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UNIVERSITY OF NEW SOUTH WALES — 378.94405
Faculty of Engineering  NEW


University of New South Wales —
Faculty of Engineering — Periodicals.
FOREWORD

This handbook is primarily for undergraduate students in the Faculty of Engineering and aims to provide information concerning the requirements for admission, enrolment and re-enrolment, conditions for the award of the different Bachelor degrees in the Faculty and the subject matter of the courses offered, including text and reference books. *It is important that each student in the Faculty becomes well acquainted with the information presented here.* In addition to this Handbook, pamphlets and brochures issued in conjunction with the enrolment period and Orientation Week are available. These should be consulted, together with the University Calendar, for further information on problems associated with courses.

At the same time, it is appreciated that a student’s choice in regard to course and other matters remains to be discussed with members of the academic staff. Some students will not make their final choice of degree course until well into their first year: others do not need to make their decision before the start of third year. Students should consult the Heads of Schools about this; where the Heads cannot be available, they have nominated colleagues to deal with enquiries.

We hope to do much more than merely impart a body of knowledge to our undergraduates. Appropriate attitudes and skills for professional engineers operating into the twenty-first century must also be developed. Good opportunities exist for this in *Faculty Hour*, a voluntary series of lectures and discussions on topics touching on the interaction of the engineer and society. This takes place at noon on Mondays in the Electrical Engineering Theatre LG1. All third and fourth year students, and some others also, will find their timetables free of formal classes at noon on Mondays. Students are urged to use Faculty Hour to broaden their approach to their studies.

P. T. FINK,  
*Dean,*  
*Faculty of Engineering*
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CALENDAR OF DATES</strong></td>
<td>A5</td>
</tr>
<tr>
<td><strong>STAFF</strong></td>
<td>A9</td>
</tr>
<tr>
<td><strong>THE FACULTY:</strong></td>
<td></td>
</tr>
<tr>
<td>School of Civil Engineering</td>
<td>A19</td>
</tr>
<tr>
<td>School of Electrical Engineering</td>
<td>A19</td>
</tr>
<tr>
<td>School of Mechanical and Industrial Engineering</td>
<td>A20</td>
</tr>
<tr>
<td>School of Surveying</td>
<td>A21</td>
</tr>
<tr>
<td>School of Highway Engineering</td>
<td>A21</td>
</tr>
<tr>
<td>School of Nuclear Engineering</td>
<td>A21</td>
</tr>
<tr>
<td>School of Transportation and Traffic</td>
<td>A22</td>
</tr>
<tr>
<td><strong>REQUIREMENTS FOR ADMISSION:</strong></td>
<td></td>
</tr>
<tr>
<td>Matriculation Requirements</td>
<td>A24</td>
</tr>
<tr>
<td><strong>ADMISSIONS AND ENROLMENT PROCEDURE:</strong></td>
<td></td>
</tr>
<tr>
<td>Admissions Procedure</td>
<td>A30</td>
</tr>
<tr>
<td>Faculty of Engineering Enquiry Centre</td>
<td>A30</td>
</tr>
<tr>
<td>Admissions Office</td>
<td>A30</td>
</tr>
<tr>
<td>Enrolment Procedure</td>
<td>A31</td>
</tr>
<tr>
<td>University Union Card</td>
<td>A37</td>
</tr>
<tr>
<td><strong>FEES:</strong></td>
<td></td>
</tr>
<tr>
<td>Student Fees</td>
<td>A41</td>
</tr>
<tr>
<td>Special Examination Fees</td>
<td>A42</td>
</tr>
<tr>
<td>Late Fees</td>
<td>A42</td>
</tr>
<tr>
<td>Withdrawal from Course</td>
<td>A43</td>
</tr>
<tr>
<td><strong>RULES RELATING TO STUDENTS:</strong></td>
<td></td>
</tr>
<tr>
<td>General Conduct</td>
<td>A44</td>
</tr>
<tr>
<td>Attendance</td>
<td>A44</td>
</tr>
</tbody>
</table>
FACULTY OF ENGINEERING

Course Transfers ............................................ A45
Admission With Advanced Standing ...................... A45
Changes in Course Programmes ............................ A46
Student Records ............................................. A46
Resumption of Courses ..................................... A47
Annual Examinations ........................................ A47
Examination Results ........................................ A49
Deferred Examinations ...................................... A50
Application for Admission to Degree or Diploma ..... A51
Restriction Upon Students Re-enrolling ................. A51
Re-admission after Exclusion ............................... A54
Ownership of Students' Work .............................. A55
Change of Address .......................................... A55
Notices ....................................................... A55
Lost Property ............................................... A55
Parking ....................................................... A56
Application of Rules ........................................ A56

STUDENT SERVICES:

The Library .................................................. A57
The University Union ...................................... A57
Student Accommodation .................................... A58
Student Amenities Unit .................................... A59
Student Employment Unit ................................ A60
Chaplaincy Service ........................................ A60
Student Health Unit ....................................... A61
Student Counselling and Research Unit ............... A61
Financial Assistance to Students ....................... A61
Financial Assistance to Aboriginal Students .......... A63
Co-operative Bookshop .................................... A63
Location of Laboratories .................................. A63

STUDENT ACTIVITIES:

The Students' Union ........................................ A64
The Sports Association ..................................... A64
Physical Education and Recreation Centre ............. A65
Student Clubs and Societies ............................... A65
The University Regiment .................................. A65
The N.S.W. University Squadron ........................ A65
Royal Australian Navy ..................................... A65
UNDERGRADUATE SCHOLARSHIPS AND PRIZES:

Scholarships .......................................................... A66
Prizes .................................................................. A70

UNDERGRADUATE COURSES:

Common First Year .................................................. A73
Progression ............................................................. A73
Full-time Courses .................................................. A74
General Studies Programme .................................. A74
Industrial Training Requirements ......................... A75
Part-time Courses .................................................. A75
Faculty of Applied Science ...................................... A76

GRADUATE SCHOOL OF ENGINEERING:

Higher Degrees ....................................................... A79
Graduate Courses ................................................... A79

OUTLINES OF UNDERGRADUATE COURSES:

School of Civil Engineering .................................. A81
Civil Engineering Courses .................................. A82
School of Electrical Engineering ......................... A86
Electrical Engineering Courses .......................... A87
Combined Full-time/Part-time Courses .................. A91
Substitution of Subjects ........................................ A91
Double Degree of BSc BE ................................ A92
Double Degree of BA BE ................................ A92
School of Mechanical and Industrial Engineering ...... A95
Mechanical Engineering, Aeronautical Engineer-
ing and Naval Architecture Courses .................. A97
Department of Industrial Engineering .................. A104
School of Surveying ............................................... A108

DESCRIPTION OF SUBJECTS: TEXT AND REFERENCE BOOKS:

School of Mechanical and Industrial Engineering .... B1
School of Electrical Engineering ........................ B18
School of Civil Engineering ................................ B30
Department of Industrial Engineering ................ B49
School of Surveying ............................................. B53
Non-Engineering Subjects ..................................... B61
CALENDAR OF DATES FOR 1974

Session 1: March 4 to May 19
May Recess: May 20 to May 26
May 27 to June 16
Midyear Recess: June 17 to July 21

Session 2: July 22 to August 25
August Recess: August 26 to September 1
September 2 to November 3
Study Recess: November 4 to November 10

JANUARY

Tuesday 1  New Year's Day—Public Holiday
Friday 11  Last day for application for review of results of annual examinations
           Last day for application for admission under "show cause" rules
Monday 14  Timetable for deferred examinations available
Tuesday 15  Last day for acceptance of applications from students graduating in 1974 for admission to University degrees and diplomas
Friday 18  Last day for application for deferred examinations
           Last day for acceptance of applications to enrol by new students and students repeating first year
Monday 28  Australia Day—Public Holiday
Tuesday 29  Deferred examinations begin

FEBRUARY

Friday 8  Last day for students to appeal against exclusion under the re-enrolment rules
Saturday 9  Deferred examinations end
Monday 18  Enrolment period begins for new students and students repeating first year
Monday 25  Enrolment period begins for students re-enrolling (second and later years)
           Deferred examination results available
# The University of New South Wales

## March

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
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</thead>
<tbody>
<tr>
<td>Friday 1</td>
<td>Last day for application for review of deferred examination results</td>
</tr>
<tr>
<td></td>
<td>Last day for students with deferred examinations to appeal against exclusion under the re-enrolment rules</td>
</tr>
<tr>
<td>Monday 4</td>
<td><strong>Session 1 begins</strong></td>
</tr>
<tr>
<td>Friday 15</td>
<td>Last day for acceptance of enrolments by new students (late fee payable)</td>
</tr>
<tr>
<td>Friday 22</td>
<td>Faculty of Engineering meeting, 2 p.m.</td>
</tr>
<tr>
<td>Friday 29</td>
<td>Last day for changes in course programmes</td>
</tr>
<tr>
<td></td>
<td>Last day for acceptance of enrolments by students re-enrolling (late fee payable)</td>
</tr>
</tbody>
</table>

## April

<table>
<thead>
<tr>
<th>Date</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Thursday 4</td>
<td>Last day for discontinuation without failure of subjects which extend over the first session only</td>
</tr>
<tr>
<td>Friday 12 to Monday 15</td>
<td>Easter</td>
</tr>
<tr>
<td>Thursday 25</td>
<td>Anzac Day—Public Holiday</td>
</tr>
</tbody>
</table>

## May

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuesday 7</td>
<td>Provisional timetable for June/July examinations published</td>
</tr>
<tr>
<td>Tuesday 14</td>
<td>Last day for acceptance of corrected enrolment details forms</td>
</tr>
<tr>
<td>Monday 20</td>
<td>May Recess begins</td>
</tr>
<tr>
<td>Sunday 26</td>
<td>Last day for students to advise of examination timetable clashes</td>
</tr>
<tr>
<td></td>
<td>May Recess ends</td>
</tr>
<tr>
<td></td>
<td>Last date for discontinuation without failure of subjects which extend over the academic year</td>
</tr>
</tbody>
</table>

## June

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuesday 4</td>
<td>Timetable for June/July examinations published</td>
</tr>
<tr>
<td>Friday 14</td>
<td>Faculty of Engineering meeting, 2 p.m.</td>
</tr>
<tr>
<td>Sunday 16</td>
<td><strong>Session 1 ends</strong></td>
</tr>
<tr>
<td>Monday 17</td>
<td>Queen’s Birthday—Public Holiday</td>
</tr>
<tr>
<td></td>
<td>Midyear Recess begins</td>
</tr>
<tr>
<td>Tuesday 18</td>
<td>Midyear examinations begin</td>
</tr>
<tr>
<td>Sunday 30</td>
<td>Last date for acceptance of applications for re-admission after exclusion under rules governing re-enrolment</td>
</tr>
<tr>
<td><strong>JULY</strong></td>
<td></td>
</tr>
<tr>
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</tr>
<tr>
<td>Tuesday 2</td>
<td>Midyear examinations end</td>
</tr>
<tr>
<td>Sunday 21</td>
<td>Midyear Recess ends</td>
</tr>
<tr>
<td>Monday 22</td>
<td>Session 2 begins</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>AUGUST</strong></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Thursday 1</td>
<td>Foundation Day</td>
<td></td>
</tr>
<tr>
<td>Friday 16</td>
<td>Faculty of Engineering meeting, 2 p.m.</td>
<td></td>
</tr>
<tr>
<td>Thursday 22</td>
<td>Last day for discontinuation without failure of subjects which extend over the second session only</td>
<td></td>
</tr>
<tr>
<td>Monday 26</td>
<td>August Recess begins</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Holiday for non-academic staff</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>SEPTEMBER</strong></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunday 1</td>
<td>August Recess ends</td>
<td></td>
</tr>
<tr>
<td>Tuesday 10</td>
<td>Provisional timetable for annual examinations published</td>
<td></td>
</tr>
<tr>
<td>Monday 16</td>
<td>Last day for return of corrected enrolment details forms</td>
<td></td>
</tr>
<tr>
<td>Monday 23</td>
<td>Last day for students to advise of examination timetable clashes</td>
<td></td>
</tr>
<tr>
<td>Monday 30</td>
<td>Last date for applications from students graduating in 1975 for admission to University degrees and diplomas</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>OCTOBER</strong></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday 7</td>
<td>Eight Hour Day—Public Holiday</td>
<td></td>
</tr>
<tr>
<td>Friday 18</td>
<td>Faculty of Engineering meeting, 2 p.m.</td>
<td></td>
</tr>
<tr>
<td>Tuesday 29</td>
<td>Timetable for annual examinations published</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>NOVEMBER</strong></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday 4</td>
<td>Study Recess begins</td>
<td></td>
</tr>
<tr>
<td>Sunday 10</td>
<td>Session 2 ends</td>
<td></td>
</tr>
<tr>
<td>Monday 11</td>
<td>Annual examinations begin</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>DECEMBER</strong></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuesday 3</td>
<td>Annual examinations end</td>
<td></td>
</tr>
<tr>
<td>Wednesday 25</td>
<td>Christmas Day—Public Holiday</td>
<td></td>
</tr>
<tr>
<td>Thursday 26</td>
<td>Boxing Day—Public Holiday</td>
<td></td>
</tr>
</tbody>
</table>
THE ACADEMIC YEAR

The academic year is divided into two sessions, each containing 14 weeks for teaching. There is a recess of five weeks between the two sessions as well as short recesses of one week within each of the sessions.

Session 1 commences on the first Monday of March.
FACULTY OF ENGINEERING

DEAN — Professor P. T. Fink
CHAIRMAN—Professor T. K. Hogan
ADMINISTRATIVE ASSISTANT—Mrs. Patricia R. Kinard, BA Maryland

SCHOOL OF CIVIL ENGINEERING

Professor of Civil Engineering, Head of School and of Department of Water Engineering
H. R. Vallentine, BE Syd., MS Iowa, ASTC, FIEAust, MASCE

Professor of Civil Engineering and Head of Department of Civil Engineering Materials
I. K. Lee, BCE MEngSc PhD Melb., MIEA, MASCE

Professor of Civil Engineering
A. S. Hall, BSc(Eng) Lond., DIC, FIEAust, MACI

Professor of Civil Engineering and Head of Department of Engineering Construction and Management
R. W. Woodhead, BE Syd., ME N.S.W., ASCE, ASEE, AIC

Visiting Professor of Civil Engineering
J. N. Antill, BE Syd., ME N.S.W., FIEAust, AMAusIMM

Professor of Engineering (on secondment)
T. K. Hogan, BE W.Aust., FIEAust, MAusIMM

Visiting Fellow
A. E. McMullen, MSc PhD Alberta

Administrative Officer
J. G. Lloyd, MA Pitt.

Honorary Associate
O. G. Ingles, BA MSc Tas., CEng, FRIC, AMInstF

Department of Water Engineering
(Including Hydraulics, Hydrology, Public Health Engineering, Water Resources Engineering, and the Water Research Laboratory)

Associate Professors
B. W. Gould, BE Tas., ME N.S.W., MIEAust
D. H. Pilgrim, BE PhD N.S.W., MIEAust
K. K. Watson, BE Syd., ME PhD N.S.W., MIEAust

A9
Senior Lecturers

C. R. Dudgeon, ME N.S.W., MIEAust
T. R. Fietz, ME N.S.W., MIEAust
D. N. Foster, BE Syd., MIEAust
D. T. Howell, BE Syd., ME N.S.W., MIEAust, MAIAS
J. R. Learmonth, BE Syd., ME N.S.W.
C. J. Wiesner, BSc Adel., FRMetS

Lecturers

A. J. Askew, BSc Birm., MSc(Engin) Qu., PhD N.S.W., MASCE, MIEAust, MEIC
P. J. Bliss, BE N.S.W., MSc Lond., DIC, ASTC, MIEAust
I. Cordery, ME PhD N.S.W., MIEAust
B. S. Jenkins, BE N.S.W., ASTC, MIEAust
R. E. Loewenthal, BSc(Eng) Rand., MSc Cape T.
D. L. Wilkinson, BE Syd., PhD N.S.W.

Tutor

J. Seeto, BE N.S.W.

Teaching Fellow

M. J. Boyd, BSc(Tech) MEEngSc N.S.W.

Professional Officers

D. G. Doran, BE DipCompSc Qld.
F. A. J. Stein, ED, BE N.S.W., GradIEAust, AMASCE
J. K. Tuck, BE N.S.W.

Department of Civil Engineering Materials
(Including Soil Mechanics, Rock Mechanics, Concrete Technology, and Plastics and Timber)

Associate Professors

A. F. S. Nettleton, BSc BE Syd., ME N.S.W., DIC, MIEAust
G. B. Welch, BE Syd., ME N.S.W., CEng, MICE, FIEAust

Senior Lecturers

A. G. Douglas, ME N.S.W., PhD Mich. State, MIEAust
E. M. Kitchen, BE Syd., MIEAust
B. J. F. Patten, BE Syd., PhD N.S.W., DIC, MIEAust
S. Valliappan, BE Annam, MS Northeastern, PhD Wales, MASCE, AMIE(INDIA)

Lecturers

D. J. Cook, BE W.Aust., MSc PhD Calg., MIEAust, AMASCE, APIA
D. R. Morgan, BSc(Eng) Rand, MSc Calg.
H. Taylor, BSc(Eng) Birm., DipNA & AC Syd.
FACULTY OF ENGINEERING

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H. N. Lunsmann, BE N.S.W., ASTC, GradIEAust

Department of Structural Engineering
Associate Professors
H. J. Brettle, BE Syd., PhD N.S.W., DIC, ASTC, FIEAust
R. A. Frisch-Fay, DiplEng Bud., ME N.S.W., MIEAust
A. P. Kabaila, MEngSc PhD N.S.W., FRMTC, MIEAust, MASCE
R. W. Traill-Nash, BE W.Aust., PhD Brist., MIEAust, AFRAeS
R. F. Warner, ME N.S.W., PhD Lehigh, MIEAust

Senior Lecturers
P. S. Balint, DiplEng Bud., ME N.S.W., MIEAust
L. S. Edwards, BCE Melb., BEc Syd., MSc Lond., DIC, ARMTC, MIEAust
K. A. Faulkes, ME N.S.W., Ms Ill., MIEAust
J. L. Jenkins, BE Syd., ME N.S.W., DIC, ASTC, MIEAust

Lecturers
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A. C. Heaney, BE MEngSc Melb., PhD Wat., MIEAust, MASCE, AMICE
P. W. Kneen, BE Melb., PhD Wat.
G. C. Lacey, BCE MEngSc Melb., PhD Texas, MIEAust
R. Lawther, BE PhD N.S.W.
S. F. Pawsey, BSc BE Syd., MSc PhD Calif.
V. A. Pulmano, BSCE Uni. of Philippines, MEng A.I.T.Bangkok, PhD Northwestern, AMASCE
B. V. Rangan, BE Madr., PhD I.I.S.B'lore., MASCE, MACI
J. J. Somervaille, BE N.S.W., ASTC

Teaching Fellows
K. D. Below, BE Qld.
R. Care, BE N.S.W.
Y. K. Chan, ME Auck.
S. French, BE N.S.W.
J. V. Kopp, BE N.S.W.

Professional Officer
C. G. Bowen-Thomas, BE Syd.

Department of Engineering Construction and Management
(including Systems Engineering, Engineering Economy, Project Planning and Management)

Senior Lecturer
L. V. O’Neill, BE Syd., MIEAust

Lecturer
V. J. Summersby, MEngSc N.S.W., ASTC, MIEAust
SCHOOL OF ELECTRICAL ENGINEERING

Professor of Electrical Engineering — Communications and Head of School
A. E. Karbowiak, DSc(Eng) Lond., CEng, FIREE, MIEE

Professor of Computer Science
M. W. Allen, BE Adel., PhD Syd., CEng, FIREE, MIEE, MIEEE

Professor of Electrical Engineering — Systems and Control
N. W. Rees, BSc PhD Wales

Professor of Electrical Engineering
R. E. Vowels, ME Adel., SMIEEE, CEng, FIEAust, MIEE

Visiting Professor — Solid State Electronics
L. W. Davies, BSc Syd., DPhil Oxon., FInstP, FAIP, FIREE

Tyree Professor of Electrical Engineering
F. J. Evans, BSc BE Syd., CEng, FIEE, FIEAust

Executive Assistant to Head of School
C. A. Stapleton, BSc BE Syd., CEng, MIEAust, MIEE, MIEEE

Senior Administrative Officer
H. G. Phillips

Administrative Assistant
S. Mo, B.A. N.S.W., MA Syd.

Department of Communications

Associate Professor
W. H. Holmes, BSc BE MEngSc Syd., PhD Camb., MIEEE, MIREE

Senior Lecturers
E. H. Fooks, BSc PhD Lond., CEng, MIEE, MIEEE
G. J. Parker, BSc BE Syd., ME N.S.W., MIEAust, MIREE
T. B. Vu, BE PhD Adel.

Lecturers
P. T. Bason, ME N.S.W., MIEAust, MIEE
W. J. Dewar, MSc Qu.
T. L. Hooper, BSc Syd., MSc N.S.W., CEng, MIEE, MIEEE, MIREE
H. L. Humphries, BSc BE BEc Syd., MIEAust, MIREE
C. J. E. Phillips, BSc BE PhD Syd., AMIREE
R. Radzyner, BE Melb., MEngSc N.S.W.
R. A. Zakarevicius, BSc BE MEngSc PhD Syd., MIEAust, MIEEE

Professional Officers
D. Cohen, MSc Syd.
K. Poronnik, BE N.S.W., ASTC, MIREE

Department of Computer Science

Senior Lecturers
A. Dunworth, BSc PhD Manc., SMIEEE, FIREE, MIEAust, GradInstP
I. Lions, BSc Syd., PhD Camb.
G. B. McMahon, BSc Syd., PhD N.S.W.
FACULTY OF ENGINEERING

Lecturers
L. C. Hill, BE N.S.W., MIEAust
P. C. Maxwell, MSc Auck., PhD A.N.U.
K. A. Robinson, BSc BE Syd.
Mrs. I. Pamela Sallaway, BSc Br.Col., MMath PhD Wat.

Professional Officer
K. W. Titmuss, BSc(Tech) N.S.W.

Department of Electric Power Engineering

Associate Professors
G. C. Dewsnnap, MEE Melb., CEng, FIEE, MIEAust
G. W. Donaldson, BE Qld., BSc MA Oxon., CEng, MIEE, MIEAust, SMIEEE
R. M. Huey, BSc BE Syd., FIEAust, FIREE, SMIEEE
G. J. Johnson, MSc Syd., CEng, MIEE, AInstP, SMIEEE, AAIP

Senior Lecturers
H. Harrison, BSc BE Syd., ME N.S.W., MIEAust
I. F. Morrison, BSc BE PhD Syd., MIEAust, MIEEE

Lecturers
D. B. Goudie, BSc BE PhD Syd., MIEEE, AMIEE
H. R. Outhred, BSc BE Syd., AMIEE
H. Yee, BSc BE PhD Syd.

Professional Officers
H. T. Bazoche, DiplIng T.U. Braunschweig
J. R. Kinard, BA Fla.S.U., MS Mass., MIEEE, MOSA

Department of Solid-State Electronics

Senior Lecturers
H. S. Blanks, BSc ME Syd., PhD N.S.W., CEng, MIQA
R. Vaughan, BSc BE PhD Syd.

Lecturer
Mrs. Manjula B. Waldron, BSc Delhi, BE I.I.S.B’lore., MS PhD Stan., MIEEE

Professional Officer
R. Michael, BSc BE MEngSc Syd.

Department of Systems and Control Engineering

Associate Professors
J. B. Hiller, BE PhD N.S.W., FIREE, MIEEE
K. E. Tait, BE(Hons) BSc N.Z., PhD N.S.W., MIEAust

Senior Lecturers
R. F. Brown, BE Liv., PhD N.S.W., CEng, MIEE
C. A. Stapleton, BSc BE Syd., CEng, MIEE, MIEEE, MIEAust

Lecturers
F. Lewin, BSc BE Syd.
D. H. Mee, BSc BE Syd., PhD Lond., DIC, MIREE
O. Pawloff, DiplIng Berl., MIEAust, MIEEE
Professional Officers
K. J. Flynn, BE MEngSc N.S.W., ASTC
K. W. Ford, ASTC
P. A. Newton, B.Sc N.S.W.
J. H. Sieuwerts, BE N.S.W., ASTC

Tutors (School)
Dorothy M. Lesmana, BSc BE N.S.W.
A. J. Peebles, BSc BE N.S.W.
G. N. Westley, BEng Liv.

Teaching Fellows (School)
G. O. Ferry, BE N.S.W.
C. M. Gysland, BS Wash.
G. R. Hellestrand, BSc N.S.W.
N. Q. Le, BE MEngSc N.S.W.
W. Nippita, BSc BE Syd.
J. Sandor, BE Syd.
A. Sunarcia, BE N.S.W.
Q. H. Vu, ME N.S.W.

SCHOOL OF MECHANICAL AND INDUSTRIAL ENGINEERING

Nuffield Professor of Mechanical Engineering, Head of School and of Department of Fluid Mechanics/Thermodynamics
R. A. A. Bryant, ME N.S.W., ASTC, CEng, FIMechE, FIEAust, AFRAeS

Professor of Mechanical Engineering
P. T. Fink, BE Syd., CEng, FIMechE, FRAeS, MAIAA, MRINA

Sir James Kirby Professor of Production Engineering
P. L. B. Oxley, BSc PhD Leeds, CEng, FIEAust, FIProdE, MIMechE

Professor of Operations Research, Head of Department of Industrial Engineering
G. Bennett, BA Syd., PhD N.S.W., ASTC, CEng, FIProdE

Professor of Mechanical Engineering, Head of Department of Applied Mechanics
N. L. Svensson, MMechE PhD Melb., CEng, MIMechE, MIEAust

Professor of Mechanical Engineering, Head of Department of Agricultural Engineering
A. H. Willis, DSc(Eng) Lond., CEng, FI MechE, MIEAust, MemASAE, WhSc

Executive Assistant to Head of School
J. Y. Harrison, BE Syd., PhD N.S.W., MIEAust

Senior Administrative Officer
G. Dusan, BSc Syd.
FACULTY OF ENGINEERING

Department of Applied Mechanics

Associate Professor
R. G. Robertson, MA Oxon., ME N.S.W., CEng, MIMechE, AFRAeS

Senior Lecturers
J. A. B. Cartmel, MSc Cran.I.T., PhD N.S.W., CEng, FIMechE, FIEAust, MASME, MIEE, MAIAA
J. Y. Harrison, BE Syd., PhD N.S.W., MIEAust
E. C. Hind, ME N.S.W., ASTC, MIEAust
C. Samonov, DiplIng Dr techn T.H. Vienna, VDI, MIEAust

Lecturers
J. E. Baker, MSc Syd., BE MEngSc N.S.W., AFIMA
R. A. V. Byron, BE Syd., CEng, AFRAeS, MAIAA
A. E. Churches, BE PhD N.S.W., ASTC
G. Crawford, BE BSc N.S.W.
R. A. Dennis, MSc Nott.
H. E. Enahoro, BSc MScTech Manc., PhD Sheff., CEng, FIMechE
E. J. Hahn, BE BSc PhD N.S.W., MASME
D. J. S. Mudge, BSc Lond., CEng, MIMechE, MIEAust, WhSc
B. Osman, BE Adel., FSASM, MIEAust
H. L. Stark, BSc PhD Strath.
K. J. Waldron, BE MEngSc Syd., PhD Stan., MIEAust

Senior Tutor
K. Kjorrefjord, BSc Durh., CEng, AMRINA

Department of Fluid Mechanics and Thermodynamics
(Including Aeronautical Engineering and Naval Architecture)

Associate Professors
R. D. Archer, BSc Melb., BE Syd., MS PhD Minn., FBIS, MIEAust, MAIAA, AFRAeS
G. de Vahl Davis, BE Syd., PhD Camb., CEng, FIMechE, FIEAust, MASME

Senior Lecturers
R. E. Corbett, DIC, ASTC, CEng, MIMechE, MIEAust
M. R. Davis, BSc(Eng) PhD S’ton.
J. N. Hool, BE Syd., DPhil Oxon., ASTC, CEng, FIMechE, MIEAust
O. F. Hughes, SB SM(NavArch) M.I.T., PhD N.S.W. MIEAust, MRINA, MSNAME
R. T. B. McKenzie, MS ME Purdue, ARSCT(Glas.), CEng, FIMechE
C. M. Sapsford, BSc(Eng) Lond., ME N.S.W., CEng, FIMechE, MIEAust
R. J. Tuft, ASTC, FRINA, MIEAust, MRINA

Lecturers
L. J. Doctors, BE MEngSc Syd., PhD Mich., AMCASI, AMSNAME, MIEAust
B. E. Milton, BE PhD N.S.W., BSc Birm., MIEAust
G. L. Morrison, BE PhD Melb.
J. O. Muiznieks, DiplIng Latvia, DrIngAer Rome
J. A. Reizes, ME N.S.W., MIEAust
Department of Agricultural Engineering

Senior Lecturer

H. G. Bowditch, ME N.S.W., ASTC, MIEAust, MIAgrE, MemASAE

Department of Industrial Engineering

(Including Operations Research and Production Engineering)

Associate Professor

J. Taylor, BSc Nott., CEng, FIMechE

Senior Lecturers

J. F. C. Close, BSc BE Syd., ME N.S.W., MIEE, SIAIEE, MIEAust
M. G. Stevenson, BSc(Tech) PhD N.S.W., ASTC, CEng, MIEAust, MIProdE
R. A. Williams, BE PhD N.S.W., ASTC, CEng, MIProdE, AMIEAust

Lecturers

L. E. Farmer, BE MEngSc PhD N.S.W.
D. Goodridge, DipIngChim L'Aurore, Shanghai, DipIndEng N.S.W.
T. R. Jefferson, MSc Tor., PhD Northwestern
R. N. Roth, BE PhD N.S.W.
C. H. Scott, BSc Qld., PhD N.S.W.
G. Smith, BE MEngSc N.S.W., ASTC, MIEAust

Honorary Associate (School)

C. A. Gladman, BSc(Eng) Lond., ACGI, CEng, FIProdE, MIMechE, MIED

Professional Officers (School)

E. A. Carter, BE MEngSc N.S.W., ASTC
W. Dollar, ASTC
T. W. Forristal, BMath Wat.
M. H. Fraser, BSc(Tech) N.S.W.
R. B. Frost, BE N.S.W.
J. Y. M. Fung, BE MEngSc Syd., GradIEAust
W. F. Hastings, BSc(Tech) N.S.W.
B. C. Motson, BE N.S.W., ASTC, MIEAust
P. H. Sivyer, BE N.S.W., MIEAust
C. B. Smith, BE MEngSc N.S.W., ASTC, GradIEAust, MAIRAH
G. D. White, BSc(Eng) N.S.W.

