Faculty of Engineering

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The University of Newcastle

Faculty of Engineering
Handbook
THE UNIVERSITY OF NEWCASTLE, New South Wales

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Volume 1 — Legislation
Volume 2 — University Bodies and Staff
Volume 3 — Faculty of Architecture Handbook
Volume 4 — Faculty of Art, Design and Communication Handbook
Volume 5 — Faculty of Arts
Volume 6 — Faculty of Economics and Commerce Handbook
Volume 7 — Faculty of Education Handbook
Volume 8 — Faculty of Engineering Handbook
Volume 9 — Faculty of Health Sciences
Volume 10 — Faculty of Medicine Handbook
Volume 11 — Faculty of Music
Volume 12 — Faculty of Nursing
Volume 13 — Faculty of Science and Mathematics Handbook
Volume 14 — Faculty of Social Science

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

The colour band, Lapis Lazuli BCC 150, on the cover is the lining colour of the hood of Bachelors of Engineering of this University.

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THE DEAN’S FOREWORD

On behalf of the staff of the Faculty of Engineering, I wish to extend a welcome to all students, those who are entering the University and the Faculty for the first time and those who are returning to commence another year of studies.

Having chosen to study in one of the fields of Engineering, Computer Science or Surveying, you are embarking on a professional career which is both challenging and stimulating. We are living in a stage which is witnessing a tremendous growth in scientific and technological development which is having a marked effect on the modes and characteristics of our society. The future of our society is very much dependent on the solution of a number of very complex technological problems. While these problems will be many and varied, none will be more important than those associated with food production, the development of alternative forms of energy and the preservation of our living environment. Graduates in the various disciplines of Engineering and of Computer Science and Surveying, will, in their own way, contribute to the solution of these and other important problems.

The role of universities in modern society has broadened. Not only is it necessary to preserve the ideals of learning and associated fundamental research, it has become of equal importance for universities to become directly involved in the application of research to the solution of problems associated with industry and the community. For this reason, the role of a university engineering faculty in applied and industrially orientated research is an important one. In this respect it is noteworthy that this Faculty of Engineering, through its research and associated projects undertaken on behalf of Australian industry, is making a major contribution and has attained national and international prominence. The interaction between the research and teaching functions is invaluable to the maintenance of standards and the professional relevance of course curricula.

The opportunity to obtain a well-rounded tertiary educational experience is embodied in the very concept of the university system. The University environment, with its excellent campus facilities, together with the many extra-curricular activities, creates an opportunity for obtaining a broad experience, indeed a unique experience in one’s lifetime. For this reason I would encourage you to take full advantage of the opportunities available to you and, where time permits, take an active interest in the various facets of University life. I would also encourage you to participate in the decision-making processes of the Faculty, either through membership of the Faculty and Departmental Boards, or by supporting the students elected to those positions.

The staff of the Faculty will do everything possible to make your work both interesting and enjoyable; they are anxious to help you with any problems you may have. We would be most grateful for any feedback of a constructive nature that you may wish to offer.

In conclusion, I wish you well in your studies at this University. There is no doubt that a course leading to a degree in Engineering, Computer Science or Surveying, requires a great deal of dedication and perseverance, but the task is certainly a rewarding one.

Alan W. Roberts
Dean
PRINCIPAL OFFICERS

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M. Hughes
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- A.W. Roberts, BE, PhD(NSW), ASTC, FIEAust, MIMechE, MIE, FTS (Professor of Industrial Engineering)
- MertzffUNRA Professor of Bulk Solids Handling and Conveying - vacant position

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- B.K. Marsden
- L.S. Miller
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**Associate Director**
- R.J. Evans, BE(Melb), ME, PhD, MIEE

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**Secretary**
- D.L. Pfeiffe

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- A. Pemberton
- P. Stepień, BE (Engineering Manager)
- M. West, BE
- T. Wiley, BE

**Laboratory Assistant**
- C. Beasley

**Office Support**
- D. Taft
- C. Watkins

**Research Assistant**
- S. Grafche, BSc, MSc(San Diego), PhD(Stockholm)
FACULTY INFORMATION

About This Section
This section contains general information about the Faculty of Engineering and the courses which are offered within it. Award Rules and the course programs of each course are given in separate sections of this Handbook.

Advice and Information
Students are assumed to be familiar with the information contained in this Handbook which relates to their own course of study and to general University and Faculty requirements.

Additional information will be posted on Notice Boards throughout the academic year. It is each student's responsibility to ensure that they keep themselves aware of the contents of relevant Notice Boards. As course and University requirements do not remain static, students are advised to purchase a copy of the Faculty Handbook annually in order to become aware of changes and to retain those Handbooks so as to provide a record of the content studied.

Course Enquiries
Enquiries regarding course requirements and general matters such as University Rules, Faculty policies, admission, enrolment and re-enrolment, variations of programs and course transfer may be directed to the Faculty Secretary and Faculty Administrative Assistant at the Faculty Office - enquiries at Room EA206.

Academic Advice
Academic advice and general enquiries regarding the content of particular courses may be obtained from the relevant Head of Department or from the following members of academic staff:

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<td>Environmental Eng'g</td>
<td>Dr W.G. Field</td>
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<td>Industrial Engineering</td>
<td>Mr G.D. Butler</td>
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<td>Mechanical Engineering</td>
<td>Mr J.W. Hayes</td>
</tr>
<tr>
<td>Surveying</td>
<td>Professor J.G. Fryer</td>
</tr>
</tbody>
</table>

Personal Counselling
Students may wish to discuss matters relating to course difficulties or options with the Faculty Secretary, the Faculty Administrative Assistant or the relevant Course Coordinator.

Members of the University Counselling Service are also available for Councillors to discuss matters of a personal nature, particularly matters of academic skills and personal growth. The Counselling Service is situated on the courtyard level of the Library Building. An appointment is usually required.

Students with Special Needs
Students with disabilities may wish to consult the Faculty's Adviser for Students with Special Needs, Dr D.H. Wood of the Department of Mechanical Engineering, top floor, D.W. George Building, Telephone: 21 6200 for an appointment.

THE SCHOOL
The School of Engineering is a management unit of the University. The Director of the School is responsible to the Vice-Chancellor (ex officio), the Deputy Vice-Chancellor and the Faculty Board. The Faculty Board is constituted by the Council of the University and consists of the Department of Chemical Engineering, the Department of Civil Engineering and Surveying, the Department of Computer Science, the Department of Electrical and Computer Engineering and the Department of Mechanical Engineering.

The Faculty Board and Faculty of Engineering, is charged with conducting the academic affairs of the Faculty. Membership of the Faculty Board includes the Vice-Chancellor (ex officio), the Director of the School of Engineering, the Dean of the Faculty, the members of the full-time academic staff of the departments comprising the Faculty, representatives of a number of other faculties and departments of the University, and four students.

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SECTION TWO
The course program meets the highest academic requirements for membership of the Australian Computer Society (ACS).

The Bachelor of Computer Science (Honours) degree is a separate degree program which may be undertaken full-time over one year or part-time over two years. Candidates for this degree have normally completed the Bachelor of Computer Science program with a creditable performance. Graduates in other disciplines with a substantial background and a creditable performance in computer science may be considered for admission.

Engineering
Bachelor of Engineering (BE) degree courses are offered in the following specialities:

- Chemical Engineering
- Civil Engineering
- Computer Engineering
- Electrical Engineering
- Electronic and Communications Engineering
- Environmental Engineering
- Industrial Engineering
- Mechanical Engineering
- Surveying

Bachelor Degree Courses
General information regarding the bachelor degree programs offered in the Faculty is provided below. The detailed Course Programs appear in Section 5 of the Handbook.

Computer Science
The Bachelor of Computer Science (BCompSc) degree course has been designed to equip students with an excellent background for a professional career in the computer industry or as a programmer or systems analyst in industry or commerce.

Honours in Computer Science
The Bachelor of Computer Science (Honours) degree is a separate degree program which may be undertaken full-time over one year or part-time over two years. Candidates for this degree have normally completed the Bachelor of Computer Science program with a creditable performance. Graduates in other disciplines with a substantial background and a creditable performance in computer science may be considered for admission.

Honours in Engineering
Each engineering degree program may be completed by four years of full-time study or equivalent. Part-time attendance is permitted, however, students intending to undertake part-time study should note that many classes are held during the day. Students may choose to combine years of full-time study with years of part-time study as their commitments permit. It is also possible to follow a 'thick sandwich' pattern of attendance by which full-time study and part-time industrial experience are alternately undertaken on an annual basis. It is recommended that at least the final year of study be taken on a full-time basis.

Engineering courses are highly structured and, although each follows a similar pattern, the content of the courses naturally differs according to the needs of the specialty concerned.

In Year 1 students study mathematics and the basic sciences as well as communication training in the engineering sciences. Year II programs continue studies in mathematics and, where applicable, basic sciences. The scope of engineering studies is also widened. Year III consists of major engineering subjects, and is generally regarded as the core of the program. In the final year these studies are extended by the inclusion of a number of highly specialised subjects. The programs also make provision for non-engineering elective subjects to be included in the degree program. The final year project, in which students may undertake extensive studies in an area of special interest, is a particular feature of engineering programs at Newcastle.

Engineering programs are regularly reviewed in order to incorporate the latest technological and professional developments.
relevant to each specialisation. The current Course Programs are set out in Section 5 of this Handbook.

In addition to the full degree programs offered in the Faculty, students may commence studies in Mining Engineering and Naval Architecture by completing the first two years of the full time programs in Civil Engineering or Mechanical Engineering respectively. Students choosing to follow these programs may complete their studies at the University of New South Wales.

Honours

Awards of honours are made on the basis of performance during the entire course program (see Faculty Policies in Section 4).

There is no separate 'honours year'.

Accreditation

Each engineering program (other than the new Electronic and Communications and Environmental Engineering programs) is accredited as meeting the full academic requirements for corporate membership of the Institution of Engineers, Australia (IEAust) and recognised by a number of overseas professional bodies. The new programs are conditionally accredited to be fully accredited in accordance with the normal accreditation process.

The Chemical Engineering Program is also accredited by the Australian Computer Society (ACS) as satisfying that organisation's highest level of academic requirements.

The Chemical Engineering Program also meets requirements for membership of the Institution of Chemical Engineers (CChem ICT) and is recognised by the Royal Australian Chemical Institute and the Australian Institute of Energy.

Surveying

The Bachelor of Surveying (BSurv) program is offered as a four year full-time or equivalent study course on a similar basis to that of engineering programs. In addition to mathematics and physics, the course deals with aspects of Civil Engineering, Geomatics and Law as well as the technical aspects which include: cadastral surveying, engineering surveying, topographical surveying, geodetic surveying and hydrographic surveying.

The course meets the academic prerequisites for an application for registration under the Surveyors Act, 1929 (as amended). In order to become a registered Surveyor in NSW it is necessary for a graduate to meet other requirements prescribed by the Board of Surveyors of NSW. Enquiries on this aspect should be directed to the Registrar of the Board of Surveyors of NSW. Registration is required only if practice as a land surveyor is intended; many surveying careers do not require registration.

The combined BE (Civil Engineering)/BSurv degree program, a recent innovation understood to be unique to the University of Newcastle, allows completion of the two professional qualifications by 5 years of full-time study. This program is entered after completion of the first year of either course with a WAM of 55 or more.

Combined Degree Programs

A number of combined degree programs are available which lead to the award of a two degrees by a total of five years of full-time study for programs which include BE and four years of full-time study for BCompSc/BMath and BCompSc/BSc programs. The programs listed below have been either approved or have been submitted for approval by the relevant Faculty Boards. Other combined programs may be approved to meet the needs of individual cases. Information on the availability of combined programs may be obtained from the Combined Degree Coordinator or from the Faculty Secretary.

BCompSc/BMath

BCompSc/BSc (Physics Major)

BCompSc/BSc (Psychology Major)

BE (Chemical Engineering)/BSc (Chemistry Major)

BE (Chemical Engineering)/BMath

BE (Civil Engineering)/BSurv

BE (Computer Engineering)/BCompSc

BE (Computer Engineering)/BMath

BE (Electrical Engineering)/BSc (Physics Major)

BE (Industrial Engineering)/BCompSc

BE (Mechanical Engineering)/BMath

Direct admission to most of the above programs may be gained through UAC by persons who achieve highly at the HSC examination.

Comprehensive degree programs may also be entered after completion of the first year of the relevant engineering or computer science program with an average of credit or weighted average mark (WAM) of 70. In the case of the BE (Civil Engineering)/BSurv program, a WAM of 55 after completion of the first year of either of the associated programs is sufficient for admission to the program.

Undergraduate Scholarships

The scholarships listed below were awarded in 1991 and similar scholarships are expected to be offered in 1992. Information regarding the scholarships available to students enrolling in the Faculty of Engineering and the relevant application details and closing dates may be obtained from the Scholarships Office from November, telephone (049) 21 6537.

IHP Scholarships in Computer Engineering

Two scholarships were in awarded to students enrolled in the Computer Engineering program. The scholarships provided a living allowance in the range $9,112 to $9,772 per annum with a general allowance of $500.

Frank Henderson Scholarships in Civil Engineering

Five scholarships are awarded annually to first year students enrolled in the Civil Engineering program. The awards are based on HSC performance but preference is given to applicants from country areas. The value of each scholarship is $500 for one year only.

Industry Scholarships in Engineering

In 1991 four scholarships were offered by industry to support full-time study in specified courses. These were:

Alico Steel - Civil Engineering;

Shortland Electricity - Electrical Engineering (2);

ICT Explosives - Mechanical Engineering.

Selection is based on the HSC performance of applicants offered a place through UAC in the relevant course. Each scholarship provides a living allowance of $5,000 and the opportunity to undertake vacation employment with the sponsoring organization.

Institution of Surveyors Scholarship

One scholarship of $500 for one year to a student enrolling in the Bachelor of Surveying course. Selection is largely based on HSC performance.

University IIECS Scholarships

Ten undergraduate scholarships are awarded annually to students enrolling in any undergraduate program in the University (other than Medicine) after completing their HSC in the previous year. Selection is on the basis of HSC performance. In 1991, six of the scholarships were awarded to students enrolling in the Faculty of Engineering. The scholarships provide coverage of the IIECS charge to a student of $2,140 per annum and are continued for the normal duration of the course subject to satisfactory academic performance.

Graduate Coursework Programs

Diploma in Computer Science

The Graduate Diploma in Computer Science meets the highest academic requirements for membership of the Australian Computer Society (ACS). Students enter the program from a variety of first degree backgrounds. While the diploma is intended as a part-time study course, candidates with a strong background in at least one programming language (Pascal or C are preferred) may be able to complete requirements in a single full-time year of study although, in this case, subject choice may be restricted.

Diploma in Computing

This post-graduate coursework masters degree program requires two years of full-time (or the equivalent part-time) study. In addition to coursework at 400 level, candidates complete a very substantial one-year research related project which is usually associated with one of the research projects being carried out in the Department Computer Science.

Applications will be considered from graduates who have completed the Bachelor of Computer Science or its equivalent (eg including the Graduate Diploma in Computer Science). This program is currently available on a part-time basis. The program is intended to provide graduates with the opportunity to update their knowledge in areas relevant to their professional responsibility.

Graduate Coursework Programs

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Please refer to the course outline in Section Seven of this Handbook.
Higher Degree Programs by Research

Master of Computer Science

The MCompSc is a research degree by thesis, requiring an original contribution to knowledge in the area of computer science. Applicants for admission are expected to hold a BCompSci(Hons) degree or an equivalent honours degree with at least second class honours. Candidates who enrol initially in the MCompSc may later transfer into the PhD program if their work is of an exceptional quality. The area of research is usually associated with some of the research projects being carried out in the Department of Computer Science.

Master of Engineering

The Master of Engineering is a research degree by thesis. Relevant coursework may be undertaken in association with the research program. The quality and standard of work required in the thesis is substantially higher than that expected of a Bachelor of Engineering honours graduate. Candidates who enrol initially in the ME program may later transfer into the PhD program if their work is of an exceptional quality.

Master of Science

This degree is similar to the Master of Engineering degree but is usually taken by students with a non-engineering background or students who are carrying out research in science areas related to engineering.

Master of Surveying

The Master of Surveying degree has the primary aim of introducing students to research, and bringing them to the point where they will be able to conduct research effectively under direction. Coursework will not normally be included in the program. The quality and standard of work required in the thesis will be at a substantially higher level than that expected of a Bachelor of Surveying honours graduate. Candidates who enrol initially in the MSurv program may later transfer into the PhD program if their work is of an exceptional quality.

Doctor of Philosophy

Doctoral research programs are available within each of the Departments of the Faculty. Initial enquiries regarding those programs and areas of specialised research activity currently undertaken within Departments may be addressed to the Head of that Department. Enquiries regarding scholarships, the formal requirements for the degree and admission procedures should be addressed to:

The Academic Registrar,
University of Newcastle,
AUSTRALIA 2308.

AWARD RULES

About This Section

This section contains the University Rules regarding the Bachelor and Graduate Diplomas offered by the Faculty of Engineering. Approved course programs referred to in this Degree are classified in Sections 5 and 7 of this handbook.

Rules Governing Academic Awards

Application of Rules

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

Interpretation

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

"award" means the degree, diploma (including graduate diploma and associate diploma) or graduate certificate for which a candidate is enrolled;

course" means the total requirements of the program of study approved by the Academic Senate for the award as set out in the schedule;

"Dean" means the Dean of a Faculty;

"department" means the department offering a particular subject and includes any other body so doing;

"Faculty" means the Faculty responsible for the course;

"Faculty Board" means the Faculty Board of the Faculty;

"schedule" means the schedule to these Rules relevant to the award listed under the name of the Faculty;

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

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

Admission

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

Subject

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

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

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

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

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

Enrolment

5. (1) A candidate may not enrol in any year in a combination of subjects which is incompatible with the requirements of the timetable for that year.
(2) Except with the permission of the Dean and subject to any contrary provision in the schedule:  
(a) a candidate may not enrol in subjects totalling more than the equivalent of 40 credit points in any semester;  
(b) a candidate shall not enrol in a subject which does not count towards the award; and  
(c) a candidate shall not be permitted to enrol in any subject which is substantially equivalent to one which the candidate has previously counted towards a degree or diploma.  

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

Pre-requisites and Co-requisites  
6. (1) The Faculty Board on the recommendation of the Head of the Department may prescribe pre-requisites and/or co-requisites for any subject offered by that Department.  
(2) Except with the permission of the Dean granted after considering any recommendation made by the Head of the Department, no candidate may enrol in a subject unless that candidate has passed any subjects prescribed as pre-requisites at any grade which may be specified and has already passed or concurrently enrols in, or is already enrolled in, any subjects prescribed as its co-requisites.

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

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

Credit  
7. (1) A Faculty Board may grant credit to a candidate in specified and unspecified subjects, on such conditions as it may determine. Recognition of work completed in another University or another institution approved by the Faculty Board for the purpose or additionally as may be provided in the schedule.  
(2) Except as may be otherwise provided in the schedule, a candidate shall be given credit for more than sixty-five percent of the total number of credit points required to complete the course.

Subject Requirements  
8. (1) The subjects which may be completed in the course for the Award shall be those approved by the Faculty Board and published annually as the approved subjects section of the schedule.

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

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

(4) A candidate attaining a Terminating Pass in a subject shall be given credit for the subject.

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

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

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

Qualification for the Award  
3. (1) To qualify for admission to the degree a candidate shall:  
(a) complete the requirements of the course program for that specialization; and  
(b) complete the industrial experience requirements as determined by the Faculty Board; and  
(c) complete the requirements of the course program for that specialization.

(2) The course program for each specialization shall consist of subjects totaling not less than 320 credit points approved by the Faculty Board on the recommendation of the Head of the designated department and include:  
(a) at least 80 credit points from 100 level subjects;  
(b) at least 60 credit points from 200 level subjects;  
(c) at least 60 credit points from 300 level subjects; and  
(d) at least 40 credit points from 400 level subjects.

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

SCHEDULE 1 — BACHELOR OF ENGINEERING  
Specialisations  
1. The degrees may be offered in one of the following specializations:  
Chemical Engineering  
Civil Engineering  
Computer Engineering  
Electrical Engineering  
Electronic and Communications Engineering  
Environmental Engineering  
Industrial Engineering  
Mechanical Engineering.

2. For the purposes of this Schedule, the designated Department with respect to each specialization shall be:  
Department of Chemical Engineering  
Department of Civil Engineering and Surveying  
Department of Electrical and Computer Engineering.

Alternative Specializations  
Department of Mechanical Engineering

2. The course program for each specialization shall consist of subjects totaling not less than 320 credit points approved by the Faculty Board on the recommendation of the Head of the designated department and include:  
(a) at least 80 credit points from 100 level subjects;  
(b) at least 60 credit points from 200 level subjects;  
(c) at least 60 credit points from 300 level subjects; and  
(d) at least 40 credit points from 400 level subjects.

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1. The degrees may be offered in one of the following specializations:  
Chemical Engineering  
Civil Engineering  
Computer Engineering  
Electrical Engineering  
Electronic and Communications Engineering  
Environmental Engineering  
Industrial Engineering  
Mechanical Engineering.

2. For the purposes of this Schedule, the designated Department with respect to each specialization shall be:  
Department of Chemical Engineering  
Department of Civil Engineering and Surveying  
Department of Electrical and Computer Engineering.

3. The degree shall be conferred as an ordinary degree except that, where the performance of a candidate has reached a standard determined by the Faculty Board to be of sufficient merit, the degree shall be conferred with Honours.

4. There shall be two classes of Honours, namely Class I and Class II. Class II shall have two divisions, namely Division 1 and Division 2.

5. Where the results for a subject is expressed as a mark, a candidate shall have met the requirements of Rule 6(2) of the Rules Governing Academic Awards by achieving a mark of 45 or more in all subjects specified as pre-requisites or co-requisites.

6. Credit may be granted for up to 160 credit points except that a candidate may be granted such credit as the Faculty Board determines for subjects completed in the University which have not already been counted towards another award.

Transfer Between Specialisations  
7. The Faculty Board may make conditions with respect to the transfer of candidature from one specialization to the other.

6. Credit may be granted for up to 160 credit points except that a candidate may be granted such credit as the Faculty Board determines for subjects completed in the University which have not already been counted towards another award.

Transfer Between Specialisations  
7. The Faculty Board may make conditions with respect to the transfer of candidature from one specialization to the other.

Additional Specializations  
8. A person who has satisfied the requirements for admission to the degree in one specialization may be admitted to candidature in any other specialization on such conditions as the Faculty Board may prescribe.

9. A person who has satisfied the requirements for admission to the degree in one specialization may be admitted to candidature in any other specialization on such conditions as the Faculty Board may prescribe.

10. A candidate shall not be permitted to enrol in a subject after the relevant date which shall be:  
(i) the last day of that semester, or  
(ii) the end of any other course of study.

11. A candidate shall not be permitted to enrol in a subject after the relevant date which shall be:  
(i) the last day of that semester, or  
(ii) the end of any other course of study.

12. A candidate shall not be permitted to enrol in a subject after the relevant date which shall be:  
(i) the last day of that semester, or  
(ii) the end of any other course of study.

13. A candidate shall not be permitted to enrol in a subject after the relevant date which shall be:  
(i) the last day of that semester, or  
(ii) the end of any other course of study.
SECTION THREE

AWARD RULES

SCHEDULE 4 — BACHELOR OF COMPUTER SCIENCE (HONOURS)

Admission to Candidature
(1) An applicant for admission to candidature shall have satisfied the requirements for admission to:
(a) the degree of Bachelor of Computer Science; or
(b) a degree in the University, or another university approved by the Faculty Board for this purpose by the Faculty Board.

(2) The Head of the Department of Computer Science shall, after considering an applicant's previous academic performance in relevant studies, make recommendations to the Faculty Board as to the applicant's suitability for admission to candidature.

