<tr>
<td>MATH509</td>
<td>Nonlinear Oscillations</td>
<td>10</td>
</tr>
<tr>
<td>MATH510</td>
<td>Perturbation Theory</td>
<td>10</td>
</tr>
<tr>
<td>MATH511</td>
<td>Quantum Mechanics</td>
<td>10</td>
</tr>
<tr>
<td>MATH512</td>
<td>Radicals and Annihilators</td>
<td>10</td>
</tr>
<tr>
<td>MATH513</td>
<td>Symmetry</td>
<td>10</td>
</tr>
<tr>
<td>MATH514</td>
<td>Viscous Flow Theory</td>
<td>10</td>
</tr>
<tr>
<td>MATH515</td>
<td>Geometrical Mechanics</td>
<td>10</td>
</tr>
<tr>
<td>MATH516</td>
<td>Concrete Group Theory</td>
<td>10</td>
</tr>
<tr>
<td>MATH517</td>
<td>Analysis of Topological Structures</td>
<td>10</td>
</tr>
<tr>
<td>MATH518</td>
<td>Lie Groups and Algebras with Applications to Differential Equations</td>
<td>10</td>
</tr>
<tr>
<td>MATH519</td>
<td>General Relativity</td>
<td>10</td>
</tr>
<tr>
<td>MATH520</td>
<td>C*-Algebras</td>
<td>10</td>
</tr>
<tr>
<td>MATH521</td>
<td>Clifford Algebras and Spinors</td>
<td>10</td>
</tr>
<tr>
<td>MATH522</td>
<td>Introduction to Category Theory</td>
<td>10</td>
</tr>
<tr>
<td>MATH523</td>
<td>Greek Mathematics and its History</td>
<td>10</td>
</tr>
<tr>
<td>MATH524</td>
<td>Development of Contemporary Algebra</td>
<td>10</td>
</tr>
<tr>
<td>MATH525</td>
<td>Advanced Topic in Analysis</td>
<td>10</td>
</tr>
<tr>
<td>MATH526</td>
<td>Models of Biological Pattern Formation</td>
<td>10</td>
</tr>
<tr>
<td>MATH527</td>
<td>Combinatorics</td>
<td>10</td>
</tr>
<tr>
<td>MATH528</td>
<td>Algebraic</td>
<td>10</td>
</tr>
<tr>
<td>MATH529</td>
<td>Dynamical Systems</td>
<td>10</td>
</tr>
</tbody>
</table>

**UNOFFICIAL SUBJECTS**

- Foundations of Applied Science and Technology
- Topics in Applied Science and Technology
- Advanced Topics in Applied Science and Technology
- Project
- Foundations of Biological Sciences
- Topics in Biological Sciences
- Advanced Topics in Biological Sciences
- Project
- Foundations of Chemistry
- Topics in Chemistry
- Advanced Topics in Chemistry
- Project
- Foundations of Environmental Assessment and Management Not In 1964
<table>
<thead>
<tr>
<th>Number</th>
<th>Subject</th>
<th>Points</th>
<th>Faculty of Science and Mathematics</th>
<th>Section Nine</th>
<th>Subject Computer Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAMS696</td>
<td>Topics in Environmental Assessment and Management Not in 1994</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EAMS697</td>
<td>Advanced Topics in Environmental Assessment and Management Not in 1994</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EAMS698</td>
<td>Project Not in 1994</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEOG695</td>
<td>Foundations of Geography Not in 1994</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEOG696</td>
<td>Topics in Geography Not in 1994</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEOG697</td>
<td>Advanced Topics in Geography Not in 1994</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEOG698</td>
<td>Project Not in 1994</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEOL695</td>
<td>Foundations of Geology</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEOL696</td>
<td>Topics in Geology</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEOL697</td>
<td>Advanced Topics in Geology</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEOL698</td>
<td>Project</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH695</td>
<td>Foundations of Mathematics</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH696</td>
<td>Topics in Mathematics</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH697</td>
<td>Advanced Topics in Mathematics</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH698</td>
<td>Project</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHYS695</td>
<td>Foundations of Physics</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHYS696</td>
<td>Topics in Physics</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHYS697</td>
<td>Advanced Topics in Physics</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHYS698</td>
<td>Project</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSYC695</td>
<td>Foundations of Psychology Not in 1994</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSYC696</td>
<td>Topics in Psychology Not in 1994</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSYC697</td>
<td>Advanced Topics in Psychology Not in 1994</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSYC698</td>
<td>Project Not in 1994</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAT695</td>
<td>Foundations of Statistics</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAT696</td>
<td>Topics in Statistics</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAT697</td>
<td>Advanced Topics in Statistics</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAT698</td>
<td>Project</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>