Teaching Fellows (School)

T. S. Lee, BE N.S.W.
L. G. Nhan, BE N.S.W.
M. D. Rabinowitz, BSc. Technion, Haifa
Simandiri, BTech. MTEch. Bandung Inst. Tech., Indonesia
C. K. Tan, BE Monash
C. K. Wong, BSc N.T.U., MSc N.S.W.
SCHOOL OF SURVEYING

Professor of Surveying and Head of School
P. V. Angus-Leppan, BSc(Eng) Rand, PhD DipTP Natal, FISAust, MILS(Natal), MAIC

Associate Professors
G. G. Bennett, MSurv Melb., PhD N.S.W., LS (N.S.W.), FISAust
R. S. Mather, BSc Ceylon, PhD N.S.W., MISAust

Senior Lecturers
J. S. Allman, BSurv PhD N.S.W., MAIC, MISAust
J. G. Freislich, BSc(Eng) Rand, FISAust, AMINS(SA)
J. C. Trinder, BSurv PhD N.S.W., MSc T.H. Delft, LS(N.S.W.), MISAust

Lecturers
L. Berlin, BSc(L.S.) Cape T., BSc T.H. Delft
G. J. F. Holden, ARICS, Dip.Photo. Lond., FRGS, MISAust
A. H. W. Kearsley, BSurv MSurvSc N.S.W., MAIC, MISAust
A. J. Robinson, BSurv N.S.W., LS(N.S.W.), MISAust, AMAIC
A. Stolz, BSurv N.S.W., LS(N.S.W.)
A. P. H. Werner, Dipling Bonn, FISAust

Special Project Officer
R. J. Keith, ME N.S.W., ASTC

Senior Tutors
M. Maughan, BSc Lond., ARICS
S. U. Nasca, DottScGeol Florence, Dip/Top&Cart (Instituto Geografico Militare), MGAS, AMAIMM

Teaching Fellow
G. Unadhay, BSc Philippines

Professional Officer
C. E. Wardrop, BSc N.S.W.

Administrative Assistant
J. V. Fonseka, BA Lond.

SCHOOL OF HIGHWAY ENGINEERING

Professor of Highway Engineering and Head of School
D. F. Orchard, BSc PhD Lond., DIC, ACGI, FIEAust, FCIT, MICE, MIMunE, MInstCE

Senior Lecturers
W. H. Cogill, MSc Cape T. and Camb., PhD N.S.W., FIEAust, MICE
G. C. Y. Hu, BSc Kwangtung Kuomin, Canton, MSc PhD Birm., DipTP Lond., MIMunE, MIEAust, MASCE, AMTPi
R. A. Jones, BE W.Aust., ME Auck., MSc Lond., DIC, MSINZ, MIEAust
T. ten Brummelaar, BE MEngSc N.S.W.
Lecturers
B. S. Shackel, BE Sheff., MEngSc N.S.W., MIEAust, MASCE
W. O. Yandell, ME PhD N.S.W., MIEAust

Professional Officers
C. E. Quinlan, GradDip N.S.W., ASTC, MIEAust
A. W. Raczkowski, MgrInz T.U. Warsaw

SCHOOL OF NUCLEAR ENGINEERING

Professor of Nuclear Engineering and Head of School
J. J. Thompson, BE PhD Syd.

Associate Professor
Z. J. Holy, DiplIng Prague, MSc Birm., MEngSc PhD N.S.W., MIEAust

Senior Lecturer
P. R. Barrett, MSc PhD Birm., MInstP

Lecturers
O. O. C. A. Bils, DiplIng Berl., PhD N.S.W.
L. G. Kemeny, BE Syd., MIEAust

Professional Officer
P. Y. P. Chen, BSc MEngSc ME N.S.W., ASTC

SCHOOL OF TRANSPORTATION AND TRAFFIC

Professor of Traffic Engineering and Head of School
W. R. Blunden, BSc BE Syd., FCIT(Lond.), MITE(U.S.A.), MIEAust, MStatSocAust, MAustSocOpRes

Senior Lecturers
D. J. Buckley, BE Syd., MEngSc PhD N.S.W., MIEAust, MORSA, MStatSocAust
R. D. Munro, BSc W.Aust., BA Melb.
J. I. Tindall, BE Qld., BCom ME N.S.W.
H. J. A. Turner, BSc Lond., ME N.S.W., MIEE, ARCS

Senior Project Scientist
A. J. Fisher, BSc Lond.

Professional Officers
R. R. Hall, BSc A.N.U.
C. J. Wingrove, BSc N.S.W.
THE FACULTY

SCHOOL OF CIVIL ENGINEERING

The School of Civil Engineering consists of four departments, Water Engineering, Civil Engineering Materials, Structural Engineering, and Engineering Construction and Management. The School conducts both part-time and full-time undergraduate courses in Civil Engineering. In addition, all departments conduct graduate courses and carry out graduate research programmes in many fields.

The Department of Water Engineering encompasses the fields of Hydraulics, Hydrology, Water Resources and Public Health Engineering. The Public Health Engineering Laboratory is located at Kensington. The Hydrology research centre is also at Kensington, but a substantial amount of investigation is carried out in the field. The Water Research Laboratory is located at Manly Vale and is the centre for instruction and research in hydraulics.

The Department of Civil Engineering Materials includes the fields of Soil Mechanics, Rock Mechanics, Concrete Technology, Plastics and Timber. The Materials Laboratories are located at Kensington.

The Department of Structural Engineering covers the fields of Structures, Stress Analysis and Solid Mechanics. The Model Structures, Experimental Stress Analysis and Solid Mechanics Laboratories are at Kensington. The Heavy Structures Laboratory is at King Street, Randwick.

The Department of Engineering Construction and Management is responsible for the fields of Civil Engineering Systems, Engineering Economy, Project Planning and Management.

SCHOOL OF ELECTRICAL ENGINEERING

The School of Electrical Engineering comprises five departments — Communications, Computer Science, Electric Power Engineering, Solid State Electronics and Systems and Control Engineering.
Each department carries out research in its own field and offers lecture and laboratory courses at the undergraduate and postgraduate levels. Subjects of common interest are provided by the School as a whole.

Special laboratories are equipped for work in the areas of Integrated Circuit Design, Microwaves, Computer Control, Machines and Acoustics. A Measurements Laboratory provides a calibrating service under certificate from the National Association of Testing Authorities.

SCHOOL OF MECHANICAL AND INDUSTRIAL ENGINEERING

Full-time undergraduate courses leading to the degree of Bachelor of Engineering are offered in Mechanical, Industrial, and Aeronautical Engineering, and in Naval Architecture. Part-time courses leading to the degree of Bachelor of Science (Engineering) are offered in the same four fields. Either degree may be taken out by a combination of full-time/part-time study, subject to approval by the Head of School.

The first two years of the full-time degree, and the first four stages of the part-time degree are common to all courses within the School. Thus a final decision on the discipline to be followed need not be made until the end of Year 2 for full-time and Stage 4 for part-time students.

Formal postgraduate courses of study are available, with a wide choice of subjects, leading to the degree of Master of Engineering Science. There are special Master of Engineering Science courses in Refrigeration and Air Conditioning, and in Industrial Engineering. The Department of Industrial Engineering within the School offers a course leading to a Graduate Diploma.

Graduates with a good first degree may register for the higher degrees of Master of Engineering and Doctor of Philosophy. Current research fields are as follows—Aerodynamics, Agricultural Engineering, Applied Plasticity, Automatic Control, Bio-mechanics, Dynamics, Gas Dynamics, Heat Transfer, Fluid Mechanics, Metal Cutting, Naval Hydrodynamics, Refrigeration and Air Conditioning, and Two-phase Flow.

Undergraduates who are interested in working for a research degree should consult the Head of School towards the end of their final year. Advice will be given to all students during their third year so that each can select the best possible combination of final year elective subjects.
SCHOOL OF SURVEYING

The School of Surveying offers a Bachelor of Surveying degree taken over four years of full-time study or seven years of part-time study. Subject to the approval of the Head of School, combinations of full and part-time study are also permissible. The graduate courses offered are Master of Surveying Science, a two year part-time or one year full-time course; and the research degrees Master of Surveying and PhD.

The School is located in the Civil Engineering Building. Facilities include four Photogrammetry laboratories with plotting instruments of various types, an observing platform for Positional Astronomy and a comprehensive range of field equipment for Surveying and Geodesy. Computing facilities include programmable calculators and a library of programmes for use on the University's IBM 360/50 computer.

Current research is in the fields of physical geodesy, photogrammetry, geometrical geodesy, error theory, gyrotheodolite theory, computer applications and land systems studies.

SCHOOL OF HIGHWAY ENGINEERING

Postgraduate courses are offered, leading to the degree of Master of Engineering Science and to a Postgraduate Diploma, in which road location and geometrics, properties of road materials, construction techniques, bridge design and traffic engineering are studied.

The School has well-equipped laboratories for studying the properties of soils, road aggregates, bitumen and cement concrete, and active studies on these subjects are in progress. Members of the School use a 1620 IBM computer as part of their course, and studies are being made of its utilization in all phases of highway engineering. They also have access to a 360/50 computer.

SCHOOL OF NUCLEAR ENGINEERING

The School of Nuclear Engineering in the University of New South Wales was established in 1961. The School presently operates at the postgraduate level in the Faculty of Engineering. A fourth year undergraduate course in Nuclear Power Technology is provided as an elective for other Schools.

In addition to the supervision of programmes of advanced study and research for candidates for the research degrees of
Master of Engineering and Doctor of Philosophy, the School offers a formal graduate course leading to the degree of Master of Engineering Science. This formal course aims specifically at the education of engineers for the detailed understanding, analysis and assessment of nuclear reactors and nuclear power systems. Particular attention is given to the mathematical, numerical and computational techniques which are relevant to nuclear engineering.

Special research interests in the School include the general field of fluctuation phenomena and noise in nuclear reactors, the coupled thermomechanical, fluid dynamics and nuclear aspects of reactor fuel elements and coolant channels, and the subject of reactor utilization and reactor strategy.

The School is presently situated in the Electrical Engineering building at Kensington. Library, workshop, digital and analogue computing facilities are available. Special digital and analogue equipment for the analysis and recording of random signals has been acquired for experimental noise research. Through the Australian Institute of Nuclear Science and Engineering, the special facilities of the Australian Atomic Energy Commission's Research Establishment at Lucas Heights can be made available for research purposes. Close personal contact is maintained between members of the School and the Engineering Research Division at Lucas Heights.

SCHOOL OF TRANSPORTATION AND TRAFFIC

The School of Transportation and Traffic is located at Randwick, and is associated with the School of Highway Engineering.

The establishment of the School followed the endowment of a Chair by the Australian Automobile Association, which had long been concerned with the need for a centre for training traffic engineers and specialists. The School is assisting this object by conducting courses in traffic and transport planning and control, and offering opportunities for research into the technical problems created by the tremendous growth in the use of the motor vehicle on the street and highway system, and also into its impact on other forms of transport and on land use activity.

The research activities of the School cover a wide range of transport and traffic phenomena, viz.: traffic flow theory — queueing, traffic stream structure, saturation flow, transportation planning — land use and transport interaction, system parameters,
synthetic models for growth, distribution and assignment of desire lines; public enterprise economics; and human factors and road safety. Research in these fields can be undertaken for the ME, MSc, and PhD degrees. Formal courses, one year full-time and two years part-time, leading to the degree of Master of Engineering Science are also offered in Transport and Traffic. A part-time Transport Graduate course offered over six terms leads to a Graduate Diploma.

In addition to the academic research activities the School has an Applied Research Division which undertakes project research for national bodies and institutions. It has an active programme relating to freeway lighting, traffic flow and capacity of urban roads and arterials and traffic instruments.
A person who seeks to become a candidate for any degree of Bachelor of the University must first have qualified for matriculation and have satisfied the requirements for admission to the particular Faculty, Course or Subject chosen.

In addition to complying with these conditions candidates must be selected before being permitted to enrol in a course. In 1974 it will be necessary for the University to limit the number of students enrolling in all undergraduate courses.

Special Assistance for Aboriginal Students

The University may admit suitably qualified persons of Aboriginal descent outside of any quota restrictions.

Upon receipt of an application under this provision, the University will assess the applicant’s potential to cope with University studies, and will make Student Counsellors available to discuss the choice of a course and subsequent career opportunities.

All enquiries relating to this scheme should be directed to the Registrar.

Matriculated Student

A candidate who has satisfied the conditions for matriculation and for admission to a course of study shall be classed as a “matriculated student” of the University, after enrolment.

A person who has satisfactorily met the conditions for admission may be provided with a statement to that effect on the payment of the prescribed fee.

MATRICULATION REQUIREMENTS

Section A

GENERAL MATRICULATION AND ADMISSION REQUIREMENTS

1. A candidate may qualify for matriculation by attaining in recognised matriculation subjects at one New South Wales Higher School Certificate Examination or at one University of Sydney Matriculation Examination a level of performance determined by the Professorial Board from time to time.
2. The level of performance required to qualify for matriculation shall be
   (a) passes in at least five recognised matriculation subjects, one of which shall be English and three of which shall be at Level 2 or higher; and
   (b) the attainment of an aggregate of marks, as specified by the Professorial Board, in not more than five recognised matriculation subjects, such marks being co-ordinated in a manner approved by the Board.

3. The following subjects, and such other subjects as may be approved by the Professorial Board from time to time, shall be recognised matriculation subjects:—

   | English   | Greek    | Chinese   |
   | Mathematics | Latin    | Japanese  |
   | Science    | French   | Hebrew    |
   | Agriculture| German   | Dutch     |
   | Modern History | Italian | Art       |
   | Ancient History | Bahasa Indonesia | Music    |
   | Geography  | Spanish  | Industrial Arts |
   | Economics  | Russian  |           |

4. A candidate who has qualified to matriculate in accordance with the provisions of Clauses 1, 2 and 3 may be admitted to a particular Faculty, course or subject provided that:
   (a) his qualification includes a pass at the level indicated in the subject or subjects specified in Schedule A as Faculty, course or subject prerequisites; or
   (b) the requirements regarding these particular Faculty, course or subject prerequisites, as specified in Schedule A, have been met at a separate Higher School Certificate or University of Sydney Matriculation Examination.

5. Notwithstanding any of the provisions of Clauses 1 to 4, the Professorial Board may grant matriculation status to any candidate at the Higher School Certificate or University of Sydney Matriculation Examination who has reached an acceptable standard and may admit him to any Faculty, course or subject.

NOTE

1. For the purposes of clause 2(a), Mathematics and Science BOTH PASSED at first level or second level full course shall together count as three subjects.

2. For the purposes of clause 2(b), Mathematics and Science, TAKEN either singly or together at first level or second level full course shall each count as one and one half subjects.
## Schedule A

<table>
<thead>
<tr>
<th>FACULTY OR COURSE</th>
<th>FACULTY OR COURSE PREREQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Science (excl. Applied Geography and Wool and Pastoral Sciences courses)</td>
<td>(a) Science at Level 2S or higher AND (b) either Mathematics at Level 2F or higher OR Mathematics at Level 2S, provided that the candidate's performance in this subject and his general level of attainment are at standards acceptable to the Professorial Board.</td>
</tr>
<tr>
<td>Biological Sciences</td>
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<tr>
<td>Engineering</td>
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<tr>
<td>Industrial Arts Course</td>
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<tr>
<td>Medicine</td>
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<tr>
<td>Military Studies</td>
<td></td>
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<tr>
<td>(Engineering course and Applied Science course)</td>
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<tr>
<td>Science</td>
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<tr>
<td>Bachelor of Science (Education)</td>
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<tr>
<td>Architecture</td>
<td>(a) Science at Level 2S or higher AND (b) Mathematics at Level 2S or higher</td>
</tr>
<tr>
<td>Applied Geography (Biogeography and Pedology specializations)</td>
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<tr>
<td>Wool and Pastoral Sciences courses</td>
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<tr>
<td>Applied Geography (Economic Geography specialization)</td>
<td>Either Mathematics at Level 2F or higher OR Mathematics at Level 2S, provided that the candidate's performance in this subject and his general level of attainment are at standards acceptable to the Professorial Board.</td>
</tr>
<tr>
<td>FACULTY OR COURSE</td>
<td>FACULTY OR COURSE PREREQUISITES</td>
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<tr>
<td>Arts</td>
<td>English at Level 2 or higher</td>
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<tr>
<td>Commerce</td>
<td>(a) Mathematics at Level 2S or higher&lt;br&gt;AND&lt;br&gt;(b) either English at Level 2 or higher&lt;br&gt;OR&lt;br&gt;English at Level 3, provided that the candidate's performance in this subject and his general level of attainment are at standards acceptable to the Professorial Board.</td>
</tr>
<tr>
<td>Law</td>
<td>Nil</td>
</tr>
<tr>
<td>Combined Jurisprudence/Law</td>
<td>Nil</td>
</tr>
<tr>
<td>Combined Arts/Law</td>
<td>As for Arts</td>
</tr>
<tr>
<td>Combined Commerce/Law</td>
<td>As for Commerce</td>
</tr>
<tr>
<td>Military Studies (Arts course)</td>
<td>English at Level 2 or higher OR English at Level 3, provided that the candidate's performance in this subject and his general level of attainment are at standards acceptable to the Professorial Board, and provided that a candidate so qualified shall not enrol in a course of English Literature.</td>
</tr>
<tr>
<td>Social Work course</td>
<td>English at Level 2 or higher&lt;br&gt;OR&lt;br&gt;English at Level 3, provided that the candidate's performance in the subject and his general level of attainment are at standards acceptable to the Professorial Board, and provided that a candidate so qualified shall not enrol in English I.</td>
</tr>
<tr>
<td>SUBJECT</td>
<td>SUBJECT PREREQUISITES</td>
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<tr>
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<tr>
<td>1.011—Higher Physics I</td>
<td>As for Faculty of Science</td>
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<tr>
<td>1.001—Physics I</td>
<td></td>
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<tr>
<td>2.001—Chemistry I</td>
<td>Science at Level 2S or higher</td>
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<tr>
<td>17.011—Human Biology</td>
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<tr>
<td>25.001—Geology I</td>
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<tr>
<td>25.111—Geoscience I</td>
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<tr>
<td>10.011—Higher Mathematics I</td>
<td>Mathematics at Level 2F or higher</td>
</tr>
<tr>
<td>10.001—Mathematics I</td>
<td>Either Mathematics at Level 2F or higher</td>
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<tr>
<td></td>
<td>OR</td>
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<tr>
<td></td>
<td>Mathematics at Level 2S, provided that the candidate's performance in the subject and his general level of attainment are at standards acceptable to the Professorial Board.</td>
</tr>
<tr>
<td>10.021—Mathematics IT</td>
<td>Mathematics at Level 2S or higher</td>
</tr>
<tr>
<td>15.102—Economics II</td>
<td>As for Faculty of Commerce</td>
</tr>
<tr>
<td>50.111—English IA</td>
<td>English at Level 2 or higher</td>
</tr>
<tr>
<td>51.111—History I</td>
<td>French at Level 2 or higher</td>
</tr>
<tr>
<td>51.121—History IB</td>
<td></td>
</tr>
<tr>
<td>56.111—French I</td>
<td>Russian at Level 2 or higher</td>
</tr>
<tr>
<td>59.111—Russian I</td>
<td>German at Level 2 or higher</td>
</tr>
<tr>
<td>64.111—German I</td>
<td>Spanish at Level 2 or higher</td>
</tr>
<tr>
<td>65.111—Spanish I</td>
<td></td>
</tr>
<tr>
<td>59.001—Russian IZ</td>
<td>A foreign language, other than that in which enrolment is sought, at Level 2 or higher.</td>
</tr>
<tr>
<td>64.001—German IZ</td>
<td></td>
</tr>
<tr>
<td>65.001—Spanish IZ</td>
<td></td>
</tr>
</tbody>
</table>
Section B

SUPPLEMENTARY PROVISIONS FOR MATRICULATION

Notwithstanding the provisions of Section A above, candidates may be accepted as "matriculated students" of the University under the conditions which are listed in the University Calendar.
ADMISSIONS AND ENROLMENT PROCEDURE

ADMISSIONS PROCEDURE

Details of the procedure to be followed by students seeking entry to first year courses at the University may be obtained from the Admissions Office or the Metropolitan Universities Admissions Centre.

Persons seeking entry to first year courses in one or more of the three Universities in the Sydney Metropolitan Area (Macquarie University, the University of New South Wales and the University of Sydney) are required to lodge a single application form with the Metropolitan Universities Admissions Centre, Third Floor, 13-15 Wentworth Avenue, Sydney (near Liverpool Street). Postal address: Box 7049, G.P.O., Sydney, 2001. Telephone: 26-6301. On the application form provision is made for applicants to indicate preferences for courses available in any of the three Universities. Students are notified individually of the result of their applications and provided with information regarding the procedures to be followed in accepting the offer of a place at this University and completing their enrolment at the Enrolment Bureau, Unisearch House, 221 Anzac Parade, Kensington.

FACULTY OF ENGINEERING ENQUIRY CENTRE

The Faculty Enquiry Centre is situated in the undercroft of the School of Electrical Engineering Building, Kensington (the corner of Engineering and Library Roads). Members of Academic Staff will be available to advise students about careers in the various fields of engineering and about undertaking a course in engineering in this University. The Centre will be open from 10.00 a.m. to 4.00 p.m. (closed 1.00 p.m. to 2.00 p.m.) from Wednesday, 9th to Friday 11th January, and Monday, 14th to Friday, 18th January, 1974. Telephone: 663 0351 extn. 3438. Prospective students are advised to take advantage of this facility.

ADMISSIONS OFFICE

The Admissions Office which is located in the Chancellery on the upper campus provides intending students (both local and overseas) with information regarding courses, admission requirements, scholarships and enrolment. Office hours are from 9.00 a.m.
to 1.00 p.m. and 2.00 p.m. to 5.00 p.m. Monday to Friday and an evening service is provided during the enrolment period.

Applications for special admission, admission with advanced standing and from persons relying for admission on overseas qualifications should be lodged with the Admissions Office. The Office also receives applications from students who wish to transfer from one course to another, resume their studies after an absence of twelve months or more, or seek any concession in relation to a course in which they are enrolled. It is essential that the closing dates for lodgment of applications are adhered to, and, for further details the sections on "Rules Relating to Students" and "Enrolment Procedure for Undergraduate Courses" should be consulted.

Applications for admission to undergraduate courses from students who do not satisfy the requirements for admission (see section on "requirements for admission"), from students seeking admission with advanced standing, and from students who have had a record of failure at another University, are referred by the Admissions Office to the Admissions Committee of the Professorial Board.

Students seeking to register as higher degree candidates should discuss their proposals initially with the Head of the School in which they wish to register. An application is then lodged on a standard form and the Admissions Office, after obtaining a recommendation from the Head of the School, refers the application to the appropriate Faculty or Board of Studies Higher Degree Committee.

ENROLMENT PROCEDURE FOR UNDERGRADUATE COURSES

In 1974 it will be necessary for the University to limit entry into each Faculty and Board of Studies, in particular in the Schools of Civil Engineering and Surveying.

The enrolment procedure for the different classes of undergraduate students is as follows:

First Enrolments

(a) New South Wales residents already qualified for admission and persons who are applying for enrolment on the basis of qualifications gained or about to be gained outside New South Wales must lodge an application for enrolment with the Metropolitan Universities Admissions Centre, 13-15 Wentworth Avenue, Sydney (P.O. Box 7049 G.P.O., Sydney) by 26th October, 1973.
(b) New South Wales residents qualifying for admission by the 1973 New South Wales Higher School Certificate Examination or the 1974 Sydney University Matriculation Examination and those who have attended a University in New South Wales in 1973 must apply for enrolment to the Metropolitan Universities Admissions Centre, 13-15 Wentworth Avenue, Sydney (P.O. Box 7049 G.P.O., Sydney) by 18th January, 1974.

Completion of Enrolment

Students whose applications for enrolment are accepted will be required to complete their enrolment at a specified appointment time before the start of Session 1. Fees must be paid on the day of the appointment. However, in special circumstances and provided class places are still available, students may be allowed to complete their enrolment after the prescribed week subject to the payment of a late fee.

Application forms for enrolment and details of the application procedures may be obtained on application to the Registrar, P.O. Box 1, Kensington 2033.

Failure in First Year

First year students who failed more than half their programme at the 1973 Annual Examinations and who were not granted any deferred examinations will NOT follow the above procedure. They are required to 'show cause' why they should be allowed to continue in the course, and should await instructions in writing from the Registrar as to the procedure.

Later Year Enrolments

All students enrolling other than for the first time and not included above should enrol through the appropriate School and bring with them their notification of examination results for the previous year. This enrolment must be effected before or during the week before the commencement of Session 1 in accordance with the special arrangements made by the individual Schools.

Preliminary Enrolment

Courses in Aeronautical, Industrial, Mechanical Engineering and Naval Architecture

Students in the above courses should have received a form requesting them to nominate their choice (choices) of general studies electives, and technical electives where applicable.

If any student has not received the above form he should obtain it from the School's general office, complete it and return
it to the general office before the end of lectures in the second session.

Courses in Civil Engineering, Electrical Engineering and Surveying

Enrolment Timetable

SCHOOL OF CIVIL ENGINEERING

a. Full-time Courses

1. Students progressing into a complete year as shown in this Handbook

<table>
<thead>
<tr>
<th>Year</th>
<th>Surnames A to M</th>
<th>Surnames N to Z</th>
<th>Date and Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 2</td>
<td>9.00 a.m. to 11.00 a.m.</td>
<td>11.00 a.m. to 1.00 p.m.</td>
<td>Friday 22nd February</td>
</tr>
<tr>
<td>Year 3</td>
<td>9.00 a.m. to 11.00 a.m.</td>
<td>11.00 a.m. to 1.00 p.m.</td>
<td>Thursday 21st February</td>
</tr>
<tr>
<td>Year 4</td>
<td>9.00 a.m. to 11.00 a.m.</td>
<td>11.00 a.m. to 1.00 p.m.</td>
<td>Wednesday 20th February</td>
</tr>
</tbody>
</table>

2. Students with “broken” programmes NOT progressing into a complete year, as shown in this Handbook

<table>
<thead>
<tr>
<th>Year</th>
<th>Surnames A to M</th>
<th>Surnames N to Z</th>
<th>Date and Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 2</td>
<td>9.30 a.m. to 11.00 a.m.</td>
<td>11.00 a.m. to 12.30 p.m.</td>
<td>Friday 1st March</td>
</tr>
<tr>
<td>Year 3</td>
<td>9.30 a.m. to 11.00 a.m.</td>
<td>11.00 a.m. to 12.30 p.m.</td>
<td>Wednesday 27th February</td>
</tr>
<tr>
<td>Year 4</td>
<td>9.30 a.m. to 11.00 a.m.</td>
<td>11.00 a.m. to 12.30 p.m.</td>
<td>Tuesday 26th February</td>
</tr>
</tbody>
</table>

b. Part-time Courses

1. Students progressing into a complete stage as shown in this Handbook

<table>
<thead>
<tr>
<th>Stages</th>
<th>Date and Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stages 2, 3, and 4</td>
<td>Thursday 21st February 6.00 p.m. to 8.00 p.m.</td>
</tr>
<tr>
<td>Stages 5 and 6</td>
<td>Friday 22nd February 6.00 p.m. to 8.00 p.m.</td>
</tr>
</tbody>
</table>
2. Students with "broken" programmes NOT progressing into a complete stage as shown in this Handbook

Stages 2, 3, and 4
Wednesday 27th February
2.00 p.m. to 4.30 p.m.
6.00 p.m. to 8.00 p.m.

Stages 5 and 6
Thursday 28th February
2.00 p.m. to 4.30 p.m.
6.00 p.m. to 8.00 p.m.

c. New Students with Advanced Standing

Full-time
Friday 1st March
9.30 a.m. to 12.30 p.m.

Part-time
Wednesday 27th February
6.00 p.m. to 8.00 p.m.

Enrolment Centre

1. Students progressing into a complete stage or year as shown in this Handbook

Room 109
School of Civil Engineering

2. Students with "broken" programmes NOT progressing into a complete stage or year as shown in this Handbook

Unisearch House
221 Anzac Parade
(across from Main Campus)

3. New Students with Advanced Standing

Unisearch House
221 Anzac Parade
(across from Main Campus)

SCHOOL OF ELECTRICAL ENGINEERING

a. Full-time Courses

Year 1 repeats and Year 2 students
Thursday 28th February
2.00 p.m. to 4.30 p.m.

Year 3
Tuesday, 26th February
2.00 p.m. to 4.30 p.m.

Year 4
Monday 25th February
9.30 a.m. to 12.30 p.m.

b. Part-time Courses

Students re-enrolling at all stages
Wednesday 27th February
6.00 p.m. to 8.00 p.m.
c. New Students with Advanced Standing

Friday 1st March
9.30 a.m. to 12.30 p.m.

Enrolment Centre
Re-enrolling students
Unisearch House
221 Anzac Parade
(across from Main Campus)

New students with advanced standing
Room G1
Electrical Engineering Building

SCHOOL OF MECHANICAL AND INDUSTRIAL ENGINEERING

Unless otherwise indicated students enrolling in the courses offered by the School are required to attend Room 106 in the School's Building in accordance with the following timetable:

a. Full-time Courses

Year 2 and Year 1 repeats
Monday 25th February
2.00 p.m. to 6.00 p.m.

Year 3
Tuesday 26th February
9.00 a.m. to 12 noon

Year 4
Monday 25th February
9.00 a.m. to 12 noon

b. Part-time Courses

Stages 2, 3 and Stage 1 repeats
Monday 25th February
2.00 p.m. to 6.00 p.m.

Stages 4, 5 and 6
Tuesday 26th February
2.00 p.m. to 5.00 p.m.
6.00 p.m. to 8.30 p.m.

c. New Students with Advanced Standing

Friday 1st March
2.00 p.m. to 5.00 p.m.

Enrolment Centre
Room 106
School of Mechanical and Industrial Engineering Building
SCHOOL OF SURVEYING

a. Full-time Courses

Year 2
Monday 25th February
9.30 a.m. to 12.30 p.m.

Year 3
Tuesday 26th February
9.30 a.m. to 12.30 p.m.

Year 4
Friday 1st March
9.30 a.m. to 12.30 p.m.

b. Part-time Courses

Students re-enrolling at all Stages
Wednesday 27th February
2.00 p.m. to 6.00 p.m.

c. New Students with Advanced Standing

Full-time
Tuesday 26th February
9.30 a.m. to 12.30 p.m.

Part-time
Wednesday 27th February
2.00 p.m. to 6.00 p.m.

Enrolment Centre
Full-time
Unisearch House, 221 Anzac Parade
(across from Main Campus)

Part-time
Room 701
Civil Engineering Building

Miscellaneous Subjects (students not proceeding to a degree or diploma)

Students may be accepted for enrolment in miscellaneous subjects provided the University considers that the subject/s will be of benefit to the student and there is accommodation available. Only in exceptional circumstances will subjects taken in this way count towards a degree or diploma.