(3) The Faculty Board after taking into account the recommendation of the Head of the Department of Computer Science shall either:
(a) approve admission to candidature; or
(b) approve admission to candidature subject to the applicant completing, to the satisfaction of the Faculty Board, such prerequisite and/or corequisite studies as it may prescribe; or
(c) reject the application.

Graduation of the Degree
(1) The Faculty Board shall, on the recommendation of the Head of the Department of Computer Science, determine the grade of Honours to be awarded a candidate upon graduating for admission to the degree.

(2) There shall be three classes of Honours, namely Class I, Class II and Class III. Class II shall have two divisions, namely Division 1 and Division 2.

Qualification for the Award
(1) To qualify for admission to the degree a candidate shall pass the program of subjects approved by the Faculty Board on the recommendation of the Head of the Department of Computer Science containing not less than 240 credit points.

(2) Credit granted for subjects completed at another institution which did not qualify a candidate for an award shall be limited to 40 credit points.

(3) Credit may be granted for all subjects completed in this University which have not already been counted towards a completed award.

Leave of Absence
(1) Leave of Absence shall not be entitled to take Leave of Absence from the course.

Time Requirement
(1) Except with the permission of the Faculty Board, a candidate shall complete the requirements for the award of the Diploma in not less than one and not more than five calendar years from the date of first enrolment in the course.

SCHEDULE 5 — GRADUATE DIPLOMA IN COMPUTER SCIENCE

Admission to Candidature
(1) In order to be admitted to candidature for the award, the applicant shall:
(a) have completed the requirements for admission to a degree in the University; or
(b) have completed the requirements for admission to a degree at any other institution recognised by the Faculty Board; and hold such other qualifications approved by the Faculty Board for the purpose of admission to candidature.

Qualification for the Diploma
2. To qualify for admission to the degree a candidate shall pass the program of subjects approved by the Faculty Board on the recommendation of the Head of the Department of Computer Science containing not less than 80 credit points.

Grading of the Diploma
3. The diploma shall be awarded as an ordinary diploma except that, where the performance of a candidate has reached a standard determined by the Faculty Board to be sufficient, the diploma may be conferred with Merit.

Credit
4. (1) Credit shall not be granted for studies which have been counted towards a completed award.

(2) Credit granted for studies completed at another institution which did not qualify a candidate for an award shall be limited to 40 credit points.

(3) Credit may be granted for all subjects completed in this University which have not already been counted towards a completed award.

Leave of Absence
5. Candidates shall not be entitled to take Leave of Absence from the course.

Time Requirement
6. Except with the permission of the Faculty Board, a candidate shall complete the requirements for the award of the Diploma in not less than one and not more than five calendar years from the date of first enrolment in the course.

SCHEDULE 6 — GRADUATE DIPLOMA IN COMPUTING

Admission to Candidature
(1) In order to be admitted to candidature for the award, the applicant shall:
(a) have completed the requirements for admission to a degree in the University of Newcastle; or
(b) have completed the requirements for admission to a degree at any other institution recognised by the Faculty Board; and hold such other qualifications approved by the Faculty Board for the purpose of admission to candidature.
Qualification for the Diploma

2. To qualify for admission to the degree a candidate shall pass the program of subjects approved by the Faculty Board on the recommendation of the Head of the Department of Computer Science totalling not less than 80 credit points.

Grading of the Diploma

3. The Diploma shall be awarded as an ordinary diploma except that, where the performance of a candidate has reached a standard determined by the Faculty Board to be sufficient, the diploma may be conferred with Merit.

Credit

4. (1) Credit shall not be granted for studies completed which qualified the candidate for an award.

5. (1) Credit shall not be granted for studies completed which qualified the candidate for an award.

6. (1) Credit shall not be granted for studies completed which qualified the candidate for an award.

Leave of Absence

5. Candidates shall not be entitled to take Leave of Absence from the course.

Time Requirement

6. Except with the permission of the Faculty Board, a candidate shall complete all requirements for the award of the Diploma not less than one and not more than five calendar years from the date of first enrolment in the course.

SCHEDULE I - GRADUATE DIPLOMA IN SURVEYING

Admission to Candidature

1. In order to be admitted to candidature for the award, the applicant shall:
   (a) have completed the requirements for admission to a degree in the University of Newcastle; or
   (b) have completed the requirements for admission to a degree at any other institution recognised by the Faculty Board; or
   (c) have registration as a Land Surveyor or hold a Certificate of Competency issued by any of the Boards of Surveyors of Australia or New Zealand; or
   (d) hold such other qualifications approved by the Faculty Board for the purpose of admission to candidature.

Course Program

2. The course program for the diploma shall comprise subjects totalling not less than 80 credit points approved by the Faculty Board on the recommendation of the Head of the Department of Computer Science and Surveying.

Qualification for the Diploma

3. To qualify for admission to the diploma a candidate shall complete the requirements of the course program to the satisfaction of the Faculty Board.

Grading of the Diploma

4. The Diploma shall be awarded as an ordinary diploma except that, where the performance of a candidate has reached a standard determined by the Faculty Board to be sufficient, the diploma may be conferred with Merit.

Credit

5. (1) Credit shall not be granted for studies completed which qualified the candidate for an award.

6. Credit granted for studies completed at another institution which did not qualify a candidate for an award shall be limited to 40 credit points.

FACULTY POLICIES

About This Section

This section contains Faculty Policies which are relevant to all students enrolled in coursework programs within the Faculty and are to be read in conjunction with the relevant Course Programs and Award Rules.

Students should note that Faculty Policies do not remain static. Students are expected to consult Faculty and Departmental notice boards regularly in order to make themselves aware of any proposals or decisions which may affect them. Enquiries regarding Faculty Policy may be directed to the Faculty Secretary.

General Course Policies and Information

The information given below should be read in conjunction with the Rules Governing Academic Awards and the relevant Schedule to those Rules together with other University requirements and Faculty policies.

It is the responsibility of students to ensure that they enrol in a program which meets currently applicable course requirements.

Where approval of a load of Department or Course Coordinator is required, this should be gained prior to submitting a Variation of Program Form and be attached to that form.

Advice on course requirements and procedures is available from the staff of the Faculty Office - Enquiries to Room 106, or from the relevant Course Coordinator.

Credit Points

1. The credit point value of a subject is intended to give a general indication of the total time required of a student undertaking that subject. The normal annual workload of 80 credit points may be taken to indicate that the total workload of an average student working at pass level is approximately 48 hours per week. Thus a 5 credit point subject offered over one semester may be taken to indicate a minimum average workload requirement of 6 hours per week which includes course contact hours plus time spent by the student on assignments and other set work as well as general study of subject content. The ratio between contact hours and private study will vary between subjects according to the nature of the content studied.

2. The number of hours per week required by individual students will vary according to many factors including: academic background, personal ability, work/study techniques and the level of performance the student wishes to attain in a particular subject. The general indication of 2 hours per week for each credit point in a semester subject is a guide to the minimum expectations of the Faculty - students will need to monitor and evaluate their own performance in the light of this expectation and the results they obtain in particular subjects.

Timetable

3. Course programs are specified and timetabled by year.

4. Every effort will be made to provide for single day release attendance patterns in the first two part-time stages of each course. Timetable requirements may restrict selection of subjects in non-standard programs.

5. Students are not to enrol in subjects which clash in the timetable.

Prerequisites, Corequisites and Assumed Knowledge

6. In addition to the subject prerequisite and corequisite requirements of individual subjects, a general understanding of the material in previous years of the course is assumed.

7. Students must satisfy the relevant prerequisite and corequisite requirements of each subject unless granted a written waiver of these requirements by the Head of the Department responsible for offering the subject. Students wishing to obtain such a waiver should make application at the scheduled Re-enrollment Approval Sessions in February. If requesting a variation of enrolment at another time, the relevant form should be obtained from the Faculty Office before making an appointment to see the Head of Department to discuss the proposed waiver.

8. Only in exceptional circumstances will prerequisite and corequisite requirements be waived for students who have a WAM of 54 or less.

Adjusting Second Semester Enrolment

9. Enrolment in second semester subjects which require completion of first semester subjects to meet prerequisite, corequisite or assumed knowledge requirements is contingent upon successful completion of the relevant first semester subjects.
SECTION FOUR

Late Addition or Substitution of Subjects

13. Applications to add subjects after the 5 p.m. on Monday of the third week of second semester otherwise the Head of Department may refuse to permit the addition.

Late Addition or Substitution of Subjects

14. That dates are prescribed after which total semester work-load may not be increased. This requirement prevents approval of the addition of a subject after those dates where total semester workload would be increased, even if the permission of the Head of Department is obtained. Students in doubt as to the requirements should consult the staff of the Faculty Office before approaching the Head of Department.

Substitution of Subjects

21. The Head of Department responsible for the course program or the Course Coordinator may approve limited substitution of another subject for a subject listed in the course program where such a substitution is considered to be to the academic benefit of the student concerned. Approval will only be given where:

- the replacement subject is of the same credit point value as the subject(s) it replaces;
- the requirements of the Regulations governing the degree program continue to be met; and
- the overall program of study to be taken by the student is suited to the award of the degree involved.

Enrolment in Extraordinary Subjects

22. Enrolment in subjects extraordinary to the requirements of the course in which the student is enrolled will normally only be approved where the student is otherwise enrolled in all subjects required to complete degree requirements and has a WAM of at least 55. The total normal program attempted by such a student, including extraordinary subjects, shall not exceed 80 credit points. The approval of the Dean is required for any application to undertake extraordinary subjects while a student is enrolled in any course offered in the Faculty of Engineering. The Dean may decline to approve any such application.

Appeals

25. Note that the University charges a fee for enrolment in subjects which do not count towards degree requirements.

Course Coordinators

Undergraduate Programs

Chemical Engineering: Mr. J. Roberts
Civil Engineering: Dr. W.G. Field
Combined Degree Programs:

Computer Engineering: Professor H. Schenker
Computer Science: Head, Department of Computer Science
Electrical Engineering: Professor D.J. Hill
Electronic and Communications Engineering: Mr. G.D. Butler
Mechanical Engineering: Mr. J.W. Hayes
Surveying: Associate Professor J.G. Fryer
Postgraduate Coursework Programs

BComp(Sc)(Hons) & MComp:

Dr Boreland-Smith

BComp(Sc) & MComp:

Simon

DipComp:

Associate Professor J.G. Fryer

MComp:

Professor D.J. Hill

Undergraduate Performance and Progress

These policies, known as the 'WAM Rules', apply to students enrolled in the Bachelor of Computer Science, Bachelor of Engineering and Bachelor of Surveying programs.

1. General

(1) The following policies are made under the powers vested in the Faculty Board, Faculty of Engineering, by the Rules of the University.

(2) In these Policies, unless the context or subject matter otherwise indicates or requires:

"annual WAM" means the weighted average mark of the results of subjects taken in a particular calendar year;
"course" means the total requirements as prescribed in these Policies and the Regulations Governing Bachelor Degrees offered in the Faculty of Engineering which, when completed, qualify a candidate for the award of the degree of Bachelor of Computer Science, Bachelor of Engineering or Bachelor of Surveying;
"Dean" means the Dean of the Faculty of Engineering;
"Degree Regulations" means the Regulations Governing Bachelor Degrees in the Faculty of Engineering;
"department" means a department of the Faculty of Engineering;
"Faculty Board" means the Faculty Board, Faculty of Engineering;
"designated department" means the department identified as such in the relevant Schedule of the Degree Regulations;
"student" means a person enrolled in an undergraduate course offered in the Faculty of Engineering;
"sub-dean" means a sub-dean of the Faculty of Engineering;
"WAM" means the cumulative Weighted Average Mark calculated in accordance with these policies.

2. Reservation

Faculty Board reserves its right to consider each case on its merits and to amend its policies without notice as it judges to be proper to maintain appropriate standards of attainment.

3. Assessment

(1) Assessment within each subject offered by a Department may take into account work in assignments, reports, laboratory exercises, tutorials, class tests and formal examinations.

(2) Students will be informed of the method of assessment to be adopted in each subject before the fourth week of the semester in that subject. This information will include an indication of the type of tasks comprising the assessment and the proportion each task will contribute to the final result in the subject concerned. It should be noted that the final result in a subject is not necessarily determined simply by the addition of marks awarded for assessment tasks although the weighting of each task and class ranking will be maintained except where an application for special consideration is granted.

(3) In the case of subjects offered to students enrolled in any undergraduate course in the Faculty by Departments of the Faculty (and any department of another faculty willing to...
(3) The Mark (‘m’) will be calculated as follows:

\[ \text{Grade} \times m = \text{WAM} \]

Where:
- \( \text{Grade} \) is the relevant number listed below:

<table>
<thead>
<tr>
<th>Grade</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>HD</td>
<td>93</td>
<td>92</td>
<td>91</td>
<td>90</td>
</tr>
<tr>
<td>D</td>
<td>80</td>
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<td>45</td>
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<tr>
<td>TP</td>
<td>40</td>
<td>39</td>
<td>38</td>
<td>37</td>
</tr>
</tbody>
</table>

(4) Each subject shall have a weighting of 1, 2, 3 or 4 as set out below.

<table>
<thead>
<tr>
<th>Level at which the subject is offered</th>
<th>Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>1</td>
</tr>
<tr>
<td>200</td>
<td>2</td>
</tr>
<tr>
<td>300</td>
<td>3</td>
</tr>
<tr>
<td>400 and over</td>
<td>4</td>
</tr>
</tbody>
</table>

Note: The level at which a subject is offered is indicated by the number listed below the subject code; for example, MECH3101 is offered at Level 100 and MECH342 is offered at Level 300.

(5) The following will be taken into account when calculating the WAM:
- Subjects taken in satisfaction of degree requirements will be considered to satisfy those requirements in the order in which they are taken during the course.
- Subjects taken in satisfaction of degree requirements will be considered to satisfy those requirements in the order in which they are taken during the course.
- Students who achieve a WAM of 55 or more are considered to have been satisfying degree requirements at a satisfactory level in the subject concerned, had such evidence been available.
- The level at which a subject is offered is indicated by the number listed below the subject code; for example, MECH3101 is offered at Level 100 and MECH342 is offered at Level 300.

Note: The level at which a subject is offered is indicated by the number listed below the subject code; for example, MECH3101 is offered at Level 100 and MECH342 is offered at Level 300.

(6) At the conclusion of second semester, each student’s WAM shall be included in the schedule of recommended results presented to Faculty Board, included on each student’s notification of registration and placed on the student’s academic record; except that a grade of "Incomplete" (I) be awarded to a student, the WAM will remain uncalculated until final marks or grades are awarded.

(7) Students may elect to repeat any subject in which they were awarded a mark of 55 or less to a grade of 80, to a grade of 30 or a grade of 5 or to a grade of 5 or any other grade which a student has been given in that subject. Where grades of 'I' are awarded, the WAM will not be calculated until a mark or a final grade shall be awarded in that subject.

(8) Each subject shall have a weighting of 1, 2, 3 or 4 as set out below.

<table>
<thead>
<tr>
<th>Level at which the subject is offered</th>
<th>Weighting</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

Note: The level at which a subject is offered is indicated by the number listed below the subject code; for example, MECH3101 is offered at Level 100 and MECH342 is offered at Level 300.

(9) The following will be taken into account when calculating the WAM:
- Where the result in a subject is a Failing grade, the WAM will be deemed to be equal to 44.
- Where the result in a subject is a passing grade (other than a percentage mark), the Mark (‘m’) will be determined to be the relevant number listed below:

<table>
<thead>
<tr>
<th>Grade</th>
<th>4</th>
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<td>UP</td>
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<tr>
<td>TP</td>
<td>40</td>
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<td>38</td>
<td>37</td>
</tr>
</tbody>
</table>

(10) The level at which a subject is offered is indicated by the number listed below the subject code; for example, MECH3101 is offered at Level 100 and MECH342 is offered at Level 300.

(11) The following will be taken into account when calculating the WAM:
- Where the result in a subject is a Failing grade, the WAM will be deemed to be equal to 44.
- Where the result in a subject is a passing grade (other than a percentage mark), the Mark (‘m’) will be determined to be the relevant number listed below:

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<thead>
<tr>
<th>Grade</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<tbody>
<tr>
<td>HD</td>
<td>93</td>
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<tr>
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SECTION FOUR
FACULTY POLICIES

(2) If a student was granted credit at the time of his or her admission or re-admission to a course offered within the Faculty, the record of that student upon which the credit was based may be considered by Faculty Board in connection with the determination of the award of honours.

(3) A Head of Department may recommend to Faculty Board that a grade of honours be awarded other than that indicated by the WAM of the student concerned, or that no honours be awarded to a particular student. In each case Faculty Board may either make an award of honours in accordance with the recommendation of the Head of the Department concerned or in accordance with the schedule contained in Policy 8(1).

(4) Faculty Board will normally recommend BE and BSc/BCompSc graduates who achieve a WAM in the order of 85 or more for the award of a University Medal.

Other Faculty Policies
Honours in Computer Science
The level of honours to be awarded to candidates completing the requirements of the Bachelor of Computer Science (Honours) degree shall be determined by Faculty Board on the recommendation of the Head of the Department of Computer Science.

Progress Requirements for Combined Degree Candidates
Students admitted to the BSc/BMath, BSc/BCompSc and BSc/BMath combined degree programs after 1990 and the BSc/BCompSc program after 1991, shall be required to maintain a WAM of at least 65 or otherwise show cause as to why the Faculty Board should not refer their case to the Admissions and Progress Committee under regulation 4 of the Regulations Governing Unsatisfactory Progress with a recommendation that they be excluded from combined enrolment in the combined degree programs for a specified period.

Missing an Examination
Failure to attend a formal written examination is a very serious matter. Students are expected to attend examinations unless prevented from doing so by circumstances beyond their control - in which case an application for Special Consideration should be lodged at the Faculty Office within the required time period (see below).

Special Consideration
It is recognized that during the course of their studies, students may suffer from illness or other serious circumstances beyond their control which affect their preparation for or performance at an examination. University Rules provide for students who believe that their performance in a subject has been adversely affected by such circumstances to apply for Special Consideration (also refer to the General University Information section of this Handbook).

Applications for Special Consideration MUST be made on the prescribed forms. Forms are available from the Student Administration Office and the Faculty Office - Room EA206.

As decisions can only be made on the basis of the information presented by the student, all available evidence should accompany each application. The medical certificate given on the prescribed form must be completed where an application is made on medical grounds unless a more extensive medical report is presented which includes the information required on the form. Where a request for Special Consideration is made on the grounds of misadventure, all available supporting evidence should be attached to the application. In some cases, particularly where no written evidence is available, the submission of a statutory declaration will be appropriate. Statutory declarations forms are available from most newsagents.

Applications for Special Consideration should be made as soon as possible after the occurrence of the circumstances leading to the request but not more than three days after the final examination in a subject. When considering requests for Special Consideration it is the intention of the Faculty to take account of circumstances which adversely affect performance such that the performance of the student concerned does not reflect his or her true competence in a subject. In doing so, the Faculty will be conscious that Special Consideration given should not disadvantage other students.

Enquiries regarding Special Consideration may be directed to the Faculty Office.

Further Assessment
A department may grant further assessment where it considers it appropriate to do so. The course coordinator will request for Special Consideration or to resolve a doubt as to the appropriate result in a subject. Further assessment will normally occur shortly after the final examination in the subject concerned:

• in the case of first semester subjects, before the end of the fifth week of the mid-year session; and
• in the case of full-year and second semester subjects, before the end of the first week in December.

Students who have requested Special Consideration which may lead to further assessment should ensure that they are available to attend any further assessment required during these periods. If they are unable to do so because of serious circumstances beyond their control, they should advise the relevant Head of Department as soon as possible.

In view of the provision for further assessment by departments, the Faculty Board does not normally award results of Incomplete (I) or otherwise allow students to submit work without further assessment. In cases where this is necessary, students may attach a statement to the application for Special Consideration explaining why they are unable to submit work on that subject. Such a request will normally be considered in cases of hardship due to illness or other serious circumstances beyond the control of the student concerned.

Failure by a Potential Graduate
When a student fails a single subject other than the final year subject and is thereby prevented from qualifying to graduate, the Faculty Board may award a result of Incomplete (I) in that subject. Such a decision will not take into account the results of all other subjects required to meet degree requirements are known. Thus a failure in a single first semester subject will be recorded as an FF unless the student has been enrolled in a program which was potentially sufficient to complete degree requirements in the first semester. A result of FF given in a first semester subject may be reviewed at the conclusion of second semester in the light of results obtained in that year and may be amended to "I" if it is then the only subject required to meet degree requirements. All such further assessments should be completed by the second week of January.

Review of Results
Students may apply through the University Examinations Office for a review of final results in subjects (see the General Information section of this Handbook for details of the procedure and the fee involved). All requests for review must be made by this procedure. A review of results consists of a check of records to ensure that all work has been marked and full marks were correctly included in the result. It is not normally a reminder of the work submitted.

If considered necessary, students may attach a statement to the official request for a review detailing any facts believed to be a reason of omission having been made. Students may also discuss aspects of performance in examinations with the lecturer concerned within a short period after final results have been published in order to gain feedback for educational purposes.

Submission of Final Year Project Reports
Meeting the deadline for submission of final year project reports is considered to be an important element of the subjects concerned. Students within the Faculty have been required by Faculty Board to adopt the following polices regarding the submission of final year project reports:

• The time for submission of final year project report will be set at 5:00 pm (the time to be specified by the Department concerned) before or during the November examination period. This date is regarded in the same way as a final formal examination. That is, failure to submit the report on or before the due date is regarded in the same way as failure to attend a formal written examination. The result will be failure, subject to any other decision which may be taken as a result of a Special Consideration.

• An extension of time for a submission, by way of an incomplete grade (I), being awarded in December, may only be granted in response to a formal request for Special Consideration made through the Faculty Office (see Special Consideration policy above). As students are expected to anticipate some delay or difficulties during the course of their project, Special Consideration will not normally be granted for circumstances involving less than 4 weeks loss of working time for the student.

• Submissions presented by the due date but not up to final presentation standard, or which require an acceptably small amount of assessment, may be graded as a result of incomplete (I). Final submission of the report will then be required on a date (to be specified by the Department concerned) before the second week of January. The project will then be awarded a result higher than 64.

Year/Stage Classification
Full-time students are classified by year. Part-time students are classified by stage. Classification is determined by the number of credit points passed in accordance with the following table.

<table>
<thead>
<tr>
<th>Full-time</th>
<th>Part-time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit</td>
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<tr>
<td>Points</td>
<td>Points</td>
</tr>
<tr>
<td>0-40</td>
<td>0-40</td>
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<td>81-160</td>
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<tr>
<td>501-600</td>
<td>241-280</td>
</tr>
<tr>
<td>601-700</td>
<td>281-320</td>
</tr>
</tbody>
</table>

Students enrolled for the first year of any combined course will be classified as Year 5.

Industrial Experience - Engineering
General
Students enrolled in Bachelor of Engineering programs are required to complete a total of at least 12 weeks of practical work of a nature acceptable to the Faculty Board. This practical experience may be either gained during long vacations or as part of an Industrial Experience elective. The University can accept no responsibility for finding employment for students wishing to enrol for Industrial Experience subjects or to find employment in order to satisfy industrial experience requirements. Students experiencing difficulty in obtaining suitable employment should contact the University's Careers and Student Employment Office.

Full-Time Students
Full-time students will normally gain their practical experience during vacation employment. Students should obtain a statement from their employer certifying the nature and period of the employment undertaken and retain the statement as to be in a position to provide it when called upon to do so.

Part-Time and Sandwich Pattern Students
Students enrolled in the degree of Bachelor of Engineering in a part-time basis may choose to take Industrial Experience elective subjects as provided in the relevant course programs. To be eligible for enrolment in an Industrial Experience subject, the student must be in approved employment on the 1 November preceding the year in which the subject is to be taken. This approved employment must continue for one calendar year, that is, until the 31 October of the year in which the subject is taken.