Students seeking to enrol in miscellaneous subjects should obtain a letter of approval from the Head of the appropriate School or his representative permitting them to enrol in the subject concerned. The letter should be given to the enrolling officer at the time of enrolment. Where a student is under exclusion he may not be enrolled in any miscellaneous subjects unless given approval by the Professorial Board.
Unless otherwise instructed, students who have obtained written permission to enrol should attend the Unisearch House enrolment centre on

Friday 1st March
2.00 p.m. to 6.00 p.m.

Students unable to enrol at the above time may enrol by attending the Admissions Office, Chancellery, at the times shown below, with a written permission to enrol from the Head of School.

Week commencing 4th March:
Monday to Friday
9.30 a.m. to 1.00 p.m.
2.00 p.m. to 4.30 p.m.
5.30 p.m. to 8.00 p.m.

Week commencing 11th March:
Monday to Friday
9.30 a.m. to 1.00 p.m.
2.00 p.m. to 4.30 p.m.
Wednesday and Friday
5.30 p.m. to 8.00 p.m.

Students who have completed the final examinations but have a thesis still outstanding are required to enrol for the period necessary to complete the thesis and to pay the requisite fees.

Course details must be completed during the prescribed Enrolment Week. For details of fee requirements, including late fee provisions, see under Fees.

Final Dates for Completion of Enrolment. No enrolments will be accepted from new students after the end of the second week of Session 1 (15th March, 1974) except with the express approval of the Registrar and the Head of the School concerned; no later year enrolments will be accepted after 31st March without the express approval of the Registrar which will be given in exceptional circumstances only.

UNIVERSITY UNION CARD

All students other than miscellaneous students are issued with a University Union membership card. This card must be carried during attendance at the University and shown on request.

The number appearing on the front of the card above the student's name is the student registration number used in the University's records. This number should be quoted in all correspondence.
The card must be presented when borrowing from the University libraries, when applying for travel concessions and when notifying a change of address. It must also be presented when paying fees on re-enrolment each year when it will be made valid for the year and returned. Failure to present the card could result in some inconvenience in completing re-enrolment.

A student who loses a Union card must notify the University Union as soon as possible.

New students will be issued with University Union cards at the University Union Enquiry Desk as soon as practicable after payment of fees. In the meantime, fees receipt form should be carried during attendance at the University and shown on request. A period of at least three weeks should be allowed to elapse after payment of fees before making application for the card. Cards will not be posted under any circumstances.
FEES

Payment of Fees

As from 1st January, 1974, no fees for tuition will be payable. Other fees and charges will still be payable. These include those charges raised to finance the expenses incurred in operating student activities such as the University Union, the Students' Union, the Sports Association and the Physical Education and Recreation Centre. Late fees are also charged where a student fails to observe required procedures by the appropriate time. Charges may also be payable, sometimes in the form of a deposit, for the hiring of kits of equipment which are lent to students for their personal use during attendance in certain subjects. Accommodation charges and costs of subsistence on excursions, field work, etc., and for hospital residence (medical students) are payable in appropriate circumstances. In order to become a student member of the University in any particular course of study it is necessary to meet the entrance requirements for the course and to enrol formally in it. To effect enrolment it is necessary to present a duly completed and authorised enrolment form to the University cashier together with, where payable, either the appropriate fees, or an authority authorising those fees to be charged to some other person or institution.

Completion of Enrolment

All students are required to attend the appropriate enrolment centre during the prescribed enrolment period* for authorisation of course programme. Failure to do so will incur a late fee of $10.

First year students (including students repeating first year) must complete enrolment (including fee payment) before they are issued with class timetables or permitted to attend classes. A first year student who has been offered a place in a course to which entry is restricted and who fails to complete enrolment at the appointed time may lose the place allocated.

Fees should be paid during the prescribed enrolment period but will be accepted during the first two weeks of Session 1. (For

* The enrolment periods for Sydney students are prescribed annually in the leaflets on enrolment procedures.
late fees see below.) No student is regarded as having completed an enrolment until fees have been paid. Fees will not be accepted (i.e. enrolment cannot be completed) from new students in year-long courses after the end of the second week of Session 1 (i.e. 15th March, 1974), and after 31st March from students who are re-enrolling, except with the express approval of the Registrar, which will be given in exceptional circumstances only.

Students enrolling for the first time in any year at the commencement of Session 2 are required to pay all fees due within the first two weeks of that Session. Students Activities fees due will be one-half of the annual fees.

These arrangements also apply to medical students and although the structure of the academic year in the later years of the course in Medicine differs from that followed in other courses, medical students are required to observe the same dates for payment as apply to students in other courses.

Assisted Students

Scholarship holders or sponsored students who have not received an enrolment voucher or appropriate letter of authority from their sponsor at the time when they are enrolling should complete their enrolment paying their own fees. A refund of fees will be made when the enrolment voucher or letter of authority is subsequently lodged with the Cashier.

Extension of Time

Any student who is unable to pay fees by the due date may apply in writing to the Deputy Registrar (Student Services) for an extension of time. Such application must state year or stage, whether full-time or part-time; and the course in which enrolment is sought, describe clearly and fully why payment cannot be made and what extension is required, and must be lodged before the date on which a late fee becomes payable. Normally the maximum extension of time for the payment of fees is one month for fees due in Session 1 and for one month from the date on which a late fee becomes payable in Session 2.

Where an extension of time is granted to a first year student in Session 1, such student may only attend classes on the written authority of the Registrar, but such authority will not normally be given in relation to any course where enrolments are restricted.
Failure to Pay Fees or Other Debts

Any student who fails to pay prescribed fees or charges or is otherwise indebted to the University and who fails to make a satisfactory settlement of his indebtedness upon receipt of due notice ceases to be entitled to the use of University facilities. Such a student is not permitted to register for a further session, to attend classes or examinations, or to be granted any official credentials.

No student is eligible to attend the annual examinations in any subject where any portion of his fees for the year is outstanding after the end of the fourth week of Session 2 (16th August, 1974).

In very special cases the Registrar may grant exemption from the disqualification referred to in the two preceding paragraphs upon receipt of a written statement setting out all relevant circumstances.

STUDENT FEES*

All undergraduate students and students taking miscellaneous subjects (with the exception of External students) will be required to pay —

- University Union† $20 — entrance fee
- Student Activities Fees:
  - University Union† $30 — annual subscription
  - Sports Association† $4 — annual subscription
  - Students’ Union† $7 — annual subscription
  - Miscellaneous $17 — annual fee

(The miscellaneous fee is used to finance expenses generally of a capital nature relating to student activities. Funds are allocated to the various student bodies for projects recommended by the Student Affairs Committee and approved by the University Council.)

Depending on the subject being taken, students may also be required to pay —

- Pathology Instrument Kit — $10 (refundable on return in satisfactory condition).

* Fees quoted in the schedule are current at the time of publication and may be amended by the Council without notice.
† Life members of these bodies are exempt from the appropriate fee or fees.
SPECIAL EXAMINATION FEES
Examinations conducted under special circumstances — $11 for each subject.
Review of examination result — $11 for each subject.

LATE FEES

Session 1—First Enrolments
Fees paid at the late enrolment session and before the commencement of Session 1 $10
Fees paid during the 1st and 2nd weeks of Session 1 $20
Fees paid after the commencement of the 3rd week of Session 1 with the express approval of the Registrar and Head of the School concerned $40

Session 1—Re-Enrolments
Failure to attend enrolment centre during enrolment week $10
Fees paid after the commencement of the 3rd week of Session 1 to 31st March $20
Fees paid after 31st March where accepted with the express approval of the Registrar $40

Session 2—All Enrolments
Fees paid in 3rd and 4th weeks of Session 2 $20
Fees paid thereafter $40
FACULTY OF ENGINEERING

WITHDRAWAL FROM COURSE

1. Students withdrawing from a course are required to notify the Registrar in writing.

2. Where notice of withdrawal from a course is received by the Registrar before the first day of Session 1 a refund of all fees paid will be made.

3. On notice of withdrawal:

   (a) a partial refund of the University Union Entrance Fee will be made on the following basis: any person who has paid the entrance fee in any year and who withdraws from membership of the University Union after the commencement of Session 1 in the same year, or who does not renew his membership in the immediately succeeding year may on written application to the Warden receive a refund of half the entrance fee paid.

   (b) A partial refund of other Student Activities Fees will be made on the following basis:

       University Union—$7.50 in respect of each half session.

       University of New South Wales Students' Union—where notice is given prior to the end of the fifth week of Session 1, $3.50; thereafter no refund.

       University of New South Wales Sports Association—where notice is given prior to the 5th week a full refund is made; thereafter no refund.

       Miscellaneous Student Activities Fee—$4.25 in respect of each half session.

4. Where initial enrolment is made at commencement of Session 2 in any year and the student subsequently withdraws, a refund of fees based on the above rules may be made.

Cashier's Hours

The cashier's office is open for the payment of fees from 9.30 a.m. to 1.00 p.m., and from 2.00 p.m. to 4.30 p.m. Monday to Friday. It is open for additional periods during the first four weeks of Session 1. Students are advised to consult noticeboards for details.
RULES RELATING TO STUDENTS

GENERAL CONDUCT

Acceptance as a member of the University implies an undertaking on the part of the student to observe the regulations, by-laws and other requirements of the University, in accordance with the declaration signed at the time of the enrolment.

In addition, students are expected to conduct themselves at all times in a seemly fashion. Smoking is not permitted during lectures, in examination rooms or in the University Library. Gambling is also forbidden.

Members of the academic staff of the University, senior administrative officers, and other persons authorised for the purpose, have authority, and it is their duty, to check and report on disorderly or improper conduct or any breach of regulations occurring in the University.

ATTENDANCE AT CLASSES

Students are expected to be regular and punctual in attendance at all classes in the course or subject in which they are enrolled. All applications for exemption from attendance at lectures or practical classes must be made in writing to the Registrar.

In the case of illness or of absence for some other unavoidable cause a student may be excused by the Registrar from non-attendance at classes for a period of not more than one month, or on the recommendation of the Dean of the appropriate Faculty for any longer period.

Applications to the Registrar for exemption from re-attendance at classes, either for lectures or practical work, may only be granted on the recommendation of the Head of the appropriate School. The granting of an exemption from attendance does not carry with it exemption from payment of fees.

Where a student has failed a subject at the annual examinations in any year and re-enrols in the same course in the following year, he must include in his programme of studies for that year the subject in which he has failed. This requirement will not be applicable if the subject is not offered the following year; is not a compulsory component of a particular course; or if there is...
some other cause, which is acceptable to the Professorial Board, for not immediately repeating the failed subject.

Where a student has attended less than eighty per cent of the possible classes, he may be refused permission to sit for the examination in that subject.

COURSE TRANSFERS

Students wishing to transfer from one course to another must apply on an application form obtainable from the Admissions Office, Chancellery, by Friday, 18th January. As the number of places in each course is limited, failure to apply by 18th January, 1974, will probably result in the application for transfer being unsuccessful.

Students whose applications to transfer are successful are required to comply with the enrolment procedures for the year/stage of the new course in which they expect to enrol. Unless otherwise instructed they must present the letter granting approval of the transfer to the enrolling officer.

Students who have not received advice regarding their application to transfer before the date on which they are required to enrol should check with the Admissions Office.

Students should also advise the Enrolling Officer of the School in which they are enrolled of their intention to transfer.

ADMISSION WITH ADVANCED STANDING

Any person who makes application to register as a candidate for any degree or other award granted by the University may be admitted to the course of study leading to such degree or award with such standing on the basis of previous attainments as may be determined by the Professorial Board.

Students should consult the University Calendar for complete details regarding “Admission with Advanced Standing”.
CHANGES IN COURSE PROGRAMMES AND WITHDRAWAL FROM SUBJECTS

Students seeking approval to substitute one subject for another (including change of session), add one or more subjects to their programme or discontinue part or all of their programme must make application to the Registrar through the Head of the School responsible for the course on forms available from School offices. The Registrar will inform students of the decision. Application to enrol in additional subjects must be submitted by 31st March.

Approval of withdrawal from subjects is not automatic, each application being determined after considering the circumstances advanced as justifying withdrawal.

It is emphasized that:
1. withdrawal from a subject, tuition in which extends over the academic year, at any time after the May recess;
2. withdrawal from a subject, tuition in which extends over only one session, at any time after one month from the commencement of the subject; or
3. failure to sit for the examinations in any subject in which the student has enrolled,

shall be regarded as failure to satisfy the examiners in the subject, unless written approval to withdraw without failure has been obtained from the Registrar.

If a student applies after the following date to withdraw from a subject he will most likely be awarded a failure in the subject:
- Subject taken over Session 1 only — 4th April 1974
- Subject taken over Session 2 only — 22nd August 1974
- Subject taken over both sessions — 26th May 1974

STUDENT RECORDS

All students will receive enrolment details forms by 30th April and 2nd September. It is not necessary to return the forms unless any information recorded thereon is incorrect. Amended forms must be returned to the Examinations and Student Records Section by 14th May and 16th September respectively. Amendments notified after the closing date will not be accepted unless exceptional circumstances exist and approval is obtained from the Registrar. Amended forms returned to the Registrar will be acknowledged in writing within fourteen days.
FACULTY OF ENGINEERING

RESUMPTION OF COURSES

Students wishing to resume their studies after an absence of twelve months or more are required to apply to the Admissions Office for permission to re-enrol by 18th January, 1974. Students re-enrolling in this way will normally be required to satisfy conditions pertaining to the course at the time of re-enrolment. This condition applies also to students who have been re-admitted to a course after exclusion under the rules restricting students re-enrolling.

ANNUAL EXAMINATIONS

Formal examinations in most Faculties are held in June-July and November-December. Provisional timetables including the dates and times of examinations are posted on the central notice boards in the Wallace Wurth Medical School, Biological Sciences Building, the Chancellery, Central Lecture Theatre Block, Dalton (Chemistry) School, Main Building (Mining and Physics), outside the Science Theatre and in the Western Grounds Area on 7th May and 10th September. Students must advise the Examinations Unit (Chancellery) of clash of examinations by 20th May and 23rd September. Final timetables will be displayed, and individual copies available for students on 4th June and 29th October.

Misreading of the timetable is not an acceptable excuse for failure to attend an examination.

A student suffering from a physical disability which puts him at a disadvantage in written examinations should apply to the Registrar in writing, as early as possible, for special provisions to be made for him to take examinations. The request should be supported by medical or other evidence.

Examinations are conducted in accordance with the following rules and procedure:

(a) Candidates are required to obey any instruction given by an examination supervisor for the proper conduct of the examination.

(b) Candidates are required to be in their places in the examination room not less than ten minutes before the time for commencement.

(c) No bag, writing paper, blotting paper, manuscript or book, other than a specified aid, is to be brought into the examination room.
(d) No candidate shall be admitted to an examination after thirty minutes from the time of commencement of the examination.

(e) No candidate shall be permitted to leave the examination room before the expiry of thirty minutes from the time the examination commences.

(f) No candidate shall be re-admitted to the examination room after he has left it unless during the full period of his absence he has been under approved supervision.

(g) A candidate shall not by any improper means obtain, or endeavour to obtain, assistance in his work, give, or endeavour to give, assistance to any other candidate, or commit any breach of good order.

(h) Smoking is not permitted during the course of examinations.

(i) All answers must be in English unless otherwise directed. Foreign students who have the written approval of the Officer-in-Charge of Examinations may use standard translation dictionaries.

(j) A candidate who commits any infringement of the rules governing examinations is liable to disqualification at the particular examination, to immediate expulsion from the examination room and to such further penalty as may be determined in accordance with the By-Laws.

A student who through serious illness or other cause outside his control is unable to attend an examination is required to bring the circumstances (supported by a medical certificate or other evidence) to the notice of the Registrar not later than seven days after the date of the examination, and may be required to submit to medical examination. A student who attempts an examination yet claims that his performance is prejudiced by sickness on the day of the examination, must notify the Registrar or Examination Supervisor, before, during or immediately after the examination and may be required to submit to medical examination.

A student who believes that his performance at an examination has been affected by serious illness during the year or by other cause outside his control and who desires these circumstances to be taken into consideration in determining his standing is required to bring the evidence (supported by medical certificates or other evidence) to the notice of the Registrar not later than seven days after the date of the examination.
In the assessment of a student's progress, consideration is given to work in laboratory and class exercises and to any term or other tests given throughout the year, as well as to the results of written examinations.

Final examination results are posted to the term addresses of students and it is therefore essential that any change of address be advised to the Examination and Student Records Section. Results are also posted on School notice boards and in the foyer of the Library. No examination results will be given by telephone.

Examination results may be reviewed for a fee of $11 a subject, which is refundable in the event of an error being discovered. Such a review will consist primarily in ensuring that all questions attempted by candidates have been marked and that the total of all marks awarded are correct. Applications for review must be submitted on the appropriate form to the Examinations and Student Records Section, together with the necessary fee by the date indicated on the notification of results.

EXAMINATION RESULTS

Graded Passes

Passes will be graded as follows:
High Distinction (indicates a quite superior performance).
Distinction (indicates a superior performance).
Credit (indicates a good but not superior performance).
Pass (indicates the achievement of an acceptable minimum level of competence in relation to the course objectives).

Pass Conceded

A pass conceded may be granted to students where the mark in the subject is slightly below the required standard and whose overall performance warrants it.

Terminating Pass

A terminating pass may be granted where the mark for the subject is below the required standard. A terminating pass will not permit a student to progress further in the subject or to enrol in any other subject for which a pass in the subject is a co-requisite or prerequisite. A student granted a terminating pass may attempt a deferred examination, if available, to improve his performance, but if the student fails the deferred examination, the terminating pass will stand.
Deferred examinations may be granted in the following cases:

(i) When a student through illness or some other acceptable circumstance has been prevented from taking the annual examination or has been placed at a serious disadvantage during the annual examinations. Applications for deferred examinations in the first category must be lodged with the Registrar with appropriate evidence of the circumstances (e.g., medical certificate) not later than seven days after the examination concerned. All such applications shall be reported to the Head of the School responsible for the subject. Before a deferred examination is granted on medical grounds, regard shall be paid to the student's class and assignment work in the subject, to his general performance in the year, and to the significance of the annual examination in compiling the composite mark.

(ii) To help resolve a doubt as to whether a student has reached the required standard in a subject.

(iii) To allow a student by further study to reach the required standard in a subject. The granting of a deferred examination in such cases will be based on the general quality of the student's performance.

(iv) Where a student's standing at the annual examinations is such that his progression or graduation could depend on his failure in one subject only, then his position in that subject shall be again reviewed with a view to determining whether a deferred examination may be granted notwithstanding his failure otherwise to qualify for such concession.

Deferred examinations must be taken at the centre in which the student is enrolled, unless he has been sent on compulsory industrial training to remote country centres or interstate. In this case the student must advise the Registrar on a form available from his school or the Enquiry Desk, Chancellery, of relevant particulars, before leaving for his destination, in anticipation that deferred examination papers may have to be forwarded to him.

Normally, the student will be directed to the nearest University for the conduct of the deferred examination.

A student eligible to sit for a deferred examination must lodge with the Accountant an application, accompanied by the fee of $8 per subject, by the date indicated on the notification of results.
Conceded Deferred Examination

A conceded deferred examination, may be granted to a student where the mark in the subject is below the standard at which deferred examinations have been granted in the subject but whose overall performance warrants such a concession.

APPLICATION FOR ADMISSION TO DEGREE OR DIPLOMA

Applications for admission to a degree or diploma of the University must be made on the appropriate form by 30th September, in a student's final year. Applicants should ensure that they have completed all requirements for the degree or diploma, including industrial training where necessary. Any variation, such as cancelling of application in order to proceed to an honours degree or submission of an application following discontinuation of honours programme, must be submitted in writing to the Registrar no later than 30th January.

RESTRICTION UPON STUDENTS RE-ENROLLING

The University Council has adopted the following rules governing re-enrolment with the object of requiring students with a record of failure to show cause why they should be allowed to re-enrol and retain valuable class places. These rules apply retrospectively from 1st January, 1971.

1. (i) A student shall show cause why he should be allowed to repeat a subject in which he has failed more than once. (Failure in a deferred examination as well as in the initial examination counts, for the purpose of this regulation, as one failure.) Where such subject is prescribed as a part of the student's course he shall be required to show cause why he should be allowed to continue the course.

Notwithstanding the provisions of Clause 1(i)

(ii) A student enrolled in the first year or first stage of any course, other than the medical course, who has failed in more than half the programme in which he is enrolled for that year or stage shall be required to show cause why he should be allowed to continue in the course.

(iii) A student enrolled in the first year of the Medical course who has failed in more than one subject of that year
shall be required to show cause why he should be allowed to continue in the Medical course.

(iv) The provisions of sections (ii) and (iii) of this rule shall be deemed to apply to any student on transfer from another course or institution whose programme of studies in the first year of enrolment immediately following transfer is comprised of subjects so chosen that half or more of such subjects are listed in the University Calendar as first year subjects.

2. Notwithstanding the provisions of Clause 1, a student shall be required to show cause why he should be allowed to continue a course which he will not be able to complete in the time set down in the following schedule:

<table>
<thead>
<tr>
<th>Number of years in course</th>
<th>Total time allowed from first enrolment to completion (years)</th>
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<tbody>
<tr>
<td>3</td>
<td>5</td>
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<td>4</td>
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<td>8</td>
<td>12</td>
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3. No full-time student shall, without showing cause, be permitted to continue a course unless all subjects of the first year of his course are completed by the end of his second year of attendance. No student in the Faculty of Arts shall, without showing cause, be permitted to continue a course unless he completes four subjects by the end of his second year of attendance. No full-time student in the Bachelor of Social Work course shall without showing cause be permitted to continue with the course unless he completes the equivalent of four full subjects by the end of his second year of attendance.

No part-time student in a course in which progression is by stage shall without showing cause be permitted to continue a course in which he will not be able to complete all subjects of the first two stages by the end of his fourth year of attendance and all subjects of the third year and fourth stages of his course by the end of his seventh year of attendance.

No part-time student in the Science course shall without showing cause be permitted to continue a course in which he
will not be able to complete level one Mathematics and six other level one units by the end of his fourth year of attendance and fourteen units inclusive of at least three at level two of his course by the end of his seventh year of attendance.

No student in the Faculty of Medicine shall, without showing cause, be permitted to continue with the medical course unless he completes the second year of the course by the end of his third year of attendance, and the third year of the course by the end of his fourth year of attendance.

4. A student who has a record of failure in a course at another University shall be required to show cause why he should be admitted to this University. A student admitted to a course at this University following a record of failure at another University shall be required to show cause, notwithstanding any other provisions in these rules, why he should be permitted to continue in that course if he is unsuccessful in the annual examinations in his first year of attendance at this University.

5. Any student excluded under any of the Clauses 1-3 may apply for re-admission after two academic years and such application shall be considered in the light of any evidence submitted by him.

6. A student wishing "to show cause" under these provisions shall do so in writing to the Registrar. Any such application shall be considered by a committee, hereinafter referred to as the Re-enrolment Committee, appointed by the Professorial Board, which shall determine whether the cause shown is adequate to justify his being permitted to continue his course or re-enrol as the case may be.

7. The Vice-Chancellor may on the recommendation of the Re-enrolment Committee exclude from attendance in a course or courses any student who has been excluded from attendance in any other course under the rules governing re-enrolment and whose record at the University demonstrates, in the opinion of the Re-enrolment Committee and the Vice-Chancellor, the student's lack of fitness to pursue the course nominated.

8. A student who has failed, under the provisions of Clause 6 of these rules, to show cause acceptable to the Re-enrolment Committee why he should be permitted to continue in his course, and who has subsequently been permitted to re-enrol
in that course or to transfer to another course, shall also be required to show cause, notwithstanding any other provisions in these rules, why he should be permitted to continue in that course if he is unsuccessful in the annual examinations immediately following the first year of resumption or transfer of enrolment as the case may be.

9. Any student who is excluded from attendance in any course or subject under the provisions of these rules may appeal to an Appeal Committee constituted by Council for this purpose. The decision of the Appeal Committee shall be final.

10. The notification to any student of a decision by the Re-enrolment Committee to exclude the student from attendance in any course or subject shall indicate that the student may appeal against the decision to an Appeal Committee. In lodging such application the student shall ensure that a complete statement is furnished of all grounds on which the application is based and shall indicate whether or not the student wishes to appear in person before the Appeal Committee.

In considering an appeal the Appeal Committee, on the basis of the student's academic record and the stated grounds for review, shall decide:

(i) whether there are grounds which justify the Committee seeing the student in person, or

(ii) whether there is sufficient information available to the Committee to allow decision without seeing the student in person

and so proceed to determine the application accordingly.

RE-ADMISSION AFTER EXCLUSION

Applications for re-admission must be made on the standard form and lodged with the Registrar not later than 30th June of the year prior to that for which re-admission is sought. An application should include evidence of appropriate study in the subjects (or equivalents) on account of which the applicant was excluded. In addition, evidence that the circumstances which were deemed to operate against satisfactory performance at the time of exclusion are no longer operative or are reduced in intensity should be furnished. An applicant may be required to take the annual examinations in the relevant subjects as qualifying examinations in which case re-admission does not imply exemption from the subject.

Late applications cannot be considered where, in the opinion of the University, insufficient time will be available for the student
to prepare himself for any qualifying examinations which may be required.

It should be noted that a person under exclusion may not be enrolled in miscellaneous subjects unless he has received the approval of the Professorial Board on the recommendation of the Admissions Committee.

Persons who intend applying for re-admission to the University at a future date may seek advice as to ways in which they may enhance their prospects of qualifying for re-admission. Enquiries should be made on a form obtainable from the Examinations and Student Records Section, and lodged with the Registrar.

OWNERSHIP OF STUDENTS’ WORK

The University reserves the right to retain at its own discretion the original or one copy of any drawings, models, designs, plans and specifications, essays, thesis or other work executed by students as part of their courses, or submitted for any award or competition conducted by the University.

CHANGE OF ADDRESS

Students are requested to notify the Student Records Section of the Registrar’s Division of any change in their address, as soon as possible. Failure to do this could lead to important correspondence not reaching students. The University cannot accept responsibility if official communications fail to reach students who have not notified their change of address. A Change of Address Advice form is available at Faculty and School offices and at the Enquiry Counters on the Ground Floor of the Chancellery Building.

NOTICES

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

LOST PROPERTY

All enquiries concerning lost property should be made to the Superintendent on Extension 2503 or to the Lost Property Office at the Union.
PARKING WITHIN THE UNIVERSITY GROUNDS

Because of the limited amount of parking space available, only the following categories of students may apply for a permit; motorcycle owners (annual fee $3.90); higher degree students (limited issue, annual fee $7.80); postgraduate, and senior undergraduate students who have completed three years of a full-time or part-time course (annual fee $3.90). A permit will allow access to the campus between 5 p.m. and 11 p.m. on weekdays and during library hours on Saturdays, Sundays and public holidays. Enquiries should be made to the Property Section, Room 240, The Chancellery Building, or phone 663 0351, extension 2920. It should be noted that increasing demand for parking space may require the imposition of further restrictions.

APPLICATION OF RULES

General

Any student who requires information on the application of these rules or any service which the University offers may make inquiries from the Admissions Office, the Student Counselling Centre or the Registrar.

Appeals

Section 5(c) of Chapter III of the By-laws provides that "Any person affected by a decision of any member of the Professorial Board (other than the Vice-Chancellor) in respect of breach of discipline or misconduct may appeal to the Vice-Chancellor, and in the case of disciplinary action by the Vice-Chancellor, whether on appeal or otherwise, to the Council".
STUDENT SERVICES

THE LIBRARY

The University library is on the upper campus and adjacent to the Chancellery, and the Arts and Commerce Buildings. The Bio-Medical Library is in the Biological Sciences Building with a branch at Prince Henry Hospital (Phone: 661-0111). The Law Library is temporarily housed on the 4th Floor of the Science Building on the upper campus.

The Library's Undergraduate Collection covers the teaching and research interests of the Faculty, and students are expected to read widely and critically from it.

It is recommended that students attend the Introduction to the Library which is held at advertised times during Orientation Week and the first week of Session 1. The Introduction uses audio-visual aids to describe the physical layout of the undergraduate library and the services available to readers.

Copies of the booklet Guide to the Library are available on request.

Students who are interested in a subject approach to information may attend a course which outlines methods of searching for information in libraries. This course runs for eight hours over a period of one week.

Individual assistance for readers with specific library problems is provided by the Reader Assistance Unit which is located in the foyer.

Staff and students must use a machine readable identification card to borrow from the main University Library. Personal identification is required in the other libraries listed. For students a current union card is acceptable. Staff must apply to the Library for a library card.

THE UNIVERSITY UNION

The University Union, housed in the circular building and joined by a courtyard to an adjacent rectangular building, is located near the entrance to the Kensington campus from Anzac Parade. The third building in the Union complex was completed in 1971. Membership of the Union is compulsory for all
registered students of the University and is also open to all members of staff and graduates of the University.

On the lower campus the range of facilities provided by the Union includes a cafeteria service and other dining facilities, a large shopping centre, cloak room, banking and hairdressing facilities, showers, a women's lounge, common, games, reading, meeting, music, practice, craft and dark rooms. Photocopying, sign printing, and stencil cutting services are also available. On the upper campus there is a cafeteria and coffee bar on the ground floor of the Sciences Building, a vending area and lounge off the Science Plaza, a similar facility off the Commerce Courtyard and a Snack Bar at the Golf House on the corner of High and Botany Streets.

The Union also sponsors and conducts courses in many facets of the arts including weaving, photography, creative dance and yoga.

STUDENT ACCOMMODATION

Residential Colleges

The Kensington Colleges

Accommodation for students is provided within the group of The Kensington Colleges which comprise Basser College, Goldstein College and Philip Baxter College. The group houses 450 men and women students, as well as staff members. Tutors in residence provide tutorial assistance in a wide range of subjects.

Board and residence fees, which are payable on a session basis, amount to $336 per session. Intending students should apply in writing to the Master, Box 24, Post Office, Kensington, N.S.W. 2033, from whom further information is available.

International House

International House accommodates over 180 students of whom half are Australian; the remaining half is made up of students from some 20 different countries. First-year students who have come to the University straight from school are not eligible for residence because preference is given to mature undergraduates and postgraduate students. Fees are $24 per week.

Students should apply as soon as possible if they wish to reside at International House at a later date. They should write to the Warden, International House, P.O. Box 88, Kensington, N.S.W. 2033 for information.
New College

This Church of England College is the first of the independent Colleges on the Campus of the University. There are no religious tests, and accommodation is available for 220 men and women in single study-bedrooms. Fees are $25 per week and may change in 1974.

Enquiries should be addressed to The Master, New College, Anzac Parade, Kensington, N.S.W. 2033.

Warrane College

This College, an affiliated Roman Catholic residential college, was completed in 1970, and provides accommodation for 200 students and fourteen resident tutors.

Basic fees are $28 per week for board and residence, payable on a session basis, and a registration fee of $20. Fees may change in 1974. Intending students should write to The Master, Warrane College, Box 123, P.O., Kensington, N.S.W. 2033.

Shalom College

Shalom College, first occupied in 1973, provides accommodation for 86 men and women students. The basic fee for residents is $28 a week, although this may change in 1974. Non-resident membership is available to students who wish to avail themselves of the Kosher dining room and tutorial facilities.

Applications for residence and further information should be addressed to The Master, Shalom College, The University of New South Wales, Box 1, P.O., Kensington, N.S.W. 2033.

Other Accommodation

Students requiring other than Residential College accommodation may make personal application to the Housing Officer (Ext. 3260) at the Student Amenities Unit. Current lists are kept of accommodation available at recognized boarding houses, private homes, and in serviced and unserviced apartments.

STUDENT AMENITIES UNIT

The Amenities Unit is concerned with student welfare and its activities are associated with sport and recreation, travel and student accommodation. It works in close liaison with the Sports Association, assisting the various clubs, and administers sporting facilities for both grade and social competitions. The Unit also has the added responsibility of the Physical Education and
Research Centre where attractive recreational programmes for students and staff are provided. Concessional application forms for all types of travel may also be obtained at the Enquiry Desk in the Chancellery or at the Student Amenities Unit. A Housing Officer is also available to assist students with any off-campus accommodation problems.

Location: The Student Amenities Unit is located in Hut B at the foot of Basser Steps.

Phone: 663 0351, Extension 2235 Sports Association
3271 Physical Education and Recreation Centre
3261 Travel
3260 Accommodation

**STUDENT EMPLOYMENT UNIT**

The Student Employment Unit offers assistance with career employment for final year students and graduates of the University. This service includes the mailing of regular job vacancy notices to registered students and a campus interview programme for final year students. Careers advice and assistance is also available to undergraduates. Assistance is offered in finding vacation employment which gives either course related experience or industrial training experience where this is a course requirement. Information and advice regarding cadetships, undergraduate and postgraduate scholarships is also available.

The Service is located in the Chancellery on the ground floor.

Telephone: 663 0351 ext. 3259 for employment and careers advice, or
663 0351 ext. 2086 for cadetships and industrial training information.

**CHAPLAINCY SERVICE**

This service is provided for the benefit of students and staff by five Christian Churches and by the Jewish congregation. Chaplains are in attendance at the University at regular times. A Chapel is also available for use by all denominations.

The University Chapel and full-time chaplains are located in Hut F near the Chemistry Building. They may be contacted by phone at the following extensions: Anglican, 2684; Jewish, 3273; Roman Catholic, 2379; Churches of Christ, Methodist and Seventh Day Adventist, 2683.
STUDENT HEALTH UNIT

A student health and first aid centre is situated within the University. It is staffed by two qualified medical practitioners, assisted by a nursing sister and two secretaries.

The medical service, although therapeutic, is not intended to replace private or community health services. Thus, where chronic or continuing conditions are revealed or suspected, the student is referred to a private practitioner or to an appropriate hospital for specialist opinion and/or treatment. The health service is not responsible for fees incurred in these instances. The service is confidential and students are encouraged to attend for advice on matters pertaining to health.

The service is available to all enrolled students by appointment, free of charge between 9 a.m. and 5 p.m. Mondays to Fridays, and additionally to part-time students from 6 p.m. to 8 p.m. on Tuesdays and Thursdays during session. For staff members, immunizations are available, and first-aid service in the case of injury or illness on the campus.

The centre is located in Hut E on the northern side of the campus in College Road.

Appointments may be made by calling at the centre or by telephoning extension 2679 or 3275 during the above hours.

STUDENT COUNSELLING AND RESEARCH UNIT

The Student Counselling and Research Unit offers a free, confidential counselling service to help students, individually or in groups, to deal with problems, and to make plans and decisions associated with their personal, academic, and vocational progress.

Interviews and group programmes are available between 9 a.m. and 8 p.m. each week-day. Appointments may be made at the Unit, which is located at the foot of Basser Steps, or by ringing 663-0351, extensions 2600-2605 between 9 a.m. and 5 p.m.

FINANCIAL ASSISTANCE TO STUDENTS

In addition to the Tertiary Allowances Scheme financed by the Australian Government (see Scholarships for details), the following forms of assistance are available.

(a) The Students’ Union and the University have co-operated to provide assistance to students who are in financial difficulties which are considered likely to prejudice their progress with their studies.
Three main forms of assistance are available:

1. **Deferment of Payment of Fees**
   
   Deferments may be granted for a short period, usually one month, without the imposition of a late fee penalty, provided the deferment is requested prior to the due date for fee payments.
   
   In exceptional circumstances the University may consider granting deferments for up to twelve months or even longer. In cases where payment is deferred to 31st December, examination results will not be published or made available until such time as the outstanding fees are paid. Where deferments are granted to a date beyond 31st December, the University may require the student to enter into a formal agreement to repay the fees.

2. **Short Terms Cash Loans**

   Donations from the Students' Union, the University Union and other sources have made funds available for urgent cash loans not exceeding $100.00. These loans are normally repayable within one month.

3. **Long Term Cash Loans**

   An amount of up to $300.00 is available from this fund, repayable usually after twelve months or within twelve months of graduation or upon withdrawal from the course. This scheme is funded jointly by the University and the Students' Union. Students are required to enter into a formal agreement with the University to repay such a loan.

(b) Early in 1973 the Australian Government made funds available to the University to provide loans to students in financial difficulty. The loans are to provide for living allowances and other approved expenses associated with attendance at University. Under this scheme allowances are paid approximately monthly during the academic year. Repayments usually commences after twelve months of graduation or upon withdrawal from the course. Students are required to enter into a formal agreement with the University to repay the loan.

From the same source of funds as mentioned in the preceding paragraph students who are in extremely difficult financial circumstances may apply for assistance by way of non-repayable grant. In order to qualify for a grant a student must generally
show that the financial difficulty has arisen from misfortune beyond his control.

Application for all forms of assistance may be made personally to the Deputy Registrar (Student Services).

FINANCIAL ASSISTANCE TO ABORIGINAL STUDENTS

Financial assistance is available from a number of sources to help Aboriginal students. Apart from the Australian Government's Tertiary Allowances Scheme, to be introduced in 1974, there is a Commonwealth Aboriginal Study Grant Scheme. Furthermore, the University may assist Aboriginal students with some essential living expenses in exceptional circumstances.

All enquiries relating to this scheme should be directed to the Deputy Registrar (Student Services).

UNIVERSITY CO-OPERATIVE BOOKSHOP LTD.

Membership is open to all students, on payment of a fee of $5, refundable when membership is terminated. Members receive an annual rebate on purchases of books.

LOCATION OF LABORATORIES OUTSIDE KENSINGTON CAMPUS

Randwick

The Schools of Highway and Traffic Engineering and the Structures Laboratory of the School of Civil Engineering occupy new buildings on the site of the old Tramway Depot at King Street, Randwick.

Manly Vale

The Water Research Laboratory of the School of Civil Engineering.
THE STUDENTS' UNION

The Students' Union was formed in 1952 as an organization, duly recognised by the University Council, to represent the student body and to provide a central organisation for the administration of student activities. In the words of its constitution, "The Students' Union is formed for the purpose of advancing the interests of University men and women, facilitating their general scientific and technical education, and fostering a University spirit among them".

The Union affords a recognised means of communication between the student body and the University administration, and represents its members in all matters affecting their interests. It aims to promote the cultural, educational and recreational life of the University and to encourage a permanent interest among graduates in the life and progress of the University.

Membership of the Union is compulsory for all registered students of the University and the annual subscription is $7.

The Students' Union is governed by a Council consisting of student representatives from the various faculties of the University, representatives of Life Members, overseas students, and of the University and the Sports Association. The Council is elected annually.

THE SPORTS ASSOCIATION

The Sports Association is a student organization within the University, and it caters for a variety of competitive sports for both men and women.

In December 1952 the University Council approved the establishment of the Sports Association which consisted of five clubs. As the University has grown, the Association has expanded, and today includes over thirty clubs.

The controlling body of the Association is the General Committee which consists of a President, Secretary, Treasurer, eight Vice-Presidents and two delegates from each of the affiliated clubs.
Membership of the Association is compulsory for all registered students, and the annual subscription is $4.

PHYSICAL EDUCATION AND RECREATION CENTRE

The Physical Education and Recreation Centre consists of eight squash courts and a main building. The latter has a large gymnasium and ancillary practice rooms for fencing, table tennis, judo and weightlifting. The Supervisor of Physical Recreation is responsible for this Centre and provides a recreational programme for both students and staff. Those who desire to participate in the recreational programmes should contact the Supervisor on Extension 3271.

STUDENT CLUBS AND SOCIETIES

Students have the opportunity of joining a wide range of clubs and societies. Affiliated with the Students' Union are the School and Faculty associations, and the numerous religious, social and cultural clubs. There are also many sporting clubs (33) affiliated with the Sports Association.

Clubs and societies seeking to use the name of the University in their title, or seeking University recognition, must submit their constitutions either to the Students' Union or the Sports Association if they wish to be affiliated with either of these bodies, or to the Registrar for approval by the University Council.

THE UNIVERSITY REGIMENT

Enquiries should be made to the Adjutant at the Regimental Depot in Day Avenue just west of Anzac Parade.

THE NSW UNIVERSITY SQUADRON

Enquiries should be made to the Commanding Officer at Squadron Headquarters at the corner of City and Darlington Streets, Darlington 2008.

ROYAL AUSTRALIAN NAVY

Enquiries should be made to the Royal Australian Naval Liaison Officer, Professor J. S. Ratcliffe, Commander, R.A.N.V.R., at the School of Chemical Engineering. Phone 663 0351, ext. 2406.
SCHOLARSHIPS

Students undertaking courses in the Faculty of Engineering are eligible to apply for the following scholarships. Not all scholarships are offered each year. Towards the end of December prospective applicants should enquire from the Student Employment and Scholarships Unit which scholarships are available.

Except where otherwise specified, applications on the forms obtainable from the Admissions Office (phone: 663-0351, ext. 2485) must be lodged with the Registrar, the University of New South Wales, P.O. Box 1, Kensington 2033. A separate application must be lodged for each category of scholarship.

In addition to these scholarships, a number of industrial organizations and Government Departments sponsor students at the University.

In the past, such students generally had their University fees paid by the employer and were employed at cadet rates of pay during the course. However these schemes, details of which are set out in Section B of the University Calendar, are currently under review and interested persons should contact the relevant organization or department for up-to-date information.

Tertiary Allowances Scheme

In 1974, no new awards will be offered under the Commonwealth University Scholarship Scheme. Instead a new system of Australian Government Assistance for tertiary students, called the Tertiary Allowances Scheme, will operate. This scheme will apply to students who commence approved courses in 1974 as well as those who commenced their courses earlier.

Means-tested living and other allowances will be available to full-time students enrolled in an approved course who satisfy certain academic and residence requirements, are unbonded and who do not receive assistance in excess of $350 from other scholarships. No age limit will apply.

A66
Students enrolled in the following types of university courses will be eligible for assistance:

- Undergraduate and postgraduate bachelor degree courses
- Postgraduate diplomas
- Combined bachelor degree courses offered by institutions
- Master's qualifying courses

Benefits

**Means-tested Living Allowance.** The maximum rates of living allowance are $850 per annum for students living at home and $1,400 per annum for students living away from home.

The maximum rates of living allowance will be paid where the adjusted family income is equal to or less than $5,300 per annum. The adjusted family income is assessed by subtracting from the gross income of both parents business expenses and an amount of $450 for each dependent child other than the student.

When the adjusted family income exceeds $5,300 p.a. the amount of living allowance will be reduced by $2 for every $10 of income until the family income exceeds $10,600 per annum. After this level, the living allowance will be reduced by $3 for every $10 of income.

A concession may be made where there are other children in the family undertaking tertiary education with scholarship assistance of less than $350 p.a. from schemes other than the Tertiary Allowances Scheme.

Students qualifying for living allowance will also receive the following allowances, where appropriate:

**Incidentals Allowance:** The Incidentals Allowance of $100 is designed to help students meet the cost of those fees which have not been abolished — the Students’ Union, University Union and sports fees — and other expenses associated with their studies.

**Travel Allowance:** Students whose home is in the country may be reimbursed the cost of three return trips per year, during vacation time.

**Dependant’s Allowance:** This is made up of allowances of $8 per week for a dependent spouse and $4.50 per week for each child.

**How to Apply:** Higher School Certificate students will be able to obtain application forms from their school. Students who do not already hold a scholarship may obtain forms from the Admissions Office, or from The Regional Director, New South Wales
AUSTRALIAN POSTGRADUATE AWARDS

Australian Postgraduate Course Awards

The Australian Government provides a number of awards for full-time postgraduate study in courses leading to the degree of Master by formal course work. Persons permanently domiciled in Australia who are under 45 years of age on 1 January of the year in which the award is to be taken up and who are University graduates or will graduate in the current academic year, are eligible for the awards. Award holders receive a living allowance of $2,900 paid over the academic year. Other allowances may also be paid in certain cases.

Application for awards tenable at the University must be lodged with the Registrar by 30 September each year.

Australian Postgraduate Research Awards

The Australian Government also provides each year a number of awards for full-time postgraduate study and research. The awards are renewable annually up to a maximum duration of two years in the case of a candidate for a Masters degree or three years in the case of a PhD candidate. In special circumstances, a PhD candidate may be granted an extension of tenure into a fourth year. Persons permanently domiciled in Australia who are under 35 years of age on 1 January of the year in which the award is to be taken up and who are University graduates or will graduate in the current academic year, are eligible for the awards. Award holders receive a living allowance of $3,050 per annum. Other allowances may also be paid in certain cases. The closing date for applications is 31 October each year.

OTHER AWARDS

Bursaries

A number of Bursaries tenable at the University are awarded to candidates of merit at the Higher School Certificate Examination whose family income falls within certain limits prescribed by the Bursary Endowment Board. Applications should be made to the Secretary, Bursary Endowment Board, Box 7077, G.P.O., Sydney 2001.
The Fell Scholarship (University Residential Colleges)

The Fell Scholarship is available to any undergraduate who is or will be in residence at one of the Colleges under the administration of Kensington Colleges Ltd. during the year of the award. The annual value of the Scholarship is $100. It may be held concurrently with other scholarships.

In awarding the scholarship the academic merit and financial need of the applicant will be taken into consideration.

Applications must be made on the appropriate form and lodged with the Master, Kensington Colleges Ltd., Box 24, P.O., Kensington 2033 (Telephone 663-0651).

Joint Coal Board Scholarships

The Joint Coal Board is offering scholarships in full-time courses in Mining Engineering and Applied Geology. While scholarship holders are not under bond, it is expected that they will obtain employment in coal mining or a related industry on graduation. Applications on forms obtainable from principals or from the Secretary, Joint Coal Board, Box 3842, G.P.O., Sydney, must be lodged with the Board’s secretary not later than seven days after the publication of the Higher School Certificate results.

The Tyree Electrical Company Scholarship in Electrical Engineering

The Tyree Electrical Company Pty. Ltd., has undertaken to provide scholarships for students enrolling in the full-time courses in Electrical Engineering. The value of the scholarships is between $500 and $1,500 per annum, payable in fortnightly instalments as a living allowance to students. They will normally be tenable for four years but may be extended to a fifth year when the holder intends to qualify for the two degrees, Bachelor of Science and Bachelor of Engineering. They may be held concurrently with any other scholarship.

The Fox Memorial Manufacturing Company Scholarship

The Company offers annually a scholarship to students in the first and later years of the full-time course in Mechanical Engineering.

Regent Scholarship in Engineering for Women Undergraduates

Mrs. G. O’Riordan and Mrs. J. Kouvelis provide annually a $200 scholarship for a female student enrolled in a full-time engineering course, and is normally tenable for four years. The award of the scholarship is based on the applicant’s scholastic merit and financial need.
<table>
<thead>
<tr>
<th>School/Department</th>
<th>Donor/Name of Prize</th>
<th>Value</th>
<th>Awarded for</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td>Sydney Technical College Union Award</td>
<td>$50.00</td>
<td>Leadership in the development of student affairs and academic proficiency throughout the course.</td>
</tr>
<tr>
<td></td>
<td>University of New South Wales Alumni Association</td>
<td>Statuette</td>
<td>Achievement for community benefit—students in their final or graduating year.</td>
</tr>
<tr>
<td>Faculty of Engineering</td>
<td>The Dean's Faculty Hour</td>
<td>$25.00</td>
<td>Best essay on a topic discussed in Faculty Hour, Faculty of Engineering, by a graduating student.</td>
</tr>
<tr>
<td></td>
<td>The Dean's Faculty Hour</td>
<td>$25.00</td>
<td>Best essay on a topic discussed in Faculty Hour, Faculty of Engineering, by a non-graduating student.</td>
</tr>
<tr>
<td>School of Chemistry</td>
<td>Australian Chemical Holdings Ltd.</td>
<td>$21.00</td>
<td>2.001 Chemistry I.</td>
</tr>
<tr>
<td></td>
<td>George Wright</td>
<td>$10.50</td>
<td>2.001 Chemistry I — Full-time students only.</td>
</tr>
<tr>
<td>School of Civil</td>
<td>Harbin Polytechnical Alumni Association</td>
<td>$50.00</td>
<td>Subject selected by Head of School.</td>
</tr>
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<td>Chamber of Manufactures of New South Wales</td>
<td>$10.00</td>
<td>Subject selected by Head of School.</td>
</tr>
<tr>
<td></td>
<td>The Association of Consulting Structural Engineers of New South Wales</td>
<td>(1) $20.00 and books to the value of $30.00 (2) $20.00 and books to the value of $30.00</td>
<td>General proficiency — Structures in the Bachelor of Engineering Course in Civil Engineering</td>
</tr>
<tr>
<td></td>
<td>Water Board Gold Medal</td>
<td></td>
<td>General proficiency — Structures in the Bachelor of Science (Engineering) Course in Civil Engineering</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Public Health Engineering.</td>
</tr>
<tr>
<td>School of Electrical Engineering</td>
<td>Austral Bronze Crane Copper Ltd.</td>
<td>50.00</td>
<td>Bachelor of Engineering in Electrical Engineering, Year III.</td>
</tr>
<tr>
<td>---------------------------------</td>
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<td>----------------------------------------------------------</td>
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<tr>
<td></td>
<td>Chamber of Manufactures of New South Wales</td>
<td>80.00</td>
<td>Power or Control elective.</td>
</tr>
<tr>
<td></td>
<td>F.P.E. (Aust.) Pty. Ltd.</td>
<td>10.00</td>
<td>Subject selected by Head of School.</td>
</tr>
<tr>
<td></td>
<td>J. Douglas Maclurcan</td>
<td>10.50</td>
<td>Subject selected by Head of School.</td>
</tr>
<tr>
<td></td>
<td>Standard Telephones &amp; Cables Pty. Ltd.</td>
<td>30.00</td>
<td>Control Systems.</td>
</tr>
<tr>
<td></td>
<td>The Wilfred Holmes Memorial Award</td>
<td>100.00</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>A student eligible to enter the final year of the course and who is deemed to be in necessitous circumstances.</td>
</tr>
<tr>
<td>Department of Industrial Engineering</td>
<td>Austral Bronze Crane Copper Ltd.</td>
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<td>Bachelor of Engineering Course in Industrial Engineering, Year III.</td>
</tr>
<tr>
<td></td>
<td>Chamber of Manufactures of New South Wales</td>
<td>10.00</td>
<td>Subject selected by Head of School.</td>
</tr>
<tr>
<td></td>
<td>T.R.W. Australia Ltd.</td>
<td>10.50</td>
<td>Bachelor of Science (Engineering) Course in Industrial Engineering, Stage 6.</td>
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<tr>
<td></td>
<td>Industrial Engineering Prize</td>
<td>25.00</td>
<td>Bachelor of Engineering in Industrial Engineering, Year IV.</td>
</tr>
<tr>
<td>School of Mathematics</td>
<td>School of Mathematics</td>
<td>25.00</td>
<td>Higher Mathematics I.</td>
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</table>

(Continued overleaf)
<table>
<thead>
<tr>
<th>School/Department</th>
<th>Donor/Name of Prize</th>
<th>Value</th>
<th>Awarded for</th>
</tr>
</thead>
<tbody>
<tr>
<td>School of Mechanical</td>
<td>Babcock &amp; Wilcox Aust. Ltd.</td>
<td>$21.00</td>
<td>Subject selected by Head of School.</td>
</tr>
<tr>
<td>Engineering</td>
<td>Chamber of Manufactures of New South Wales</td>
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<tr>
<td></td>
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<td>4.20</td>
<td>Bachelor of Science (Engineering) Course in Naval Architecture, Stage 5.</td>
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<td></td>
<td>Colonial Sugar Refining Co. Ltd.</td>
<td>30.00</td>
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<td></td>
<td>Ford Motor Co. of Aust. Ltd.</td>
<td>20.00</td>
<td>Subject selected by Head of School.</td>
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<tr>
<td></td>
<td>Harbin Polytechnical Alumni Association</td>
<td>50.00</td>
<td>5.113 Mechanical Engineering Design.</td>
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<tr>
<td></td>
<td>Jeremy Hirschhorn</td>
<td>20.00</td>
<td>Theory of Machines.</td>
</tr>
<tr>
<td></td>
<td>Royal Institute of Naval Architects</td>
<td>20.00</td>
<td>Bachelor of Engineering or Bachelor of Engineering Course in Naval Architecture, final year or stage.</td>
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<tr>
<td></td>
<td>Staedtler (Pacific) Pty. Ltd.</td>
<td>50.00 (order)</td>
<td>General proficiency in Bachelor of Engineering Course in Mechanical Engineering, Year II.</td>
</tr>
<tr>
<td>School of Physics</td>
<td>School Prize for Physics II</td>
<td>40.00</td>
<td>Physics II.</td>
</tr>
<tr>
<td>School of Surveying</td>
<td>Board of Surveyors Medal</td>
<td>Medal</td>
<td>Bachelor of Surveying Course, Final Year</td>
</tr>
</tbody>
</table>
The Faculty of Engineering consists of seven Schools—Civil, Electrical, Mechanical and Industrial, Highway, Nuclear, Transportation and Traffic, and Surveying. The Schools of Civil, Electrical, and Mechanical and Industrial offer full-time courses leading to the degree of Bachelor of Engineering, and part-time courses leading to the degree of Bachelor of Science (Engineering). The School of Surveying offers a full-time and part-time course leading to the degree of Bachelor of Surveying. The Schools of Highway Engineering, Nuclear Engineering and Transportation and Traffic Engineering offer graduate courses only.

All the postgraduate activities of the Faculty are co-ordinated under the Graduate School of Engineering. For full details of such activities please see the Graduate School of Engineering Handbook and the University Calendar, or contact the appropriate school.

Common First Year

The Schools of Civil, and Mechanical and Industrial Engineering have similar first year courses in physics, mathematics and chemistry, facilitating the transfer of students from one Bachelor of Engineering course to another within these schools at the end of their first year without loss of standing.

The first year courses in the Schools of Electrical Engineering and Surveying differ from the courses offered by the Schools of Civil Engineering and Mechanical & Industrial Engineering. However, notwithstanding the fact that the courses are not identical, sympathetic consideration will be given to requests by students who have completed first year to transfer to an allied course without loss of standing. When such transfer is desired an application must be made with the Registrar.

Progression

Progression in all undergraduate courses in the Faculty of Engineering is now permitted by subject. However:

(1) Course programmes will continue to be stated and timetabled by Year or Stage and it cannot be guaranteed that non-standard programmes can be completed in the minimum number of years.

(2) Students must satisfy the rules governing re-enrolment: in particular, these require all subjects of the first year to be
completed by the end of two years of full-time (or four years of part-time) study.

(3) Before enrolling in any subject a student must have satisfied the relevant prerequisite and co-requisite requirements. This will usually necessitate a student completing or attempting all subjects of a particular Year or Stage before proceeding to a subject in the next part of a course. Further details are available from the appropriate School.

(4) Only in exceptional circumstances will a student be permitted to enrol in subjects extending over more than two years of the course or for more than twenty-eight hours of course work per week if a full-time student or fourteen hours per week if a part-time student.

Students repeating subjects are required to choose a programme which limits their hours of course work to twenty-two per week if a full-time student, and to eleven per week if a part-time student, unless they have the express permission of the Head of School to exceed these hours.

(5) Notwithstanding the above, before a student can enrol in any non-standard programme, such programme must meet with the approval of the Head of School. A non-standard programme is one which involves enrolment in subjects from more than one Year or Stage, or comprises subjects which do not normally constitute a particular year's course work.

FULL-TIME COURSES

Full-time courses of four-years' duration are offered in Civil, Electrical, Mechanical, Industrial, and Aeronautical Engineering, and in Naval Architecture: all of these lead to the degree of Bachelor of Engineering. A four-year full-time course in Surveying is offered by the School of Surveying leading to the degree of Bachelor of Surveying.

The award of the degree of Bachelor of Engineering is recognized by the Institution of Engineers, Australia, as giving complete exemption from the examinations required for admission to the grade of Member. In nearly all cases substantial or complete recognition is accorded to these courses by overseas engineering institutions.

General Studies Programme

Almost all undergraduates in Faculties other than Arts and Law are required to complete a General Studies programme. Courses (in addition to the Faculties of Arts and Law) which do not have this requirement are Bachelor of Science in Psychology, Bachelor of Science in Economic Geography, Bachelor of Science (Educa-
FACULTY OF ENGINEERING

The Department of General Studies publishes its own Handbook which is available free of charge. All details regarding General Studies courses and requirements are contained in it, and students are advised to obtain a copy. All enquiries about General Studies should be made to the General Studies Office, Room G15, Morven Brown Building (663-0351 Extn. 2091).

Industrial Training Requirements

All full-time engineering courses incorporate industrial training and reference should be made to the entries under each School heading for details of the arrangements applicable. All students are strongly recommended to gain further industrial experience in those long vacations where such training is not already prescribed.

The staff of the University will, where possible, assist students to obtain this employment, but it is emphasized that the primary responsibility for obtaining suitable industrial experience rests with each student. Progression to succeeding years of the course and the award of the degree are dependent on the completion of the requisite periods of industrial employment of a standard approved by the University.

PART-TIME COURSES

Since 1961 the Schools of the Faculty have offered six-year part-time courses in a variety of engineering fields leading to the degree of Bachelor of Science (Technology). From 1971 the name of this degree became Bachelor of Science (Engineering) but is not awarded retrospectively. Courses for the BSc(Eng) degree are offered in Civil, Electrical, Industrial and Mechanical Engineering and in Naval Architecture and Aeronautical Engineering (these last two being offered by the School of Mechanical and Industrial Engineering).

The General Studies programme is the same for part-time as for full-time students, except that part-time students do not do an Advanced Elective.

The award of the degree of BSc(Eng) is recognized at present by the Institution of Engineers, Australia, as giving complete exemption from the examinations required for admission to the grade of Member.

Recognition by overseas engineering institutions varies in the different branches of engineering, and particular enquiries on this matter should be addressed to the head of the appropriate School.

A student completing the BSc(Eng) degree course and wishing to qualify for the corresponding BE degree may, on the recom-
mendation of the Head of the School, transfer to the corresponding full-time BE course provided he does not take out the BSc (Eng) degree. Further, provided he continues as a registered student on transfer from one course to the other, he may retain any concession granted in the BSc(Eng) degree course.

Holders of the BSc(Eng) award are eligible to proceed to the degree of Master of Engineering, Master of Engineering Science or Master of Surveying Science subject to the conditions for the award of these degrees set out in Section C of the University Calendar.

Courses leading to the BSc(Eng) award are basically part-time and the prescribed industrial experience should be gained concurrently with the course of study (a minimum of three years of suitable engineering experience is required). Students transferring from full-time courses must, therefore, also satisfy these industrial experience requirements before being admitted to the degree of BSc(Eng).

The BSc(Eng) degree programme may in some cases be accelerated by a student attending for one or more years full-time. For example, in all courses of the Faculty it is possible to take the equivalent of the first two part-time years in the full-time first year.

The School of Surveying offers a part-time course of seven years' duration for the degree of Bachelor of Surveying.

**FACULTY OF APPLIED SCIENCE**

The Faculty of Applied Science offers courses to students desiring a career in a specialized technology with an engineering element. These courses are as follows:

<table>
<thead>
<tr>
<th>Chemical Engineering</th>
<th>Ceramic Engineering</th>
<th>Metallurgy</th>
<th>Mining Engineering</th>
<th>Textile Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>BE</td>
<td>BSc</td>
<td>BSc(Eng)</td>
<td>BE</td>
<td>BSc(Eng)</td>
</tr>
<tr>
<td>BSc(Tech)</td>
<td>BSc(Tech)</td>
<td>BSc(Tech)*</td>
<td>BSc(Eng)†</td>
<td>—</td>
</tr>
</tbody>
</table>

Entrance to these courses, which are of four years' duration full-time (pass or honours) and six years' duration part-time, is conditional upon completion of the full subject Chemistry I. Except in the case of Mining Engineering, transfer should be made at the end of first year to achieve maximum standing. Full-time Engineer-

* A part-time course is also available at Wollongong.
† A part-time course in Mining Engineering leading to the award of the BSc(Eng) degree is available at Wollongong and Broken Hill. A part-time course in Mineral Processing leading to the award of the BSc(Tech) degree is available in Broken Hill.
ing students may enter the Mining Engineering course after the second year of courses in Mechanical, Electrical or Civil Engineering without loss in standing of subjects completed.

Part-time engineering students may enter the courses offered by the Schools of Chemical Engineering, Chemical Technology and Metallurgy after the second stage part-time or the full-time first year. They may enter the Mining Engineering course after the fourth stage. In all cases the requirements for the degree of BSc(Tech) demand three years approved concurrent industrial training.

Holders of the degrees of BE (pass or honours) and BSc(Tech) in Chemical Engineering and in Mining Engineering are recognized by the Institution of Engineers of Australia as being eligible for Corporate Membership without further examination.

Ceramic Engineering

Ceramics are inorganic, non-metallic materials which usually require the use of high temperatures in their processing. Products of the industry include glass, refractories, bricks, tiles, pipes, abrasives, cement, plaster, nuclear ceramics, whitewares, enamels and electric insulators, dielectrics and magnetic materials. The ceramic engineer is concerned with the relationship between the atomic and crystal structure of materials and their chemical, physical and engineering properties, as well as the methods of their manufacture and fabrication into useful shapes.

Graduates in Ceramic Engineering take positions in the fields of research and development, production control, product evaluation and technical service.

Chemical Engineering

Chemical Engineering is the application of the principles of the physical sciences, together with principles of economics and human relations to fields in which matter undergoes a change in state, energy content or composition. The chemical engineer is generally responsible for the design, construction and operation of plant and equipment used in the chemical processing industries.