Students enrolled in Industrial Experience subjects may attend such lectures and seminars, and submit such reports, as the relevant Head of Department may require. Normally enrolment
In an Industrial Experience subject will not be allowed in the first year of enrolment. Students attending on a "thick" sandwich pattern should consult with the Course Coordinator before enrolling in an Industrial Experience subject. The successful completion of one Industrial Experience subject satisfies the requirement that students complete 12 weeks practical experience.

Credit for Previous Studies

Students entering courses who believe that they may be eligible for credit on the basis of previous tertiary study should consult the relevant Course Coordinator or the Faculty Secretary. Evidence in the form of original academic transcripts and handbook descriptions of the context of the subjects studied should be provided.

Credit for TAFE Associate Diplomas

Faculty Board has approved the granting of credit to students enrolling in courses who hold certain TAFE Associate Diplomas (and TAFE Certificates obtained before the introduction of Associate Diploma programs). The credit to be granted will vary according to the TAFE qualification obtained, the course program in which the candidate is enrolled and the current requirements of that program. Further information may be obtained from the Faculty Secretary.

BACHELOR DEGREE COURSE PROGRAMS

About This Section

This section contains the detailed bachelor degree course programs approved by the Faculty Board which incorporate the list of Approved Subjects of the relevant Schedules of the Rules Governing Academic Awards.

A guide is also provided to the various patterns of attendance by which courses may be completed. Students are expected to be aware of all aspects of the Course Program and associated requirements of the course in which they are enrolled. Attention is particularly drawn to the General Course Policies and other policies of the Faculty Board set out in the previous section of this Handbook.

Enquiries regarding course requirements may be directed to the Faculty Office or the Course Coordinator indicated in the course entry concerned.

Guide to Course Attendance Patterns

Course Programs are given in this Section for all bachelor degree courses. All students must complete the requirements of the relevant Course Program regardless of their attendance pattern.

The Faculty of Engineering offers a flexible array of attendance patterns which are designed to suit the individual needs of students. Each student may choose a pattern of attendance each year which suits him provided that academic progress is satisfactory and other course rules and requirements are met. The attendance patterns available are summarised below. Further enquiries may be directed to the Faculty Secretary.

Full-time Attendance

The greater majority of students enrolled in the Faculty of Engineering attend as full-time students. Full-time attendance allows for full concentration on course requirements during the academic year and is therefore the recommended pattern of attendance. Each engineering course may be completed in a minimum of 4 years of full-time study. The Computer Science program may be completed in 3 years full-time study.

Part-time Attendance

All or part of each Course Program may be completed by part-time attendance. Part-time students will normally take two years for each equivalent full-time year. Although a 6 year pattern of attendance, of which the last year is full-time, is possible in the Chemical Engineering program. The first two part-time stages of all courses are timetabled to permit a single day work release attendance pattern with some evening lectures. In the latter years of each course, attendance will be required at various times during the day depending upon the subjects in which the student is enrolled and the requirements of the timetable. Full-time study is recommended after Stage 2. While each student enrolled in less than 60 credit points is regarded as a part-time student, there is no minimum number of subjects in which part-time students must enrol in each year. Part-time students may also choose to enrol in Industrial Experience subjects and count these units as Elective units as permitted by the Elective Requirements of the relevant course.

Sandwich Programs

Each course may be undertaken on a "thick" sandwich attendance pattern in which full-time attendance at University is alternated with full-time employment on an annual basis. This allows work experience to be undertaken in 15 month periods between Years I and II, Years II and III and Years III and IV. Such a pattern would require a minimum of 7 years to complete degree requirements. The number of years of work experience undertaken

Enquiries regarding course requirements may be directed to the Faculty Office or the Course Coordinator indicated in the course entry concerned.
While the Careers and Student Employment office enables trainees to gain valuable practical experience during the 15 month period(s) makes it possible for the trainee to experience a full period of assessment in Stages 1 and 2. After completing first year studies, trainees are in a position to give their full attention to the appropriate procedure to apply for re-enrolment from the University plus attendance at University plus attendance at University plus attendance at University. A further 15 month period of work experience could be included between Years II and III resulting in a 7 year minimum program. This attendance: pattern allows both the employer and employee a period of assessment in Stages 1 and 2. After completing first year studies, trainees are in a position to give their full attention to their academic studies in Years II, III and IV of their course and to gain vocational practice in the 15 month period(s) of work experience. The length of the major work experience period(s) makes it possible for the trainee to experience a full annual cycle of the operation of the employer's organisation and to gain full attention to participating in the work of the organisation. The length of the major period(s) of work experience also enabled trainees to gain practical experience in locations outside Newcastle.

Finding Employment

While the Careers and Student Employment Office of the University will assist students to find employment to complement their chosen attendance pattern, the University cannot accept any responsibility for finding appropriate positions for students.
Combined Degree Programs

Combined degree programs are available which allow completion of the requirements for the Bachelor of Engineering (BE) degree in the specialisation of Chemical Engineering together with the requirements for a degree of Bachelor of Mathematics (BMath) and Bachelor of Science (BSc) (Chemistry Major). The subjects undertaken in the first year of study of each program are identical to those required in the Chemical Engineering program except that the inclusion of MATH102 and MATH1103 is required. Combined degree programs each require a minimum of 5 years full-time study.

Note that students undertaking a combined degree program are attempting two distinct programs concurrently and therefore the annual enrolment required by such a program may exceed the normal annual load of 80 credit points. Also note that HECs will be calculated on the basis of the proportion which each individual subject counts in the program of the separate degree of which it forms part and not on the proportion it contributes to any combined degree program. Timetabling constraints may limit the choice of optional subjects.

Direct entry to combined programs may be gained via UAC by applicants who attain a TIER of 92.5 at the NSW HSC (or equivalent). Students may also enter combined degree programs at the conclusion of Year 1 if they have achieved a WAM of 70. Application should be made in conjunction with submission of this enrolment application. The Faculty Office may be consulted regarding application forms and course requirements.

### Course Program

#### YEAR I

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIVL111 Mechanics and Structures</td>
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</tr>
<tr>
<td>MATH111 Mathematics 111 *</td>
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</tr>
<tr>
<td>MSCI122 Materials 2</td>
<td>5</td>
</tr>
<tr>
<td>PHYS101 Physics 101 *</td>
<td>10</td>
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<td>SURV111 Surveying 1</td>
<td>10</td>
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#### Semester 2

<table>
<thead>
<tr>
<th>Subjects</th>
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</thead>
<tbody>
<tr>
<td>CIVL131 Fluid Mechanics 1</td>
<td>5</td>
</tr>
<tr>
<td>CIVL141 Environmental Engineering 1</td>
<td>5</td>
</tr>
<tr>
<td>MATH112 Mathematics 112 *</td>
<td>10</td>
</tr>
<tr>
<td>MECI102 Programming</td>
<td>5</td>
</tr>
<tr>
<td>SURV112 Surveying 2</td>
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</table>

* Approved Options

1. MATH102 and MATH1103 may replace MATH111 and MATH112.
2. PHYS102 may replace PHYS101.

#### YEAR II

<table>
<thead>
<tr>
<th>Subjects</th>
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<tbody>
<tr>
<td>CIVL212 Mechanics of Solids</td>
<td>5</td>
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<tr>
<td>CIVL222 Materials 2</td>
<td>5</td>
</tr>
<tr>
<td>CIVL224 Geotechnical Investigation</td>
<td>10</td>
</tr>
<tr>
<td>CIVL232 Fluid Mechanics 2</td>
<td>5</td>
</tr>
<tr>
<td>CIVL242 Environmental Engineering 2</td>
<td>5</td>
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<tr>
<td>LAW201 Legal Process</td>
<td>5</td>
</tr>
<tr>
<td>MATH201 Multivariable Calculus</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Subjects</th>
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</tr>
</thead>
<tbody>
<tr>
<td>CIVL213 Theory of Structures 1</td>
<td>5</td>
</tr>
<tr>
<td>CIVL223 Materials 3</td>
<td>5</td>
</tr>
<tr>
<td>CIVL233 Fluid Mechanics 3</td>
<td>5</td>
</tr>
<tr>
<td>CIVL251 Systems</td>
<td>5</td>
</tr>
<tr>
<td>CIVL271 Transportation Engineering</td>
<td>10</td>
</tr>
<tr>
<td>CIVL273 Structural Analysis</td>
<td>5</td>
</tr>
<tr>
<td>MATH203 Ordinary Differential Equations 1</td>
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<tr>
<td>MECI205 Engineering Computations</td>
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#### YEAR III

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<th>Subjects</th>
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</tr>
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<tr>
<td>CIVL314 Theory of Structures 2</td>
<td>5</td>
</tr>
<tr>
<td>CIVL315 Stress Analysis</td>
<td>5</td>
</tr>
<tr>
<td>CIVL317 Structural Design 2</td>
<td>10</td>
</tr>
<tr>
<td>CIVL325 Soil Mechanics 1</td>
<td>5</td>
</tr>
</tbody>
</table>

#### Semester 1

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIVL191 Industrial Experience</td>
<td>5</td>
</tr>
<tr>
<td>CIVL192 Industrial Experience *</td>
<td>5</td>
</tr>
<tr>
<td>CIVL193 Industrial Experience</td>
<td>5</td>
</tr>
<tr>
<td>CIVL194 Special Topic</td>
<td>5</td>
</tr>
<tr>
<td>CIVL195 Masonry and Timber Design</td>
<td>5</td>
</tr>
<tr>
<td>CIVL201 Dynamics and Stability of Structures</td>
<td>5</td>
</tr>
<tr>
<td>CIVL202 Rock Mechanics</td>
<td>5</td>
</tr>
<tr>
<td>CIVL203 River and Coastal Engineering</td>
<td>5</td>
</tr>
<tr>
<td>CIVL204 Engineering Risk Assessment</td>
<td>5</td>
</tr>
<tr>
<td>CIVL205 Highway Engineering</td>
<td>5</td>
</tr>
<tr>
<td>CIVL206 Special Topic</td>
<td>5</td>
</tr>
</tbody>
</table>

**General Course Policies**

The attention of students is drawn to the General Course Policies of the Faculty published in the Faculty Policy Section of this Handbook. These policies are particularly important for students intending to enrol in a non-standard program.

### Elective Requirements

Electives may be chosen from any subjects offered within the University at 100, 200, 300, or 400 level provided that prerequisites are met (or written permission obtained from the Head of the Department offering the subject). Recommended electives are listed below. Not all electives may be offered in any one year. Students will be advised in September of the preceding year which CIVL400 level elective subjects will be available.

#### Recommended Elective Subjects

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIVL334 Open Channel Hydraulics</td>
<td>5</td>
</tr>
<tr>
<td>CIVL335 Statistical Methods</td>
<td>5</td>
</tr>
<tr>
<td>CIVL336 Structural Design 1</td>
<td>10</td>
</tr>
<tr>
<td>CIVL337 Soil Mechanics 2</td>
<td>5</td>
</tr>
<tr>
<td>CIVL338 Concrete and Metals Technology</td>
<td>5</td>
</tr>
<tr>
<td>CIVL339 Hydrology</td>
<td>5</td>
</tr>
<tr>
<td>CIVL340 Management</td>
<td>5</td>
</tr>
<tr>
<td>CIVL341 Fluid Filtration Methods</td>
<td>5</td>
</tr>
<tr>
<td>CIVL342 Technology and Human Values</td>
<td>10</td>
</tr>
</tbody>
</table>

* Approved Options

1. MATH102 and MATH1103 may replace MATH111 and MATH112.
2. PHYS102 may replace PHYS101.

After completion of the above program attendance will be required at various times during the day depending upon the subjects in which the candidate is enrolled and the requirements of the timetable. Full-time study is recommended after Stage 2. Students considering part-time study are advised to consult the Guide to Attendance Patterns at the beginning of this Section of the Handbook.
The Course Program has been amended with effect from the commencement of the 1992 academic year. All students enrolled in this course or any combined degree of which it forms part, are required to meet the requirements of the new Course Program. The following equivalence between previous subjects and new subjects will apply.

### Previous Subjects | New Subjects
---|---
MECH101 | CIV114
CIV124 | CIV124
CIV142 | CIV142
50c of elective | CIV142

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

### Combined Degree Programs

**BE(Civil Engineering)/BSurv**

A program which allows completion of the requirements of the BE(Civil Engineering) and BSurv is also available. The subjects undertaken in the first year of study of each program are identical to those required in the Civil Engineering program. The BE/Civil Engineering program requires a minimum of 5 years full-time study and the program will be granted only upon satisfactory completion of Year I of either program (that is a WAM of 55 or more).

Note that students undertaking a combined degree program are attending two or more distinct programs concurrently and therefore the annual enrolment required by such a program may exceed the normal annual load of 80 credit points. Also note that the 5ECE will be calculated on the basis of the proportion which each individual subject counts in the program of the separate degree of which it forms part and not on the proportion it contributes to any combined degree program. Timetabling constraints may limit the choice of optional subjects.

The detailed BE(Civil Engineering)/BSurv combined degree program is summarised in the Surveying section of this Handbook.

### Application

Application should be made in conjunction with submission of the enrolment application. The Faculty Office may be consulted regarding application forms and course requirements.

### Other Combined Degree Programs

Combined degree programs may also be available which allow completion of the requirements for the Bachelor of Computer Engineering (BE) degree in the specialisation of Computer Engineering with the requirements for another degree, for example Bachelor of Mathematics (BMath) and Bachelor of Science (BSc). The development of an individual program which meets with the approval of the Dean of the faculties concerned will be required. Students normally apply to enter combined degree programs at the conclusion of Year I. These combined degree programs require a WAM of 70 for entry.

### Computer Engineering

 disen: Bachelor of Engineering (BE) awarded in the specialisation of Computer Engineering

deignated Department: Department of Electrical and Computer Engineering

_course Coordinator: Professor H. Scheidler_

### Course Program

<table>
<thead>
<tr>
<th>Subject</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>YEAR I</td>
<td></td>
</tr>
<tr>
<td>Semester 1</td>
<td></td>
</tr>
<tr>
<td>MATH102 Mathematics 102</td>
<td>10</td>
</tr>
<tr>
<td>PHYS102 Physics 102</td>
<td>10</td>
</tr>
<tr>
<td>MATH112 Materials 1</td>
<td>5</td>
</tr>
<tr>
<td>Semester 2</td>
<td></td>
</tr>
<tr>
<td>MATH103 Mathematics 103</td>
<td>10</td>
</tr>
<tr>
<td>PHYS103 Physics 103</td>
<td>10</td>
</tr>
<tr>
<td>CIV111 Mechanics and Structures</td>
<td>5</td>
</tr>
<tr>
<td>MECH111 Engineering Drawing</td>
<td>5</td>
</tr>
<tr>
<td>* Approved Option</td>
<td></td>
</tr>
<tr>
<td>See note on Year I Mathematics Option below</td>
<td></td>
</tr>
<tr>
<td>YEAR II</td>
<td></td>
</tr>
<tr>
<td>Semester 1</td>
<td></td>
</tr>
<tr>
<td>MATH120 Multivariable Calculus</td>
<td>5</td>
</tr>
<tr>
<td>MATH126 Complex Analysis</td>
<td>5</td>
</tr>
<tr>
<td>MATH128 Linear Algebra 2</td>
<td>5</td>
</tr>
<tr>
<td>PHYS201 Quantum Mechanics and Electromagnetics</td>
<td>10</td>
</tr>
<tr>
<td>Semester 2</td>
<td></td>
</tr>
<tr>
<td>MATH120 Ordinary Differential Equations 1</td>
<td>5</td>
</tr>
<tr>
<td>ELEC220 Electronics 1</td>
<td>10</td>
</tr>
<tr>
<td>Both Semesters</td>
<td></td>
</tr>
<tr>
<td>COMP101 Computer Science 1</td>
<td>20</td>
</tr>
<tr>
<td>ELEC230 Electrical Engineering 2</td>
<td>20</td>
</tr>
</tbody>
</table>

**Approved Option**

MATH1217 may be taken in lieu of MATH1218

<table>
<thead>
<tr>
<th>Subject</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>YEAR III</td>
<td></td>
</tr>
<tr>
<td>Semester 1</td>
<td></td>
</tr>
<tr>
<td>COMP205 Programming in C</td>
<td>5</td>
</tr>
<tr>
<td>COMP206 Theory of Computation</td>
<td>5</td>
</tr>
<tr>
<td>MATH212 Discrete Mathematics</td>
<td>5</td>
</tr>
<tr>
<td>Semester 2</td>
<td></td>
</tr>
<tr>
<td>COMP201 Advanced Data Structures</td>
<td>5</td>
</tr>
<tr>
<td>COMP204 Programming Language Semantics</td>
<td>5</td>
</tr>
<tr>
<td>Both Semesters</td>
<td></td>
</tr>
<tr>
<td>ELEC320 Electronics 2</td>
<td>15</td>
</tr>
</tbody>
</table>

### General Course Policies

The attention of students is drawn to the General Course Policies of the Faculty published in the Faculty Policy Section of this Handbook. These policies are particularly important for students intending to enrol in a non-standard program.

### Year 1 Mathematics Option

MATH102 assumes attainment of a mark of at least 120/150 in 3 unit Mathematics at the NSW HSC examination. It is expected that students wishing to prepare for an honours degree and/or entrance to any combined degree program,will take MATH102 and MATH103. It is also recommended that students who successfully complete MATH102 and MATH103, undertake MATH218 in Year II.

Students undertaking for entry to MATH102 may take MATH111 and MATH112 in lieu of MATH102 and MATH103. These students who successfully complete MATH111 and MATH112 must take MATH217 in lieu of MATH1218 in Year II and may then choose to take MATH218 as 50c of General Elective.

### Elective Requirements

The requirements of each of the three elective categories is given below.

- **Computer Engineering Electives (Year IV)**
  - A total of 30 credit points (3 subjects) is to be chosen from the subjects listed below.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELEC420 Advanced Electronics</td>
<td>10</td>
</tr>
<tr>
<td>ELEC440 Advanced Control</td>
<td>10</td>
</tr>
<tr>
<td>ELEC441 Control System Design and Management</td>
<td>10</td>
</tr>
<tr>
<td>ELEC450 Advanced Communications</td>
<td>10</td>
</tr>
<tr>
<td>ELEC460 Computer Software</td>
<td>10</td>
</tr>
<tr>
<td>ELEC470 Computer Systems</td>
<td>10</td>
</tr>
<tr>
<td>COMP301 Compiler Design</td>
<td>10</td>
</tr>
<tr>
<td>COMP303 Computer Networks</td>
<td>10</td>
</tr>
<tr>
<td>COMP304 Database Design</td>
<td>10</td>
</tr>
<tr>
<td>COMP306 Computer Graphics</td>
<td>10</td>
</tr>
</tbody>
</table>
  | Not all Computer Engineering Electives may be offered in any one year. Students will be advised in semester of the preceding year which 400 level elective subjects will be available.

### Prerequisite and Corequisite Requirements

The prerequisite and corequisite requirements of individual subjects are listed in the schedule presented in Section 9 of this Handbook. Enrolment in a subject contrary to the provisions of this schedule will not be approved without the written permission of the Head of the Department offering the subject concerned.

### Part-time Attendance

All candidates for the degree must complete the requirements of the Course Program given above. All or part of this program may be completed by part-time attendance. Part-time students will normally take three years for each equivalent full-time year. The first two stages of the course are timetabled to permit a single-day work release attendance pattern with some evening lectures. These stages are:

- **STAGE I**
  - Semester 1
    - MATH102 Mathematics 102
    - COMP205 Programming in C
    - MATH212 Discrete Mathematics
  - Semester 2
    - MATH103 Mathematics 103
    - COMP201 Advanced Data Structures
    - COMP204 Programming Language Semantics

### Approved Option

See note on Year 1 Mathematics Option above.
## Combined Degree Programs

Combined degree programs are available which allow completion of the requirements for the Bachelor of Engineering (BEng) degree in the specialisation of Computer Engineering together with the requirements for a degree of Bachelor of Computer Science (BCompSc), Bachelor of Mathematics (BMath) and Bachelor of Science (BSc) (Physics Major). The subjects undertaken in the first year of study of each program are identical to those required in the Computer Engineering program except that the inclusion of MATH102 and MATH110 is required. Combined degree programs each require a minimum of 5 years full-time study. Notes that students undertaking a combined degree program are attempting two distinct programs concurrently and therefore the annual enrolment required by such a program may exceed the normal annual load of 40 credit points. Also note that HECS will be calculated on the basis of the proportion which each individual subject counts in the program of the separate degree of which it forms part and not on the proportion it contributes to any combined degree program. Timetabling constraints may limit the choice of optional subjects.

Direct entry to combined programs may be gained via UAC by applicants who attain a TIER of 92.5 at the NSW HSC (or equivalent). Students may also enter combined degree programs at the conclusion of Year 11 if they have achieved a WAM of 70. Application should be made in conjunction with submission of the re-enrolment application. The Faculty Office may be consulted regarding application forms and course requirements.

<table>
<thead>
<tr>
<th>SECTION FIVE</th>
<th>BACHELOR DEGREE COURSE PROGRAMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEMESTER 1</td>
<td>B.E.(Computer Engineering/BCompSc)</td>
</tr>
<tr>
<td>Semester 1</td>
<td>The following program has been approved by the Faculty Board.</td>
</tr>
<tr>
<td>MEC111</td>
<td>BEng (Computer Engineering)</td>
</tr>
<tr>
<td>PHYS102</td>
<td>BCompSc</td>
</tr>
<tr>
<td>Semester 2</td>
<td>Year I</td>
</tr>
<tr>
<td>CIV111</td>
<td>Year I of the Computer Engineering Course Program including</td>
</tr>
<tr>
<td>MECH101</td>
<td>MATH102 and MATH103. (Total 90 credit points)</td>
</tr>
<tr>
<td>PHYS103</td>
<td>Year II</td>
</tr>
<tr>
<td>Both Semesters</td>
<td>Year II of the Computer Engineering Course Program plus</td>
</tr>
<tr>
<td>ELIC101</td>
<td>PHIL242. (Total 85 credit points)</td>
</tr>
<tr>
<td>Semester 1</td>
<td>Year III</td>
</tr>
<tr>
<td>MATH111</td>
<td>Year III of the Computer Engineering Course Program plus</td>
</tr>
<tr>
<td>MATH112</td>
<td>MATH116. (Total 85 credit points)</td>
</tr>
<tr>
<td>Both Semesters</td>
<td>Year IV</td>
</tr>
<tr>
<td>COMP202, COMP203, MATH121 and STAT203. (Total 80 credit points)</td>
<td></td>
</tr>
<tr>
<td>Year V</td>
<td>Year V of the Computer Engineering Course Program plus</td>
</tr>
<tr>
<td>COMP306</td>
<td>STAT203. (Total 80 credit points)</td>
</tr>
<tr>
<td>Year VI</td>
<td>Year VI of the Computer Engineering Course Program. (Total 80 credit points)</td>
</tr>
</tbody>
</table>

### Approved Option

MATH102 and MATH103 may replace MATH111 and MATH112.

<table>
<thead>
<tr>
<th>YEAR II</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester 1</td>
<td></td>
</tr>
<tr>
<td>COMP203</td>
<td>Assembly Language</td>
</tr>
<tr>
<td>COMP205</td>
<td>Programming in &quot;C&quot;</td>
</tr>
<tr>
<td>COMP206</td>
<td>Theory of Computation</td>
</tr>
<tr>
<td>MATH212</td>
<td>Discrete Mathematics</td>
</tr>
<tr>
<td>MATH217</td>
<td>Linear Algebra I **</td>
</tr>
<tr>
<td>STAT203</td>
<td>Queues and Simulation</td>
</tr>
<tr>
<td>Year II Electives</td>
<td>10</td>
</tr>
</tbody>
</table>

| Semester 2 | |
| COMP202 | Advanced Data Structures |
| COMP204 | Computer Architecture |
| COMP206 | Programming Language Semantics |
| COMP207 | Theory of Computation |
| MATH215 | Operations research |
| MATH216 | Numerical Analysis |
| PHIL342 | Basic Symbolic Logic |
| Year II Electives | 10 |

** Approved Option

Students who take MATH102 and MATH103 in Year I may replace MATH117 with MATH121 Linear Algebra 2.