Metallurgy

Metallurgy deals with the nature, production, properties and uses of metals. Its importance today is associated with the demands for better materials for aircraft, rockets, and nuclear reactors, as well as the more conventional engineering structures, machines and appliances. Metallurgists are also closely involved with the development of new and more efficient processes for extracting metals from their ores and contributing to mineral production.
The School of Metallurgy is located at Kensington, and also has a department in Wollongong. It has excellent facilities for teaching and research. Emphasis in these courses is on the application of science to technological problems and in this respect there is a close relationship between metallurgy and engineering. Information on the Metallurgy courses and on opportunities for postgraduate work for engineering graduates in the School of Metallurgy may be obtained from the University Calendar, or from Professor Hugh Muir at the School of Metallurgy.

**Mining Engineering**

The aim of the training is to give students a thorough foundation in Mining Engineering and so permit them to enter quarrying, coal mining, metalliferous mining or the petroleum industry, and to be employed in any of the phases of these industries ranging from exploration to production.

During the undergraduate course, students will spend portion of the long vacations obtaining practical experience in mining. Mining companies prepare programmes so that the students obtain a comprehensive experience in many aspects of the profession. This experience is important and it is related to the academic training received in the School. Practical experience in mining, gained as a student, can contribute to the experience record of mining engineers when making application for a statutory certificate of competency from one of the Australian State Government Departments of Mines.

The School of Mining Engineering offers a part-time course in Mineral Processing at Broken Hill, leading to the degree of Bachelor of Science (Technology). Part-time courses leading to the degree of Bachelor of Science (Engineering) are available at Broken Hill and Wollongong.

**Textile Engineering**

The textile industry, being a manufacturing one, depends on many types of machinery and engineering services to produce its products. In order to cope with technological problems in production, quality control and research, a competent textile engineer must have a good understanding of the fundamental sciences and extensive theoretical and practical knowledge of the applied textile and engineering sciences.

There are many challenging positions for textile engineers in industry and research.

Full details of the above courses may be obtained from the University Calendar or the Faculty of Applied Science Handbook.
Research Degrees

The higher degrees of Master of Engineering, Master of Surveying, and of Doctor of Philosophy are awarded on the presentation of a thesis, satisfactory to the examiners, which embodies the results of an original investigation or design. Candidates for these degrees must possess a bachelor's degree in an appropriate field and meet the conditions governing the award of these degrees. The full conditions are set out in the University Calendar and in the Handbook of the Graduate School of Engineering.

The degree of Doctor of Science is also awarded for a contribution of distinguished merit in the field of engineering.

GRADUATE COURSES

Courses of Study for Graduate Awards

In addition to the research degrees listed above, the Faculty offers courses of instruction at the graduate level leading to the award of the degree of Master of Engineering Science, Master of Surveying Science or to a graduate diploma.

Courses for the Degrees of Master of Engineering Science and Master of Surveying Science

These degrees may be gained by —

(i) formal course work;

(ii) a combination of formal course work and the completion of a report on a project or a research thesis; or

(iii) completion of a research thesis.

Candidates proceeding to the degree of Master of Engineering Science and Master of Surveying Science are encouraged to develop interdisciplinary attitudes and with the approval of the Head of School may take subjects from other schools of the Faculty, other Faculties of the University and other universities or institutions. By means of this system, a student, with the approval of the Head of School, is able to select a programme of studies best suited to his needs.
Courses for Graduate Diplomas

Highway Engineering, Human Communication, Industrial Engineering and Transport.

Full details of all these courses are given in the section on postgraduate study in the University Calendar, in the Handbooks of the appropriate Schools, and in the Handbook of the Graduate School of Engineering or may be obtained from the Dean of the Faculty of Engineering.

The Faculty of Engineering also supervises the Graduate Diploma course in Human Communications, offered by the Division of Postgraduate Extension Studies.

Special Courses

Short, intensive graduate and special courses are provided throughout each year designed to keep practising engineers in touch with the latest developments in their various fields. The programmes of such courses for this year are published separately.
OUTLINES OF UNDERGRADUATE COURSES

SCHOOL OF CIVIL ENGINEERING

The School of Civil Engineering offers two courses in Civil Engineering: a four year full-time or equivalent part-time course leading to the degree of Bachelor of Engineering (BE) and a six year part-time course leading to the degree of Bachelor of Science (Engineering) (BSc(Eng)). In the full-time course, a period of forty working days of industrial training must be completed between Years 3 and 4 and it is strongly recommended that further industrial experience be gained in the long vacation between Years 2 and 3. Part-time students are required to gain a minimum of three years of suitable engineering experience concurrently with the University course. Students enrolled in the final year of either course may be required to present a seminar and attend a prescribed number of seminar sessions as part of their programme.

A student who has completed the requirements for the award of the BSc(Eng) degree in Civil Engineering but has not taken out the degree by formal graduation may apply to the Head of School for enrolment on a part-time basis in the BE degree course. It is anticipated that, in normal cases, the additional requirements for the BE degree may be completed in one year of part-time study.

The degree of Bachelor of Engineering may be conferred as a Pass degree or as an Honours degree. There are two classes of Honours, Class 1, and Class 2 in two divisions, and the award and grade of Honours are made in recognition of superior performance throughout the course. The degree of Bachelor of Science (Engineering) may be awarded with Merit in recognition of superior performance throughout the course.
### Bachelor of Engineering

#### Hours per week

<table>
<thead>
<tr>
<th>Session 1</th>
<th>Session 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>YEAR 1</td>
<td></td>
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<tr>
<td>1.001 Physics I or</td>
<td>3</td>
</tr>
<tr>
<td>1.011 Higher Physics I</td>
<td>3</td>
</tr>
<tr>
<td>2.021 Chemistry IE</td>
<td>4</td>
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<tr>
<td>5.010 Engineering A</td>
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<tr>
<td>5.020 Engineering B</td>
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<tr>
<td>5.030 Engineering C</td>
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<td>10.001 Mathematics I or</td>
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<tr>
<td>10.011 Higher Mathematics I</td>
<td>14</td>
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<tr>
<td>YEAR 2</td>
<td></td>
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<tr>
<td>8.172 Mechanics of Solids II</td>
<td>2</td>
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<tr>
<td>8.181 Structural Design I</td>
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<tr>
<td>8.272 Civil Engineering Materials I</td>
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<tr>
<td>8.301 Systems Engineering</td>
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<td>10.022 Engineering Mathematics II</td>
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<td>29.491 Survey Camp†</td>
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<td>Two Electives*</td>
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<td>12 1/4</td>
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†Students are required to attend a one-week Survey Camp, equivalent to 40 class contact hours.

*Of ten electives (see footnote, Years 3 and 4 on next page), at least four shall be in General Studies, and at least four shall be in technical electives. Two of the General Studies electives shall be taken prior to Year 4.

#### YEAR 3

<table>
<thead>
<tr>
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<tr>
<td>8.152 Structures</td>
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<td>1</td>
<td>3</td>
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<tr>
<td>8.161 Engineering Mathematics</td>
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<td>1 1/4</td>
<td>1 1/4</td>
<td>1 1/4</td>
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<tr>
<td>8.252 Civil Engineering Materials</td>
<td>1 1/4</td>
<td>1 1/4</td>
<td>1 1/4</td>
<td>1 1/4</td>
<td></td>
</tr>
<tr>
<td>8.301 Systems Engineering</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>8.531 Water Engineering</td>
<td>2 1/4</td>
<td>1 1/4</td>
<td>2 1/4</td>
<td>1 1/4</td>
<td></td>
</tr>
<tr>
<td>Two General Studies Electives</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>11 1/4</td>
<td>9 1/4</td>
<td>11 1/4</td>
<td>9 1/4</td>
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</tbody>
</table>
### FACULTY OF ENGINEERING

#### YEAR 4

<table>
<thead>
<tr>
<th></th>
<th>SESSION 1</th>
<th>SESSION 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering Electives†</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>8.153 Structures</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>8.253 Civil Engineering Materials</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>8.532 Water Engineering</td>
<td>1½</td>
<td>1½</td>
</tr>
<tr>
<td>8.631 Civil Engineering</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Two General Studies Electives*</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>14½</td>
<td>9</td>
</tr>
</tbody>
</table>

†The approved electives are: 8.011 Project, 8.012 Architecture, 8.013 Bridge Engineering, 8.014 Computer Applications in Civil Engineering, 8.015 Road Engineering, 8.016 Hydraulics, 8.017 Transportation Engineering, 8.018 Construction and Administration, 8.019 Railway Engineering, 8.020 Hydrology, 8.021 Environmental Aspects of Civil Engineering, 8.022 Elasticity and Plasticity in Soil and Rock Mechanics, 8.023 Flow in Porous Media, 8.024 Foundation Engineering, 8.025 Structural Concrete, 8.026 Systems Methods in Civil Engineering, 8.027 Timber, Plastics and Composite Engineering.

*One elective must be advanced; as an alternative to it, students may take the Sociology IIIA (53.113) option “Science, Technology and Society.”

#### YEAR 3†

<table>
<thead>
<tr>
<th></th>
<th>SESSION 1</th>
<th>SESSION 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.173 Structural Analysis I</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>8.174 Structural Analysis II</td>
<td>0</td>
<td>0</td>
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<tr>
<td>8.182 Structural Design II</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>8.273 Civil Engineering Materials II</td>
<td>1½</td>
<td>1½</td>
</tr>
<tr>
<td>8.351 Engineering Mathematics</td>
<td>2½</td>
<td>2½</td>
</tr>
<tr>
<td>8.572 Hydraulics II</td>
<td>1½</td>
<td>1½</td>
</tr>
<tr>
<td>8.573 Hydraulics III</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.581 Water Resources I</td>
<td>1½</td>
<td>1½</td>
</tr>
<tr>
<td>8.582 Water Resources II</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.672 Planning and Management I</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Two Electives*</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>12</td>
<td>11</td>
</tr>
</tbody>
</table>

†Available in 1975 for the first time.

*Of ten electives (see footnote, Year 2, on previous page), at least four shall be in General Studies, and at least four shall be technical electives. Two of the General Studies electives shall be taken prior to Year 4.
YEAR 4‡

8.191 Structural Engineering  
8.274 Civil Engineering Materials III  
8.583 Water Resources III  
8.673 Planning and Management II  
8.051 Design Projects I  
8.052 Design Projects II  
Six Electives*

<table>
<thead>
<tr>
<th>8.191</th>
<th>8.274</th>
<th>8.583</th>
<th>8.673</th>
<th>8.051</th>
<th>8.052</th>
<th>8.053</th>
<th>8.054</th>
</tr>
</thead>
<tbody>
<tr>
<td>1⅔ 1⅔</td>
<td>1⅔ 1⅔</td>
<td>1 2</td>
<td>1 2</td>
<td>0 0</td>
<td>0 0</td>
<td>4⅔ 4⅔</td>
<td></td>
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</table>

9⅔ 11⅔ 7 13

‡Available in 1976 for the first time.

*Of ten electives (see footnote, Year 2, earlier), at least four shall be in General Studies, and at least four shall be technical electives. Two of the General Studies electives shall be taken prior to Year 4.

363. CIVIL ENGINEERING—PART-TIME COURSE
Bachelor of Science (Engineering)

<table>
<thead>
<tr>
<th>STAGE 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>SESSION 1</td>
</tr>
<tr>
<td>Physics I or Higher Physics I</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>Mathematics I or Higher Mathematics*</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

*Not available in the evening in 1974.

<table>
<thead>
<tr>
<th>STAGE 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>SESSION 1</td>
</tr>
<tr>
<td>Chemistry IE</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>Engineering A</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>Engineering B</td>
</tr>
<tr>
<td>0</td>
</tr>
<tr>
<td>Engineering C</td>
</tr>
<tr>
<td>0</td>
</tr>
<tr>
<td>Elective I*</td>
</tr>
<tr>
<td>1 ⅔</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

*The part-time programme is being revised. See * footnote, Year 2 and Year 4 above.
### FACULTY OF ENGINEERING

#### STAGE 3

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Lab.</th>
<th>Tut.</th>
<th>Session 1</th>
<th>Session 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.172</td>
<td>Mechanics of Solids II</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>8.272</td>
<td>Civil Engineering Materials I</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>10.022</td>
<td>Engineering Mathematics II</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>29.441</td>
<td>Engineering Surveying*</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>29.491</td>
<td>Survey Camp†</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*6½ hours per week*

*42 hours of Saturday fieldwork is an essential part of this subject.*

†Students are required to attend a one-week Survey Camp, equivalent to 40 class contact hours.

#### STAGE 4

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Lab.</th>
<th>Tut.</th>
<th>Session 1</th>
<th>Session 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.711</td>
<td>Thermodynamics†</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>6.801</td>
<td>Electrical Engineering</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>8.510</td>
<td>Hydraulics†</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.621</td>
<td>Engineering Construction</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>25.101</td>
<td>Geology for Engineers*†</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

*5½ hours per week*

*Two one-day Geology excursions are an essential part of the course.*

†Normally offered in both sessions as a complete course. At enrolment students are grouped into the appropriate session.

#### STAGE 5

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Lab.</th>
<th>Tut.</th>
<th>Session 1</th>
<th>Session 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.152</td>
<td>Structures</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>8.161</td>
<td>Engineering Mathematics</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>8.301</td>
<td>Systems Engineering</td>
<td>2</td>
<td>2</td>
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</table>

*7½ hours per week*

#### STAGE 6

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Lab.</th>
<th>Tut.</th>
<th>Session 1</th>
<th>Session 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.154</td>
<td>Structures</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>8.252</td>
<td>Civil Engineering Materials</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.254</td>
<td>Civil Engineering Materials</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>8.632</td>
<td>Civil Engineering</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

*6½ hours per week*
SCHOOL OF ELECTRICAL ENGINEERING

The School consists of the Departments of Communications, Computer Science, Electric Power Engineering, Solid State Electronics and Systems and Control Engineering and offers undergraduate and postgraduate training in all branches of the profession of electrical engineering. The School's teaching and research programmes are constantly under review to meet the ever changing challenges of present and future needs.

The School offers a full-time course of four years' duration leading to the degree of Bachelor of Engineering, and a six-year part-time course for the degree of Bachelor of Science (Engineering). The courses may also be completed by a combination of part-time and full-time study. Graduate courses are described elsewhere.

The degrees of Bachelor of Engineering and Bachelor of Science (Engineering) are recognized by the Institution of Engineers, Australia, the Institution of Radio and Electronics Engineers, Australia, and the Institution of Electrical Engineers, London, as giving complete exemption from the examinations required for admission to Graduate or Corporate membership.

Electrical engineering, perhaps more than most other branches of engineering, is closely linked with the pure sciences, and requires a scientific outlook and approach for a proper understanding of its problems.

In the early years of the electrical engineering courses, students concentrate on acquiring knowledge of the basic sciences, particularly mathematics and physics, with an engineering component which increases progressively to the final year, when students elect, with the approval of the Head of the School, to study in specialized fields of electrical engineering. Students in doubt as to which programme patterns are desirable or permissible should consult the Head of the School.

Each student in the BE course is required to work on an individual or group project under the guidance of members of the lecturing staff. Generally, the project will involve the design and construction of experimental apparatus together with laboratory tests. Where possible the projects will be related to the research programme of the School and chosen to develop the student's initiative. Each student is required to lead a seminar and to prepare a thesis or take part in the preparation of a group thesis based on the results of the project work.

All students in the BScEng course must complete three years of appropriate industrial experience. Students in the BE course are
Strongly recommended to obtain practical experience in the long vacations.

In the Bachelor of Engineering course the same formal programme is offered to both pass students and to those aiming at honours. Honours will be awarded for meritorious performance over the course: special attention is paid to a candidate's performance in the final year thesis project. A student with a creditable performance in the Bachelor of Science (Engineering) course may be awarded a degree with Merit.

364. ELECTRICAL ENGINEERING—FULL-TIME COURSE
Bachelor of Engineering

The full-time course is of four years' duration and leads to the degree of Bachelor of Engineering (pass or honours). Each of the four years of the course requires full-time day attendance at the University for twenty-eight weeks.

<table>
<thead>
<tr>
<th>YEAR 1</th>
<th></th>
<th>YEAR 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SESSION 1</strong></td>
<td><strong>SESSION 2</strong></td>
<td><strong>SESSION 1</strong></td>
</tr>
<tr>
<td><strong>Hours per week</strong></td>
<td><strong>Lab.</strong></td>
<td><strong>Lec.</strong></td>
</tr>
<tr>
<td><strong>1.001 Physics I</strong>*</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>5.010 Engineering A</strong></td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td><strong>6.010 Electrical Engineering I</strong></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>10.001 Mathematics I</strong>*</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td><strong>Either</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2.001 Chemistry I</strong></td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>or</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2.021 Chemistry IIE</strong></td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>5.030 Engineering C</strong></td>
<td>0</td>
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<td><strong>14</strong></td>
<td><strong>10</strong></td>
<td><strong>12</strong></td>
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<table>
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<tr>
<th><strong>YEAR 2</strong></th>
<th><strong>SESSION 1</strong></th>
<th><strong>SESSION 2</strong></th>
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<tbody>
<tr>
<td><strong>1.112A Electromagnetism (Session 2)</strong></td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>1.112B Modern Physics (Session 1)</strong></td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td><strong>6.021 Electrical Engineering II</strong></td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>8.111 Civil Engineering</strong></td>
<td>2</td>
<td>1 ½</td>
</tr>
<tr>
<td><strong>10.111A Pure Mathematics II (Linear Algebra)</strong>*</td>
<td>1 ½</td>
<td>1</td>
</tr>
<tr>
<td><strong>10.111B Pure Mathematics II (Analysis)</strong>*</td>
<td>1 ½</td>
<td>1</td>
</tr>
<tr>
<td><strong>10.211A Applied Mathematics II (Mathematical Methods)</strong>*</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>One General Studies subject</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>15 ½</strong></td>
<td><strong>9 ½</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Students who have achieved a certain standard may attempt similar material at a higher level.
### YEAR 3

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Lec.</th>
<th>Tut.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.661</td>
<td>Mechanical Engineering III</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>10.033</td>
<td>Electrical Engineering Mathematics III</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>10.361</td>
<td>Statistics SE</td>
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</table>

**Electrical Engineering III**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Lec.</th>
<th>Tut.</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.031A</td>
<td>Systems and Circuit Theory</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>6.031B</td>
<td>Energy Conversion, Transmission and Utilization</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>6.031C</td>
<td>Electronic Circuits and Signal Processing</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>6.031D</td>
<td>Computing</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>6.031E</td>
<td>Electron Physics and Devices</td>
<td>2</td>
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</tr>
<tr>
<td></td>
<td>Two General Studies subjects</td>
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</table>

### YEAR 4

**Electrical Engineering IV (6 units)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>6.911</td>
<td>Thesis or</td>
</tr>
<tr>
<td>6.931</td>
<td>Group Thesis</td>
</tr>
</tbody>
</table>

One General Studies subject†

†At least one General Studies advanced elective is required in the course.

### Electrical Engineering IV

A number of general topics are offered and each Department offers specialized electives. Not all electives will be offered every year. Students will be advised each year which electives are available.

Four units are taken in Session 1 and two in Session 2. Each elective is 5 hours per week (2 Lecture, 3 Lab. Tut.) for one session. The list of electives is:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.041</td>
<td>Fields and Measurements</td>
</tr>
<tr>
<td>6.042</td>
<td>Circuits, Signals and Information Theory</td>
</tr>
<tr>
<td>6.044</td>
<td>Electrical Product Design and Reliability</td>
</tr>
<tr>
<td>6.202</td>
<td>Power Systems I</td>
</tr>
<tr>
<td>6.203</td>
<td>Power Systems II</td>
</tr>
<tr>
<td>6.212</td>
<td>Machines</td>
</tr>
<tr>
<td>6.222</td>
<td>High Voltage and High Current Technology</td>
</tr>
<tr>
<td>6.303</td>
<td>Communication Electronics</td>
</tr>
<tr>
<td>6.313</td>
<td>Wave Radiation and Guidance</td>
</tr>
<tr>
<td>6.322</td>
<td>Electronics</td>
</tr>
<tr>
<td>6.333</td>
<td>Communication Systems</td>
</tr>
<tr>
<td>6.383</td>
<td>Biomedical Engineering</td>
</tr>
<tr>
<td>6.412</td>
<td>Automatic Control</td>
</tr>
<tr>
<td>6.422</td>
<td>Computer Control</td>
</tr>
<tr>
<td>6.512</td>
<td>Advanced Semiconductor Device Theory</td>
</tr>
<tr>
<td>6.522</td>
<td>Transistor and Integrated Circuit Design</td>
</tr>
<tr>
<td>6.612</td>
<td>Computer Systems Engineering</td>
</tr>
<tr>
<td>6.622</td>
<td>Computer Application and Software</td>
</tr>
</tbody>
</table>
The programme selected by each student must be approved by the Head of School.

**Thesis or Group Thesis**

In Session 1 two hours per week and in Session 2 three clear days per week are devoted to directed laboratory and research work on an approved subject with special reading and study associated with the presentation of a seminar and the preparation of a thesis. The thesis must be submitted by the last Monday in November.

### 365. ELECTRICAL ENGINEERING—PART-TIME COURSE

Bachelor of Science (Engineering)

The six-year part-time course in Electrical Engineering leads to the degree of Bachelor of Science (Engineering).

<table>
<thead>
<tr>
<th>STAGE</th>
<th>Course Details</th>
<th>Hours per week for 2 sessions</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAGE 1</td>
<td>Physics I</td>
<td>Lec. 3 Tut. 3 Lab.</td>
</tr>
<tr>
<td>1.001</td>
<td>10.001 Mathematics I</td>
<td>4 2</td>
</tr>
<tr>
<td>STAGE 2</td>
<td>Chemistry I</td>
<td>3 3</td>
</tr>
<tr>
<td>2.001</td>
<td>5.010 Engineering A (Session 1) 5.030 Engineering C (Session 2)</td>
<td>4 2</td>
</tr>
<tr>
<td>STAGE 3</td>
<td>Waves in Continuous Media and Thermodynamics 6.021 Electrical Engineering II 10.111A Pure Mathematics II (Linear Algebra) 10.111B Pure Mathematics II (Analysis) One General Studies subject</td>
<td>2 0 Lab. 3 3 1½ ½ 1 ½</td>
</tr>
<tr>
<td>STAGE 4</td>
<td>Electromagnetism (Session 2) Modern Physics (Session 1) Electrical Engineering III Unit A: Systems and Circuit Theory Applied Mathematics II (Mathematical Methods)</td>
<td>3 3 2 2 1½ ½</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6½ 5½</td>
</tr>
</tbody>
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STAGE 5*

<table>
<thead>
<tr>
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<th>Course Title</th>
<th>Lec.</th>
<th>Tut.</th>
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</thead>
<tbody>
<tr>
<td>4.921</td>
<td>Materials Science</td>
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<td>0</td>
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<tr>
<td>6.043</td>
<td>Measurements</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Two General Studies subjects</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

Communications Option

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Lec.</th>
<th>Tut.</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.031</td>
<td>Electrical Engineering III</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unit C: Electronic Circuits and Signal Processing</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Unit E: Electron Physics and Devices</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

Power and Control Option

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Lec.</th>
<th>Tut.</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.031</td>
<td>Electrical Engineering III</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unit B: Energy Conversion, Transmission and Utilization</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Unit D: Computing</td>
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STAGE 6

Communications Option

<table>
<thead>
<tr>
<th>Course Code</th>
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</thead>
<tbody>
<tr>
<td>6.031</td>
<td>Electrical Engineering III</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unit B: Energy Conversion, Transmission and Utilization</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Unit D: Computing</td>
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<td>1</td>
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<td>Two Communications Electives*</td>
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<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Lec.</th>
<th>Tut.</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.031</td>
<td>Electrical Engineering III</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unit C: Electronic Circuits and Signal Processing</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>5.661</td>
<td>Mechanical Engineering</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Two Power and Control Electives*</td>
<td>3</td>
<td>3</td>
</tr>
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</table>

Power and Control Option

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Lec.</th>
<th>Tut.</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.031</td>
<td>Electrical Engineering III</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unit C: Electronic Circuits and Signal Processing</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>5.661</td>
<td>Mechanical Engineering</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Two Power and Control Electives*</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

*In Stage 5 students take either the Communications or the Power and Control Option. Whichever option is chosen must be continued in Stage 6, where Power and Control Students choose different electives and substitute 5.661 Mechanical Engineering for 6.031 Unit E (Electron Physics and Devices).

*The list of electives to be offered will largely correspond to those in the Electrical Engineering IV list (see the BE programme). The full range of electives will not be offered in the BSc(Eng) course; students who can arrange day attendance may request approval to substitute Electrical Engineering IV electives.
ELECTRICAL ENGINEERING—
COMBINED FULL-TIME/PART-TIME COURSES

The subjects of the BSc(Eng) course are generally identical with a subject of the BE programme and the requirements of these subjects can be completed by either day or evening study in most cases. Timetables will be arranged to suit the yearly programmes given above. Provided prerequisites are met and the programme can be timetabled, a student in either course may, with the approval of the Head of the School, complete the requirements by a combination of full-time and part-time study.

ELECTRICAL ENGINEERING—
SUBSTITUTION OF SUBJECTS

To suit the special abilities or needs of individual students a limited amount of substitution is permitted within each course. Any such substitution must have prior approval of the Head of School who will ensure that:

1. The replacement subject is at least of the same length and level as the prescribed subject it replaces; and
2. The resulting overall programme of study is suited to the award of either the BE or BSc(Eng) as applicable.

Examples are:
(a) Replacement of two General Studies subjects by an approved Arts subject;
(b) Replacement of one or two General Studies subjects by an approved (by the Head of the Department of General Studies) subject from areas such as:
   Life Sciences;
   Earth Sciences;
   Accounting and Business Administration;
   Law;
   Economics;
   Industrial Management.
(c) If students proposing to attempt the BSc BE pattern include some Computer Science or additional Applied Mathematics in their Second Year Electrical Engineering Programme they open up a wider choice of subjects in their Science Third Year. This can be substituted for 8.111 or the General Studies courses. If the BSc programme is completed these courses could be put back into the student's Third Year of Electrical Engineering;
(d) The normal Fourth Year of the BE programme includes 6 units of Electrical Engineering IV. Students may substitute for ONE of these units, a subject of suitable level and difficulty from an area outside the School of Electrical Engineering.

DOUBLE DEGREE OF BSC BE IN ELECTRICAL ENGINEERING

Students in Electrical Engineering may qualify for this double degree in five years of full-time study. Having completed the first and second years of the Electrical Engineering course, students with a credible performance may transfer to Science (this is subject to the recommendation of the Head of the School of Electrical Engineering and the approval of the Deans of the Faculties of Engineering and Science) and do the appropriate General Studies subjects and four level III units chosen from related disciplines and no less than four other units of either level II or level III chosen in accordance with the Science Course regulations. In their fourth year the students revert to the Faculty of Engineering. Depending on the programme followed in their year in Science they will have already completed parts of the normal third year programme of the Electrical Engineering course, and they will be required to omit these from their programme and to include an equivalent amount of other courses chosen with the approval of the Head of School. In their fifth year they will complete the fourth year of the Electrical Engineering course.

DOUBLE DEGREE BA BE IN ELECTRICAL ENGINEERING

The double degree BA BE in Electrical Engineering may be gained by a five-year course of combined study. Students wishing to enrol for this double degree may do so.

(i) by initially enrolling as a student proceeding to the double degree, or

(ii) by transferring to the BA BE programme with advanced standing after partially completing the requirements of either degree, provided that suitable courses have been studied.

Any student wishing to enrol in, transfer into or continue in the double degree course BA BE shall have complied with all the
requirements for prerequisite study and academic attainment of both the Faculties concerned. Students wishing to enrol in or to transfer into the double degree course may do so only after receiving the approval of the respective Deans of the Faculties of Arts and Engineering. Guidance should be sought from the School of Electrical Engineering, the relevant schools in the Faculty of Arts and the Arts Faculty Office.

1. Initial Enrolment for BA BE

A student enrolling initially for the double degree shall pursue a programme for four years in which he studies at least nine courses in accordance with the regulations of the Faculty of Arts, provided that they include:

(i) the subjects in Table A below, and

(ii) a major sequence of courses available within the Faculty of Arts (see Schedule A of that Faculty’s regulations) in addition to his studies in the School of Mathematics.

In addition he shall also study concurrently subjects selected from Table B in accordance with an acceptable programme loading. Upon completion of this four year programme he may then complete his studies by satisfying the remaining requirements of a normal BE programme in Electrical Engineering

(a) less the General Studies subjects, and

(b) less the equivalent of ONE non-electrical engineering subject of the BE course, and

(c) less either strand B or strand E of Electrical Engineering III, and

(d) less one of the six units of Electrical Engineering IV.

Table A

<table>
<thead>
<tr>
<th>10.001 Mathematics I</th>
<th>or</th>
<th>10.011 Higher Mathematics I</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.111A Pure Mathematics II (Linear Algebra)</td>
<td>10.121A Higher Pure Mathematics II (Algebra)</td>
<td></td>
</tr>
<tr>
<td>10.111B Pure Mathematics II (Analysis)</td>
<td>10.121B Higher Pure Mathematics II (Real and Complex Analysis)</td>
<td></td>
</tr>
<tr>
<td>10.211A Applied Mathematics II (Mathematical Methods)</td>
<td>10.221A Higher Applied Mathematics II (Mathematical Methods)</td>
<td></td>
</tr>
<tr>
<td>1.001 Physics I</td>
<td>or</td>
<td>1.011 Higher Physics I</td>
</tr>
<tr>
<td>1.112 Physics II</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table B

2.001 Chemistry
5.010 Engineering A
5.661 Mechanical Engineering III*
6.010 Electrical Engineering I
6.021 Electrical Engineering II
6.031 Electrical Engineering III*
8.111 Civil Engineering*
10.033 Electrical Engineering
10.361 Statistics SE

Notes:

(i) The substitution rule for the BE in Electrical Engineering if invoked (see Electrical Engineering—Substitution of Subjects) may modify the requirements set out in Table B.

(ii) In addition it may be possible to defer strand B or strand D of 6.031 Electrical Engineering III into the fifth year of the combined programme, provided that the student does not wish to major in the relevant strand, i.e. strand B Machines or strand D Computing. Such re-arrangements are to be regarded as special cases and prior approval of the School of Electrical Engineering must be sought and received.

(iii) The requirements of the appropriate Schools in respect to pre-requisites, sequencing or substitutions shall be adhered to.

2. Subsequent Transfer to BA BE Course

Students wishing to pursue this route shall at the time of transfer and subsequently comply with the requirements for students initially enrolling in the double degree BA BE.

3. Honours degree in Arts

Students wishing to gain an Honours degree in Arts as part result of their combined BA BE double degree programme shall meet all the relevant requirements of the Faculty of Arts and of the appropriate Schools. Such students may enrol for the Honours year in Arts only after receiving the approval of the respective Deans of the Faculties of Arts and Engineering.

*Permission may be given for some portion of the subjects marked with an asterisk to be deferred until after the completion of the four year programme.
SCHOOL OF MECHANICAL AND INDUSTRIAL ENGINEERING

The courses in this School are planned to provide the appropriate academic training for the professional engineer in the fields of aeronautical, industrial and mechanical engineering, and for the naval architect.

The study of the basic sciences—Mathematics, Physics and Chemistry—together with an introduction to Engineering, comprises the first year. In the second year further mathematical studies are undertaken together with a study of the Engineering Sciences—Thermodynamics, Fluid Mechanics, Engineering Mechanics, Mechanics of Solids and their application in the field of Design.

The full-time courses of Mechanical, Industrial and Aeronautical Engineering and of Naval Architecture have common subjects for the first two years. The third and fourth years contain a number of common core subjects together with specific departmental requirements. In the fourth and final year, in addition to core subjects and departmental requirements, provision is made for a limited degree of specialization in one or more elective subjects. Each full-time student is required to present a thesis at the end of his final year and to deliver a short paper on the subject of his thesis. General studies form a regular part of all courses. In certain instances and with permission from the Head of the School students may substitute an Arts subject in lieu of two General Studies subjects.

Industrial experience is an integral part of the full-time courses. All students enrolled in the School must complete forty working days of approved industrial training between Years 3 and 4, and, irrespective of their specialization, are strongly recommended to gain as much industrial training as possible between Years 1 and 2 and between Years 2 and 3.

The full-time courses in Aeronautical, Industrial and Mechanical Engineering and in Naval Architecture are of four years' duration and lead to the degree of Bachelor of Engineering (BE).

All students will be considered for the award of Honours which will be granted for meritorious performance in the course with particular emphasis on the later years. With the approval of the Head of School, students may proceed to the BE degree via a combination of full-time and part-time study.
Part-time courses of six years’ duration leading to the degree of Bachelor of Science (Engineering) are offered in the same four fields as the full-time courses.

Part-time courses may also be completed by a combination of part-time and of full-time study. Students proceeding to the BSc(Eng) degree whether by a combination of part-time and of full-time study, or by part-time study alone, are required to undergo a minimum period of three years approved concurrent industrial training. (See also conditions for the award of the Degree of BSc(Eng) in Section B of the calendar.)

A student who has successfully completed the first two stages of any of the Bachelor of Science (Engineering) courses mentioned above may transfer to the second year of any of the full-time BE courses offered by the School. A part-time student will be able to transfer at the end of Stage 4 of his course to the third year of the corresponding BE course. The BSc(Eng) degree may be awarded ‘With Merit’ to students whose performance in the course is superior.

The award of the degree BE or BSc(Eng) in Mechanical Engineering is recognized by the Institution of Mechanical Engineers, London, as giving exemption from Parts I and II of the examinations required for admission to the grade of Member. Exemption from Part III (The Engineer in Society) of the examinations may also be granted, depending on the particular General Studies subjects taken. Exemption from Part III is considered on a case by case basis, and is not automatic. Specific enquiries on this matter should be addressed to the Head of the School.

The award of the degree of BE or BSc(Eng) in Industrial Engineering is similarly recognized by the Institution of Production Engineers, London.

The Institution of Engineers, Australia, grants full exemption from examinations for admission to the grade of Member to holders of the degree of BE or BSc(Eng) in any of the undergraduate courses offered by the School.
**FACULTY OF ENGINEERING**

**368. MECHANICAL ENGINEERING—FULL-TIME COURSE**

Bachelor of Engineering

<table>
<thead>
<tr>
<th>YEAR 1</th>
<th>Hours per week</th>
<th>SESSION 1</th>
<th>SESSION 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.001</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>1.011</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>2.021</td>
<td>4</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>5.010</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>5.020</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>10.001</td>
<td>4</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>10.011</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

*One session only. Students will take this subject in either Session 1 or Session 2.

**YEAR 2**

| 5.032  | Experimental Engineering II | 1 | 1 | 1 | 1 |
| 5.061  | Technical Orientation | 1 | 0 | 1 | 0 |
| 5.111  | Mechanical Engineering Design I | 2 | 2 | 2 | 2 |
| 5.311  | Engineering Mechanics* | 1 | 1 | 1 | 1 |
| 5.611  | Fluid Mechanics/Thermodynamics I | 2 | 2 | 2 | 2 |
| 6.801  | Electrical Engineering | 1 | 2 | 1 | 2 |
| 8.151  | Mechanics of Solids | 2 | 1 | 2 | 1 |
| 8.259  | Properties of Materials | 2 | 1 | 2 | 1 |
| 10.022 | Engineering Mathematics II | 2 | 2 | 2 | 2 |

*One session only. Students will take this subject in either Session 1 or Session 2.

**YEAR 3**

| 5.033  | Experimental Engineering III | 1 | 1 | 1 | 1 |
| 5.043  | Industrial Training | 0 | 0 | 0 | 0 |
| 5.071  | Engineering Analysis | 2 | 1 | 2 | 1 |
| 5.112  | Mechanical Engineering Design II | 1 | 1 | 1 | 1 |
| 5.331  | Dynamics of Machines I | 1 | 1 | 1 | 1 |
| 5.412  | Mechanics of Solids I | 1 | 1 | 1 | 1 |
| 5.612  | Fluid Mechanics/Thermodynamics II | 2 | 1 | 2 | 1 |
| 6.802  | Electrical Engineering* | 2 | 1 | 2 | 1 |
| 18.011 | Industrial Engineering IA or | 1 | 1 | 1 | 1 |
| 18.021 | Industrial Engineering IB | 1 | 1 | 1 | 1 |
|        | General Studies Elective | 2 | 1 | 2 | 1 |

*One session only. Students will take this subject in either Session 1 or Session 2.*
### YEAR 4

<table>
<thead>
<tr>
<th>Course</th>
<th>SESSION 1</th>
<th>SESSION 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.051 Thesis</td>
<td>0 Lec.</td>
<td>0 Lec.</td>
</tr>
<tr>
<td>5.062 Communications</td>
<td>2 Lec.</td>
<td>2 Lec.</td>
</tr>
<tr>
<td>5.324 Automatic Control Engineering</td>
<td>2 Lec.</td>
<td>2 Lec.</td>
</tr>
<tr>
<td>General Studies Elective</td>
<td>1 Lec.</td>
<td>1 Lec.</td>
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</tbody>
</table>

*Plus 12 hours from the following Technical Electives:*

<table>
<thead>
<tr>
<th>Course</th>
<th>SESSION 1</th>
<th>SESSION 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.913 Materials Science</td>
<td>2 Lec.</td>
<td>2 Lec.</td>
</tr>
<tr>
<td>5.113 Mechanical Engineering Design III</td>
<td>1½ Lec.</td>
<td>1½ Lec.</td>
</tr>
<tr>
<td>5.332 Dynamics of Machines II</td>
<td>2 Lec.</td>
<td>2 Lec.</td>
</tr>
<tr>
<td>5.413 Mechanics of Solids II</td>
<td>2 Lec.</td>
<td>2 Lec.</td>
</tr>
<tr>
<td>5.613 Fluid Mechanics/Thermodynamics III</td>
<td>4 Lec.</td>
<td>4 Lec.</td>
</tr>
<tr>
<td>18.012 Industrial Engineering IIA</td>
<td>2 Lec.</td>
<td>2 Lec.</td>
</tr>
<tr>
<td>18.022 Industrial Engineering IIB</td>
<td>2 Lec.</td>
<td>2 Lec.</td>
</tr>
<tr>
<td>18.431 Design for Production</td>
<td>2 Lec.</td>
<td>2 Lec.</td>
</tr>
<tr>
<td>23.057 Nuclear Power Technology</td>
<td>2 Lec.</td>
<td>2 Lec.</td>
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</tbody>
</table>

### 369. MECHANICAL ENGINEERING—PART-TIME COURSE

Bachelor of Science (Engineering)

This course is of six years’ duration, and leads to the degree of Bachelor of Science (Engineering).

<table>
<thead>
<tr>
<th>Course</th>
<th>SESSION 1</th>
<th>SESSION 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.001 Physics I or 1.011 Higher Physics I</td>
<td>3 Lec.</td>
<td>3 Lec.</td>
</tr>
<tr>
<td>10.001 Mathematics I or 10.011 Higher Mathematics I*</td>
<td>4 Lec.</td>
<td>4 Lec.</td>
</tr>
</tbody>
</table>

*Not available in the evening in 1974.

### STAGE 2

<table>
<thead>
<tr>
<th>Course</th>
<th>SESSION 1</th>
<th>SESSION 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.021 Chemistry IE</td>
<td>3 Lec.</td>
<td>3 Lec.</td>
</tr>
<tr>
<td>5.010 Engineering A*</td>
<td>4 Lec.</td>
<td>4 Lec.</td>
</tr>
<tr>
<td>5.020 Engineering B†</td>
<td>0 Lec.</td>
<td>4 Lec.</td>
</tr>
<tr>
<td>5.030 Engineering C*</td>
<td>3 Lec.</td>
<td>3 Lec.</td>
</tr>
</tbody>
</table>

*One session only. Students will take this subject in either Session 1 or Session 2.

†Broken Hill students take 5.301 Engineering Mechanics (1 — 1) in lieu of 5.020.
### FACULTY OF ENGINEERING

#### Hours per week

<table>
<thead>
<tr>
<th>STAGE 3</th>
<th>SESSION 1</th>
<th>SESSION 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.311 Engineering Mechanics*</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>8.151 Mechanics of Solids</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>8.259 Properties of Materials</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>10.022 Engineering Mathematics II</td>
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<td>2</td>
</tr>
<tr>
<td>General Studies Elective</td>
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<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>8</td>
<td>5</td>
</tr>
</tbody>
</table>

*One session only. Students will take this subject in either Session 1 or Session 2.

#### STAGE 4

<table>
<thead>
<tr>
<th></th>
<th>SESSION 1</th>
<th>SESSION 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.032 Experimental Engineering II</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>5.111 Mechanical Engineering Design I</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>5.611 Fluid Mechanics/Thermodynamics I</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>6.801 Electrical Engineering</td>
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<td>2</td>
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<tr>
<td>General Studies Elective</td>
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<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
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<td>6½</td>
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#### STAGE 5

<table>
<thead>
<tr>
<th></th>
<th>SESSION 1</th>
<th>SESSION 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.071 Engineering Analysis</td>
<td>2½</td>
<td>1</td>
</tr>
<tr>
<td>5.112 Mechanical Engineering Design II</td>
<td>1½</td>
<td>1</td>
</tr>
<tr>
<td>5.331 Dynamics of Machines I</td>
<td>1½</td>
<td>1</td>
</tr>
<tr>
<td>5.412 Mechanics of Solids I</td>
<td>1½</td>
<td>1</td>
</tr>
<tr>
<td>5.612 Fluid Mechanics/Thermodynamics II</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>9</td>
<td>4</td>
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#### STAGE 6

<table>
<thead>
<tr>
<th></th>
<th>SESSION 1</th>
<th>SESSION 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.324 Automatic Control Engineering</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>General Studies Elective</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

*Plus 9 hours from Mechanical Engineering Electives*

<table>
<thead>
<tr>
<th></th>
<th>SESSION 1</th>
<th>SESSION 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.913 Materials Science</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>5.113 Mechanical Engineering Design III</td>
<td>1½</td>
<td>4½</td>
</tr>
<tr>
<td>5.332 Dynamics of Machines II</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>5.413 Mechanics of Solids II</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>5.613 Fluid Mechanics/Thermodynamics III</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>
The University of New South Wales

361. AERONAUTICAL ENGINEERING—
FULL-TIME COURSE
Bachelor of Engineering

The first and second years of this course are identical with the first two years of the full-time course in Mechanical Engineering.

<table>
<thead>
<tr>
<th>YEAR 3</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
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*One session only. Students will take this subject in either Session 1 or Session 2.

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*Plus one technical elective from:—

| 4.913 | Materials Science | 2 | 1 |
| 5.324 | Automatic Control Engineering | 2 | 1 |
| 18.022 | Industrial Engineering II B | 11 | 12½ |
| 18.551 | Operations Research | 11 | 12½ |
360. AERONAUTICAL ENGINEERING—
PART-TIME COURSE

Bachelor of Science (Engineering)

This course is of six years' duration and leads to the degree of Bachelor of Science (Engineering). The first four stages are identical with the Mechanical Engineering part-time course.

**STAGE 5**

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**STAGE 6**

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370. NAVAL ARCHITECTURE—FULL-TIME COURSE

The first and second years of this course are identical with the first two years of the full-time course in Mechanical Engineering. Subject to the Head of the School of Mechanical and Industrial Engineering being satisfied that the present extent of equivalences is maintained, and on his recommendation, Faculty has approved an arrangement by which students who satisfy the requirements of the first two years of the Mechanical Engineering degree course at any other Australian university may be admitted to a two-year full-time programme leading to the Bachelor of Engineering degree in Naval Architecture.

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Year 4

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Plus one elective from:

4.913 Materials Science
18.022 Industrial Engineering IIB
18.551 Operations Research

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This course is of six years’ duration and leads to the degree of Bachelor of Science (Engineering). The first four stages are identical with the Mechanical Engineering part-time course.

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The Department of Industrial Engineering offers a full-time and a part-time course in industrial engineering leading to the degree of Bachelor of Engineering and Bachelor of Science (Engineering) respectively. These courses are designed for students with engineering ability whose interests lie in the planning, developing and control of manufacturing or service operations.

The first two years of the full-time course and the first four years of the part-time course provide the student with a sound foundation in the basic science and engineering subjects, and this knowledge is used and extended in the later years in the study of the industrial subjects. Finally, the problems associated with the practical economics of manufacturing operations are studied. These three fields of study provide the student with the training necessary to carry out an industrial job and to examine it critically in the light of economic efficiency.

Traditional engineering courses do not embrace the problems which are characteristic of industrial engineering. These problems include the analysis of a product to ensure satisfactory functioning with regard to methods and sequence of manufacturing operations; the disposition of buildings and of equipment in relation to buildings to permit efficient handling of materials; the avoidance or elimination of bottlenecks; the related problems of quality and cost control, testing and inspection; labour and personnel relations; and, finally, the problem of distribution and sales.

The financial and economic aspects are studied as the problem in manufacturing has not been solved until the final translation of the product into money has been accomplished successfully. While it is not intended to develop an expert in accounting practice or economics, it is intended to produce an engineer with an appreciation of the problems of cost and one who can apply considerations of ultimate economy to all industrial problems. The techniques of operations research may be applied here, where mathematical models of real life situations are constructed and manipulated to yield optimal solutions as guides to management.

All full-time students must obtain industrial training for a period each of forty working days between Years 3 and 4. They
are also strongly advised to obtain further experience during the long vacations between Years 1 and 2 and between Years 2 and 3.

The Work of the Industrial Engineer

The industrial engineer may initially be employed in any of the following major areas of industrial activity:

(a) Industrial Economic Analysis

One of the principal functions of industrial engineering is to analyse a product, project or process from the economic point of view to ensure that an adequate profit can be obtained from it. A general working knowledge of economics and management skill has to be directed towards the making of decisions on how to operate an enterprise most efficiently. The basis for such decisions is furnished largely by the logical application of mathematics and statistics.

(b) Planning and Control of Production

Manufacturing processes and operations must be planned in detail throughout an enterprise to ensure that they proceed smoothly and economically. Functions in this field include the establishment of production standards, the setting of production targets and, finally, control of quality.

The ultimate responsibility of those in charge of the planning and control of production is to ensure that the goods, as originally specified, perform satisfactorily and are produced when required at an optimum cost. Modern electronic computers may be called upon to help achieve this.

(c) Product and Process Design

The design interest of the industrial engineer goes beyond normal mechanical design to develop a product that will not only function effectively but also have a pleasing appearance.

Further, the product has to be adapted to suit existing manufacturing equipment, or a manufacturing process has to be developed by means of which an existing product can be manufactured at the right price and of the right quality. The design work of the industrial engineer incorporates also problems of equipment selection and application for both economy and performance.

Fundamental scientific studies of manufacturing processes such as metal machining, forming and casting are continually being made to improve their efficiency.
(d) **Methods Engineering**

Methods engineering is particularly concerned with the coordination of men, materials and machines, so that an enterprise will run at maximum efficiency. A considerable knowledge of engineering in general, as well as an understanding of human factors and materials science, is necessary for methods engineering work. Time and motion study is part of methods engineering. In many cases the methods engineer works in close co-operation with the design department and executives engaged in industrial economic analysis.

(e) **Operations Research**

This is the attack of modern science on complex problems arising in the direction and management of large systems of men, machines, materials and money in industry, business, government, and defence. The distinctive approach is to develop a scientific model of the system, incorporating measurements of factors such as chance and risk, with which to predict and compare the outcomes of alternative decisions, strategies or controls. The purpose is to help management determine its policy and actions scientifically.

Employment in any of these fields may well lead to a position of responsibility in industrial management if the engineer is so inclined.

366. **INDUSTRIAL ENGINEERING—FULL-TIME COURSE**

Bachelor of Engineering

The first and second years of this course are identical with the first two years of the full-time course in Mechanical Engineering.

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### FACULTY OF ENGINEERING

#### Hours per week

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**Plus one elective from:**

- 4.913 Materials Science
- 5.332 Dynamics of Machines II
- 5.413 Mechanics of Solids II
- 18.431 Design for Production

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### 367. INDUSTRIAL ENGINEERING—PART-TIME COURSE

Bachelor of Science (Engineering)

This course is of six years’ duration and leads to the degree of Bachelor of Science (Engineering).

For outline of the first four stages see the Mechanical Engineering part-time course.

#### STAGE 5

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SCHOOL OF SURVEYING

The School of Surveying offers a four year full-time course and a seven year part-time course both leading to the degree of Bachelor of Surveying. The degree is divided into eight parts of one session each and can also be attained through a combination of part-time and full-time study. Part 7 comprises professional training and a survey camp.

The course is designed to provide the appropriate academic training for a professional surveyor working in any of the many branches of surveying. Since these branches cover a wide range, the course is broad in its scope. First and second years are concerned mainly with the basic sciences, but the basic surveying subjects are also included. In the third year the major surveying subjects appear: geodesy, photogrammetry, astronomy and land studies. With the addition of some elective courses these are continued into fourth year. The graduate can take up cadastral or property surveying, engineering surveying, geodetic surveying, photogrammetry, cartography or hydrographic surveying. The course is also an appropriate first qualification for those wishing to specialize in astronomy, satellite geodesy, geodynamics, computing and systems analysis, town and regional planning, land and resources development or environmental sciences.

The full-time and part-time courses have undergone comprehensive revision. Features of the revisions include: decreased lecture time to allow use of teaching methods which involve more student participation; an extended period of professional experience in the final year; Land Studies, a group of subjects designed to provide a broad understanding of the ecology of land and its development; and a survey camp of six weeks in the final year. Throughout the course the theoretical studies are complemented by practical exercises in the field and the laboratory. Students make use of the most modern measuring instruments and computing equipment. As far as possible each stage of the part-time course is equivalent to one part (one session) of the full-time course. However Stage 7 includes the Survey Camp of Part 7 as well as subjects of Part 8.

The existing part-time course will be phased out over the period 1975-1980. It will be replaced by a sandwich course. Students attending the sandwich course will attend full-time for one session per year, and will be free to undertake full-time employment for the remainder of the year, approximately 35 weeks. The minimum time for completion of the sandwich course will be seven years, as for the present part-time course. It will
also be possible for a student in the sandwich course to attend for both sessions in a year, thus decreasing the length of his course by one year.

The transition arrangements are as follows: part-time students who commenced before 1973 will be unaffected. Those who commenced in 1973 will move into the sandwich system in 1975 and each year from then on will attend full-time for one session of each year. Students commencing the part-time course in 1974 will enter the sandwich system in 1976.

The Bachelor of Surveying degree may be awarded as a Pass degree, Honours Class I, or Honours Class II in two divisions. Honours are awarded in recognition of superior performance throughout the course.

Students wishing to become Registered Surveyors after graduation are advised to gain practical experience under a Registered Surveyor. Some reduction in the period of practical experience required before registration may be granted because of practical experience gained during the University course, provided the New South Wales Surveyors' Board has been informed in the prescribed manner. Details are obtainable from the Registrar, Surveyors' Board, Department of Lands, Bridge Street, Sydney 2000.

The degree of Bachelor of Surveying confers exemption from all written examinations of the Surveyors' Board.

374. SURVEYING—FULL-TIME COURSE
Bachelor of Surveying

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<th>Hours per week</th>
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*Materials Option (Session 2).
†Introduction to Systems and Computers Option (Session 1).
## YEAR 2—SESSION 1 (PART 3)

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<td>29.102</td>
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<td>4</td>
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<tr>
<td>29.151</td>
<td>Survey Computations I</td>
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<td>2½</td>
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<td>31.212</td>
<td>Geometrical Optics</td>
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<td>1½</td>
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**Hours per week**

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*Students are required to attend a two-week survey camp, held in October, which is equivalent to 80 class contact hours.*

†A one-day field tutorial is an essential part of this course.

## YEAR 2—SESSION 1 (PART 4)

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<td>8.711</td>
<td>Engineering for Surveyors</td>
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<td>0</td>
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<td>10.341</td>
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†A one-day field tutorial is an essential part of this course.

## YEAR 3—SESSION 1 (PART 5)

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†A one-day field tutorial is an essential part of this course.

## YEAR 3—SESSION 2 (PART 6)

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<td>29.511</td>
<td>Photogrammetry I</td>
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*Students are required to attend a two-week survey camp, held in October, which is equivalent to 80 class contact hours.*

†A one-day field tutorial is an essential part of this course.
YEAR 4—SESSION 1 (PART 7)

29.193 Professional Training 5 Months
29.194 Survey Camp* (4 Weeks: Field 12 Weeks: Office)

*Students are required to attend a six-week survey camp, equivalent to 40 hours of class contact per week.

YEARY 4—SESSION 2 (PART 8)

29.212 Geodesy II
29.312 Astronomy II
29.512 Photogrammetry II

Management
General Studies Advanced Elective
Two Electives†

Hours per week

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†Electives chosen from:
29.213 Geodesy III
29.313 Astronomy III
29.513 Photogrammetry III
29.615 Land Studies
29.173 Project

374. SURVEYING—PART-TIME COURSE
Bachelor of Surveying

STAGE 1

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STAGE 2

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*Materials Option (Session 2).
†Introduction to Systems and Computers Option (Session 1).
### STAGE 3

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*Students are required to attend a two-week survey camp, held in October, equivalent to 80 class contact hours.

†A one-day field tutorial is an essential part of this course.

### STAGE 5

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†A one-day field tutorial is an essential part of this course.
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Students who have completed Stage 6 in 1973 should enrol in this stage, and should consult the School's Enrolment Officer.

*The academic requirements of the subject, 29.193 Professional Training must be fulfilled normally before a student attempts Stage 7.

†ELECTIVES CHOSEN FROM

- 29.213 Geodesy III
- 29.313 Astronomy III
- 29.513 Photogrammetry III
- 29.613 Land Studies
- 29.173 Project

‡Students are required to attend a six-week survey camp, equivalent to 40 hours of class contact per week. Academic subjects are arranged so as not to clash with the camp.
### PART-TIME AND SANDWICH COURSE

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**Note:**
- **STAGE:** a part-time stage of the existing course.
- **NSTAGE:** A part-time stage of the revised course equivalent in material to one part.
- **PART:** one session of the revised course, which comprises eight parts.

### FULL-TIME COURSE

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**METHOD OF IMPLEMENTATION OF REVISED BACHELOR OF SURVEYING COURSE**
SCHOOL OF MECHANICAL AND INDUSTRIAL ENGINEERING

5.010 Engineering A


Introduction to Engineering Design: Engineering method, problem identification, creative thinking, mathematical modelling, computer aided design, materials and processes, communication of ideas, the place of engineering in society.

and either

(i) Materials: An introductory course on the production, structure, and properties of the main types of engineering materials, with a brief introduction to the process used in shaping and fabricating them.

or


TEXTBOOKS

Svensson, N. L. Introduction to Engineering Design. N.S.W. U.P.
Walshaw, A. C. SI Units in Worked Examples. Longman.

and

For Introduction to Materials I:
B2 THE UNIVERSITY OF NEW SOUTH WALES

REFERENCE BOOKS

Harrisberger, L. Engineersmanship. Wadsworth.
Krick, E. V. Introduction to Engineering and Engineering Design. Wiley.
Meriam, J. L. Statics and Dynamics. Wiley.

and

For Materials:
Gilchrist, J. D. Extraction Metallurgy. Pergamon.
Guy, A. C. Physical Metallurgy for Engineers. Addison-Wesley.
Newton, J. Extractive Metallurgy. Wiley.

and

For Introduction to Materials I:

5.020 Engineering B


and either

(i) Introduction to Systems and Computers: Introduction to computers to follow the computer work in Mathematics I. To develop: (a) familiarity with algorithms; (b) the use of procedure oriented languages; and (c) an introduction to computing equipment.

Systems. To give students an appreciation of some of the concepts used in engineering, to relate the concepts to phenomena within their experience, and to illustrate them by case histories and engineering examples. Quantities. Concepts. Components. Systems.

or

TEXTBOOKS

Walshaw, A. C. *SI Units in Worked Examples*. Longman.

and

For *Introduction to Systems and Computers*:
Karbowiak, A. E. & Huey, R. M. eds. *Information Computers, Machines and Humans*. N.S.W. U.P.

and

For *Introduction to Materials II*:

REFERENCE BOOKS

Meriam, J. L. *Statics and Dynamics*. Wiley.

and

For *Introduction to Materials II*:

5.030 Engineering C

*Engineering Drawing*: Fundamental concepts of descriptive geometry, including reference systems, representation of point, line and plane; fundamental problems of position and measurement. Application of descriptive geometry to certain problems arising in engineering practice. Special emphasis on ability to visualize problems and processes involved in their solution. Instruction in the correct use of drawing instruments and the application of drawing standards. Measurements and dimensioning. Orthographic and isometric projections.

end either*

(i) *Introduction to Systems and Computers*: Introduction to computers to follow the computer work in Mathematics I. To develop: (a) familiarity with algorithms; (b) the use of procedure oriented languages; and (c) an introduction to computing equipment.

 Systems: introduction and concepts: concepts and introduction to systems. To give students an appreciation of some of the concepts used in engineering, to relate the concepts to phenomena within their experience, and to illustrate them by case histories and engineering examples. Quantities. Concepts. Components. Systems.

* Options are specified according to course requirements.
Production Technology: Description and appraisal of the processes classified as: forming from liquid or solid, material removal, material joining. Machines. Analysis of the primary functions of the machine tools and an appraisal of their limitations, Principles of operation of common machine tools and illustrations of their use.


(Chemical Engineering students must take this option) Introduction to Chemical Engineering: Routes to and end uses of industrial chemicals. Likely new industrial chemicals. A survey of several Australian chemical industries for the point of view of their historical and economic importance. Examination of the unit operations involved in the industry and the raw materials, equipment and services used. Environmental aspects of the chemical industry.

TEXTBOOKS
Robertson, R. G. Descriptive Geometry. Pitman.

and

For Introduction to Systems and Computers:

and

For Production Technology:

and

For Mechanics of Solids I:

REFERENCE BOOKS
For Mechanics of Solids I:

5.032 Experimental Engineering II
Prerequisites: 1.051, 5.010, 5.020, 10.001. Co- or prerequisites: 5.311, 6.801, 8.151, 5.611.

A series of lectures, demonstrations and experiments designed to show the theory and techniques of instrumentation in Mechanical Engineering.

TEXTBOOK
5.033 Experimental Engineering III

Prerequisite: 5.032. Co- or prerequisite: 5.071.

A series of experiments and associated lectures to illustrate some common problems in experimental work.

5.043 Industrial Training

An industrial training report must be submitted to the School for assessment after completion of the period of training and must meet School requirements.

5.051 Thesis

Prerequisite: All subjects in Years 1, 2 and 3. Co- or prerequisite: 5.324.

For students in the full-time courses in the School of Mechanical and Industrial Engineering.

5.061 Technical Orientation

Designed to inform students of the art and technique of technical communication, the forms of engineering professional work and the nature of the courses of instruction. A major objective is to bring staff and students together in an atmosphere of discussion and enquiry. May include one or two visits to special establishments.

TEXTBOOK

Cooper, B. M. Writing Technical Reports. Pelican.

REFERENCE BOOKS

Roget's Thesaurus.
The Concise Oxford Dictionary.

5.062 Communications

The mathematical theory of communication, followed by the basic techniques of communication by various media, as required by the professional man. Drawings as a means of communication, pictorial sketches and drawings as illustrations, instructions and visual aids. Basic photographic techniques, the grammar of cine film and of television. Library searching, collation of information, preparation of a seminar and relevant visual aids. Techniques of public speaking and chairmanship. Preparation of a technical paper and its illustrations including graphs, charts and tables of data. The work of an editor. Methods of reproducing information. Copyright and fair copying. Computerized data storage.

Production of a short cine film, videotape and slide sequence; pictorial illustrations. Participation in a seminar and writing of a thesis.

TEXTBOOK


REFERENCE BOOKS

McLuhan, M. Understanding Media. Sphere.
5.071 Engineering Analysis

Prerequisite: 10.022.


TEXTBOOKS
Freund, J. E. Mathematical Statistics. Prentice-Hall.

Statistical Tables.

REFERENCE BOOKS
Derman, C. & Klein, M. Probability and Statistical Inference for Engineers. O.U.P.
Freeman, H. Introduction to Statistical Inferences. Addison-Wesley.
Hald, A. Statistical Theory with Engineering Applications. Wiley.

5.111 Mechanical Engineering Design I

Prerequisites: 5.010, 5.020. Co- or prerequisites: 5.311, 5.611, 8.151, 8.259.

Introductory lectures illustrating the interdependence of design and technology. Mechanical technology. Interpretation of engineering drawing practice. Philosophy and technique of design. Simple creative design assignments. Basic engineering elements.

TEXTBOOKS
Shigley, J. E. Mechanical Engineering Design. 2nd ed. McGraw-Hill.

REFERENCE BOOKS
ISO. Limits and Fits. 4500/1969.
Matousek, R. Engineering Design. Blackie.
5.112 Mechanical Engineering Design II
Prerequisites: 5.111, 5.311, 8.151, 8.259. Co- or prerequisite: 5.331, 5.412, 5.612.

*Design for Production* — Principles of tolerance specification, standard procedures for gauging, dimensioning and surface finish specification. *Design of Machine Elements* — Application of fundamental principles to the design of common machine elements, such as shafts, springs, bearings, power transmission devices.