<table>
<thead>
<tr>
<th>YEAR III</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester 1</td>
<td></td>
</tr>
<tr>
<td>COMP301</td>
<td>Computer Design</td>
</tr>
<tr>
<td>COMP303</td>
<td>Computer Networks</td>
</tr>
<tr>
<td>COMP305</td>
<td>Design and Analysis of Algorithms</td>
</tr>
<tr>
<td>Semester 2</td>
<td></td>
</tr>
<tr>
<td>COMP302</td>
<td>Artificial Intelligence</td>
</tr>
<tr>
<td>COMP304</td>
<td>Database Design</td>
</tr>
</tbody>
</table>

### General Course Policies

The attention of students is drawn to the General Course Policies of the Faculty published in the Faculty Policy Section of this Handbook. These policies are particularly important for students intending to enrol in a non-standard program.

### Elective Requirements

Electives may be chosen from any subjects offered within the University at 100, 200, 300, or 400 level provided that prerequisites are met (or written permission obtained from the Head of the Department offering the subject). Recommended electives are listed below.

Recommended Elective Subjects | Credit Points |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>IELC130 Electrical Engineering 1 **</td>
<td>10</td>
</tr>
<tr>
<td>INFO101 Introduction to Information Systems *</td>
<td>10</td>
</tr>
<tr>
<td>INFO102 Information Storage and Management *</td>
<td>10</td>
</tr>
<tr>
<td>MATH110 Introduction to Philosophy</td>
<td>20</td>
</tr>
<tr>
<td>PHYS101 Physics 101</td>
<td>10</td>
</tr>
<tr>
<td>PHYS102 Physics 102 **</td>
<td>10</td>
</tr>
<tr>
<td>PHYS103 Physics 103</td>
<td>10</td>
</tr>
<tr>
<td>PSYC101 Psychology Introduction 1</td>
<td>10</td>
</tr>
<tr>
<td>PSYC102 Psychology Introduction 2</td>
<td>10</td>
</tr>
</tbody>
</table>

* Students intending to take INFO202 Analysis of Information Systems, INFO203 Information Systems Design or INFO204 Commercial Programming as Year II Elective subjects must choose both INFO301 and INFO302 as Year I Elective subjects.

** Students intending to enrol in the BEng/Computer Engineering/ BCompSc combined degree program should take IELC130, PHYS102 and PHYS103 as their Year I Elective subjects.

For Year II

<table>
<thead>
<tr>
<th>COMP341</th>
<th>Cognitive Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>IELC370</td>
<td>Computer Engineering 2</td>
</tr>
<tr>
<td>INFO202</td>
<td>Analysis of Information Systems</td>
</tr>
<tr>
<td>INFO203</td>
<td>Information Systems Design</td>
</tr>
<tr>
<td>INFO204</td>
<td>Commercial Programming</td>
</tr>
<tr>
<td>PHIL391</td>
<td>Technology and Human Values 1</td>
</tr>
<tr>
<td>PSYC201</td>
<td>Foundations for Psychology</td>
</tr>
<tr>
<td>PSYC202</td>
<td>Basic Processes</td>
</tr>
<tr>
<td>PSYC203</td>
<td>Developmental and Social Processes</td>
</tr>
</tbody>
</table>
Both Semesters

STAGE 2

Semester 1
MATH111 Mathematics 111 * 10
Semester 2
MATH112 Mathematics 112 * 10
Both Semesters
COMPI01 Computer Science 1 20

* Approved Option
MATH102 and MATH103 may replace MATH111 and MATH112.

STAGE 3

Both Semesters
ELEC170 Computer Engineering 1 10
Year 1 Electives 30

After completion of the above program attendance will be required at various times during the day depending upon the subjects in which the candidate is enrolled and the requirements of the timetable. Full-time study is recommended for Stage 2. Students considering part-time study are advised to consult the Guide to Attendance Patterns at the beginning of this Section of the Handbook.

Combined Degree Programs

Combined degree programs are available which allow completion of the requirements for the Bachelor of Computer Science together with the requirements for a degree of Bachelor of Mathematics (BMath) or Bachelor of Science (BSc) (Physics or Psychology Major). These programs require a minimum of 4 years full-time study. A program which allows completion of the requirements of the BCompSc program and ELEC170 is also available and requires a minimum of 5 years full-time study.

Note that students undertaking a combined degree program are attending two distinct programs concurrently and therefore the annual enrolment required by such a program may exceed the normal annual load of 80 credit points. Also note that HICCS will be calculated on the basis of the proportion which each individual subject counts in the program of the separate degree of which it forms part and not on the proportion it contributes to any combined degree program. Time表ling constraints may limit the choice of optional subjects.

Attention Patterns at the beginning of this Section of the Course Program are advised to consult the Guide to Attendance Patterns at the beginning of this Section of the Handbook.

Prerequisite and Corequisite Requirements

The prerequisite and corequisite requirements of individual subjects are listed in the schedule presented in Section 9 of this Handbook. Enrolment in a subject contrary to the provisions of this schedule will not be approved without the written permission of the Head of the Department offering the subject concerned.

Part-time Attendance

All candidates for the degree must complete the requirements of the Course Program given above. All or part of this program may be completed by part-time attendance. Part-time students will normally take two years for each equivalent full-time year. The first two stages of the courses are timetabled to permit a single-day work release attendance pattern with some evening lectures. These stages are:

Subjects Credit Points

STAGE 1
Semester 1
MATH111 Mathematics 111 * 10
Semester 2
MATH112 Mathematics 112 * 10
Both Semesters
COMPI01 Computer Science 1 20

* Approved Option
MATH102 and MATH103 may replace MATH111 and MATH112.

STAGE 2

Both Semesters
ELEC170 Computer Engineering 1 10
Year 1 Electives 30

After completion of the above program attendance will be required at various times during the day depending upon the subjects in which the candidate is enrolled and the requirements of the timetable. Full-time study is recommended for Stage 2. Students considering part-time study are advised to consult the Guide to Attendance Patterns at the beginning of this Section of the Handbook.

Computer Science Honours

Degree: Bachelor of Computer Science (Honours) (BCompSc(Hons))

Designated Department: Department of Computer Science

Course Coordinator: Prof. B. Beresford-Smith

The BCompSc(Hons) program is a postgraduate degree taken over one full-time year or two part-time years. This program is normally undertaken by students with a superior record in the discipline of Computer Science as further preparation for professional practice or to meet the requirements for admission to a research degree program. Entry to the honours program is possible for graduates of other disciplines. Enquiries regarding admission should be directed to the Course Coordinator.

The BCompSc(Hons) course program approved by the Faculty Board is presented below.

Course Program

Subjects Credit Points

COMP425 Honours Project 20
Selected COMP100 Level Subjects * 60

* In exceptional circumstances the Head of the Department of Engineering and Computer Science may approve enrolment in other subjects.

COMP400 Level Subjects

All COMP400 Level subjects are listed below. Not all subjects will be offered in any one year. Students will be advised of subjects intended to be offered in September of the preceding year. Subjects indicated as available may be withdrawn if enrolment is insufficient.

Subjects Credit Points

COMP401 Advanced Artificial Intelligence 10
COMP402 Formal Semantics of Programming Languages 10
COMP403 Advanced Computer Architecture 10
COMP404 Parallel Computation and VLSI 10
COMP405 Digital Image Processing 10
COMP406 Advanced Operating Systems 10
COMP408 Natural Language Processing 10
COMP409 Advanced Compiler Design 10
COMP410 Advanced Computer Networks 10
COMP411 Special Topic A 10
COMP412 Special Topic B 10
COMP413 Special Topic C 10
COMP414 Special Topic D 10
COMP435 Special Topic E 20

Electrical Engineering

Degree: Bachelor of Engineering (BEng) awarded in the specialisation of Electrical Engineering

Designated Department: Department of Electrical and Computer Engineering

Course Coordinator: Prof. D.J. Hill

Course Program

Subjects Credit Points

YEAR I

Semester 1

MATH102 Mathematics 102 * 10
MTED111 Engineering Drawing 5
PHYS102 Physics 102 5
Semester 2

CIVIL111 Mechanics and Structures 5
MATH103 Mathematics 103 * 10
MECH121 Materials 1 5
PHYS103 Physics 103 10

Both Semesters

ELEC111 Introduction to Electrical Engineering 5

ELEC120 Electrical Engineering 1 10
ELEC170 Computer Engineering 1 10

* Approved Option

See note on Year 1 Mathematics Option below.

YEAR II

Semester 1

COMPI21 Introduction to Programming 5
MATH101 Multivariable Calculus 5
MATH106 Complex Analysis I 5
MATH121 Linear Algebra 2 ** 5
PHYS201 Quantum Mechanics and Electromagnetics 10

Semester 2

ELEC200 Electronics I 10
MATH203 Ordinary Differential Equations 1 5
MECH205 Engineering Computations 5

Both Semesters

ELEC220 Electrical Engineering 2 20
MECH213 Dynamics 10

** Approved Option

MATH217 may replace MATH218

YEAR III

Semester 1

MECH271 Thermodynamics 5

Semester 1 or Semester 2

Mathematics Elective *** 5
Both Semesters

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELIC10</td>
<td>15</td>
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<td>ELIC20</td>
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<td>ELIC30</td>
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<td>ELIC370</td>
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<tr>
<td>MECH101</td>
<td>10</td>
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<tr>
<td>MECH102</td>
<td>10</td>
</tr>
</tbody>
</table>

**YEAR IV**

**Semester 1**  
ELEC130 Electrical Engineering Electives ***  30  
**Semester 2**

### Elective Requirements

- **Mathematics**
  - MATH102 Mathematics 102 * 10  
  - MATH103 Mathematics 103 * 10

### General Electives (Year IV)

Electives may be chosen from any subjects offered within the University at 100, 200, 300, or 400 level, provided that prerequisites are met or written permission obtained from the Head of the Department offering the subject. Recommended electives are listed below.

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELIC192</td>
<td>5</td>
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<tr>
<td>ELIC193</td>
<td>5</td>
</tr>
<tr>
<td>ELIC194</td>
<td>5</td>
</tr>
<tr>
<td>ELIC195</td>
<td>5</td>
</tr>
<tr>
<td>MATH102</td>
<td>5</td>
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<tr>
<td>MATH103</td>
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</tr>
<tr>
<td>MATH111</td>
<td>10</td>
</tr>
<tr>
<td>MATH112</td>
<td>10</td>
</tr>
<tr>
<td>MATH113</td>
<td>10</td>
</tr>
</tbody>
</table>

### General Electives (Year III)

Electives may be chosen from any subjects offered with a mark of at least 120/150 in listed Mathematics at the NSW HSC examination. It is expected that students wishing to prepare for an honours degree and/or for entry to any combined degree programs, will take MATH102 and MATH103. It is also recommended that students who successfully complete MATH102 and MATH103, undertake MATH111 in Year II.

### Electrical Engineering Electives (Year IV)

Online or within the Department of Mathematics. These stages are:

1. **Semester 1**  
2. **Semester 2**
3. **Semester 3**

### Combined Degree Programs

Combined degree programs are available which allow completion of the requirements for the Bachelor of Engineering (BE) degree in the specialisation of Electrical Engineering together with the requirements for a degree of Bachelor of Mathematics (BMath) or Bachelor of Science (BSc) (Physics Major) by a minimum of 5 years full-time study. The subjects undertaken in the first year of study of each program are identical to those required in the Electrical Engineering program except that the inclusion of MATH102 and MATH103 is required.
Electronic and Communications Engineering

Degree: Bachelor of Engineering (BE) awarded in the specialisation of Electronic and Communications Engineering

Designated Department: Associate Professor P.J. Moylan

Course Coordinator: Head of Department


This course has been established from 1992 to allow present students enrolled in either the Electrical Engineering or Computer Engineering programs to transfer to it if they choose to do so. Students entering either the Electrical Engineering or Computer Engineering programs in 1992 will also have an ex-ante right of transfer to this program for the commencement of 1993. The course will be available for direct entry via UAC for 1993.

Course Program

<table>
<thead>
<tr>
<th>Year</th>
<th>Subjects</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>MATH102</td>
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<tr>
<td></td>
<td>MECH111</td>
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<td>PHYS102</td>
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<tr>
<td></td>
<td>CIVL111</td>
<td>5</td>
</tr>
<tr>
<td>I</td>
<td>MATH103</td>
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<td>MECH121</td>
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<td>ELEC130</td>
<td>10</td>
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<tr>
<td></td>
<td>ELEC170</td>
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</tr>
</tbody>
</table>
|      | ** Approved Option **

YEAR I Mathematics Option

MATH102 assumes attainment of a mark of at least 120/150 in 3 unit Mathematics at the NSW HSC examination. It is expected that students wishing to prepare for an honours degree and/or for entry to any combined degree program, will take MATH102 and MATH103. It is also recommended that students who successfully complete MATH102 and MATH103, undertake MAT218 in Year II.

Students unprepared for entry to MATH102 may take MATH111 and MATH112 in lieu of MATH102 and MATH103. Those students who successfully complete MATH111 and MATH112 must take MAT218 in lieu of MATH102 in Year II, and may then choose to take MAT218 as the 5cp Mathematics Elective in Year III.

Effective Requirements

The requirements of each of the three elective categories are given below.

Mathematics Elective (Year III)

One 5 credit point subject is to be selected from those subjects offered by the Department of Mathematics at 200 or 300 level. The prerequisite and co-requisite requirements of the selected subject must be satisfied or written permission to enrol gained from the Head of the Department of Mathematics.

Electronic and Communications Engineering Electives (Year IV)

A total of 30 credit points (3 subjects) is to be chosen from the subjects listed below. All subjects listed are offered as full-year subjects.

** Not available before 1994

Not all Electrical Engineering Electives may be offered in any one year. Students will be advised in September of the preceding year which 400 level elective subjects will be available.

General Electives (Year IV)

Electives may be chosen from any subjects offered within the University at 100, 200, 300 or 400 level provided that prerequisites are met (or written permission obtained from the Head of the Department offering the subject). Recommended electives are listed below.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELEC192</td>
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<tr>
<td>ELEC193</td>
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<td>MAT202</td>
<td>5</td>
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<tr>
<td>MAT205</td>
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<td>MAT211</td>
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<td>MAT213</td>
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<td>MAT214</td>
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<td>MAT215</td>
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<td>MAT216</td>
<td>5</td>
</tr>
<tr>
<td>MECH184</td>
<td>5</td>
</tr>
</tbody>
</table>

** Industrial Experience subjects may be taken by part-time students after Stage 1.

Preliminary and Corequisite Requirements

The prerequisite and co-requisite requirements of individual subjects are listed in the schedule presented in Section 9 of this Handbook. Enrolment in a subject contrary to the provisions of the schedule will not be approved without the written permission of the Head of the Department offering the subject concerned.

Part-time Attendance

All candidates for the degree must complete the requirements of the Course Program given above. All or part of this program may be completed by part-time attendance. Part-time students will normally take two years for each equivalent full-time year. The first two stages of the course are time limited to permit a single day's work release attendance pattern with some evening lectures.

These stages are:

Subject | Year | Credit Points |
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>MATH102</td>
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<tr>
<td>MATH103</td>
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<td>PHI391</td>
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</table>
Environmental Engineering

**Degree:** Bachelor of Engineering (BE) awarded in the specialization of Environmental Engineering

**Designated Department:** Department of Civil Engineering and Surveying.

**Course Coordinator:** Dr. W. G. Field

### Course Program

<table>
<thead>
<tr>
<th>YEAR I</th>
<th>Semester 1</th>
<th>Credit Points</th>
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</thead>
<tbody>
<tr>
<td>CIVL111</td>
<td>Mechanics and Structures</td>
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</tr>
<tr>
<td>MATH111</td>
<td>Mathematics 111</td>
<td>10</td>
</tr>
<tr>
<td>MECH121</td>
<td>Materials 1</td>
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<td>Physics 101</td>
<td>10</td>
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<td>SURV111</td>
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<td>4</td>
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<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Credit Points</th>
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</thead>
<tbody>
<tr>
<td>CIVL131</td>
<td>Fluid Mechanics 1</td>
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<tr>
<td>MATH112</td>
<td>Mathematics 112</td>
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<td>MECH102</td>
<td>Programming</td>
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<td>Engineering Drawing</td>
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<td>SURV112</td>
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<td>CIVL141</td>
<td>Environmental Engineering 1</td>
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</table>

**Approved Options**
1. MATH102 and MATH103 may replace MATH111 and MATH112.
2. PHYS101 may replace PHYS101.

<table>
<thead>
<tr>
<th>YEAR II</th>
<th>Semester 1</th>
<th>Credit Points</th>
</tr>
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<tbody>
<tr>
<td>BIOL101</td>
<td>Plant and Animal Biology</td>
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<tr>
<td>CHEM101</td>
<td>Chemistry 101</td>
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<tr>
<td>CIVL232</td>
<td>Fluid Mechanics 2</td>
<td>5</td>
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<tr>
<td>MATH201</td>
<td>Mathematics 201</td>
<td>5</td>
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<tr>
<td>GEOL101</td>
<td>The Environment</td>
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<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL102</td>
<td>Cell Biology, Genetics and Evolution</td>
</tr>
<tr>
<td>CHEM102</td>
<td>Chemistry 102</td>
</tr>
<tr>
<td>CIVL233</td>
<td>Fluid Mechanics 3</td>
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<tr>
<td>MATH1203</td>
<td>Ordinary Differential Equations 1</td>
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<td>MECH205</td>
<td>Engineering Computations</td>
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<td>Environmental Engineering 2</td>
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<table>
<thead>
<tr>
<th>YEAR III</th>
<th>Semester 1</th>
<th>Credit Points</th>
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<tbody>
<tr>
<td>CHEM261</td>
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</tr>
<tr>
<td>CIVL334</td>
<td>Open Channel Hydraulics</td>
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<tr>
<td>CIVL381</td>
<td>Statistical Methods</td>
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<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Credit Points</th>
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<tbody>
<tr>
<td>BIOL201</td>
<td>Biochemistry</td>
</tr>
<tr>
<td>BIOL202</td>
<td>Animal Physiology</td>
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<tr>
<td>BIOL204</td>
<td>Cell and Molecular Biology</td>
</tr>
<tr>
<td>BIOL301</td>
<td>Molecular Genetics</td>
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<td>BIOL301</td>
<td>Environmental Plant Physiology</td>
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<tr>
<td>CHEM221</td>
<td>Inorganic Chemistry</td>
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<tr>
<td>CHEM231</td>
<td>Organic Chemistry</td>
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<tr>
<td>CHEM231</td>
<td>Inorganic Chemistry</td>
</tr>
<tr>
<td>CHEM331</td>
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<tr>
<td>CHEM361</td>
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<tr>
<td>CHEE264</td>
<td>Transfer Principles 2</td>
</tr>
<tr>
<td>CHEE274</td>
<td>Biotechnology</td>
</tr>
<tr>
<td>CHEE274</td>
<td>Separation Processes</td>
</tr>
<tr>
<td>CIVL222</td>
<td>Materials 2</td>
</tr>
<tr>
<td>CIVL251</td>
<td>Systems</td>
</tr>
<tr>
<td>CIVL271</td>
<td>Transportation Engineering</td>
</tr>
</tbody>
</table>

| BIOL201 | Biochemistry | 10 |
| BIOL202 | Animal Physiology | 10 |
| BIOL204 | Cell and Molecular Biology | 10 |
| BIOL301 | Molecular Genetics | 10 |
| BIOL301 | Cell Processes | 10 |
| BIOL301 | Environmental Plant Physiology | 10 |
| CHEM221 | Inorganic Chemistry | 10 |
| CHEM231 | Organic Chemistry | 10 |
| CHEM231 | Inorganic Chemistry | 10 |
| CHEM331 | Organic Chemistry | 10 |
| CHEM361 | Environmental Chemistry | 10 |
| CHEE264 | Transfer Principles 2 | 10 |
| CHEE274 | Biotechnology | 5 |
| CHEE274 | Separation Processes | 5 |
| CIVL222 | Materials 2 | 5 |
| CIVL251 | Systems | 5 |
| CIVL271 | Transportation Engineering | 10 |
## Industrial Engineering

**Degree:** Bachelor of Engineering (BE) awarded in the specialisation of Industrial Engineering

**Designated Department:** Department of Mechanical Engineering

**Course Coordinator:** Mr. G.D. Butler

### Course Program

#### Subjects and Credit Points

<table>
<thead>
<tr>
<th>Year</th>
<th>Semester</th>
<th>Course Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>YEAR I</td>
<td>Semester 1</td>
<td><strong>MATH111</strong> Mathematics 111 *</td>
</tr>
<tr>
<td>YEAR I</td>
<td>Semester 1</td>
<td><strong>MATH112</strong> Mathematics 112 *</td>
</tr>
<tr>
<td>YEAR I</td>
<td>Semester 2</td>
<td><strong>MECH101</strong> Engineering Drawing</td>
</tr>
<tr>
<td>YEAR I</td>
<td>Semester 2</td>
<td><strong>MECH102</strong> Thermodynamics</td>
</tr>
<tr>
<td>YEAR I</td>
<td>Semester 2</td>
<td><strong>PHYS101</strong> Physics 101 *</td>
</tr>
<tr>
<td>YEAR I</td>
<td>Semester 2</td>
<td><strong>PHYS102</strong> Physics 102 *</td>
</tr>
</tbody>
</table>

**Approved Options**

1. MATH102 and MATH103 may replace MATH111 and MATH112.
2. PHYS102 and PHYS103 may replace PHYS101 and PHYS102.
3. *Approved Options*

### Effective Requirements

Electives must be chosen from the list of Approved Elective Subjects given below. Not all electives may be offered in any one year and the entry requirements for selected subjects must be met. Students will be advised in September of the preceding year which MATH130 and 400 level elective subjects will be available.

<table>
<thead>
<tr>
<th>Approved Elective Subjects</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MATH120</strong> Multivariable Calculus</td>
<td>5</td>
</tr>
<tr>
<td><strong>MECH121</strong> Mechanics of Solids</td>
<td>5</td>
</tr>
<tr>
<td><strong>MECH122</strong> Thermodynamics</td>
<td>5</td>
</tr>
<tr>
<td><strong>STAT205</strong> Engineering Statistics</td>
<td>5</td>
</tr>
<tr>
<td><strong>MECH202</strong> Ordinary Differential Equations</td>
<td>5</td>
</tr>
<tr>
<td><strong>MECH203</strong> Engineering Computations</td>
<td>5</td>
</tr>
<tr>
<td><strong>MECH204</strong> Engineering Materials</td>
<td>5</td>
</tr>
<tr>
<td><strong>MECH205</strong> Fluid Mechanics</td>
<td>5</td>
</tr>
<tr>
<td><strong>MECH206</strong> Electrical Engineering Design</td>
<td>10</td>
</tr>
<tr>
<td><strong>MECH205</strong> Digital Electronics Design</td>
<td>10</td>
</tr>
<tr>
<td><strong>MECH202</strong> Dynamics</td>
<td>10</td>
</tr>
<tr>
<td><strong>MECH203</strong> Computer Graphics</td>
<td>5</td>
</tr>
<tr>
<td><strong>MECH204</strong> Artificial Intelligence</td>
<td>10</td>
</tr>
<tr>
<td><strong>MECH205</strong> Logic Design</td>
<td>5</td>
</tr>
<tr>
<td><strong>MECH206</strong> Computer Networks</td>
<td>5</td>
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<tr>
<td><strong>MECH207</strong> Data Structures</td>
<td>5</td>
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<tr>
<td><strong>MECH208</strong> Digital Signal Processing</td>
<td>5</td>
</tr>
<tr>
<td><strong>MECH209</strong> Machine Learning</td>
<td>5</td>
</tr>
<tr>
<td><strong>MECH200</strong> Robotics</td>
<td>5</td>
</tr>
<tr>
<td><strong>MECH201</strong> Engineering Mechanics</td>
<td>5</td>
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<tr>
<td><strong>MECH202</strong> Fluid Mechanics</td>
<td>5</td>
</tr>
<tr>
<td><strong>MECH203</strong> Mechanics of Solids</td>
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</tr>
</tbody>
</table>

### Course Coordinator

- **Mr. G.D. Butler**

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**Approved Elective Subjects (Credit Points)**

<table>
<thead>
<tr>
<th>Approved Elective Subjects</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MATH120</strong> Multivariable Calculus</td>
<td>5</td>
</tr>
<tr>
<td><strong>MECH121</strong> Mechanics of Solids</td>
<td>5</td>
</tr>
<tr>
<td><strong>MECH122</strong> Thermodynamics</td>
<td>5</td>
</tr>
<tr>
<td><strong>STAT205</strong> Engineering Statistics</td>
<td>5</td>
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<tr>
<td><strong>MECH202</strong> Ordinary Differential Equations</td>
<td>5</td>
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<tr>
<td><strong>MECH203</strong> Engineering Computations</td>
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<tr>
<td><strong>MECH204</strong> Engineering Materials</td>
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<tr>
<td><strong>MECH205</strong> Fluid Mechanics</td>
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</tr>
<tr>
<td><strong>MECH206</strong> Electrical Engineering Design</td>
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<tr>
<td><strong>MECH205</strong> Digital Electronics Design</td>
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</tr>
<tr>
<td><strong>MECH202</strong> Dynamics</td>
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<tr>
<td><strong>MECH203</strong> Computer Graphics</td>
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</tr>
<tr>
<td><strong>MECH204</strong> Artificial Intelligence</td>
<td>10</td>
</tr>
<tr>
<td><strong>MECH205</strong> Logic Design</td>
<td>5</td>
</tr>
<tr>
<td><strong>MECH206</strong> Computer Networks</td>
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<tr>
<td><strong>MECH207</strong> Data Structures</td>
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<tr>
<td><strong>MECH208</strong> Digital Signal Processing</td>
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<td><strong>MECH209</strong> Machine Learning</td>
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<td>5</td>
</tr>
<tr>
<td><strong>MECH202</strong> Fluid Mechanics</td>
<td>5</td>
</tr>
<tr>
<td><strong>MECH203</strong> Mechanics of Solids</td>
<td>5</td>
</tr>
</tbody>
</table>

---

**Course Coordinator:** Mr. G.D. Butler

### Effective Requirements

Electives must be chosen from the list of Approved Elective Subjects given below. Not all electives may be offered in any one year and the entry requirements for selected subjects must be met. Students will be advised in September of the preceding year which MATH130 and 400 level elective subjects will be available.

<table>
<thead>
<tr>
<th>Approved Elective Subjects</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MATH120</strong> Multivariable Calculus</td>
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<tr>
<td><strong>MECH121</strong> Mechanics of Solids</td>
<td>5</td>
</tr>
<tr>
<td><strong>MECH122</strong> Thermodynamics</td>
<td>5</td>
</tr>
<tr>
<td><strong>STAT205</strong> Engineering Statistics</td>
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<tr>
<td><strong>MECH202</strong> Ordinary Differential Equations</td>
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**Approved Elective Subjects (Credit Points)**

<table>
<thead>
<tr>
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<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MATH120</strong> Multivariable Calculus</td>
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<td><strong>MECH121</strong> Mechanics of Solids</td>
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<td><strong>MECH122</strong> Thermodynamics</td>
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</tr>
</tbody>
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**Course Coordinator:** Mr. G.D. Butler

### Effective Requirements

Electives must be chosen from the list of Approved Elective Subjects given below. Not all electives may be offered in any one year and the entry requirements for selected subjects must be met. Students will be advised in September of the preceding year which MATH130 and 400 level elective subjects will be available.

<table>
<thead>
<tr>
<th>Approved Elective Subjects</th>
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<tbody>
<tr>
<td><strong>MATH120</strong> Multivariable Calculus</td>
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</table>
SECTION FIVE

BACHELOR DEGREE COURSE PROGRAMS

Mechanical Engineering

Degree: Bachelor of Engineering (BiE) awarded in the specialisation of Mechanical Engineering

Designated Department: Department of Mechanical Engineering

Course Coordinator: Mr I.W. Hayes

Course Program

Subjects | Credit Points
---|---
**YEAR I**
Semester 1
MATH111 | Mathematics 111 * 10
MECH102 | Programming 5
MECH111 | Engineering Drawing 5
PHYS101 | Physics 101 * 10
Semester 2
CIVIL11 | Mechanics and Structures 5
MATH112 | Mathematics 112 * 10
MECH112 | Materials 1 5
MECH103 | Engineering Chemistry 5
PHYS102 | Physics 102 * 10
**Both Semesters**
ELEC170 | Computer Engineering 1 10
MECH101 | Introduction to Engineering 5

* Approved Options
1. MATH102 and MATH103 may replace MATH111 and MATH112.
2. PHYS102 and PHYS103 may replace PHYS101 and PHYS102.

**YEAR II**

Semester 1
MATH201 | Multivariable Calculus 5
MECH204 | Experimental Methods 1 5
MECH241 | Mechanics of Solids 1 5
MECH271 | Thermodynamics 1 5
STAT205 | Engineering Statistics 5
Semester 2
MATH203 | Ordinary Differential Equations 1 5
MECH205 | Engineering Computations 5
MECH222 | Materials 2 5
MECH225 | Fluid Mechanics 1 5
**Both Semesters**
MECH213 | Mechanical Engineering Design 1 15
MECH232 | Dynamics 10
ELEC130 | Electrical Engineering 1 10

**YEAR III**

Semester 1
MECH325 | Materials 3 5
Semester 2
ELEC321 | Electrical Energy Conversion 5
MATH202 | Partial Differential Equations 1 5

---

Elective Requirements

Electives must be chosen from the list of Approved Elective Subjects given below. A maximum of 10 credit points must be selected from the MECH 400 level subjects listed. Not all electives may be offered in any one year. Students will be advised in September of the proceeding year which MECH 300 and 400 level elective subjects will be available.

**Approved Elective Subjects**

- MATH204: Real Analysis 5
- MATH206: Complex Analysis 1 5
- MATH217: Linear Algebra 1 5
- MATH219: Industrial Experience * 5
- MECH192: Industrial Experience * 5
- MECH305: Advanced Numerical Programming 5
- MECH309: Noise Pollution and Control 5
- MECH315: Computer Aided Design 5
- MECH316: Finite Element Methods in Design 5
- MECH317: Bulk Materials Handling 5
- MECH318: Conveying of Bulk Solids 5
- MECH324: Ceramic Science and Technology 5
- MECH325: Polymer Science and Technology 5
- MECH326: Fabrication of Metals 5
- MECH381: Environmental Engineering 5
- MECH382: Engineering Administration 5
- MECH383: Quality Engineering 5
- MECH384: Engineering Economics 1 5
- MECH396: Computer Aided Manufacturing 5
- MECH397: Operations Research 1 5
- MECH398: Operations Research 2 5
- MECH405: Computation of Turbulent Flows 5
- MECH407: Environmental Engineering 5
- MECH408: Machine Condition Monitoring 5
- MECH412: Bulk Materials Handling 5
- MECH418: Maintenance Management 5
- MECH421: Composites in Engineering 5
- MECH431: Robotics 5
- MECH433: Introduction to Turbulence 5
- MECH473: Thermodynamics 3 5
- MECH474: Heat Transfer 5
- MECH484: Engineering Economics 2 5
- MECH485: Production Scheduling 5
- MECH497: Directed Reading ** 5
- MECH498: Directed Reading ** 10
- PHIL392: Technology and Human Values 2 5
- General Electives *** maximum of 20

---

Industrial Experience subjects may be taken by part-time students after stage 1.

---

MECH497 and MECH498 are normally taken as substantial extensions to MECH496. Supervision must be arranged and the written permission of the Head of the Department obtained before enrolment will be permitted in these subjects.

---

General Electives may be any subject(s) offered within the University at 100, 200, 300 or 400 level provided the prerequisites are met (or written permission obtained from the Head of the Department offering the subject).
The prerequisite and corequisite requirements of individual subjects are listed in the schedule presented in Section 9 of this Handbook. Enrolment in a subject contrary to the provisions of this schedule will not be approved without the written permission of the Head of the Department offering the subject concerned.

**Part-time Attendance**

All candidates for the degree must complete the requirements of the Course Program given above. All or part of this program may be completed by part-time attendance. Part-time students will normally take two years for each equivalent full-time year. The first two stages of the course are timetabled to permit a single day work release attendance pattern with some evening lectures. These stages are:

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Credit Points</th>
</tr>
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<tbody>
<tr>
<td>Semester 1</td>
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<tr>
<td>MATH111 Mathematics 111 *</td>
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<td>MECH111 Engineering Drawing</td>
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<tr>
<td>Semester 2</td>
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<td>CIVL111 Mechanics and Structures</td>
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<tr>
<td>MATH112 Mathematics 112 *</td>
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<td>MECH113 Engineering Chemistry</td>
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<td>MECH101 Introduction to Engineering</td>
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**STAGE 2**

<table>
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<td>PHYS101 Physics 101 *</td>
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<td>PHYS102 Physics 102 *</td>
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<td>Both Semesters</td>
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<td>ELEC190 Computer Engineering 1</td>
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</tbody>
</table>

* Approved Options

1. MATH102 and MATH103 may replace MATH111 and MATH112.
2. PHYS102 and PHYS103 may replace PHYS101 and PHYS102.

After completion of the above program attendance will be required at various times during the day depending upon the subjects in which the candidate is enrolled and the requirements of the timetable. Full-time study is recommended after Stage 2. Students considering part-time study are advised to consult the Guide to Attendance Patterns at the beginning of this Section of the Handbook.

**Combined Degree Programs**

A combined degree program is available which allows completion of the requirements for the Bachelor of Engineering (BEng) degree in the specialisation of Mechanical Engineering together with the requirements for a degree of Bachelor of Mathematics (BMath) by a minimum of 5 years full-time study. The subjects undertaken in the first year of study of the program are identical to those required in the Mechanical Engineering program except that the inclusion of MATH102 and MATH103 is required.

Note that students undertaking a combined degree program are attempting two distinct programs concurrently and therefore the annual enrolment required by such a program may exceed the normal annual load of 80 credit points. Also note that HECS will be calculated on the basis of the proportion which each individual subject counts in the program of the separate degree of which it forms part and not on the proportion it contributes to any combined degree program. Timetabling constraints may limit the choice of optional subjects.

Direct entry to the combined program may be gained via UAC by applicants who attain a TER of 92.5 at the NSW HSC. Full-time study is recommended after Stage 2. Students considering part-time study are advised to consult the Guide to Attendance Patterns at the University. These policies are particularly important for students intending to enrol in a non-standard program.

**Elective Requirements**

Electives may be chosen from any subjects offered within the University at 100, 200, 300, or 400 level, provided that prerequisites are met (or written permission obtained from the Head of the Department offering the subject). Recommended electives are listed below. All electives may be offered in any one year. Students will be advised in September of the preceding year which SURV400 level elective subjects will be available.

**Recommended Elective Subjects**

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Credit Points</th>
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<tbody>
<tr>
<td>SURV191 Industrial Experience *</td>
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<tr>
<td>SURV192 Industrial Experience *</td>
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<tr>
<td>SURV193 Industrial Experience *</td>
<td>5</td>
</tr>
<tr>
<td>SURV452 Geodesy 2</td>
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<tr>
<td>SURV462 Photogrammetry 2</td>
<td>5</td>
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<tr>
<td>SURV463 Advanced Cartography</td>
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<tr>
<td>SURV498 Special Topic</td>
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<td>SURV499 Special Topic</td>
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<td>CIVL222 Materials 2</td>
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<td>CIVL223 Materials 3</td>
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<td>CIVL231 Fluid Mechanics 3</td>
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<td>CIVL241 Environmental Science</td>
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<td>CIVL334 Open Chained Hydraulics</td>
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<td>MATH103 Mathematics 103</td>
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</tr>
<tr>
<td>MATH202 Partial Differential Equations 1</td>
<td>5</td>
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</tbody>
</table>
Combined BE/BSurv Degree Program

The combined degree program allows completion of the requirements for the Bachelor of Engineering (BE) degree in the specialisation of Civil Engineering together with the requirements for a degree of Bachelor of Surveying (BSurv) degree in a minimum of 5 years full-time study.

Note that students undertaking a combined degree program are attempting two distinct programs concurrently and therefore the annual enrolment required by such a program may exceed the normal annual load of 80 credit points. Also note that HECS will be calculated on the basis of the proportion which each individual subject counts in the program of the separate degree of which it forms part and not on the proportion it contributes to any combined degree program.

Students normally apply to enter combined degree programs at the conclusion of Year 1. Students who have completed the first year of either the Surveying or Civil Engineering program and have attained a weighted average mark (WAM) of 55 for entry may be admitted. Application should be made in conjunction with submission of the re-enrolment application. The Faculty Office may be consulted regarding application forms and course requirements. The Course Coordinator may be consulted regarding course requirements.

The detailed requirements are set out below.

The combined degree program requires completion of the following postgraduate degrees offered in the Faculty of Engineering.

Master of Computer Science
Master of Computing
Master of Engineering
Master of Engineering Science
Master of Surveying
Doctor of Philosophy

About This Section

This section contains the 1991 Regulations governing the following postgraduate degrees offered in the Faculty of Engineering:

- Master of Computer Science
- Master of Computing
- Master of Engineering
- Master of Engineering Science
- Master of Surveying
- Doctor of Philosophy

The Regulations appearing in this section were under review at the time of printing. It is not expected that admission requirements or the general provisions of coursework requirements will alter substantially. However, students enrolled in 1992 should ensure that they are aware of the relevant provisions new Rules which are expected to be operative from 1992. Details may be obtained from the Postgraduate Studies and Scholarships Section.

Regulations Governing Masters Degrees

Part I - General

1. (a) These Regulations prescribe the conditions and requirements relating to the degrees of Master of Architecture, Master of Arts, Master of Commerce, Master of Computer Science, Master of Computing, Master of Education, Master of Educational Studies, Master of Engineering, Master of Engineering Science, Master of Letters, Master of Mathematics, Master of Medical Science, Master of Psychology (Clinical), Master of Psychology (Educational), Master of Science, Master of Scientific Studies, Master of Special Education and Master of Surveying.

   (b) In these Regulations and the Schedules thereto, unless the context or subject matter otherwise indicates or requires:

   "Faculty Board" means the Faculty Board of the Faculty responsible for the course in which a person is enrolled or is proposing to enrol;

   "program" means the program of research and study prescribed in the Schedule;

   "Schedule" means the Schedule of these Regulations pertaining to the course in which a person is enrolled or is proposing to enrol; and

   "thesis" means any thesis or dissertation submitted by a candidate.

2. These Regulations shall not apply to degrees conferred before 1992.

3. A degree of Master shall be conferred in one grade only.

   (a) An application for admission to candidature for a degree of Master shall be made on the prescribed form and lodged with the Contact in the University by the prescribed date.

   (b) To be eligible for admission to candidature an applicant shall:

      (i) have satisfied the requirements for admission to a degree of Bachelor in the University of Newcastle as specified in the Schedule;
MASTER AND DOCTORAL DEGREE REGULATIONS

SECFIGSIX

5. The program shall be carried out:
(a) under the guidance of a supervisor or supervisors either
appointed by the Faculty Board or otherwise prescribed in
the Schedule; or
(b) as the Faculty Board may otherwise determine.

6. Upon request by a candidate the Faculty Board may grant
leave of absence from the course. Such leave shall not be
taken into account in calculating the period for the
program prescribed in the Schedule.

7. (a) A candidate may withdraw from a subject or course only
on the recommendation of the Faculty Board or otherwises as
may be prescribed in the Schedule.
(b) Unless otherwise specified in the Schedule, applications
for admission to candidature shall be considered by the
Faculty Board, which may approve or reject any
application.
(c) An applicant shall not be admitted to candidature unless
all requirements prescribed in the Schedule are
satisfied.

8. (a) A candidate may withdraw from a subject or course only
under the guidance of a
(b) in a case where a thesis has been submitted, to permit the
candidate to resubmit an amended thesis within twelve
months of the date on which the candidate is advised of
the result of the first examination or within such longer
period of time as the Faculty Board may prescribe; or
(c) not to recommend the candidate for the degree, in which case the
candidature shall be terminated.

9. In exceptional circumstances arising in a particular case, the
Secretary, the recommendation of the Faculty Board, may
waive any provision of these Regulations.

Part II - Examination and Results

10. The Examination Regulations approved from time to time by
the Council shall apply to all examinations with respect to a
degree of Master or the examination of a thesis which shall be
conducted in accordance with the provisions of Regulations 12 to 16 inclusive of these
Regulations.

11. The Faculty Board shall consider the results in subjects, the
reports of examiners and any other recommendations
prescribed in the Schedule and shall decide:
(a) to recommend to the Council that the candidate be
admitted to the degree;
(b) according to the result of the examination of a thesis
whether to permit the candidate to resubmit an amended
thesis within twelve months of the date on which the
candidate is advised of the
result of the first examination or
within such longer period of time as the
Faculty Board may prescribe; or
(c) to not recommend the candidate for the degree, in which case the
advise the Faculty Board of the candidate's decision and such further period as the
Dean may accept.

12. (a) The subject of a thesis shall be approved by the Faculty
Board on the recommendation of the Head of the
Department in which the candidate is carrying out the
research for the thesis.
(b) The thesis shall not contain as its main content any work or material which has previously been submitted by the
candidate for a degree in any tertiary institution unless
the Faculty Board otherwise permits.

13. The candidate shall give to the Secretary to the University
notices of intention to submit a thesis and such notice shall be accompanied by any prescribed fee.

GENERAL INFORMATION

Principal Dates 1992
(See separate entry for Bachelor of Medicine degree course)

<table>
<thead>
<tr>
<th>Year</th>
<th>Semester 1</th>
<th>Semester 2</th>
<th>Summer Semester</th>
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HOLIDAYS

- Friday 17 April, 1992: O$lander's Day
- Friday 28 September, 1992: Public Holiday - Labour Day
- Monday 26 October, 1992: Good Friday
- Monday 24 December, 1992: Christmas Day
- Saturday 25 December, 1992: Public Holiday - New Year's Day
- Monday 1 February, 1993: Public Holiday - Australia Day

REFERENCES

- UAC applications for enrolment in 1993 (Undergraduate courses other than Medicine)
- Wednesday, 31 July, 1992: Closing date for UAC applications for enrolment in 1993
- Friday, 31 July, 1992: Closing date for UAC applications for enrolment in 1993
- Monday, 3 January, 1993: Closing date for UAC applications for enrolment in 1993
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- Monday, 3 January, 1993: Closing date for UAC applications for enrolment in 1993
### Year Two

#### Semesters ONE and TWO

**Semester One**
- **commences:** Monday 2 March 1992
- **recess:** Friday 17 April 1992
- **recommences:** Monday 27 April 1992
- **concludes:** Friday 4 July 1992

**Semester Two**
- **commences:** Monday 20 July 1992
- **recess:** Friday 28 September 1992
- **concludes:** Friday 9 October 1992

**Examinations**
- **commences:** Monday 9 November 1992
- **concludes:** Friday 20 November 1992

**Mini-semester**
- **commences:** Monday 22 November 1992
- **concludes:** Friday 6 December 1992

**Notes:**
- Semester One consists of Block Four (10 weeks) and 7 weeks of Block Five.
- Semester Two consists of the remaining 7 weeks of Block Five, all of 8 to 9 (10 weeks) and Summer (1 week).

#### Year Three

**Black 7**
- **Date:** Feb 10 — May 1
- **Duration:** 12 weeks, 1 week block
- **ACV/CLINER:** 1 week, VACATION 12/4/92

**Black 8**
- **Date:** May 4 — June 26
- **Duration:** 8 weeks

**Vacation**
- **Date:** June 29 — July 10
- **Duration:** 2 weeks (ACV/CLINER)

**Black 9**
- **Date:** July 15 — Sep 9
- **Duration:** 9 weeks, 8 weeks block

**Stavet**
- **Date:** Sept 14 — Dec 18
- **Duration:** 1 week

**Assessment**
- **Date:** Nov 21, 28 — Jan 3
- **Duration:** 3 weeks

**Vacation**
- **Date:** Dec 12 — Jan 6
- **Duration:** 1 week

**Black 10**
- **Date:** Jan 10 — Dec 11
- **Duration:** 8 weeks

**Black 11**
- **Date:** Feb 3 — Mar 15
- **Duration:** 6 weeks

**Clinical Attachment 1**
- **Date:** Mar 16 — May 1
- **Duration:** 1 week attachment

**Clinical Attachment 2**
- **Date:** May 4 — May 8
- **Duration:** 1 week

**Clinical Attachment 3**
- **Date:** May 11 — June 19
- **Duration:** 6 weeks

**Clinical Attachment 4**
- **Date:** June 22 — July 31
- **Duration:** 2 weeks

**Clinical Attachment 5**
- **Date:** Aug 3 — Aug 14
- **Duration:** 2 weeks

**Clinical Attachment 6**
- **Date:** Aug 17 — Sep 25
- **Duration:** 8 weeks

**GP Period**
- **Date:** Sep 28 — Nov 6
- **Duration:** 6 weeks

**Stavet**
- **Date:** Nov 9 — Nov 18
- **Duration:** 9 weeks

**Assessment**
- **Date:** Nov 19 — Dec 4
- **Duration:** 1 week

**Year One**
- **Date:** Nov 30 — Dec 4
- **Duration:** 1 week

**Clinical Attachment 1**
- **Date:** Feb 3 — Mar 20
- **Duration:** 7 weeks

**Clinical Attachment 2**
- **Date:** Mar 23 — May 8
- **Duration:** 7 weeks

**Assessment**
- **Date:** May 11 — May 15
- **Duration:** 1 week

**Vacation**
- **Date:** May 18 — May 22
- **Duration:** 1 week

**Clinical Attachment 3**
- **Date:** May 25 — Jul 17
- **Duration:** 8 weeks

**Clinical Attachment 4**
- **Date:** Jul 13 — Aug 7
- **Duration:** 8 weeks

**Stavet**
- **Date:** Aug 31 — Sep 4
- **Duration:** 1 week

**Assessment**
- **Date:** Sept 7 — Sep 18
- **Duration:** 2 weeks

**2nd Assessment**
- **Date:** Oct 25 — Nov 1
- **Duration:** 1 week

**Elective Attachment**
- **Date:** Nov 28 — Nov 20
- **Duration:** 8 weeks

**Final Assessment**
- **Date:** Nov 23 — Nov 27
- **Duration:** 1 week

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### Advice and Information

#### Advice and Information

Advice and information on matters concerning the Faculties of the University can be obtained from a number of people.

**Faculty Secretaries**
- For general enquiries about University regulations, Faculty rules and policies, studies within the University and so on, students may consult their Faculty Secretaries.