Text and Reference Books as for 5.111, together with:

**TEXTBOOK**
French, M. J. *Engineering Design, Conceptual Stage*. H.E.B.

**REFERENCE BOOKS**

5.113 Mechanical Engineering Design III
Prerequisites: 5.112, 5.331, 5.412. Co- or prerequisite: 5.612.


**REFERENCE BOOKS**
As for 5.112, together with:
Asimow, M. *Introduction to Design*. Prentice-Hall.
Spotts, M. F. *Mechanical Design Analysis*. Prentice-Hall.
Thoma, J. *Hydraulic Power Transmissions*. Trade & Tech.

5.301 Engineering Mechanics
Prerequisites: 1.051, 5.010. Co- or prerequisite: 10.001.

Kinematics and kinetics of the plane motion of particles. Rectilinear, curvilinear and relative translational motion; work and energy; impulse and momentum.

**TEXTBOOK**
Meriam, J. L. *Dynamics*. Wiley.

**REFERENCE BOOK**

5.303 Mechanical Vibrations
Prerequisites: 5.311, 10.022.


**REFERENCE BOOKS**
Church, A. H. *Mechanical Vibrations*. Wiley.

5.311 **Engineering Mechanics**

**Prerequisites:** 1.051, 5.011. Co- or prerequisite: 10.001.

Kinematics and kinetics of the plane motion of rigid bodies. Absolute motion, relative translational motion and relative angular motion; dynamic equilibrium; work and energy; impulse and momentum.

**TEXTBOOK**
Meriam, J. L. *Dynamics*. Wiley.

**REFERENCE BOOKS**

5.324 **Automatic Control Engineering**

**Prerequisite:** 10.022.


**TEXTBOOK**

**REFERENCE BOOKS**
Atkinson, P. A. T. *Feedback Control Theory for Engineers*. H.E.B.

5.331 **Dynamics of Machines I**

**Prerequisites:** 5.311, 10.022.


*Mechanical Vibrations*: Simple harmonic motion. One degree of freedom systems, free and forced vibrations, transmissibility and motion isolation. Whirling of shafts. Laplace transform methods and transfer functions.

**TEXTBOOKS**
Hirschhorn, J. *Dynamics of Machinery*. Nelson.
FACULTY OF ENGINEERING

REFERENCE BOOKS
Church, A. H. *Mechanical Vibrations*. Wiley.

5.332 Dynamics of Machines II
Prerequisite: 5.331.

*Dynamic Response*: Vibration of multiple degree of freedom systems.
Time domain analysis of single and multiple degree of freedom systems.


*Kinematic Analysis and Synthesis*: Analysis of complex mechanisms and an introduction to the synthesis of planar mechanisms.

TEXTBOOK
Meriam, J. L. *Dynamics*. Wiley.

REFERENCE BOOKS
Burton, R. *Vibrations and Impact*. Addison-Wesley.
Church, A. H. *Mechanical Vibrations*. Wiley.
Holowenko, A. R. *Dynamics of Machinery*. Wiley.

5.412 Mechanics of Solids I
Prerequisites: 8.151, 8.259, 10.022.


Experimental stress analysis, photoelasticity, strain gauges.

TEXTBOOK

REFERENCE BOOKS
5.413 Mechanics of Solids II
Prerequisite: 5.412.


TEXTBOOK

REFERENCE BOOKS
Johnson, W. J. & Mellor, R. S. *Plasticity for Mechanical Engineers.* Van Nostrand.

5.611 Fluid Mechanics/Thermodynamics I
Prerequisites: 1.051, 5.010, 5.020, 10.001. Co- or prerequisites: 5.311, 10.022.


TEXTBOOKS
or
or

5.612 Fluid Mechanics/Thermodynamics II
Prerequisites: 5.311, 5.611, 10.022.


TEXTBOOKS

REFERENCE BOOK

5.613 Fluid Mechanics/Thermodynamics III
Prerequisite: 5.612.

REFERENCE BOOKS

5.661 Mechanical Engineering III
Prerequisites: 1.001, 5.010, 10.211A.

TEXTBOOK

REFERENCE BOOKS
5.711 Thermodynamics

Prerequisites: 1.051, 5.011, 10.001.


TEXTBOOK

5.800 Aircraft Design

Prerequisites: 5.111, 5.311, 8.151, 8.259. Co- or prerequisite: 5.412.

Aircraft types and development, overall design process, wing load, shear force, bending moment and torque distributions. Detailed stressing of lugs, sockets, pins, bearings, fittings, hinges, gears, rivetted, welded and bonded joints. Design and drawing of small fittings such as hinge assembly, spar for tailplane, control stick or landing gear component.

5.801 Aircraft Design

Prerequisites: 5.303, 5.412, 5.800 (full-time only), 5.811, 5.822. Co- or prerequisite: 5.823.


(b) Design of Aircraft Structures — Significance of design requirements: proof and ultimate load, load and safety factors, interpretation of V-g diagram. Stressing cases. Detailed structural and mechanical design of airframe, controls, joints; choice of materials; use of structures data sheets. Practical design of a simple aircraft structural component.

TEXTBOOKS

REFERENCE BOOKS
Australian Department of Civil Aviation. Air Navigation Orders, Sections 100, 101. D.C.A.
Royal Aeronautical Society. Data Sheets. R.Ae.S.
5.811 Aerodynamics I

Prerequisites: 5.311, 5.611, 10.022.

Navier-Stokes equations; elementary boundary layer theory; turbulence, convection, friction and form drag; airfoil characteristics. Vorticity and circulation; Prandtl wing theory, induced drag, spanwise lift distribution, wing characteristics. Static longitudinal stability and control. Manoeuvrability. Standard atmosphere, performance calculations. One-dimensional gas dynamics, isentropic, adiabatic and nozzle flow; rocket equation.

REFERENCE BOOKS
Glauert, H. The Elements of Aerofoil & Airscrew Theory. C.U.P.
Rauscher, M. Introduction to Aeronautical Dynamics. Wiley.

5.812 Aerodynamics II

Prerequisites: 5.811, 5.303.


TEXTBOOKS

REFERENCE BOOKS
Etkin, B. Dynamics of Flight. 2nd ed. Wiley.
Royal Aeronautical Society. Aerodynamics and Performance Data Sheets. R.Ae.S.

5.822 Analysis of Aerospace Structures I

Prerequisites: 5.311, 8.151, 8.259, 10.022. Co- or prerequisites 5.412.

Equilibrium of forces, plane frames, space frames; inertia forces, load factors; beams: two-moment equation, shear and bending-stress distribution in various thin-webbed beams, tapered beams, beams with variable flange areas. Semi-monocoque structures. Deflection of structures: Maxwell's and
Castigliano's theorems, virtual work method. Statically indeterminate structures: beams, trusses, stiff-jointed frames; methods of superposition, energy, moment distribution, elastic centre; shear distribution in two-cell beam. Aircraft materials, physical properties and their measurement. Dimensionless stress-strain data.

**TEXTBOOK**
Peery, D. J. *Aircraft Structures*. McGraw-Hill.

**REFERENCE BOOK**

### 5.823 Analysis of Aerospace Structures II

**Prerequisites:** 5.412, 5.822.


**TEXTBOOK**

**REFERENCE BOOKS**
Hendry, A. W. *Elements of Experimental Stress Analysis*. Pergamon.

### 5.831 Aircraft Propulsion

**Prerequisites:** 5.611, 5.811.


**TEXTBOOK**

**REFERENCE BOOKS**
Zucrow, M. J. *Principles of Jet Propulsion and Gas Turbines*. Wiley, N.Y.
5.911 Naval Architecture
Prerequisite: 5.311. Co- or prerequisite: 5.951 (full-time only).


TEXTBOOK

REFERENCE BOOKS
Robb, A. M. *Theory of Naval Architecture.* Griffin & Co.

5.921 Ship Structures I
Prerequisites: 8.151, 8.259, 10.022. Co- or prerequisite: 5.412.


TEXTBOOK

REFERENCE BOOKS
Lloyd's Register of Shipping. *Rules and Regulations for the Construction and Classification of Steel Ships.* Published Annually.

5.922 Ship Structures II
Prerequisites: 5.071, 5.412, 5.921.


TEXT AND REFERENCE BOOKS
As for 5.921.
5.931 Principles of Ship Design IA
Modern ship types and developments. The overall design process. Ship structural arrangements.

TEXTBOOKS

5.932 Principles of Ship Design IB
Co-requisite: 5.911 (5.931 Full-time only).

REFERENCE BOOKS
Board of Trade. *Instructions as to the Tonnage Measurement of Ships*. H.M.S.O.
Board of Trade. *Measurements of Vessels for the Panama Canal*. H.M.S.O.

5.933 Principles of Ship Design II
Prerequisite: 5.932.

TEXTBOOKS

REFERENCE BOOKS
Arnott, D. *Design and Construction of Steel Merchant Ships*. Soc. of Naval Architects & Marine Engineers.
Board of Trade. *Instructions as to the Survey of Passenger Steamships*. Vols. I & II. H.M.S.O.
Board of Trade. *Instructions as to the Tonnage Measurement of Ships*. H.M.S.O.
Board of Trade. *Measurements of Vessels for the Panama Canal*. H.M.S.O.
Munro-Smith, R. *Merchant Ship Design.* Hutchinson.
Todd, F. H. *Ship Hull Vibration.* Arnold.

### 5.934 Ship Design Project

**Prerequisites:** All subjects in Years 1, 2 and 3. Co- or prerequisites: 5.922, 5.933, 5.941.

Design of a vessel to provide characteristics of hull form, preliminary general arrangement, lines plan, hydrostatic curves, investigation of stability and trim, structural profile and midship section, capacity, freeboard, tonnage, floodable length (if applicable), power requirements, propeller design, investigation of vibration, rudder design and final general arrangement.

**TEXT AND REFERENCE BOOKS**

As for 5.933.

### 5.941 Ship Propulsion and Systems

**Prerequisites:** 5.071, 5.951 (full-time only).


**TEXTBOOK**


**REFERENCE BOOKS**

Robb, A. M. *Theory of Naval Architecture.* Griffin & Co.
Todd, F. H. *Ship Hull Vibration.* Arnold.

### 5.951 Hydrodynamics

**Prerequisites:** 5.311, 5.611, 10.022. Co- or prerequisite: 5.071.

Kinematics of fluids: stream function, velocity potential and application. Elementary treatment of equations of motion and examples in hydrodynamics.

**REFERENCE BOOKS**

Glauert, H. *Aerofoil and Airscrew Theory.* C.U.P.
SCHOOL OF ELECTRICAL ENGINEERING

6.010 Electrical Engineering I
An orientation subject to acquaint students with the various areas and problems of Electrical Engineering. Secondary school physics and maths applied to some aspects of energy conversion and transmission; electronics; logic, number systems, and computers; systems and circuit theory; probability, information and communication. Laboratory exercises and project work in these areas including instrumentation and device characteristics.

TEXT AND REFERENCE BOOKS

To be advised.

6.021 Electrical Engineering II
A unified treatment of electrical engineering:

TEXTBOOK
Del Toro, V. Electrical Engineering Fundamentals. Prentice-Hall.

REFERENCE BOOKS
Smith, R. J. Circuits, Devices and Systems. Wiley.

6.031 Electrical Engineering III

TEXTBOOKS

REFERENCE BOOKS

B. Energy Conversion, Transmission and Utilization: Introduction to energy conversion; electromagnetic machines, transformers. Power transmission, power systems. Utilization of electrical energy; motors and industrial drives; rotating and other high power amplifiers; a.c.-d.c. conversion; rating of plant; tariffs. Earthing, protection and electrical safety.

TEXTBOOKS
Harrison, H. The Principles of DC and AC Machines. Univ. of N.S.W.

REFERENCE BOOKS
Hancock, N. N. Electric Power Utilization. Pitman.


TEXTBOOK

REFERENCE BOOKS

Numerical analysis, errors, interpolation, quadrature linear and non-linear equation, differential equations. Logical organization of computers in functional units.

TEXTBOOKS
REFERENCE BOOKS
Marcus, M. P. *Switching Circuits for Engineers*. Prentice-Hall.


TEXTBOOK

REFERENCE BOOKS

6.041 Fields and Measurements

**Fields:** Applications of field theory not elsewhere treated in the course, selected from: elements of incompressible fluid magnetohydrodynamics; some engineering applications of magnetostatics; analogies between the telegraphist’s equations and a variety of potential theory problems, particularly non-electrical; superconductivity.

TEXTBOOK
To be advised.

REFERENCE BOOKS

**Measurements:** Principles of electrical measurements of moderate precision using direct currents and alternating currents of frequency such that lumped circuit techniques are satisfactory.

TEXTBOOK
Stout, M. B. *Basic Electrical Measurements*. Prentice-Hall.

REFERENCE BOOKS
Harris, F. K. *Electrical Measurements*. Wiley.
6.042 Circuits, Signals and Information Theory

Circuit theory and network synthesis. Signal Analysis and transmission through networks, including theory of noise and stochastic signals. Includes time frequency and mixed domain presentation; transients and other signals; correlation, convolution, etc.; statistical properties of signals; applications. Information Theory of discrete systems including coding and encoding of patterns. Information theory of continuous systems. Mathematical theory of signal detection, including an introduction to decision theory. Signal and system analysis in the light of information theory.

TEXTBOOK

REFERENCE BOOKS

6.043 Electrical Measurements

Measurements section of 6.041 Fields and Measurements.

TEXTBOOK
Stout, M. B. Basic Electrical Measurements. Prentice-Hall.

REFERENCE BOOKS
Harris, F. K. Electrical Measurements. Wiley.

6.044 Electrical Product Design and Reliability

The design and development of reliable, high-quality hardware, from components to systems: product and procurement specifications; factors in choice of system configuration, materials, components, processes; prediction of reliability, availability, system effectiveness; cost-of-ownership optimization; maintainability; thermal design; mechanical design; electromagnetic compatibility; redundancy; ergonomics; design of integrated circuits; interconnection and assembly methods; design reviews; fault-tree analysis; Monte Carlo simulation; worst-case and statistical design; sensitivity analysis and
marginal testing; component screening; product development; life testing, environmental testing, non-destructive testing; quality control, attribute sampling.

TEXTBOOK

REFERENCE BOOKS
*Proceedings of Annual Symposia on Reliability*. IEEE.

Standards, published by Australian Dept. of Defence:

*Standard, pub. by Standards Association of Australia: AS 1199 Sampling by Attributes.*


6.202 Power Systems I

An elective emphasizing parameters and performance of power system components: transmission lines, power system overvoltages, transformers, fault calculation, circuit interruption, protection.

TEXTBOOK

REFERENCE BOOKS

6.203 Power Systems II


A subject emphasizing interconnected system operation, performance and control: synchronous machines, power system analysis, operation and control; power systems in society, distribution systems.

TEXTBOOK
REFERENCE BOOKS

6.212 Machines
General Theory of Machines: power invariant transformations; transient performance; small disturbances and oscillations. Commutator Machines: d.c. and a.c. operation; cross field machines; d.c. machines in control systems; thyristors and thyristor speed control. Induction Machines: polyphase and single phase; unbalanced operation; speed control. Synchronous Machines: cylindrical and salient pole; locus diagrams; transients and faults; motor pull-in, hunting. Machine Design: windings; machine inductances; harmonics.

TEXTBOOK

REFERENCE BOOKS
Draper, A. Electrical Machines. Longmans.
Hancock, N. N. Matrix Analysis of Electrical Machines. Pergamon.
Say, M. G. Design and Performance of A.C. Machines. Pitman.

6.222 High Voltage and High Current Technology
An elective concerned with aspects of design and testing of high power electrical equipment. Topics selected from: fields and materials in high voltage apparatus; effects of high currents; design considerations; testing and measurements; effects of transients, earthing; applications of superconductivity.

TEXTBOOKS
No set text.

REFERENCE BOOKS
Alston, L. L. High Voltage Technology. Harwell/O.U.P.
Carter, G. W. The Electromagnetic Field in its Engineering Aspects. Longman.

6.303 Communication Electronics

TEXTBOOK

REFERENCE BOOKS
Hancock, J. C. *An Introduction to the Principles of Communication Theory*. McGraw-Hill.
Lathi, B. *Communication Systems*. Wiley.

6.313 Wave Radiation and Guidance

A selection from the following topics:


TEXTBOOK
No set text.

REFERENCE BOOKS
6.322 Electronics

Topics in this course include: An introduction to modern filter theory; pulse spectra. Amplifiers: wide band, compensation; direct coupled, operational amplifiers, regulators. Pulse and Digital circuits: semiconductor switches; emitter coupled multivibrators; blocking oscillators. Integrated Circuits: non-linear and linear; use in systems. Power Converters: polyphase rectifiers, controlled rectifiers; high voltage converters, inverters. Semiconductor controls: motor controls, firing circuits, etc. Reliability Engineering: calculation of MTBF; statistical and worst case design; environmental and operating stresses.

TEXTBOOK
No set text.

REFERENCE BOOKS

6.333 Communication Systems


TEXTBOOKS


**REFERENCE BOOKS**


### 6.383 Biomedical Engineering

A course designed to introduce electrical engineering students to the practice of engineering techniques applied to the biological and medical fields. The lectures are supplemented by demonstrations and experimental work, and deal with the basic physiology of cells, tissues, organs and organisms, instrumentation and measurement techniques and modelling of various types of biological systems.

**TEXTBOOK**

No set text.

**REFERENCE BOOKS**

To be advised in class.

### 6.412 Automatic Control

Principles and techniques applicable to the analysis and design of feedback control systems encountered in industrial processes. Frequency transform and state space methods for compensation and stability analysis of single-input single-output linear systems. Extension to include some common nonlinearities. Optimum design including identification of process parameters by both on- and off-line methods.

**TEXTBOOK**

(i) *Fourteen-week Course:*

Stapleton, C. A. *Basic Control—Classic and Modern*. Univ. of N.S.W.

(ii) *Twenty-week Course:*


**REFERENCE BOOKS**


Stapleton, C. A. *Basic Control—Classic and Modern*. Univ. of N.S.W.

6.422 Computer Control


TEXTBOOK
No set text.

REFERENCE BOOKS
To be advised in class.

6.512 Advanced Semiconductor Device Theory

Characteristics and limitations of semiconductor devices as functions of operating point and environment. Devices include high-frequency and power transistors, FETs, thyristors and negative resistance devices.

TEXTBOOK

REFERENCE BOOKS
Gentry, F. et al. Semiconductor Controlled Rectifiers. Prentice-Hall.

6.522 Transistor and Integrated Circuit Design

Development of theory of transistor operation including high injection level effects and three dimensional geometry effects. Kinetics of epigrowth, diffusion and oxide growth as far as these are required to permit the student to specify process cycles. Design of transistor in terms of desired diffusion profiles, oxide growth thicknesses, and the specification of process cycles. Extension of the above to passive components as used in integrated circuits. Design aspects of integrated circuits, covering aspects peculiar to integrated circuits such as distributed parameters, parasitic couplings, correlated component tolerances and variations, special D.C. biasing methods.

TEXTBOOKS

REFERENCE BOOKS
To be advised in class.

6.612 Computer Systems Engineering

Switching circuits, memory systems, control and sequencing methods, digital to analogue and analogue to digital converters, input output and display devices. Data representation in machines, system architecture, multiprocessor systems. Fundamentals of software systems and languages.
Analog and hybrid computing; or advanced machine organization and construction.

TEXTBOOK

or

REFERENCE BOOKS

6.622 Computer Application and Software

Topics chosen from the following: simulation, heuristics, numerical analysis, mathematical optimization, data structures, machine organization, high-level languages, compilers and operating systems.

REFERENCE BOOK

6.801 Electrical Engineering

Presentation of principles of circuit theory and elementary electronics, transformers, electrical machines and instrumentation.

TEXTBOOK
Smith, R. J. Circuits Devices and Systems. 2nd ed. Wiley.

REFERENCE BOOKS
Del Toro, V. Electrical Engineering Fundamentals. Prentice-Hall.
(Earlier version published as Principles of Electrical Engineering. Prentice-Hall.)

6.802 Electrical Engineering

Study of electrical and electronic equipment, with emphasis on analogue and digital techniques applicable to the electrical measurement of non-electrical quantities. Open-loop and closed-loop control systems and some of their applications to instrumentation.

TEXT AND REFERENCE BOOKS
To be advised in class.
6.811  **Electronic Instrumentation for Surveyors**  
Measurement of time, frequency and distance, Propagation of electromagnetic waves affecting the accuracy of tellurometry, time measurement, position finding and navigational aids.

**TEXTBOOK**  
No set text.

**REFERENCE BOOKS**  
To be advised in class.

6.822  **Electronics**  
Conduction in solids; electron emission, vacuum tubes and applications; solid state diodes, transistors, thyristors, unijunction transistors, amplifiers, feedback; block diagrams of complete systems.

**TEXTBOOK**  

6.841  **Electronic Instrumentation**  
Fundamentals of electronic instrumentation, in particular the operation and use of equipment at audio and sub-audio frequencies for the measurement and recording of small signals in the presence of noise. The laboratory course comprises mainly demonstration experiments. Up to four weeks of field instruction will be included in the course.

**TEXT AND REFERENCE BOOKS**  
To be advised in class.

6.911  **Thesis**  
For students in the fourth year of the BE course.

6.931  **Group Thesis**  
For students in the fourth year of the BE course.
SCHOOL OF CIVIL ENGINEERING

8.010 Project
Assignments in civil engineering topics.

8.011 Project

8.012 Architecture
Introduction concerning the influence of structural technique in the past on Architectural styles. Effect of modern structural engineering systems on Architecture. Responsibilities of the structural engineer as a consultant.

8.013 Bridge Engineering
Not compatible with 8.019 Railway Engineering.
Pre-or corequisite: 8.153.
Types of Bridges, Economics, proportions, aesthetics, history. Structural factors in bridge design. Aspects of design of steel, reinforced concrete, prestressed concrete, and composite bridges.

8.014 Computer Applications in Civil Engineering
Pre-or corequisite: 8.153/8.532.
Programming, revision of Fortran, introduction to PL1. Some numerical techniques used in computing. Applications of computers to problems in structural analysis, systems engineering, water engineering, engineering practice and geomechanics.

TEXTBOOKS

REFERENCE BOOKS

8.015 Road Engineering
Pre-or corequisite: 8.631.
Planning, location and design of roads in urban and rural areas. Properties of bitumen and pavement design. Computer applications and the use of aerial photographs in road design.

8.016 Hydraulics
Pre-or corequisite: 8.532.
Use of hydraulic models for rivers and coastal works. Further studies in open channel flow and estuarine hydraulics.

8.017 Transportation Engineering
8.018 Construction and Administration

*Pre-or corequisite: 8.631.*

Advanced construction methods and techniques. Practical construction organization and management.

8.019 Railway Engineering

Not compatible with 8.013 Bridge Engineering.

*Pre-or corequisite: 8.631.*

First half of subject consists of the Session 1 lectures and tutorials of the Bridge Engineering elective, the second half is devoted to railway engineering. It includes railway geometry, track rails, traffic, railway development.

8.020 Hydrology

*Pre-or corequisite: 8.532.*

Flood estimation with particular reference to design and flood forecasting. Outline of current practices and recent developments. Discussion of possible/likely implications of recent developments for the practising engineer.

8.021 Environmental Aspects of Civil Engineering

An interdisciplinary study of the possible aesthetic and ecological effects of Civil Engineering activities on the environment.

**TEXTBOOKS**


**REFERENCE BOOKS**


8.022 Elasticity and Plasticity

*Pre-or corequisite: 8.153.*

Aspects of the elasticity and plasticity theories to solution of stress distribution and stability problems.

8.023 Flow in Porous Media

*Pre-or corequisite: 8.532.*

Analysis of flow in saturated and unsaturated porous media systems. Application of analytical results to relevant problems in Civil Engineering practice.

8.024 Foundation Engineering

*Pre-or corequisite: 8.253.*

In depth study of selected topics in foundation.

8.025 Structural Concrete

*Pre-or corequisite: 8.253.*

Study of the application of concrete technology to engineering practice.

8.026 Systems Methods in Civil Engineering

Theory and applications of operations research and systems analysis in decision making, optimization, networks, stochastic processes, or system modelling.
8.027 Timber, Plastics and Composite Engineering
Pre-or corequisite: 8.253.
Properties and applications of timber and developing materials.

8.051 Design Projects I
Final year design projects in the fields of structural engineering and civil engineering materials

8.052 Design Projects II
Final year design projects in the fields of hydraulics, water resources, planning and management.

8.111 Civil Engineering


TEXTBOOK

REFERENCE BOOKS

8.112 Materials and Structures


Properties of Materials — Mechanical behaviour of materials; response to static and dynamic loads. Laboratory techniques. Analysis and presentation of experimental results. Use of material properties in analysis and design.
REFERENCE BOOKS

8.151 Mechanics of Solids


TEXTBOOK

REFERENCE BOOKS

8.152 Structures


(c) **Analysis**: Moment distribution, including sideway with several degrees of freedom. Frames with members which are not mutually orthogonal. Stability, concepts of bifurcation and snap-through, stability of simple mechanisms with linear material response. Discussion of the effects of plastic material response. Virtual work: virtual forces and virtual displacements. Application to trusses. Displacements of static-
ally determinate pin-jointed trusses, matrix methods. Concept of
generalized forces, application to truss deflections. Connectivity matrix.
Flexibility analysis of simple statically indeterminate trusses. Calculation
of displacements in simple structures by the method of volume
integrals. Brief treatment of influence lines for statically determinate
and indeterminate structures.

**TEXTBOOKS**

Structures. Wiley.


*Steel Design Course*. Part 1—Design of Beams & Columns. Part 2—
Tension Members & Plastic Design. Australian Institute of Steel Con-
struction, North Sydney, 1971.

*AS 1250—1972. SAA Steel Structures Code*. (Metric Units)

*CA2—1973. SAA Concrete Structures Code*. (Imperial Units)

Manual Welding.*


(Metric Units)


*ASCA 45—1970. SAA High Strength Bolting Code.*

**REFERENCE BOOKS**

Bresler, B., Lin, T. Y. & Scalzi, J. B. *Design of Steel Structures*. 2nd ed.

Ferguson, P. M. *Reinforced Concrete Fundamentals*. Wiley.

8.153 Structures

*Analysis*. Introduction to three-dimensional theory of elasticity. Stress,
strain, Hooke's Law, strain compatibility. Three-dimensional principle of
virtual displacements. Forces and displacements in statically determinate and
indeterminate pinjointed structures; matrix formulation. Forces and displace-
ments in rigid jointed structures; matrix formulation. Introduction to elastic
stability dynamic behaviour of structures.

*Design of Structures*. Design of continuous structures in reinforced con-
crete. Introduction to ultimate strength design in reinforced concrete.
Elements of prestressed concrete. Pre-tensioning and post-tensioning. Design
by permissible stress. Checking ultimate-strength of members. Applications
limited to statically determinate structures.

Extension of earlier work on steel design to include continuous structures;
design of a single storey continuous gable-framed structure using permissible
stress method, with emphasis on design of welded joints for continuity. Intro-
duction to plastic method of design of steel structures. Load factor. Principle
of redistribution of moments. Simple application such as design of continuous
beams.

Timber design. Emphasis on special properties of timber affecting design of
timber structures.

Earth retaining structures.

**TEXTBOOK**

8.154 Structures


TEXTBOOK

REFERENCE BOOK


REFERENCE BOOKS
As for 8.153.

8.161 Engineering Mathematics


TEXTBOOKS

REFERENCE BOOKS
8.171 Mechanics of Solids I

This subject forms part of 5.030 Engineering C.


TEXTBOOK

8.172 Mechanics of Solids II


TEXTBOOK

REFERENCE BOOKS

8.173 Structural Analysis I


TEXTBOOK

8.174 Structural Analysis II


8.181 Structural Design I

Introduction to structural design. Design loads, factors of safety, load factors, codes of practice.
TEXTBOOK

REFERENCE BOOKS

8.182 Structural Design II

Design of reinforced concrete structures by ultimate strength and working stress design methods. Simple and continuous beams and slabs; columns; footings; retaining walls; two-way slabs and flat slabs.


8.191 Structural Engineering

(b) Timber design. Emphasis on special properties of timber affecting the design of timber structures. Introduction to plastic design of steel structures. Application to continuous beams and portal frames.

8.241 Geomechanics


TEXTBOOKS

REFERENCE BOOKS
8.250 Properties of Materials


TEXTBOOK

REFERENCE BOOKS
Mann, J. Y. Fatigue of Materials. M.U.P.

8.252 Civil Engineering Materials


TEXTBOOKS

REFERENCE BOOKS
Ackroyd, T. N. W. Concrete Properties and Manufacture.
BSI Specification (current editions) B.S12 Portland Cement (Ordinary and Rapid Hardening); B.S812 Sample and Testing of Mineral Aggregates, Sands and Fillers; B.S882 Concrete Aggregates from Mineral Sources; B.S1881 Methods of Testing Concrete. Br. Stand. Inst. London.
Design, Control and Characteristics of Concrete. Cement & Concrete Association of Australia.
8.253 Civil Engineering Materials


Laboratory. Examination of concrete properties and concrete-making materials; proportioning methods; analysis, manufacture and testing of reinforced concrete members.

REFERENCE BOOKS

A.C.I. Manual of Concrete Practice. 3 vols. 1968.
Murdock, L. J., & Blackledge, G. F. Concrete Materials and Practice. 4th ed. Arnold.
S.A.A. Specifications (current editions) A64 Ready Mixed Concrete;
A77 Aggregates for Concrete; A100-A111 Methods of Testing Portland Cement Concrete. Stand. Assoc. of Aust.

**Part II — Soil Engineering**

Foundation engineering; bearing capacity theory; allowable settlement, shallow and deep foundations; rafts; pile groups; site investigation as applicable to foundation design. Earth and rockfill dams, types, materials, stability analysis and design, construction problems. True shear strength of saturated soils, modern failure theories, yield criteria and yield surface theories applied to soil behaviour. Non-saturation; mechanics of unsaturated flow, soil suction, shear strength of unsaturated soils, drainage process.

*Laboratory*. Consolidation and shear strength testing of cohesive and granular soils. Evaluation of simple earth pressure, foundation engineering and earth dam theory.

**TEXTBOOKS**


**REFERENCE BOOKS**

Terzaghi, K. *Theoretical Soil Mechanics*. Wiley.

**8.254 Civil Engineering Materials**


*Laboratory*. Examination of concrete and concrete materials; aggregate testing, mix design, mechanical properties of concrete.

*Part II — Soil Engineering*

Foundation engineering; bearing capacity theory; allowable settlement, shallow and deep foundations; rafts; pile groups; site investigation as applicable to foundation design. Earth and rockfill dams, types, materials, stability analysis and design, construction problems.

*Laboratory*. Consolidation and shear strength testing of cohesive and granular soils. Evaluation of simple earth pressure, foundation engineering and earth dam theory.

**TEXT AND REFERENCE BOOKS**

As for 8.253.