**Faculty**
- **Architecture:** Ms Sheila Prout/Ms Vickie Drews
- **Art, Design & Communication:** Ms Sheila Prout/Ms Vickie Drews
- **Arts:** Ms David Donnelly
- **Economics:** & Ms Linda Hargan
- **Commerce:** Ms Natalie Downing
- **Education:** Ms Chandra Murri
- **Music:** Ms Katrina Booth-Kittle: Mr Jonny Block
- **Science:** Ms Norida You
- **Engineering:** Mr Geoff Gordon
- **Mad & Librarian:** Ms Elizabeth
- **Health Sciences:** Ms Jenny Hughes
- **Maurice Chalmers:** Ms Maurice
- **Music:** Mr Brian Kelleher
- **Nursing:** Ms Jill Queensland, phone 049 215706
- **Science & Mathematics:** Mr Geoff Gordon
- **Science:** Ms Sheila Prouls/Ms Jennie Gow
- **Social Sciences:** Ms Susan Evans/ Ms Jennie Gow

**Campus Services**
- **Student Services**
  - **Sub-Dean:** Ms Margaret McEniery
  - **Sub-Dean:** Mr Bruce Wilson
  - **Sub-Dean:** Mr Maurice
  - **Sub-Dean:** Ms Margaret Davies

**Advisory Services**
- **For Mathematics:** Lecturer in Mathematics, phone 049 215706

**Student Services**
- **Engineering:** Ms Natalie Downing
- **Mathematics:** Ms Jenny Hughes

**Advice and Information**
- Advice and information can be obtained from a number of people.

**University Services**
- **Services**
  - **Student Services**
  - **Engineering:** Ms Natalie Downing
  - **Mathematics:** Ms Jenny Hughes

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**Student Services**
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- **Mathematics:** Ms Jenny Hughes

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### Students with Disabilities

The University of Newcastle has a policy to provide equal opportunity to students with Special Needs.

#### Practical assistance, which may be required by students with a disability to facilitate their participation in their course of study, can be arranged through the Student Support Officer, Ms Annette Kennedy, located in Temporal Structure Mathematics, phone 049 215706 or the Sub-dean of Students, Ms Ma Kirkby, Room 215, Hunter Building, phone 049 215600.

Special equipment is available in some lecture theatres and in the Library.

**If you need academic assistance, please do not hesitate to contact your relevant Faculty Advisor.**

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### ENROLMENT OF NEW UNDERGRADUATE STUDENTS

#### Enrolment Process

- **Persons offered enrolment are required to attend in person at the Great Hall in February to enrol.**
- **Important information is given in the Office of the Enrolment and Admissions Board.**
- **Enrollment must be completed prior to enrolment of continuing students.**

**TRANSFER OF COURSE**

Students currently enrolled in an undergraduate course who wish to transfer to a different undergraduate course in 1992 must apply through the University of Newcastle. The transfer application must be completed prior to enrolment of continuing students.
machine readable listing for use when bringing books from the University Library, and contains the student's inserted passcode for access to facilities of the Computing Centre. Please note that the Student Card will not be activated until the General Service Charge has been paid.

Students are urged to take good care of their Student Card. If the card is lost or destroyed, there is a service charge of $3 payable before the card will be replaced.

A student who withdraws completely from studies should return the Student Card to the Student Division Office.

**RE-ADMISSION AFTER ABSENCE**

A person wishing to resume an undergraduate degree course who has been registered previously with the University of Newcastle, but not enrolled in 1992, is required to apply for admission again through the Universities Admissions Centre, Locked Bag 500 Lidcombe 2141. Application forms may be obtained from the UAC or from the Student Division Office and close with the UAC on 30 September each year. There is a $50.00 fee for late applications.

**ATTENDANCE STATUS**

A candidate for any qualification other than a postgraduate qualification who is enrolled in three quarters or more of a normal full-time program shall be deemed to be a full-time student whereas a candidate enrolled in one quarter or less of a full-time program shall be deemed to be a part-time student.

A candidate for a postgraduate qualification shall enrol as either a full-time or a part-time student as determined by the Faculty Board.

**CHANGE OF ADDRESS**

The University holds on record an address for correspondence and the University will not be responsible for notifying the Student Division Office in writing of any change in their address. A Change of Address form should be used and is available from the Student Division Office.

Failure to notify changes to your correspondence address could lead to the University being unable to contact you, and close with the UAC on 30 September each year. There is a $50.00 fee for late applications.

**FAILING TO PAY OVERDUE DEBTS**

Any student who has failed to repay any fees or fines, or to pay any other fine imposed, or who has failed to repay any overdue debts shall not be permitted to:
- complete an enrolment in a following year;
- receive a transcript of academic record;
- graduate; be awarded a Diploma;
- receive a replacement Student ID Card until such debts are paid.

Students are requested to pay any debts incurred without delay.

**LEAVE OF ABSENCE**

Subject to any provision concerning your course (as set out in the schedule), a candidate in good academic standing in the course:
- may take leave of absence for one year from the course;
- with the permission of the dean, may take leave of absence for two consecutive years from the course.

Students who change their name should advise the Student Division Office in writing of any change in their address.

Any student who is indebted to the University by reason of non-payment of fees or fines, or who has failed to repay any overdue debts shall not be permitted to:
- complete an enrolment in a following year;
- receive a transcript of academic record;
- graduate; be awarded a Diploma;
- receive a replacement Student ID Card until such debts are paid.

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- graduate; be awarded a Diploma;
- receive a replacement Student ID Card until such debts are paid.

Students are requested to pay any debts incurred without delay.

**EXAMINATIONS**

**GENERAL CONDUCT**

In acceptable standing, the University, students undertake to observe the by-laws and regulations at the University.

Students are expected to conduct themselves at all times in a diligent manner. Students who fail to do so are subject to disciplinary action.

**RULES FOR FORMAL EXAMINATIONS**

**PART I**

**APPLICATION OF RULES**

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

2. In these Rules, unless the context or subject matter otherwise indicates or requires:

- "Supervisor" means the degree, diploma or associate diploma or graduate certificate for which a candidate is enrolled;
- "Department" means the department assigned responsibility for a specific subject or includes any other body to responsible;
- "Departmental Examinations Committee" means the Departmental Examinations Committee of the Department of advanced in accordance with the Rules governing the examinations;
- "Examiner" includes any form of examination, assignment, test or any other work by which the final grade of a candidate is determined;
- "examiner" means an examiner, not being a member of the staff of the University, appointed to assist in the examination of an extended project, auxiliary work or similar work;
- "examiner" means an examiner not being a member of the faculty of the University, appointed to assist in the examination of an extended project, auxiliary work or similar work;
- "examinations" includes any form of examination, assignment, test or any other work by which the final grade of a candidate is determined;
- "external examiner" means an examiner not being a member of the staff of the University, appointed to sit in the examination of an extended project, auxiliary work or similar work;
- "external examiner" means an examiner not being a member of the faculty of the University, appointed to sit in the examination of an extended project, auxiliary work or similar work;
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- "external examiner" means an examiner not being a member of the faculty of the University, appointed to sit in the examination of an extended project, auxiliary work or similar work;
"supplementary examination" means an examination administered to a candidate in respect of whom any doubt exists as to the judgement to be recorded in an examination record.

PART 1 - GENERAL

Examinations other than in single department

3. (1) Where a Faculty is not composed of Departments, the functions and responsibilities of the Head of a Department and the Departmental Examinations Committee shall be undertaken respectively by the person or body in that Faculty approved for the purpose of these Rules by the Academic Senate.

(2) Where a subject is not the responsibility of a single Department, the person or body in that Faculty approved for the purpose of these Rules by the Academic Senate may undertake the functions and responsibilities of the Head of the Department and the Departmental Examinations Committee in respect of that subject, for which a decision shall be made by the Faculty Board concerned, or, where Departments from more than one Faculty are involved, by the Academic Senate.

Determination of nature and extent of examining

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

Publication of requirements

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

Penalties

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

PART 3 - PROCEDURES

External Examiners

7. (1) The Academic Senate may, on the recommendation of a Faculty Board, direct on the recommendation of the Head of a Department appoint one or more external examiners for the Department. Such appointment should be for a term of any year or, except with the approval of the Academic Senate, no external examiner for the Department shall be appointed for more than one consecutive term of office.

(2) Where the appointment of an external examiner for a candidate is presided over by the Rules for an award, or where the Faculty Board considers it justified on religious, conscientious or other grounds, special arrangements may be made to allow the candidate to attend a prescribed examination for the subject in which they are enrolled.

Examining

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

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

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

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

Departmental recommendations of results

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

Determination of results in subjects

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

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

(3) Each Faculty Board shall consider the recommendations of the Departmental Examinations Committee and, taking into account any change to a recommendation under sub-rule (1) or (2), shall decide:

(a) confirm the results; or

(b) defer the decision pending the outcome of such other action recorded by the Faculty Board as appropriate.

Grading of results in subjects

11. The result awarded in a subject to a candidate shall be one of those in the list of approved results determined by the Academic Senate from time to time.

Review of result in subject

12. (1) A candidate may apply for a review of any result awarded in a subject to that candidate.

(2) An application made under sub-rule (1) shall be made to the Academic Registrar on the prescribed form and shall be accompanied by the prescribed fee.

(3) A review of the result shall include a check:

(a) that all required parts of the assessment have been included in the final determination of the result;

(b) that the content of examination scripts has been fairly considered, including, where possible, a review of marks awarded to other candidates; and

(c) that all marks contributing to the final grade have been correctly weighted and their total accurately obtained but shall not include any review of earlier assessments which have not been made available to the candidate on a continuing basis throughout the subject.

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

Special Consideration

13. (1) A candidate who claims that:

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

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

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

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

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

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

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

PART 4 - FORMAL WRITTEN EXAMINATIONS

Responsibility

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

Timetable for formal written examinations

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

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

(3) Subject to the provisions of Rule 15(1)(b), a candidate who fails to attend an examination which is shown on the examination timetable shall be deemed to have failed for that examination.

Rules for formal written examinations

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

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

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

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

(d) no candidate shall leave the examination room after thirty minutes from the last ten minutes of the examination;

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

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

(2) a candidate shall not by any means obtain or endeavour to obtain any assistance, give or obtain any assistance to any other candidate, or conceal any breach of good order;

(3) a candidate shall not take from the examination room or in any way retain any examination paper or marked, graph paper, drawing paper or other material issued for use during the examination;

(4) no candidate may smokc in the examination room.

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

(a) by the Academic Registrar; and

(b) with the exception of paragraphs (a), (b), (c) and (d) by the supervisor, upon the decision of the Academic Registrar or in the discretion of the supervisor, provided that the circumstances of any case in which discretion has been exercised shall be recorded in writing to the Academic Registrar immediately following the conclusion of the examination.

PART 5 - OTHER EXaminATIONS

Responsibility

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

Timetable

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

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

Compliance with instructions

19. Candidates shall comply with any instructions given by the Head of Department or the supervisor relating to an examination. Any infringement of these rules constitutes an offence against discipline.

EXAMINATION RESULTS

End of your examination results will be mailed out by late December. Examination results for Semester I and II will be mailed out by the end of July.

No results will be given by telephone. After the release of both Semester I and II of examination results, a student may apply to have a result reviewed (see page 3). There is a charge per subject, which is determined by the University. For details on how to discover it, please contact the Academic Senate. However, it is strongly recommended that examination results are released only after careful assessment of students' performances and that, amongst other things, marginal failures are reviewed before results are released.
SPECIAL CONSIDERATION REQUESTS

All applications for special consideration should be made on the Application for Special Consideration form.

The granting of Special Consideration could involve a further examination or assessment held shortly after the formal examination.

Any further examination or assessment administered will be by the Department that offered the subject. Consequently you must therefore check with the Department that offered the subject to ascertain that Department's requirements. You should also check with the Department's nominee board for further advice concerning Special Consideration.

Application Forms may be obtained from your Faculty Office, Student Services, Sub-Dean, Student Health Service, Student Counselling Unit and Examinations 
Services Counter, Hunter Building.

Part 3 of the University's Examination Rules specifies procedure relating to Special Consideration Requests, for details see page vii and the necessary application form. You should read the instructions on the application form before applying for Special Consideration.

STATEMENTS OF ACADEMIC RECORD

If you wish to be issued with a statement of your academic record, you must complete the appropriate application form and lodge it with the University Registrar's Office with the appropriate fee (see page vii). The statement will be mailed as soon as it becomes available, to the nominated address. Applicants should allow adequate time for this to occur. Computer printed statements can normally be mailed within one week. Statements involving pre 1979 records might be expected to take longer to process. Applicants must ensure their details before statements can be finalised. Application forms may be obtained from the Student Division Enquiry Counter, Chancellery Building and the Examination Office, Hunter Building.

UNSATISFACTORY PROGRESS

The University has adopted Regulations Governing Unsatisfactory Progress which are set out below.

Students who become liable for action under the Regulations will be informed accordingly by mail after the release of the End of Year examination results and will be informed of the procedure to be followed if they wish to appeal.

Appeals against exclusion must be lodged together with an Examination Application Form by Friday 4 January 1991.

The Faculty's progress requirements are set out elsewhere in this volume.

Regulations Governing Unsatisfactory Progress

1. (1) These Regulations are made in accordance with the powers vested in the Council under By-law 5.1.2.

2. These Regulations shall apply to all students of the University except those who are candidates for a degree of Bachelor or Doctor.

3. In these Regulations, unless the context or subject matter otherwise indicates or requires:

"Admissions Committee" means the Admissions Committee of the Senate constituted under By-law 2.3.5;

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

"Faculty Board" means the Faculty Board of a Faculty in which a student is enrolled.

2. (1) A student's enrolment in a subject may be terminated by the Head of the Department of offering that subject if that student does not maintain a rate of progress considered satisfactory by the Head of Department. In determining whether a student is failing to maintain satisfactory progress the Head of Department may take into consideration such factors as:

(a) unsatisfactory attendance at lectures, tutorials, seminars, laboratory classes or field work;

(b) failure to complete laboratory work;

(c) failure to complete written work or other assignments;

(d) failure to complete field work.

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

(3) A student whose enrolment in a subject is terminated under regulation 2(1) of these Regulations may appeal to the Faculty Board which shall determine the matter.

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

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

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

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

(c) the student be excluded from further enrolment:

(i) in the course;

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

(iii) in the Faculty;

(d) if the Faculty Board considers its powers to deal with the case are inadequate, that the case be referred to the Admissions Committee together with a recommendation for such action as the Faculty Board considers appropriate.

(2) Before a decision is made under regulation 3(1)(b), (c) or (d) of these Regulations the student shall be given an opportunity to make representations with respect to the matter either in person or in writing or both.

(3) A student may appeal against any decision made under regulation 3 (1) of these Regulations either to the Admissions Committee or to the Faculty Board.

4. When the question of a student's exclusion is raised in a combined course or who has previously been excluded from enrolment in another course or Faculty is considered by the Faculty Board to be unsatisfactory, the Faculty Board shall refer the matter to the Admissions Committee together with a recommendation for such action as the Faculty Board considers appropriate.

5. When the question of a student's exclusion is raised in a combined course or who has previously been excluded from enrolment in another course or Faculty is considered by the Faculty Board to be unsatisfactory, the Faculty Board shall refer the matter to the Admissions Committee together with a recommendation for such action as the Faculty Board considers appropriate.

6. (1) The Admissions Committee shall consider any case referred to it by a Faculty Board and may:

(a) make any decision which the Faculty Board itself could have made pursuant to regulation 3(1)(b), (c) or (d) of these Regulations;

(b) exclude the student from enrolment in such other subjects, courses, or Faculties as it thinks fit;

(c) exclude the student from the University.

(2) The Committee shall not make any decision pursuant to regulation 6(1) of these Regulations unless it has first given the student the opportunity to be heard in person by the Committee.

7. A student may appeal to the Vice-Chancellor against any decision made by the Admissions Committee under this Regulation.

8. Where there is an appeal against any decision of the Admissions Committee made under Regulation 6 of these Regulations, the Vice-Chancellor may refer the matter back to the Admissions Committee with a recommendation or shall arrange for the appeal to be heard by the Council. The Council may confirm the decision of the Admissions Committee or may mắc hine for such other decision which the Admissions Committee is empowered to make pursuant to these Regulations.

9. (1) A student who has been excluded from further enrolment in a Faculty may enroll in a course in another Faculty only with the permission of the Faculty Board of that Faculty and on such conditions as it may determine after considering any representations to the Dean of the Faculty from which the student was excluded.

(2) A student who has been excluded from further enrolment in any course, Faculty or University under these Regulations may apply for permission to enroll therein again provided that in such cases there shall be no re-enrollment for the following academic year from the date of the exclusion. A decision on such application shall be made:

(a) by the Dean of the Faculty to which the student has been excluded from a single course or a single Faculty;

(b) by the Admissions Committee, in any other case.

CHARGES

The General Services Charge (details below) is payable by all students.

For undergraduate students are required to pay all charges when they
are liable to pay

Re-enrolling students receive in October each year, as part of their re-
enrollment kit, a Fee and Charges Notice. Students are expected to pay
charges in advance of re-enrolment at any Westmead Bank. The last date
for payment of charges with the Westmead Bank is 8 March 1991.

1. General Services Charge

(a) Student Proceeding to a Degree or Diploma

Per Annum

$258

(b) Non-Degree Student

Per Semester

Newcastle University Union

$134

(c) External Student

$37

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

2. Late Charges

Where the Fee and Charges Notice is delayed with all charges payable after the 28 February 1992

$50

3. Other Charges

(a) Examination under special supervision

$25

(b) Review of examination results, per subject

$25

(c) Replacement of Enrolment kit

$10

(d) Replacement of Student Card

$5

(e) Statement of Matriculation Status

of Services Counter

$50

(f) Statement of Academic Record

$10

(g) Minimum 2 copies

$1

(h) Additional copy

$1

Notes:

(i) Graduands will be provided with two copies of their statement free upon notification of eligibility to graduate.

(ii) Statements will be issued on request free of charge to other tertiary education institutions.

(iii) Ineligible Students

All charges, including debts outstanding to the University, must be paid before or upon enrolment — part payment of total amount due will not be accepted.

METHOD OF PAYMENT

Students are requested to pay charges due at any Westmead Bank up and including 28 February 1992. After 28 February 1992, payment of charges must be paid at any Westmead Bank but a $50.00 fee will also apply.

HIGHER EDUCATION CONTRIBUTION SCHEME (H.E.C.S.)

The Higher Education Contribution Scheme (H.E.C.S.) requires students to contribute towards the cost of their higher education. Each semester a student's H.E.C.S. liability is calculated according to his or her Student Load. The liability for 80 credits (32 units) is $2250. Student Loans are calculated as at the census date each semester i.e. 31st March in Semester One and 31st August in Semester Two. If you fail a subject, or withdraw after the census date, your H.E.C.S. liability remains unchanged.
SCHOLARSHIP HOLDERS AND SPONSORED STUDENTS

Some courses are exempt from H.E.C.S. charges and some students are exempt. Exemption from payment of the Higher Education Contribution (HECS) applies to:
- a fixed-fee-paying student in a "fixed-fee-paying postgraduate award course"
- a student in a "basic nurse education course"
- a "full-fee-paying overseas student"
- a "student who has paid the Overseas Student Charge"
- a fully sponsored overseas student
- a student in an "exchange course"
- a student in a "non-award" course
- a student who has been awarded a "HECS postgraduate scholarship"

Basic NURSE education courses will not be exempt from H.E.C.S. after 1993. Currently enrolled students continuing their studies in such a course will also be liable for H.E.C.S. in 1994 and in subsequent years. H.E.C.S. is administered as part of the enrolment process. Students enrolling in a new course must select one of these sections on the HECS Payment Options form.

On enrolment students must do one of the following:
(a) Elect to pay up-front which would require payment of 85% of the enrolment for the semester, with the balance to be paid by the Commonwealth. Students electing to pay up-front will be asked to pay at the commencing amount of each semester.
(b) Elect to defer their H.E.C.S. and pay through the taxation system, in which case they must either provide a tax file number as part of their enrolment. Institutions are required to ensure that the information given by students of their tax file number application is the same as that on their enrolment form. Students electing to defer their H.E.C.S. and pay through the taxation system are required to make payments towards their contribution until their taxable income reaches a minimum threshold level. For the 1991-92 income year the minimum threshold is $72,098. This amount will be increased each year; or
(c) Provide evidence of exemption from the H.E.C.S.

All students enrolling in a new course must complete a Payment Options form selecting one of the above three options. Deferred or upfront-paying students will subsequently maintain their elected payment option. Students must complete a new Payment Options form if they change courses or wish to change their payment option. Students who wish to change their Payment Option in any semester must do so before the census date for that semester. Changes to the upfront option will not be permitted after the due date for payment of Up Front Accounts (approximately one month before the census date).

Failing to pay up-front accounts by the due date or change to the deferred option before the census date will lead to automatic cancellation of your enrolment. Late Payments will not be permitted.

Please contact the H.E.C.S. Office if you have any queries about your H.E.C.S. obligations.

SCHOLARSHIP HOLDERS AND SPONSORED STUDENTS

Students holding scholarships or receiving other forms of financial assistance must lodge with the Cashiers' Fees and Charges Notice together with a warrant or other written evidence that charges will be paid by the sponsor. Sponsor must provide a separate warrant or letter for each student sponsored.

LOANS

Students who do not have sufficient funds to pay the general service charge should seek a loan from their bank, building society, credit union or other financial institution. An application for a loan from the student loan funds is possible when no other help is available. Applications for loans from these funds must be made before the 28 February, 1992 to avoid the addition of a late fee. Student loan funds are available for other necessary needs. Contact the Student Loans Officer, Mr Anne Laug, phone (049) 21.5959 or Student Support Officer, Ms Annette Rudah, phone (049) 21.9586 to arrange an appointment.

REFUND OF CHARGES

A student entitled to a refund of charges is required to notify the Student Services Division of complete withdrawal from studies by the following date:
- For students enrolled in normal award programmes for the full year: SEMESTER 1 Census Date
- For students permitted to enrol in Semester 2 only: SEMESTER 2 Census Date
- For students permitted to enrol in Semester 1 and after Semester 1 Census Date

Conditions for applying for a refund of charges include:
(a) A student failing to notify the University that he was withdrawing from studies by the above dates will not be entitled to a refund of charges. The Director (Finance) may impose interest on any uncollected amounts.
(b) A student who has paid the Overseas Student Charge will not be entitled to a refund of charges.
(c) A student who has paid the University's Travel and Parking Regulations must be satisfied that any services to which the student is entitled will be used.

The University reserves the right to refuse to grant a refund if:
- a student fails to provide satisfactory evidence that charges will be met
- a student fails to provide satisfactory evidence that he is in breach of the Regulations
- a student fails to provide satisfactory evidence that charges will be paid by the sponsor
- a student fails to lodge a Form of Change of Details or Application for Refund

The University may refuse to grant a refund if the student is in breach of any University Regulations. The student's failure to comply with the regulations or any of the above conditions will result in the student being refused a refund.

CASHIER

The Cashiers' Office on-campus is located in First Floor, Chancellory Building.

HOURS OF OPENING
- (a) During Semester 9.00am - 4.00pm
- (b) Vacation Period 9.00am - 12.30pm
- 2.00pm - 4.00pm

CHAPLAINCY SERVICE

The Chaplain's office is located in the temporary buildings adjacent to the Computer Teaching Building and opposite the Mathematics Building, and also in CN9 in the Hunter Building.

Hours of Opening
- Monday to Friday 8.30am - 5.00pm

COMMUNITY PROGRAMMES

The Department of Community Programmes offers a Spring course for students in its Summer programme (January and February), as well as courses for people who do not have to be formally accepted as University students.

Students interested in bridging course student should contact the Department's office at (049) 21.5555; Faculty of Science, Mathematics and Information Systems, 100 University Drive, University of Newcastle.

BANKING

complementary facilities and services. All students of the University of Newcastle become members of two unions.

COMMUNITY PROGRAMMES

of the University of Newcastle and, under the provisions of the University of Newcastle Act, is a constituent part of the University. By virtue of the Act and the University by-Laws, Convocation has a voice in the governance of the University through its right to elect members of Council and the Standing Committee's right to direct communication with the Council and the Senate. Through its membership of the Australian University Graduate Conference, Convocation also operates in other universities to give effective expression of opinion on matters of concern to graduates. The Convocation Officer can be contacted on (049) 21.6444.

CO-OP BOOKSHOP

The Co-op Bookshop is located within the Shortland Student Union. It stocks textbooks, general publications, computer discs and other software, audio-taped cassette. Discounts are available to Co-op members.

HOURS OF OPENING
- Monday, Wednesday and Friday 9.00am - 5.00pm
- Tuesday and Thursday 9.00am - 6.00pm
- First two weeks of semester 8.30am - 7.00pm
LOST PROPERTY

Students wishing to post notices within the Lost property may be collected from the following locations:

(a) Patrol Office, Great Hall between 9.00am - 4.00pm
(b) Property Services, C110, between 9.00am - 4.00pm

It is suggested that you telephone in advance.

NOTICEBOARDS

PUBLIC TRANSPORT

There is a Public Transport Service provided by the University. For further information and claim forms, please contact the University Computing Services.

STUDENT INSURANCE COVER

The University provides a Student Insurance Cover at a cost of $20.00 excess per annum for teaching and administrative staff. This cover includes a comprehensive bus accident policy which is administered by the University's Risk Management Department. The policy does not cover disability arising from sickness or disease.

UNIVERSITY COMPUTING SERVICES

Computers are widely used in teaching whenever this is appropriate. Some of these are managed by the teaching departments while others are maintained and supported by University Computing Services in partnership with the local academic departments.

The central computers and many others are connected to the Campus Local Area Network (LAN) which in turn is connected to the Australian Academic and Research Network (AARNet) and to the worldwide Internet.

University Computing Services provides administrative computing services for all activities of the university: for academic departments, for administrative divisions and for service units. Services are provided through central computers, through a campus network with external links, and through allocations to the coUctions of both the central computers and distributed disk computers.

There are more than 800 terminal connections directly to the campus network, allowing connection to various computers, both in University Computing Services and in University departments. A number of School and departmental computers and networks are also connected to the campus network.

Students are given access to central VAX/VAX and UNIX computers and centrally located microcomputers (Apple Macintosh and IBM PCs or clones) and to departmental and special purpose computers as appropriate to their course of study. Many packages are available such as the NAG numerical library, statistical programs such as Minintal, SAS, SPSS-X and BMDP and word processing. All students are free to use the electronic News and Mail services.

Students enrolling in a subject for which a computer connection time quote has been granted are normally given accounts on the central computers. Research students (Research Masters and PhD) are not limited to connection time and are allocated disk quotas appropriate to their work.

The computer normally operates continuously, with terminal room open from 08:00 to 21:00 on weekdays (and in the Computing and Information Sciences Building from 09:00 to 17:00 on weekdays for most of the academic year).

University Computing Services aim to provide a high-quality modern computing environment for students. Use of this together with their experience in using School and Departmental Computers will ensure graduates have acquired broad and valuable computing experience.

Students are encouraged to seek guidance in computer use from their instructors. The Help Desk also offers assistance to all users.

Conditions of Use

The University accepts no responsibility for any damage to or loss of data stored directly or indirectly from use of these facilities or for any consequential loss or damage. The University makes no warranty, express or implied regarding the computing services offered, or their fitness for any particular purpose.

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

The University’s liability in the event of any loss or damage shall be limited to the fees and charges paid to the University for the use of the computing facilities which resulted in the loss or damage. You may only use those facilities which have been authorised for your use. If access is provided by a password, you are not to make this password available to others. You may not change another user’s password, nor may you attempt to find out the password of another user. This applies both to facilities within the University and to any accessible using the University’s network.

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

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

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

You may not attempt to interfere with or disrupt the operation of the University’s computing facilities or any other facilities accessible by use of the University’s computing services.

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

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

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

For the purpose of Newcastle University, you are entitled to use the Auchmuty, Huxley, Science, Science Block, Tindal, Neo-Researcher and Myers libraries.

You are required to abide by any relevant instructions given by the Director or the Director’s designated officer. Such instructions may be issued by notice and shall be issued by notice and shall be in any media, including electronic media, in the University and/or in University departments.

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Students who are members of the Sports Union (this does not include students who have deferred study). Membership of the Sports Union is included in the General Services Charge.

Students are given accounts on the central computers.

Active life and active associate members of the Insured organisation.

Students who are members of the Student Union and staff of the University who join the Sports Union.

For further information and claim forms, please contact the Sports and Recreation office during business hours on (02) 215584.

UNIVERSITY LIBRARIES

The University of Newcastle has made use of computers in research and teaching for administrative purposes since the first computer was installed in October 1963.

The Biomedical Library houses monographs, serials, pamphlets and reference material in Biological and Medical sciences within the classification range O67.57-616.9 and 570-619. It is also a specialist library, the Medical Library, which houses a variety of resources and equipment supporting the Faculty of Medicine’s innovative and highly resource-dependent curriculum.

Additional locations of study are also maintained in seven campus centres for the use of students in clinical learning stages: Tamworth, Gosford, Maitland, Orange, Lismore and Dubbo. There is a permanent link between Board Chair and the operation of the Quirky Library Service under which registered users of the Quirky and Gardner Libraries enjoy complete reciprocal privileges.

The University Library is located in the Hunter building, this Library supports the teaching requirements of the Faculty of Science, Nursing, Education and Art, Design and Communication. It receives all Department of Education publications. Borrowers may have access to the Short Loan Collection for restricted periods. Other services include:

University Computing Services

Further information and assistance can be obtained at the University Library Reference Desk.

For additional information on how to use the Internet, please contact the University Library Reference Desk.

For the purpose of Newcastle University, you are entitled to use the Auchmuty, Huxley, Science, Science Block, Tindal, Neo-Researcher and Myers libraries.

You are required to abide by any relevant instructions given by the Director or the Director’s designated officer. Such instructions may be issued by notice and shall be issued by notice and shall be in any media, including electronic media, in the University and/or in University departments.

Limited facilities for disabled persons can be arranged by contacting the Librarian on 29 4131.

Limited facilities for disabled persons can be arranged if prior arrangement is made.

General Services Library

There are three separate libraries within the services: the John Hunter Hospital Branch, the Royal Newcastle Hospital Branch and the Mater Hospital Branch. The specific locations for these libraries will be published through the University Library Services guide and the appropriate library guides.

Borrowing/Identification Cards

You need an identification card to borrow. Student cards are issued to students upon payment of fees. Borrowing cards are issued to staff on open application at the Loans Enquiries Desk in the Auchmuty Library and the Circulation Desk in the Huxley Library.

Please remember to carry your card with you at all times if you wish to borrow. If books are borrowed on your card by another person, you are responsible for them. Report any lost card to the Lending Desk staff immediately, and replacement cards are available for $3.00 from the Student Division Office in the McMullin Building.

Books must be returned to the Library from which they were borrowed. A fine of $30.00 per item is levied when material is two days overdue. The
**UNIVERSITY LIBRARIES**

find will increase by 50 cents per day per item until the material is returned. If library material is lost or damaged, the replacement cost plus a processing fee will be charged.

**Borrowing Rights**
The following loan conditions apply at the Auchmuty and Huxley Libraries.

<table>
<thead>
<tr>
<th>Undergraduate</th>
<th>12 books overall for 2 weeks</th>
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<tbody>
<tr>
<td>Graduate diploma/Postgraduate Diploma (Pass or Honours)</td>
<td>12 books overall for 2 weeks</td>
</tr>
<tr>
<td>Postgraduate Qualifying/Bachelor Honours/Masters by Coursework</td>
<td>12 books overall for 2 weeks</td>
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<tr>
<td>2 journals for 1 week**</td>
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</tr>
<tr>
<td>Staff/Higher Doctorate/PhD and Masters by research</td>
<td>50 books overall for 12 weeks</td>
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<tr>
<td>6 journals for 1 week**</td>
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</table>
| * Some heavy demand material will be available on 3 day loans only to all staff and students. ** Most journals in the classification range 610-619 are not available for loan.

**Access to Information**
Library facilities include the computerised catalogue, ALLEYCAT, which provides direct access to information about materials held in the Auchmuty, Huxley, Central Coast and Gardiner Libraries. The Auchmuty and Huxley Libraries also hold databases on CD-ROM to enable students and staff to find journal articles in their subject areas. The print version of other indexes will be available in the Reference Collection for manual searching. Some will be available as computerised databases available via telecommunication networks. AARNET, the Australian academic network will provide access to others.

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

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

**Disabled Persons**
Both Auchmuty and Huxley Libraries have facilities for the needs of physically disabled and visually impaired library users. Contact librarians in each library will hold information about the library, parking, lift keys and other facilities like the Braille Library and the Kurrawil machine which are available from English printed text. Tactile facilities for disabled persons are located near the entrances in Reading Rooms 2 and 4 of the Auchmuty Library, while similar facilities exist in the foyer area outside the Huxley Library.

**Hours of Opening**

<table>
<thead>
<tr>
<th>(a) Auchmuty Library</th>
<th>(b) Huxley Library</th>
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<tr>
<td><strong>(i) Term Hours</strong></td>
<td><strong>(i) Term Hours</strong></td>
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<td>Monday to Thursday</td>
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<td>Saturday &amp; Sunday</td>
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<tr>
<td>8.30am to 7.00pm</td>
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**Library Closed**
- **(iv) Library Closed**
  - Australia Day, Easter except Easter Monday, Christmas to New Year
  - Long Vacation
    - Easter Monday, Anzac Day, Queen's Birthday, Show Day, Labour Day
- **(vi) Library Open**
  - Easter Monday, Anzac Day, Queen's Birthday, Show Day, Labour Day
- **(vii) Library Closed**
  - All public holidays
- **(viii) Conservation Library**
  - Monday to Friday 9.00am to 5.00pm
  - 2.00pm to 5.00pm
  - Closed for four weeks over Christmas/New Year vacation period.

*Some heavy demand material will be available on 3 day loans only to all staff and students.** Most journals in the classification range 610-619 are not available for loan.

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Notice: The information provided is subject to change. For the most current details, please consult the official library resources or contact the library directly.
14. (a) The candidate shall comply with the following provisions concerning the presentation of a thesis:
(i) the thesis shall contain an abstract of approximately 200 words describing its content;
(ii) the thesis shall be typed and bound in a manner prescribed by the University;
(iii) three copies of the thesis shall be submitted together with:
   • a certificate signed by the candidate that the main content of the thesis has not been submitted by the candidate for a degree of any other tertiary institution; and
   • a certificate signed by the supervisor indicating whether the candidate has completed the program and whether the thesis is of sufficient academic merit to warrant examination; and
   • if the candidate so desires, any documents or published work of the candidate whether bearing on the subject of the thesis or not.
(b) The Faculty Board shall determine the course of action to be taken should the certificate of the supervisor indicate that in the opinion of the supervisor the thesis is not of sufficient academic merit to warrant examination.

15. The University shall be entitled to retain the submitted copies of the thesis, accompanying documents and published work. The University shall be free to call on the thesis to be consulted or borrowed and, subject to the provisions of the Copyright Act, 1968 (Comm), may issue it in whole or in any part in photocopy or microfilm or other copying medium.

16. (a) For each candidate two examiners, at least one of whom shall be an external examiner (being a person who is not a member of the staff of the University) shall be appointed either by the Faculty Board or otherwise as prescribed in the Schedule.
(b) If the examiners' reports are such that the Faculty Board is unable to make any decision pursuant to regulation 11 of these Regulations, a third examiner shall be appointed either by the Faculty Board or otherwise as prescribed in the Schedule.

SCHEDULE 6 — MASTER OF ENGINEERING

1. The Faculty of Engineering shall be responsible for the course leading to the degree of Master of Engineering.

2. To be eligible for admission to candidature an applicant shall:
   (a) have satisfied the requirements for admission to a degree in Engineering Science at the University of Newcastle or other university approved for this purpose by the Faculty Board in the area in which the applicant proposes to carry out research; or
   (b) have satisfied the requirements for admission to a degree in the University of Newcastle or other university approved for this purpose by the Faculty Board and have completed to the satisfaction of the Faculty Board such work and such examinations as determined by the Faculty Board; or
   (c) in exceptional cases produce evidence of possessing such other qualifications as may be approved by the Faculty Board on the recommendation of the Head of the Department in which the candidate proposes to carry out the program.

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

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

5. Except with the permission of the Faculty Board a candidate shall take part in research seminars within the Department in which the program is being carried out.

SCHEDULE 7 — MASTER OF ENGINEERING

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

2. To be eligible for admission to candidature an applicant shall:
   (a) have satisfied the requirements for admission to a four year full-time or equivalent part-time Bachelor's degree in Engineering or Metallurgy from the University of Newcastle or any other approved university, or
   (b) have satisfied the requirements for admission to a three year full-time or equivalent part-time Bachelor's degree of the University of Newcastle or any other approved university and have completed to the satisfaction of the Faculty Board such work and examinations as determined by the Faculty Board; or
   (c) in exceptional cases produce evidence of possessing such academic and professional attainments as may be approved by the Faculty Board on the recommendation of the Head of Department in which the applicant proposes to carry out the program.

3. (a) An applicant shall nominate the Department in which it is proposed to pursue the program.
   (b) In the case of each applicant the Head of the nominated Department shall:
      (i) make recommendations to the Faculty Board on the applicant's suitability for admission to candidature; and
      (ii)
SCHEDULE 17 — MASTER OF COMPUTER SCIENCE
1. The Faculty of Engineering shall be responsible for the course leading to the degree of Master of Computer Science.
2. To be eligible for admission to the course an applicant shall:
   (a) have satisfied the requirements for admission to the degree of Bachelor of Computer Science with honours class I or II of the University of Newcastle or to an honour degree, approved for this purpose by the Faculty Board, of the University of Newcastle or any other university; or
   (b) have satisfied all the requirements for admission to a degree of Bachelor or Computer Science with honours class I or II of the University of Newcastle or to an honour degree, approved for this purpose by the Faculty Board, of the University of Newcastle or any other university; or
   (c) have satisfied all the requirements for admission to a degree of the University of Newcastle or to a degree, approved for this purpose by the Faculty Board, of another tertiary institution and have completed such work and passed such examinations as the Faculty Board may have determined and have achieved a standard at least equivalent to that required for admission to a degree of bachelor with record class honours; or
   (d) in exceptional cases produce evidence of possessing such academic or professional qualifications as may be approved by the Faculty Board on the recommendation of the Head of the Department of Electrical Engineering and Computer Science.
3. To qualify for admission to the degree a candidate shall pass a program of subjects approved by the Faculty Board containing:
   (a) a full time candidate shall complete the program in not less than two and not more than three years;
   (b) a part time candidate shall complete the program in not less than three and not more than five years;
   (c) the program shall be approved in advance by the Faculty Board; and
   (d) the candidate has completed no more than eight credit points in recognition of work completed in this University or elsewhere.
4. Except with the permission of the Faculty Board a candidate shall complete the program in not less than one and not more than three calendar years from its commencement.

SCHEDULE 18 — MASTER OF COMPUTING
1. The Faculty of Engineering shall be responsible for the course leading to the degree of Master of Computing.
2. To be eligible for admission to the course an applicant shall:
   (a) have satisfied all the requirements for admission to the degree of Bachelor of Computer Science of the University of Newcastle or to any other degree approved for this purpose by the Faculty Board; or
   (b) in exceptional cases produce evidence of possessing such academic or professional qualifications as may be approved by the Faculty Board on the recommendation of the Head of the Department of Electrical Engineering and Computer Science; and
   (c) complete such additional work and pass such examinations as the Faculty Board may determine.
3. To qualify for admission to the degree a candidate shall pass a program of subjects approved by the Faculty Board on the recommendation of the Head of the Department of Electrical Engineering and Computer Science containing not less than 160 credit points.
4. The program referred to in sub-section (1) shall contain:
   (a) an investigation of and report on a project specified by the candidate's supervisor; and
   (b) complete such additional work and pass such examinations as the Faculty Board may determine.
5. Except with the permission of the Faculty Board a candidate shall complete the program in not less than two and not more than five calendar years from its commencement.
6. The Faculty of Engineering shall be responsible for the investigation of and report on a project specified by the candidate's supervisor; or
   (a) have satisfied the requirements for admission to a degree in another tertiary institution and have completed such work and passed such examinations as the Faculty Board may have determined and have achieved a standard at least equivalent to that required for admission to a degree of bachelor with record class honours; or
   (b) in exceptional cases produce evidence of possessing such academic or professional qualifications as may be approved by the Faculty Board on the recommendation of the Head of the Department of Electrical Engineering and Computer Science.
7. To qualify for admission to the degree a candidate shall pass a program containing:
   (a) a full time candidate shall complete the program in not less than two and not more than three years;
   (b) a part time candidate shall complete the program in not less than three and not more than five years from its commencement.
### REQUIREMENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.</td>
<td>The Senate Review Committee shall be responsible for</td>
</tr>
<tr>
<td></td>
<td>advising the Doctoral Degree Committee of any recommendations concerning the course of action the Committee may specify;</td>
</tr>
<tr>
<td>7.</td>
<td>The Senate Review Committee shall appoint three examiners of whom at least two shall be members of the staff of the University.</td>
</tr>
<tr>
<td>10.</td>
<td>The University shall be entitled to retain the submitted copies of the thesis, accompanying documents and published work.</td>
</tr>
</tbody>
</table>

### SCHEDULE II — REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

1. An applicant for admission to candidature for the degree of Doctor of Philosophy shall |
   - have satisfied all the requirements for admission to the degree of Master of the degrees of Bachelor with first or second class honours in the University of Newcastle or a degree from another university approved for this purpose by the Doctoral Degree Committee; |

<table>
<thead>
<tr>
<th>54</th>
</tr>
</thead>
</table>
## GRADUATE COURSEWORK PROGRAMS

### About This Section

This section contains the course programs which have been approved by the Faculty Board in accordance with the Rules governing Admission to the Graduate Program.

Enquiries may be directed to the Faculty Office or the Course Coordinator indicated in the course entry concerned.

### Graduate Diploma in Computer Science

**Designated Department:** Department of Computer Science

**Course Coordinator:** Simon

The Diploma is intended as a part-time course for graduates of a variety of disciplines, however, candidates with a strong background in at least one programming language (Pascal or C are preferred) may be able to complete requirements in a single full-time year of study although, in this case, subject choice may be restricted.

**Subject prerequisites** are prescribed mainly in relation to the BCompSc program. The prescribed prerequisites may therefore be waived for those with an appropriate background. Enquiries regarding waiver of prerequisites should be directed to the Course Coordinator.

The DipCompSc course program approved by the Faculty Board is presented below.

### Course Program

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP201 Advanced Data Structures</td>
<td>5</td>
</tr>
<tr>
<td>COMP206 Programming in C</td>
<td>5</td>
</tr>
<tr>
<td>COMP307 Software Engineering Principles</td>
<td>10</td>
</tr>
</tbody>
</table>

**List A Subjects**

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP201 Computer Architecture</td>
<td>5</td>
</tr>
<tr>
<td>COMP203 Assembler Language</td>
<td>5</td>
</tr>
<tr>
<td>COMP204 Programming Language Semantics</td>
<td>5</td>
</tr>
<tr>
<td>COMP206 Theory of Computation</td>
<td>5</td>
</tr>
<tr>
<td>COMP211 Introduction to Programming</td>
<td>5</td>
</tr>
<tr>
<td>COMP299 Project **</td>
<td>5</td>
</tr>
<tr>
<td>MATH217 Linear Algebra I</td>
<td>5</td>
</tr>
<tr>
<td>MATH218 Discrete Mathematics</td>
<td>5</td>
</tr>
<tr>
<td>MATH219 Numerical Analysis</td>
<td>5</td>
</tr>
<tr>
<td>MATH309 Commercial Programming</td>
<td>10</td>
</tr>
<tr>
<td>MNGT303 Computing and Information Systems</td>
<td>10</td>
</tr>
<tr>
<td>MNGT304 Systems Design</td>
<td>10</td>
</tr>
<tr>
<td>PHIL242 Basic Symbolic Logic</td>
<td>5</td>
</tr>
<tr>
<td>STAT203 Queues and Simulation</td>
<td>5</td>
</tr>
</tbody>
</table>

**List B Subjects**

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP201 Compiler Design</td>
<td>10</td>
</tr>
<tr>
<td>COMP202 Artificial Intelligence</td>
<td>10</td>
</tr>
<tr>
<td>COMP203 Computer Networks</td>
<td>10</td>
</tr>
<tr>
<td>COMP204 Database Design</td>
<td>10</td>
</tr>
<tr>
<td>COMP205 Design and Analysis of Algorithms</td>
<td>10</td>
</tr>
<tr>
<td>COMP206 Computer Graphics</td>
<td>10</td>
</tr>
<tr>
<td>COMP208 Operating Systems</td>
<td>10</td>
</tr>
<tr>
<td>MNGT311 Management Information Systems</td>
<td>10</td>
</tr>
</tbody>
</table>

**Transition Arrangements**

The Course Program has been amended with effect from the commencement of the 1992 academic year. All students enrolled in this course or any combined degree of which it forms part, are required to meet the requirements of the new Course Program except as provided below.

1. Students who have completed COMP102 Introduction to Programming as an extraneous subject and who have not completed all List A subjects, will, if they request it, be granted credit for COMP212 Introduction to Programming towards satisfaction of List A requirements.

2. Students who have completed COMP201 Advanced Data Structures can count COMP201 Assembler Language as a compulsory subject in lieu of MNGT205 Programming in C.

3. Students who have completed COMP201 Advanced Data Structures prior to 1991 may not enrol in COMP212 Introduction to Programming.

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

Students enrolling in Graduate Diploma courses are referred to the Award Rules in Section 3 of this handbook.

### Graduate Diploma in Computing

**Designated Department:** Department of Computer Science

**Course Coordinator:** Simon

The Diploma is intended as a part-time course for graduates of a variety of disciplines, however, candidates with a strong background in at least one programming language (Pascal or C are preferred) may be able to complete requirements in a single full-time year of study although, in this case, subject choice may be restricted.

**Subject prerequisites** are prescribed mainly in relation to the BCompSc program. The prescribed prerequisites may therefore be waived for those with an appropriate background. Enquiries regarding waiver of prerequisites should be directed to the Course Coordinator.

The DipCompSc course program approved by the Faculty Board is presented below.

### Course Program

The DipCompSc course program approved by the Faculty Board requires completion of 90 credit points selected from the list of approved subjects given below. In exceptional circumstances the student may approve other subjects.

**List A Subjects**

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP201 Computer Architecture</td>
<td>5</td>
</tr>
<tr>
<td>COMP203 Assembler Language</td>
<td>5</td>
</tr>
<tr>
<td>COMP204 Programming Language Semantics</td>
<td>5</td>
</tr>
<tr>
<td>COMP206 Theory of Computation</td>
<td>5</td>
</tr>
<tr>
<td>COMP211 Introduction to Programming</td>
<td>5</td>
</tr>
<tr>
<td>COMP299 Project **</td>
<td>5</td>
</tr>
<tr>
<td>MATH217 Linear Algebra I</td>
<td>5</td>
</tr>
<tr>
<td>MATH218 Discrete Mathematics</td>
<td>5</td>
</tr>
<tr>
<td>MATH219 Numerical Analysis</td>
<td>5</td>
</tr>
<tr>
<td>MATH309 Commercial Programming</td>
<td>10</td>
</tr>
<tr>
<td>MNGT303 Computing and Information Systems</td>
<td>10</td>
</tr>
<tr>
<td>MNGT304 Systems Design</td>
<td>10</td>
</tr>
<tr>
<td>PHIL242 Basic Symbolic Logic</td>
<td>5</td>
</tr>
<tr>
<td>STAT203 Queues and Simulation</td>
<td>5</td>
</tr>
</tbody>
</table>

**List B Subjects**

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP201 Compiler Design</td>
<td>10</td>
</tr>
<tr>
<td>COMP202 Artificial Intelligence</td>
<td>10</td>
</tr>
<tr>
<td>COMP203 Computer Networks</td>
<td>10</td>
</tr>
<tr>
<td>COMP204 Database Design</td>
<td>10</td>
</tr>
<tr>
<td>COMP205 Design and Analysis of Algorithms</td>
<td>10</td>
</tr>
<tr>
<td>COMP206 Computer Graphics</td>
<td>10</td>
</tr>
<tr>
<td>COMP208 Operating Systems</td>
<td>10</td>
</tr>
<tr>
<td>MNGT311 Management Information Systems</td>
<td>10</td>
</tr>
</tbody>
</table>

**Transition Arrangements**

The Course Program has been amended with effect from the commencement of the 1992 academic year. All students enrolled in this course or any combined degree of which it forms part, are required to meet the requirements of the new Course Program except as provided below.