**8.259 Properties of Materials**

8.250—Properties of Materials, *plus* the structure and properties of binary alloys; control of structure and properties, commercial alloys, materials selection.
8.271 Introduction to Materials

(This subject forms part of 5.010 Engineering A and 5.020 Engineering B.)


TEXTBOOKS

8.272 Civil Engineering Materials I


TEXTBOOK

8.273 Civil Engineering Materials II

8.274 Civil Engineering Materials III


8.280 Civil Engineering Materials


Laboratory: Approximately 51 hours of laboratory/tutorial studies with emphasis on the study of structure and the relationship of structure to mechanical properties of a range of materials.

TEXTBOOKS


REFERENCE BOOKS

Mann J. Y. Fatigue of Materials. M.U.P.

8.301 Systems Engineering


TEXTBOOK

REFERENCE BOOKS


8.351—Engineering Mathematics

As for 8.161 Engineering Mathematics.

8.510 Hydraulics

Fluid properties; hydrostatics, stability of floating bodies; fluid acceleration; flow patterns, continuity; Euler, Bernoulli, energy and momentum equations. Laboratory experiments.

TEXTBOOKS

Giles, R. V. *Fluid Mechanics and Hydraulics.* Schaum's Outline Series. Schaum, N.Y.

REFERENCE BOOK


8.531 Water Engineering

*Hydrology* — The hydrologic cycle, the runoff cycle, water balance, energy balance, circulation of atmosphere, dynamic cooling, condensation and precipitation, probability analysis of precipitation and floods, infiltration, soil water and groundwater hydrology, streamgaging, hydrograph analysis, flood estimation, yield and storage determination, evaporation, evapotranspiration.


*Public Health Engineering* — Elements of organic chemistry, elements of biology, process of decomposition and decay, colloids and colloidal solutions, adsorption, ionic theory and dissociation, chemical and biochemical measurement of degree of pollution, rate of biochemical oxidation, principles of water treatment, principles of sewage treatment.

TEXTBOOKS

Giles, R. V. *Fluid Mechanics and Hydraulics.* Schaum's Outline Series. Schaum, N.Y.

REFERENCE BOOKS


Henderson, F. M. *Open Channel Flow*. Macmillan.


8.532 Water Engineering


Part II — Applied Water Engineering: water resources problems and solutions, the systems approach. General principles of regulation and utilisation of water; reservoirs and storage, distribution and transmission, treatment, collection and disposal. Examples of applied water engineering selected from the following fields: water supply, sewerage, irrigation, land drainage, urban drainage, flood control, hydro-electric generation, multi-purpose projects, river channel control, coastal engineering.

TEXTBOOK

REFERENCE BOOKS
Henderson, F. M. *Open Channel Flow*. Macmillan.

Robertson, J. M. *Hydrodynamics*. Prentice-Hall.
8.571 Hydraulics I
Fluid properties: hydrostatics, stability of floating bodies; fluid acceleration; flow patterns, continuity; Euler, Bernoulli, energy and momentum equations.

8.572 Hydraulics II
Dimensional analysis, hydraulic model theory, scale effect. Fluid turbulence, velocity distribution, surface resistance in flow past plane boundaries and in pipes and channels. Pipe flow, pipe networks, steady flow in uniform channels.

8.573 Hydraulics III

8.581 Water Resources I

8.582 Water Resources II
The hydrologic cycle, water and energy balances, climatology, atmospheric moisture, precipitation, runoff cycle, infiltration, stream gauging, hydrograph analysis, storm runoff and loss rates, design storms, flood estimation, yield and storage determination, groundwater.

8.583 Water Resources III
Hydraulics of groundwater systems, application to regional problems. Water resources planning, systems approach, applied aspects of water engineering.

8.621 Engineering Construction
Construction plant and equipment; compressed air services, drilling, earth-moving, tunnelling and blasting, hoisting and conveying, pile-driving, etc.; aggregate and concrete plant. Principles of construction administration; evolution of management; objectives of management; principles of organisation; motivation and communication; project management. The role of government and local government authorities. An introduction to construction planning and scheduling; cost control and cost accounting; tenders and the preparation of estimates; scheduling of operations; linear programming, critical path and PERT techniques; contracts and specifications.

TEXTBOOKS
REFERENCE BOOKS
Antill, J. M. Civil Engineering Management. A. & R.

8.631 Civil Engineering


Part II: Transport Planning and Operations. Definition of a land use/transport system — land use potential, traffic generation, intensity of traffic generation, transport system capacity. Stability and steady state performance — output, specific output. Land use, generation, desire line and assignment models. The transport planning process — systems versus programming approach. Evaluation of operational performance of transport systems — travel time and flow relationships (the queueing model), level of service, network characteristics, transfer terminals. Economic evaluation of transport schemes and plans — criteria, benefits, costs, time streams, discounting, present worth, rates of return, benefit/cost and cost/effectiveness ratios.

Part III: Road Engineering. Route analysis and road location in the rural and urban environment including the location of bridges. Road geometrics and design, its influence on the behaviour of drivers. Landscape aspects of road design. Some examples of road design policies and their application. Types of roads and expressways and their applications. Advantages and disadvantages. Types of intersections and interchanges, and some problems in their design. Pavement requirements, thickness design, pavement materials, gravels, stabilisation, cement and bituminous concrete. Function of wearing courses. Road drainage requirements and examples of design, road construction methods and plant. Uses of electronic computation in Highway Engineering.


8.632 Civil Engineering

Comprises Parts I and III, being respectively Regional and Urban Planning and Road Engineering of 8.631 Civil Engineering.
8.671 Engineering Construction

Role of the construction engineer; site services and site works; plant and equipment; clearing, earthmoving, drilling, blasting, quarrying, tunneling, pile-driving, hoisting, conveying; setting out, quantity surveys; scheduling of operations, estimating, costing, practical examples of construction of dams, bridges, tunnels, buildings and roadworks.

8.672 Planning and Management I

Elements of engineering economics, project costs and benefits; interest, present worth, annual cost, rates of return, economic comparisons, benefit-cost analysis, project evaluation.

Principles of management; management techniques, linear programming, critical path methods, inventory management. Project objectives, feasibility studies, investigation, design alternatives, environmental impact assessment; estimation of construction costs.

8.673 Planning and Management II

Construction contracts; drawings, specification and quantities; project organization, financial control and costing, construction management; personnel management, industrial relations; professional responsibilities. Technical communication. Engineering planning aspects of regional and urban developmental works, transportation and traffic and highway engineering.

8.711 Engineering for Surveyors I


TEXTBOOK

REFERENCE BOOKS
Stormwater Standards Committee. Australian Rainfall and Runoff. Inst. of Engineers, Australia.

8.712 Engineering for Surveyors II

Municipal Engineering. Soil Mechanics: Soil forming processes; pedological classification; engineering classification of soils; pavement design based on engineering classification; effective stress concept for saturated
and unsaturated soils, shear strength, flow of water through soils; consolidation; slope stability and earth pressures. Public Utilities: Relationship between urban development and each of water supply, wastewater and stormwater drainage, transport.

TEXTBOOKS

REFERENCE BOOKS
DEPARTMENT OF INDUSTRIAL ENGINEERING

18.011 Industrial Engineering IA

Prerequisite: 10.022. Co- or prerequisites: 5.071, 5.111.


TEXTBOOK

REFERENCE BOOKS

18.012 Industrial Engineering IIA

Prerequisites: 5.112, 18.011.

Technology of Manufacturing: Basic plasticity theory. Theories of deformation processes, extrusion, tube making, forming and deep drawing. Design for Production: Interchangeable manufacture; standardisation; design communication; pre-production planning; introduction to design analysis. Metrology: Principles of measurement and measuring systems; basic design concepts of mechanical, optical, pneumatic and electrical systems; linear and angular measurements; straightness and flatness; screw thread measurements; machine tool testing.

TEXTBOOKS
BS 4500-1969. ISO Limits & Fits.
18.021 Industrial Engineering IB

**Prerequisite: 10.022. Co- or prerequisite: 5.071.**

Engineering Economy: Price-output decisions under various competitive conditions. The time-value of money, nett present worth and DCF rate of return, and their applications in the selection and replacement of processes and equipment. Construction and optimization of particular models, e.g. replacement, capital rationing. Measures of profitability. Industrial Applications of Probability — Tutorial problems from the fields of sampling inspection, quality control, control charts — simple economic models, e.g. newsboy problem, length of steel bars.

TEXTBOOKS

REFERENCE BOOKS

18.022 Industrial Engineering IIB

**Prerequisites: 5.071, 18.021.**

Design of manufacturing facilities — Product and objectives, equipment selection. Charting and systematic improvement of methods, workplace layout, the factory environment.

The use of human and physical resources — Motion and time study, financial incentives, applications to machine controlled processes, work sampling and data collection, predetermined motion-time systems.

Production Control — The detailed mechanics of control of jobbing production, and its extension to batch and continuous production. Manufacturing organisations, functions, inter-relationships and information flow. Application of data processing and control systems. Introduction to inventory control. Analysis of some engineering planning decisions. Sampling techniques in quality control. Control charts. Further quantitative work.

TEXTBOOKS

REFERENCE BOOKS

18.121 Production Management
Prerequisites: 10.031, 10.331.


*The Use of Human and Physical Resources*—Methods engineering, ergonomics, motion and time study, financial incentives, applications to machine controlled processes, work sampling and data collection. Plant location, factory layout.

*Production and Quality Control*—Control of jobbing, repetitive batch and continuous production. Manufacturing organizations, functions, interrelationships and information flow. Sampling techniques in quality control, control charts. Introduction to inventory control. Analysis of some engineering planning decisions.

*Introduction to Operations Research*—The formation and optimization of mathematical models of industrial processes. The development of decision rules. Some techniques of operational research and applications, e.g. mathematical programming, queueing theory, inventory models, simulation.

TEXTBOOKS

REFERENCE BOOKS

18.431 Design for Production
Prerequisites: 18.011, 5.112. Co- or prerequisite: 18.012.

Interchangeable manufacture; standardisation; unit and selective assembly; preferred sizes. Presentation and interpretation of geometric tolerances: grouping; analysis of non-linear loop equations, economic allocation of tolerances; application of probability theory to tolerance allocation. Gauge design: effect of gauge tolerances on interchangeability.

TEXTBOOKS
18.551 Operations Research

Prerequisites: Either 5.071 and 18.021 or 10.031, 10.331 and 18.121.

The formulating and optimisation of mathematical models. The development of decision rules. Some techniques of operations research such as mathematical programming, queueing theory, inventory models, replacement and reliability models, and simulation will be introduced. These techniques will be applied to situations drawn from industrial fields, e.g. production planning and inventory control. Practical problems of data collection, problem formulation and analysis will be included.

TEXTBOOK

REFERENCE BOOKS
29.081 Thesis

29.101 Surveying I

Introduction to surveying instruments. The theory and use of optical square, clinometer, cloth tape, steel tape, plane table, level and theodolite. Theory and practice of data reduction.


TEXTBOOKS

Seven Figure Mathematical Tables. Full ed. Chambers, 1958.


REFERENCE BOOKS


29.102 Surveying II

Control Surveys: plane triangulation with ten second theodolites, precise traversing, contour surveys including optical distance measurement, calculation of areas, volumes, calculating and setting out curves.

Barometrical and trigonometrical levelling. Hydrographic surveying. Introduction to use of one second theodolites.

TEXTBOOKS


REFERENCE BOOKS


29.103 Surveying III


TEXTBOOKS

REFERENCE BOOKS

29.151 Survey Computations I


TEXTBOOKS
*Seven Figure Mathematical Tables*. Chambers, 1958.
*Tables of Natural Sines, Tangents, etc. to every Ten Seconds*. D.M.R., 1949, or

REFERENCE BOOK

29.152 Survey Computations II

Revision of basic error theory. Adjustment by least squares (a) parametric method; (b) method of correlatives. Solution of Normal Equations by elimination methods (a) Gauss-Doolittle; (b) Cholesky. Error ellipse calculations.
TEXTBOOKS
As for 29.151 Survey Computations I.

REFERENCE BOOKS
Shortrede, R. Logarithms of Sines and Tangents for Every Second. Layton.
Vega, G. Seven Figure Logarithmic Tables. Hafner Pub. Co., N.Y.

29.181 Cartography
Cartographic drawing, plotting and plan drawing. Applications in boundary and engineering surveys.

TEXTBOOK

29.192 Survey Camp
A two-week field camp, including the preparation of a report and plans.

29.193 Professional Training
A five-month period of practical experience including the submission of a report.

29.194 Survey Camp
A four-week field camp followed by two weeks on campus for completion of computations.

29.211 Geodesy I
Historical development of geodesy. Differential geometry, the spheroid; curves on the spheroid, Legendres Theorem, computation of geographical coordinates. Geodetic surveying (types of horizontal control surveys). Procedures for angular observation. Surveyors projections. Applications to integrated surveys.

TEXTBOOK
Mather, R. S. The Theory and Geodetic Use of some Common Projections. School of Surveying, U.N.S.W.

REFERENCE BOOKS
Geodetic Triangulation. USC & GS. Special Publication.

29.212 Geodesy II
A. Adjustment of control surveys using the condition and parametric methods of least square adjustment for measured angular and linear quantities. Variance/covariance matrix; variance factor; weight coefficient matrix. Elementary statistical testing of observations and adjusted values. High precision levelling.
B. Relationship between geoid and ellipsoid; astro geodetic levelling; elliptoidal elevations; mean sea level and the geoid. Methods for establishing a world geodetic system. Gravity and its use in geodesy.

REFERENCE BOOKS

Mather, R. S. The Theory and Geodetic Use of some Common Projections. School of Surveying, U.N.S.W.

29.213 Geodesy III


REFERENCE BOOKS

As for 29.212 Geodesy II.

29.311 Astronomy I


TEXTBOOKS


or

Star Almanac for Land Surveyors for Current Year. H.M.S.O.

29.312 Astronomy II

Azimuth by circum-elongation, circum-polar and sun observations. Optimum position of observation, balancing of observations. Position line methods.

TEXTBOOK

Star Almanac for Land Surveyors for Current Year. H.M.S.O.

REFERENCE BOOKS

29.313 Astronomy III

A study of topics selected from the following: Corrections to observations and calculations; star coordinates; meridian methods; equal altitude methods; precise timing.

TEXT AND REFERENCE BOOKS
As for 29.312 Astronomy II.

29.411 Surveying for Architects


REFERENCE BOOKS

29.431 Surveying and Cartography


REFERENCE BOOKS
As for 29.411 Surveying for Architects.

29.441 Engineering Surveying


*Part B.* Levelling (other methods). Linear measurement (electronic). Applications of survey techniques: control surveys, provision of information for design, setting out engineering works, etc. Outline of photogrammetry.

TEXTBOOKS
*Seven Figure Mathematical Tables*. Chambers, 1958.

REFERENCE BOOKS

**29.491 Survey Camp**
A one-week field camp for students studying 29.441 Engineering Surveying.

**29.511 Photogrammetry I**
Stereoscopic vision. Geometry of single air photograph and stereoscopic pairs. Fundamental mathematical relationships. Radial triangulation. Inner, relative and absolute orientation with respect to direct optical projection. Cameras, physical properties of photographs.

**TEXTBOOK**

**REFERENCE BOOKS**

**29.512 Photogrammetry II**

**TEXTBOOK**

**REFERENCE BOOKS**

**29.513 Photogrammetry III**

**TEXT AND REFERENCE BOOKS**
As for 29.512 Photogrammetry II.

**29.611 Land Studies I**
of land classification with special reference to work in Australia. Classification for land potential. Laboratory classes will support the study of physical factors determining land character, and will also illustrate the use of air-photos in the identification and mapping of land types. There will be a one-day field tutorial in the Sydney region.

B. Economics: Fundamentals of economic theory; national income and its distribution; employment, housing, economics of location. Financial planning and budgeting; cost benefit analysis of planning; compensation and betterment; investment criteria. Economics of transition from rural to urban land use.

TEXTBOOKS
CSIRO. *The Australian Environment*. M.U.P.

REFERENCE BOOKS
Griffiths, J. F. *Applied Climatology*. O.U.P.

29.612 Land Studies II


B. Land Utilization: A broad study of biological, political, social and economic factors establishing a concept of ecological relationships and the place of man therein. Primary industries and urbanization. Conservation of resources.

C. Introducing Property Law: The legal system, forms and sources of law; land tenure and property law.

TEXTBOOKS

or


29.613 Land Studies III

*Land Titles and Survey Law*: General study of land title systems; land tenure and title; the law of boundaries and of easements and other estates. The N.S.W. Real Property Act and other acts regulating the conduct of surveys and recording; field records, plans, title searches; surveyor's powers and duties. Cadastral Survey Systems. The N.S.W. Integrated Survey System.

**TEXTBOOK**


**REFERENCE BOOKS**


29.614 Land Studies Project

A project involving the preliminary survey, analysis and all aspects of design for a development.

29.615 Land Studies

Advanced studies in residential and industrial subdivisional design and presentation. Conflict of demand for land use; environmental control. Integrated survey applications. Data banks.

**Management**

Introduction to management and principles. Administrative and contract law; specifications and contracts; accounting principles and taxation; business and office management; personnel relationships, labour awards, public relations, professional practice.
NON-ENGINEERING SUBJECTS

(For General Studies subjects see the Department of General Studies Handbook.)

1.001 Physics I

Aims and nature of physics and the study of motion of particles under the influence of mechanical, electrical, magnetic and gravitational forces. Concepts of force, inertia, mass, energy, momentum, charge, potential, fields. Application of the conservation principles to solution of problems involving charge, energy and momentum. Electrical circuit theory, application of Kirchoff's Laws to AC and DC circuits. Uniform circular motion, Kepler's Laws and Rotational mechanics.

The application of wave and particle theories in physics. A review of the atomic theory of matter and the structure and properties of atomic nuclei. A molecular approach to energy transfer, kinetic theory, gas laws and calorimetry. The wave theories of physics, transfer of energy by waves, properties of waves. Application of wave theories to optical and acoustical phenomena such as interference, diffraction and polarization. Interaction of radiation with matter, photoelectric effect, Compton effect, spectroscopy. Resolution of the wave—particle paradox by means of wave mechanics and the uncertainty of principle.

TEXTBOOK
Bueche, F. *Introduction to Physics for Scientists and Engineers*. McGraw-Hill.

REFERENCE BOOKS

1.011 Higher Physics I


TEXTBOOKS


REFERENCE BOOKS


PHYSICS LEVEL II UNITS

The units are at two levels, an ordinary level, prefix 1.112, and a higher level, prefix 1.122:

1.112A Electromagnetism

Electrostatics in vacuum and in dielectrics. Magnetostatics in vacuum and in magnetic materials. Maxwell's equations and simple applications.

TEXTBOOK


1.112B Modern Physics

Special theory of relativity, Lorentz transformation, relativistic mass, momentum and energy; quantum theory, photoelectric effect, Compton effect; wave-particle duality, Schrödinger wave equation, infinitely deep square well, H atom; spectra, magnetic moment, exclusion principle; Rutherford scattering, nuclear properties, mass spectrograph, binding energy, radioactivity, alpha, beta and gamma radiation, nuclear reactions.

TEXTBOOK


1.112C Waves in Continuous Media and Thermodynamics


TEXTBOOKS

**Continuum Mechanics**

**Thermodynamics**

**1.122A Electromagnetism**


**TEXTBOOK**

**1.122B Quantum Physics**


**TEXTBOOK**

**1.122C Thermodynamics and Mechanics**


**TEXTBOOKS**

**2.001 Chemistry I**

Classification of matter and theories of the structure of matter. Atomic structure, the periodic table and chemical behaviour. Chemical bonds and molecular structure. Equilibrium and change in chemical systems. The structure, nomenclature and properties of organic compounds. Reactions of organic compounds.
TEXTBOOKS


REFERENCE BOOKS


2.021 Chemistry IE

A terminating subject for students in the Aeronautical, Civil, Industrial and Mechanical Engineering, Naval Architecture, and Applied Geography courses.

Classification of matter and theories of the structure of matter. Atomic structure, the periodic table and chemical behaviour. Chemical bonding and the nature and properties of chemical substances. Equilibrium and change in chemical systems.

TEXTBOOKS


Chemistry IE. Laboratory Manual. Univ. of N.S.W., 1974.


REFERENCE BOOK


4.913 Materials Science

The structure and properties of crystalline substances. Crystal structures, crystal planes and directions. Examination of crystals by X-ray, electron and neutron diffraction techniques. The properties of crystalline solids. Defect structure of crystals. Influence of defects on the behaviour of crystals. The
properties of metals and metallic alloys in terms of modern theories. The
development of alloys for specific engineering applications. The elastic and
plastic properties of solids. The mechanisms of fracture in crystalline solids.

Polymer materials. The structure and properties of polymers. Mechanisms
for the modification of properties.

Ceramic materials. The structure and properties of ceramics. Similarities
and differences with other crystalline solids. Ceramic-metal composites.

4.921 Materials Science

The atomic structure of metals. The crystalline nature of metals and
its significance. The solidification of metals. Plastic deformation of cry-
stalline materials and its effect on properties. Phase equilibria in metallic
alloys. The heat treatment of some ferrous and non-ferrous alloys. Cor-
rosion. The electron theory of metals. Conductors, semi-conductors and
insulators. Magnetic materials—structure and properties.

TEXTBOOK

REFERENCE BOOKS
Azaroff, L. V. & Brophy, J. J. Electronic Processes in Materials. McGraw-
Hill.
Pfann, W G. Zone Melting. Wiley.

4.931 Metallurgy

For students of Civil Engineering. Part of 8.280 Civil Engineering
Materials I.

The atomic structure of metals. The grain structure of metals; origin;
effects of manufacturing processes. Structure of alloys—theory. Structure,
properties and heat treatment of commercially important alloys. The
selection and properties of structural steels. Corrosion.

TEXTBOOKS

4.941 Metallurgy for Engineers

The structure and properties of solids, with special reference to metals
and metallic alloys which are of use to the engineer.

TEXTBOOKS
or
10.001 Mathematics I

Calculus, analysis, analytic geometry, linear algebra, an introduction to abstract algebra, elementary computing.

TEXTBOOKS

Blatt, J. M. *Introduction to Fortran IV Programming*. Prentice-Hall.

REFERENCE BOOKS

Kaplan, W., & Lewis, D. J. *Calculus and Linear Algebra*. Vols. 1 & 2. Wiley.
Lange, I. H. *Elementary Linear Algebra*. Wiley.
Pedoe, D. *A Geometric Introduction to Linear Algebra*. Wiley.
Tetra, B. C. *Basic Linear Algebra*. Harper & Row.
Zelinsky, D. *A First Course in Linear Algebra*. Academic.

PRELIMINARY READING LIST

Courant, R. & Robbins, H. *What is Mathematics?* O.U.P.
Polya, G. *How to Solve It*. Doubleday Anchor.

10.011 Higher Mathematics I

Calculus, analytic geometry, linear algebra, an introduction to abstract algebra, elementary computing.

TEXTBOOKS

Blatt, J. M. *Introduction to Fortran IV Programming*. Prentice-Hall.
Fagg, S. V. *Differential Equations*. E.U.P.
Spivak, M. *Calculus*. Benjamin.

REFERENCE BOOKS

As for 10.001 Mathematics I plus:
Abraham, R. *Linear and Multilinear Algebra*. Benjamin.
Burkhill, J. C. *A First Course in Mathematical Analysis*. C.U.P.
Crowell, R. H., & Williamson, R. E. *Calculus of Vector Functions*. Prentice-Hall.
Lang, S. *Linear Algebra*. Addison-Wesley.
Spivak, M. *Calculus on Manifolds*. Benjamin.
PRELIMINARY READING LIST

As for 10.001 Mathematics I plus:
Reid, C. From Zero to Infinity. Routledge & Kegan Paul.

10.021 Mathematics IT

Calculus, analysis, analytic geometry, algebra, probability theory, elementary computing.

TEXTBOOKS
Blatt, J. M. Introduction to Fortran IV Programming. Prentice-Hall.
Greening, M. G. First Year General Mathematics. N.S.W.U.P.

REFERENCE BOOKS

10.022 Engineering Mathematics II

Differential equations, use of Laplace transforms, solutions by series; partial differential equations and their solution for selected physical problems, use of Fourier series; introduction to numerical methods; matrices and their application to theory of linear equations, eigenvalues and their numerical evaluation; vector algebra and solid geometry; multiple integrals; introduction to vector field theory.

TEXTBOOK

REFERENCE BOOKS
Hildebrand, F. B. Advanced Calculus for Applications. Prentice-Hall.
10.033 Electrical Engineering Mathematics III


TEXTBOOK
Groden, C. M., McKeegan, D. J. & Kirkpatrick, C. B. Mathematics for Electrical Engineers. Notes issued by the School of Mathematics.

REFERENCE BOOKS
Hague, B. An Introduction to Vector Analysis. Methuen.
Tranter, C. J. Integral Transforms. Methuen.

10.111A Pure Mathematics II—Linear Algebra

Vector Spaces: inner products, linear operators, spectral theory, quadratic forms. Linear Programming: convex sets and polyhedra, feasible solutions, optimality, duality.

TEXTBOOKS
SESSION 1
SESSION 2

REFERENCE BOOKS
Lang, S. Linear Algebra. Addison-Wesley.

10.111B Pure Mathematics II—Analysis

Complex variables: analytic functions, elementary functions, Taylor and Laurent series, integrals, Cauchy’s theorem, residues, evaluation of certain real integrals, maximum modulus principles. Linear differential equations of the second order: equations with constant coefficients, power series solutions, Laplace transforms, Bessel functions.

TEXTBOOKS
SESSION 1
SESSION 2

REFERENCE BOOKS

10.211A Applied Mathematics II—Mathematical Methods

Review of functions of two and three variables, divergence, gradient, curl; line, surface, and volume integrals; Green's and Stokes' theorems. Special functions, including gamma and Bessel functions. Differential equations and boundary value problems, including vibrating string and vibrating circular membrane; Fourier series.

TEXTBOOKS
Blatt, I. M. Introduction to Fortran IV Programming. Prentice-Hall.
Sneddon, I. N. Fourier Series. Routledge.

REFERENCE BOOKS
Smith, G. D. Vector Analysis Including the Dynamics of a Rigid Body. O.U.P.

10.341 Statistics SU

An introduction to probability theory. Random variables and distribution functions; the binomial, Poisson and normal distributions in particular. Standard sampling distributions, including those of $\chi^2$, t and F. Estimation by moments and maximum likelihood; confidence interval estimation. The standard tests of significance based on the above distributions, with a discussion of power where appropriate. An introduction to linear regression. Least squares adjustment of data.

10.351 Statistics SM

For students in Aeronautical, Industrial and Mechanical Engineering and Naval Architecture as part of 5.071 Engineering Analysis.

An introduction to probability theory, with finite, discrete and continuous sample spaces. Random variables: the standard elementary distributions including the binomial, Poisson and normal distributions. Sampling distributions, with emphasis on those derived from the normal distribution: t, $\chi^2$ and F. Estimation of parameters: the methods of moments and maximum likelihood, and confidence interval estimation. The standard tests of statistical hypotheses, and, where appropriate, the powers of such tests. An introduction to regression and the bivariate normal distribution.

TEXTBOOKS (for 10.341 and 10.351.)
Freund, J. E. Mathematical Statistics. 2nd ed. Prentice-Hall.
Statistical Tables.
REFERENCE BOOKS
Derman, C. & Klein, M. *Probability and Statistics Inference for Engineers*. O.U.P.
Freeman, H. *Introduction to Statistical Inference*. Addison-Wesley.
Hald, A. *Statistical Theory with Engineering Applications*. Wiley.

10.361 Statistics SE
For students in Electrical Engineering.
As for 10.351 Statistics SM, with the addition of auto-correlation.

TEXTBOOKS
As for 10.351 Statistics SM.

14.001 Introduction to Accounting
An introduction for non-commerce students to the nature, purpose and conceptual foundation of accounting. Information systems including accounting applications. Analysis and use of accounting reports. Relevance of accounting to managerial and technological functions including planning, decision-making and control.

PRELIMINARY READING

TEXTBOOK

31.212 Geometrical Optics

REFERENCE BOOKS
Fincham, W. *Optics*. Hatton.

36.411 Town Planning
The study of factors influencing the direction of the development and use of land in the public interest. Objectives of town and regional planning; urban land process; patterns and processes of urbanization; the industrial and urban revolution; housing and neighbourhood planning; planning law and administration; the Sydney Region Outline Plan; transportation planning; industrial location and decentralisation; “Tomorrow's Canberra”; the future city.

REFERENCE BOOKS
Colman, J. *Planning and People*. A. & R.
HELP IMPROVE YOUR HANDBOOK

It is important to the University and to yourself that you understand its conventions and regulations. The University Calendar and faculty handbooks are means by which the University attempts to convey, amongst other things, information regarding the facilities it has to offer, and the rules and regulations which govern the conduct and progress of students. You can help us assess the efficacy of the handbooks by completing this questionnaire, and thereby help yourself and your fellow students in the years to come.

1. Name of faculty ................................ Course ............................ Yr./Stage ..............

A. CONTENTS

2. What information in your handbook did you find most useful?

3. (a) What information did you find least useful?

(b) Why was the information of so little use to you?

4. How would you rate the following information areas for inclusion in the handbook?

   (Tick appropriate square)

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<th>Information Area</th>
<th>Essential</th>
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<td>Calendar of dates</td>
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<td>List of academic staff</td>
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<td>Course outlines or rules governing course</td>
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5. Please comment on any aspect of the information areas listed in Question 4 and particularly, if you think necessary, on the form of presentation i.e., its content, layout, position.
6. If there is any section which you feel might be expanded, please list and state why you feel it should be expanded

7. Would you like any of the following included in the handbook?
   - Photographs of senior academic and administrative personnel
   - Prices of textbooks
   - Names of lecturers listed alongside subject descriptions
   - Timetables
   - Map of the Campus
   - Any other items

   YES NO

8. Do you use the textbook lists in your handbook when buying your books?
   If 'NO', please state where you obtained a list of the required textbooks

9. Do you use your handbook when selecting reference books?
   If 'NO', please state where you obtained your list of reference books

10. The handbooks are generally available at the latest by mid-December. Is this date early enough for your purposes?
    If 'NO', please nominate a month when you feel they should be on sale

11. Have you ever sought information from the University Calendar because it was not available in the handbook?
    If 'YES', please indicate which information

12. If you had any difficulty in obtaining a copy of your handbook, please outline problem

B. FORMAT

13. Is the handbook a convenient size?

14. Would you prefer some of the information to be presented differently, e.g., in tabular form, or expressed in a less complex manner or perhaps communicated in some other way?
    If 'YES', please give examples of what you would like changed, and how you would change it

15. Have you any comments which you would like to make on either the contents or format?

When you have completed this form, please either return it personally to Marianne Devin, Publications Officer, Room 307, The Chancellery, or post it via the internal mail system. Thank you for your co-operation.
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