1. Students who have completed COMP102 Introduction to Programming as an extraneous subject and who have not completed all List A subjects, will, if they request it, be granted credit for COMP212 Introduction to Programming towards satisfaction of List A requirements.

2. Students who have completed COMP201 Advanced Data Structures can count COMP201 Assembler Language as a compulsory subject in lieu of MNGT205 Programming in C.

3. Students who have completed COMP201 Advanced Data Structures prior to 1991 may not enrol in COMP212 Introduction to Programming.

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

Students enrolling in Graduate Diploma courses are referred to the Award Rules in Section 3 of this handbook.
Diploma in Surveying

**Course Requirements**

The postgraduate Diploma in Surveying is designed to broaden and further the education of the practising surveyor, particularly in the light of recent technological changes which have significantly altered the role and operational techniques of professional surveyors.

While a full workload for a single year of a course is normally considered to be 80 credit points, it might not be possible to complete the requirements of the DipSurv course program in a single year of attendance because of subject prerequisite requirements. Subject prerequisites are, however, prescribed mainly in relation to the BSurv program. The prescribed prerequisites may therefore be waived for DipSurv students with an appropriate background. Enquiries regarding waiver of prerequisites should be directed to the Course Coordinator.

**Course Coordinator:**

Associate Professor J.G. Fryer

**Course Program**

The DipSurv course program approved by the Faculty Board requires completion of 80 credit points selected from the list of approved subjects given below and approved by the Course Coordinator. In exceptional circumstances the Head of the Department of Civil Engineering and Surveying may approve enrolment in other subjects.

**Approved Diploma in Surveying Subjects**

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON101 Economics 1</td>
<td>20</td>
</tr>
<tr>
<td>ECON371 Principles of Economics</td>
<td>10</td>
</tr>
<tr>
<td>GEGO101 Introduction to Physical</td>
<td>10</td>
</tr>
<tr>
<td>GEGO102 Introduction to Human</td>
<td>10</td>
</tr>
<tr>
<td>LAW291 Legal Process</td>
<td>5</td>
</tr>
<tr>
<td>LAW292 Property and Survey Law</td>
<td>5</td>
</tr>
<tr>
<td>SURV341 Hydrographic Surveying</td>
<td>5</td>
</tr>
<tr>
<td>SURV334 Error Theory</td>
<td>5</td>
</tr>
<tr>
<td>SURV361 Photogrammetry 1</td>
<td>10</td>
</tr>
<tr>
<td>SURV352 Geodesy 2</td>
<td>5</td>
</tr>
<tr>
<td>SURV462 Photogrammetry 2</td>
<td>5</td>
</tr>
<tr>
<td>SURV463 Advanced Cartography</td>
<td>5</td>
</tr>
<tr>
<td>SURV475 Land Valuation</td>
<td>10</td>
</tr>
<tr>
<td>SURV473 Town Planning</td>
<td>10</td>
</tr>
<tr>
<td>SURV474 Project **</td>
<td>15</td>
</tr>
<tr>
<td>SURV482 Minor Project A **</td>
<td>20</td>
</tr>
<tr>
<td>SURV483 Minor Project B **</td>
<td>20</td>
</tr>
<tr>
<td>SURV484 Major Project **</td>
<td>40</td>
</tr>
</tbody>
</table>

* A ten day Jive-in Survey Camp is included as part of SURV95.

**Course Program A**

For students commencing in odd numbered calendar years.

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP301 Compiler Design</td>
<td>10</td>
</tr>
<tr>
<td>COMP302 Artificial Intelligence</td>
<td>10</td>
</tr>
<tr>
<td>COMP303 Computer Networks</td>
<td>10</td>
</tr>
<tr>
<td>COMP304 Database Design</td>
<td>10</td>
</tr>
<tr>
<td>COMP305 Design and Analysis of</td>
<td>10</td>
</tr>
<tr>
<td>Algorithms</td>
<td>10</td>
</tr>
<tr>
<td>SURV381 Geodesy 2</td>
<td>5</td>
</tr>
<tr>
<td>SURV393 Artificial Intelligence</td>
<td>10</td>
</tr>
<tr>
<td>SURV401 Artificial Intelligence</td>
<td>10</td>
</tr>
<tr>
<td>SURV402 Formal Semantics of</td>
<td>10</td>
</tr>
<tr>
<td>Programming Languages</td>
<td></td>
</tr>
<tr>
<td>COMP303 Advanced Computer</td>
<td>10</td>
</tr>
<tr>
<td>Architecture</td>
<td></td>
</tr>
<tr>
<td>COMP304 Parallel Computation and</td>
<td>10</td>
</tr>
<tr>
<td>VLSI</td>
<td></td>
</tr>
<tr>
<td>COMP305 Digital Image Processing</td>
<td>10</td>
</tr>
<tr>
<td>COMP306 Advanced Operating</td>
<td>10</td>
</tr>
<tr>
<td>Systems</td>
<td></td>
</tr>
<tr>
<td>COMP307 Data Language Processor</td>
<td>10</td>
</tr>
<tr>
<td>COMP308 Advanced Compiler Design</td>
<td>10</td>
</tr>
<tr>
<td>COMP410 Advanced Computer Networks</td>
<td>10</td>
</tr>
<tr>
<td>COMP411 Special Topic A</td>
<td>10</td>
</tr>
<tr>
<td>COMP412 Special Topic B</td>
<td>10</td>
</tr>
<tr>
<td>COMP413 Special Topic C</td>
<td>10</td>
</tr>
<tr>
<td>COMP414 Special Topic D</td>
<td>10</td>
</tr>
<tr>
<td>COMP415 Special Topic E</td>
<td>10</td>
</tr>
</tbody>
</table>

**Course Program B**

For students commencing in even numbered calendar years.

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP301 Compiler Design</td>
<td>10</td>
</tr>
<tr>
<td>COMP302 Artificial Intelligence</td>
<td>10</td>
</tr>
<tr>
<td>COMP303 Computer Networks</td>
<td>10</td>
</tr>
<tr>
<td>COMP304 Database Design</td>
<td>10</td>
</tr>
<tr>
<td>COMP305 Design and Analysis of</td>
<td>10</td>
</tr>
<tr>
<td>Algorithms</td>
<td>10</td>
</tr>
<tr>
<td>SURV381 Geodesy 2</td>
<td>5</td>
</tr>
<tr>
<td>SURV393 Artificial Intelligence</td>
<td>10</td>
</tr>
<tr>
<td>SURV401 Artificial Intelligence</td>
<td>10</td>
</tr>
<tr>
<td>SURV402 Formal Semantics of</td>
<td>10</td>
</tr>
<tr>
<td>Programming Languages</td>
<td></td>
</tr>
<tr>
<td>COMP303 Advanced Computer</td>
<td>10</td>
</tr>
<tr>
<td>Architecture</td>
<td></td>
</tr>
<tr>
<td>COMP304 Parallel Computation and</td>
<td>10</td>
</tr>
<tr>
<td>VLSI</td>
<td></td>
</tr>
<tr>
<td>COMP305 Digital Image Processing</td>
<td>10</td>
</tr>
<tr>
<td>COMP306 Advanced Operating</td>
<td>10</td>
</tr>
<tr>
<td>Systems</td>
<td></td>
</tr>
<tr>
<td>COMP307 Data Language Processor</td>
<td>10</td>
</tr>
<tr>
<td>COMP308 Advanced Compiler Design</td>
<td>10</td>
</tr>
<tr>
<td>COMP410 Advanced Computer Networks</td>
<td>10</td>
</tr>
<tr>
<td>COMP411 Special Topic A</td>
<td>10</td>
</tr>
<tr>
<td>COMP412 Special Topic B</td>
<td>10</td>
</tr>
<tr>
<td>COMP413 Special Topic C</td>
<td>10</td>
</tr>
<tr>
<td>COMP414 Special Topic D</td>
<td>10</td>
</tr>
<tr>
<td>COMP415 Special Topic E</td>
<td>10</td>
</tr>
</tbody>
</table>

**Note:** No more than 40 credit points may be counted towards Diploma requirements.

**Students enrolling in Graduate Diploma courses are referred to the Award Rules in Section 3 of this handbook.**

**Graduate Coursework Program**

**Master of Engineering Science - Industrial Systems**

<table>
<thead>
<tr>
<th>Degree</th>
<th>Master of Engineering Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Coordinator</td>
<td>Professor D.J. Hill</td>
</tr>
<tr>
<td>This course program is offered in</td>
<td>a part-time, intensive teaching format to maximize access for practising engineers. Core course subjects are offered in alternate years in the patterns indicated below.</td>
</tr>
</tbody>
</table>

**Course Program A**

For students commencing in odd numbered calendar years.

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIEC1584 Engineering Economics</td>
<td>5</td>
</tr>
<tr>
<td>MIEC1585 Maintenance Management</td>
<td>5</td>
</tr>
<tr>
<td>MIEC1586 Computer Science</td>
<td>5</td>
</tr>
</tbody>
</table>

**Both Semesters**

Industrial Systems Project/Seminar A* 20

* Selection of the project area occurs in the first teaching session.

**Course Program B**

For students commencing in even numbered calendar years.

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELEC511 Condition Monitoring</td>
<td>5</td>
</tr>
<tr>
<td>ELEC512 Industrial Systems</td>
<td>5</td>
</tr>
<tr>
<td>Project A*</td>
<td>20</td>
</tr>
<tr>
<td>MIEC1584 Engineering Economics</td>
<td>5</td>
</tr>
<tr>
<td>MIEC1585 Maintenance Management</td>
<td>5</td>
</tr>
<tr>
<td>MIEC1586 Computer Science</td>
<td>5</td>
</tr>
</tbody>
</table>

**Both Semesters**

Industrial Systems Project/Seminar B* 20

* Selection of the project area occurs in the first teaching session.
The departmental indicators included in this Handbook are listed below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL</td>
<td>Biology</td>
</tr>
<tr>
<td>CHEG</td>
<td>Chemical Engineering</td>
</tr>
<tr>
<td>CHEM</td>
<td>Chemistry</td>
</tr>
<tr>
<td>CIVL</td>
<td>Civil Engineering and Surveying (Civil Engineering subject)</td>
</tr>
<tr>
<td>COMM</td>
<td>Commerce</td>
</tr>
<tr>
<td>COMP</td>
<td>Computer Science</td>
</tr>
<tr>
<td>ECON</td>
<td>Economics</td>
</tr>
<tr>
<td>BLEC</td>
<td>Electrical and Computer Engineering</td>
</tr>
<tr>
<td>GEOG</td>
<td>Geography</td>
</tr>
<tr>
<td>GIOI</td>
<td>Geology</td>
</tr>
<tr>
<td>INFO</td>
<td>Information Science, Information Science subject</td>
</tr>
<tr>
<td>LAW</td>
<td>Law</td>
</tr>
<tr>
<td>MATH</td>
<td>Mathematics</td>
</tr>
<tr>
<td>MSCI</td>
<td>Mechanical Engineering</td>
</tr>
<tr>
<td>MGMT</td>
<td>Management</td>
</tr>
<tr>
<td>PHIL</td>
<td>Philosophy</td>
</tr>
<tr>
<td>PHYS</td>
<td>Physics</td>
</tr>
<tr>
<td>PSYC</td>
<td>Psychology</td>
</tr>
<tr>
<td>STAT</td>
<td>Statistics</td>
</tr>
<tr>
<td>SURV</td>
<td>Civil Engineering and Surveying (Surveying subject)</td>
</tr>
</tbody>
</table>

**Prerequisites and Corequisites**

Many subjects have prerequisite and/or corequisite requirements. The prerequisites and corequisites of the subjects described in this Handbook are set out in Section 9.

**Contact Hours**

The credit point value of a subject gives an indication of the workload required of a student as a proportion of the normal full-time annual workload of 80 credit points. The credit point value is adjusted for the academic year to take into account the variation in the annual workload of 80 credit points. Similarly, the credit point value of a subject indicates the proportion of the annual full-time program that department will be required to undertake. The credit point value of a subject is indicated in each subject description.

**Assumed Knowledge**

Many subjects also have assumed knowledge requirements. These are also set out in Section 9 of this Handbook. Students are strongly advised to have completed the subjects prescibed as assumed knowledge before enrolling or to otherwise discuss the extent of their disadvantage with the head of department or the lecturer concerned.

**Examinations and Assessment**

Refer to policies 3.1 and 3.5 of the Faculty's Policies on Undergraduate Performance and Progress published in Section 4 of this Handbook. Students will be advised of the assessment procedures for each subject within the first 2 weeks of classes.

**Contact Hours**

The credit point value of a subject gives an indication of the workload required of a student as a proportion of the normal full-time annual workload of 80 credit points. Contact hours vary according to the content and teaching requirements of each subject. In most cases, students are required to enrol in one subject each semester and to complete 3 contact hours per week. Students will be advised of the assessment procedures for each subject within the first 2 weeks of classes.

**Assumed Knowledge**

Many subjects also have assumed knowledge requirements. These are also set out in Section 9 of this Handbook. Students are strongly advised to have completed the subjects prescribed as assumed knowledge before enrolling or to otherwise discuss the extent of their disadvantage with the head of department or the lecturer concerned.

**Examinations and Assessment**

Refer to policies 3.1 and 3.5 of the Faculty's Policies on Undergraduate Performance and Progress published in Section 4 of this Handbook. Students will be advised of the assessment procedures for each subject within the first 2 weeks of classes.

**Texts**

The information on required texts available at the time of publication is included in each subject description. In most cases it is recommended that students purchase the texts specified, however, it is suggested that students consult with the lecturer concerned before finalising the purchase of texts.

**References**

Information on reference material is not published in this Handbook. In the case of subjects offered by departments of the Faculty of Engineering, the details of appropriate reference material will be supplied by the lecturer concerned. In the case of other subjects, reference material may be specified in the Handbook of the Faculty in which the subject originates.

**Availability of Subjects**

Not all subjects are necessarily available in each academic year. In particular elective subjects may not proceed if the department concerned considers that there is insufficient demand for the subject or if insufficient resources are available.

**Alterations to Subjects**

The Faculty Board and the departments of the Faculty reserve the right to amend any aspect of the content of any subject or the arrangements for offering a subject. The details of subjects given in this Handbook and the University Timetable are an expression of interest only and are not to be taken as a firm offer or undertaking.

**Biology Subjects**

**BIOI 101 Plant & Animal Biology** 10cp

*Unit 1: Plant Diversity - Form and Function. Theme: Structural specialization to facilitate efficient functional capacity.*

**Topics:**
- The major plant groups and their life cycles.
- Higher plant structure and function.
- Plant development. Plant diversity as a consequence of adaptation for survival in a range of environments.

*Unit 2: Animal Diversity - Form and Function. Theme: The variety of structural and functional adaptations which have allowed animals to exploit the wide range of available environments.*

**References**


**BIOI 102 CELL BIOLOGY, GENETICS & EVOLUTION** 10cp

*Cell Biology: Theme: The function and organisation of functional units.*

**Topics:**
- Biological molecules - the structure of proteins, carbohydrates and lipids.
- Cell organization - emphasis on organelle ultrastructure and functional interaction.
- Evolution of cells and organisms.
- Biological energy processes - photosynthesis, cellular respiration.
- Genetics: Cell division, Mendelian genetics, Scientific method.
- Molecular biology: Gene action, development and differentiation.
- Probability. Tests of significance. Immunology.
- Ecology & Evolution: An introduction to ecology, population genetics and evolution.

**See Faculty of Science and Mathematics Handbook for further information.**

**Texts**

SECTION EIGHT


BIOLOGY


BIOLOGY

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

See Faculty of Science and Mathematics Handbook for further information.

Text


BIOCHEMISTRY


See Faculty of Science and Mathematics Handbook for further information.

Text

Cummings Publishing Co.

BIOCHEMISTRY

Biological and cellular aspects of mammalian hormones will be considered together with their role in homeostasis. The biochemistry of blood and the digestion and absorption of foodstuffs will also be major topics for consideration.

See Faculty of Science and Mathematics Handbook for further information.

Text


CHEMISTRY

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

See Faculty of Science and Mathematics Handbook for further information.

Text


CHEMISTRY


See Faculty of Science and Mathematics Handbook for further information.

Text


CHEMISTRY


See Faculty of Science and Mathematics Handbook for further information.

Text


CHEMISTRY

Cell Processes

Biochemical and cellular aspects of mammalian hormones will be considered together with their role in homeostasis. The biochemistry of blood and the digestion and absorption of foodstuffs will also be major topics for consideration.

See Faculty of Science and Mathematics Handbook for further information.

Text


CHEMISTRY

Environmental Plant Physiology

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

See Faculty of Science and Mathematics Handbook for further information.

Text


CHEMISTRY

The Molecular Biology of the Cell

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

See Faculty of Science and Mathematics Handbook for further information.

Text


CHEMISTRY

Introduction to Chemical Engineering


See Faculty of Science and Mathematics Handbook for further information.

Text


CHEMISTRY

Chemical Engineering Computation

An introduction into the writing and use of computer programs and packages which use numerical techniques to solve problems in engineering. Emphasis is placed on the use of both main frame computers and PC's. Topics include numerical solutions of ordinary and partial differential equations. Techniques for the solution of linear and nonlinear algebraic equations, systems of linear and nonlinear equations. Numerical integration and differentiation techniques. Sources of error and error estimation in numerical techniques.

Text


CHEMISTRY

Transfer Principles I


Text


CHEMISTRY

Transfer Principles II


Text

Project engineering: Assessment of economic feasibility and profitability. Selection of major equipment items important to the operating environment. Plant utilities and process instrumentation. An overview of AC and DC power engineering, transmission, transformers, switchgear. Site inspections of appropriate industries.

Text


CHEE352 SAFETY AND ENVIRONMENT

10cp

General introduction to the inherent hazards of the materials and processes relevant to the chemical industry. Elements of hazard analysis and optimization. Aspects of industrial toxicology. Sources, types and effects of explosions. Legal, environmental and ecological considerations in the disposal of industrial waste. Waste disposal and pollution control; treatment and disposal of solid, liquid and gaseous effluents; recycling possibilities, statutory requirements and environmental regulations; E.S. assessment.

Text


CHEE353 THERMODYNAMICS

10cp


Texts


CHEE354 PROJECT ENGINEERING AND MANAGEMENT

10cp

Management: A review of background economics, estimation of capital and operating costs, discounting techniques, cash flow, depreciation, incentives, inflation. Sensitivity analysis and uncertainty. Project implementation, the project manager and team, scheduling and network analysis. Budgetary control, engineering procurement, construction and commissioning. Project engineering: Assessment of economic feasibility and profitability. Selection of major equipment items important to the operating environment. Plant utilities and process instrumentation. An overview of AC and DC power engineering, transmission, transformers, switchgear. Site inspections of appropriate industries.

Text


CHEE354 PROCESS SYNTHESIS

10cp


Text


CHEE361 ELECTROCHEMISTRY AND CORROSION


Texts


CHEE362 TRANSPORT PHENOMENA

5cp

An introduction to momentum and mass transport as a continuous approach. Shell balances and numerical methods for solving these balances by algebraic and numerical procedures using computer packages such as Excel.

Text


CHEE363 SURFACE CHEMISTRY 1

10cp


Text


CHEE364 BIOTECHNOLOGY

5cp

Properties of important micro-organisms; thermodynamic and stoichiometric aspects of microbial metabolism and activity. Product pathways and enzymes. Reactor design and flow behaviour of fermentation fluids; transfer processes and unit operations for product recovery; with examples from pharmaceutical, agricultural, food, energy and liquid effluent control.

Text


CHEE365 INTRODUCTION TO MINERAL PROCESSING

5cp

The concept of ores and minerals, liberation and separation, grade and recovery. Size analysis of solids. Principles of comminution, classification, gravity concentration, heavy medium separation and flotation. Novel physico-chemical separation techniques. Dewatering and tailings disposal.

Text


CHEE367 SEPARATION PROCESSES

10cp

Physical property criteria for separation process selection. Phase equilibria: equilibrium stage and continuous contacting operations; analysis of principal separation processes, including distillation, adsorption, extraction, evaporation, humidification, crystallization and drying, hydraulic design of mass transfer equipment; stage efficiency, energy requirements; analysis of multi-component separation processes including azeotropic, extractive and complex distillation.

Text


CHEE371 SPECIAL TOPIC

5cp

A topic in Chemical Engineering to be approved by Head of Department.
CHEM241 PHYSICAL CHEMISTRY 10cp
Chemical Dynamics — rate laws of chemical kinetics, principles of mechanism, determination; transition state theory; electrolyte activity; thermodynamics of galvanic cells.
Surface Chemistry — definitions; binding in crystals; condensation coefficient; sticking probability, adsorption isotherms; Langmuir model; types of isotherms; determination of surface area of adsorbents (BET); applications of adsorptions. Atomic & Molecular Spectroscopy — structure of free atom; Bohr model; electronic structure of diatomic molecules; potential energy curves; rotational spectroscopy; vibrational spectroscopy; vibration-rotation spectroscopy.
Note: The laboratory work will count for 20% of the final assessment but a pass in the laboratory work is a prerequisite for a pass in the subject. See Faculty of Science and Mathematics Handbook for further information.
Text

CHEM261 ENVIRONMENTAL CHEMISTRY 10cp
This subject is an introduction to environmental chemistry, focusing on the hydrosphere and the atmosphere. Specific topics include: general introduction; properties, composition, redox equilibria and complexation in natural and waste waters; chemical aspect of microbial cycles; water pollution; nature and composition of the atmosphere; inorganic atmospheric pollutants; photochemical strong; atmospheric monitoring; an overview of energy sources.
The laboratory/library/workshop visits will count for 20% of the final assessment but a pass in this work is a prerequisite for a pass in the subject. See Faculty of Science and Mathematics Handbook for further information.
Text

CIVIL311 MECHANICS AND STRUCTURES 5cp
Text

CIVL331 FLUID MECHANICS 3cp
Fluid properties, fluid statics, stability of submerged and floating bodies, relative equilibrium. Fluid-flow concepts and basic equations of continuity, energy, linear and angular momentum.
Text

CIVL341 ENVIRONMENTAL ENGINEERING 1 5cp
Text

CIVL191 INDUSTRIAL EXPERIENCE 5cp
CIVL192 INDUSTRIAL EXPERIENCE 5cp
CIVL193 INDUSTRIAL EXPERIENCE 5cp
These subjects unitar are designed to formalise periods of Industrial Experience gained by part-time students only. Students will also be required to present a report giving a connected account and critical evaluation of their engineering activities and experience during the year. Such subjects may be counted by part-time students as electives. (See Section 4b of this Handbook).

CIVL212 MECHANICS OF SOLIDS 5cp
Revised stress and strain, extension of bars. Simple statically indeterminate problems, thermal stresses, superposition, strain energy, nonlinear deformation in axially loaded bars. Thin shells subject to internal pressure, Mohr’s circle of stresses. Shear strain, generalised stress-strain relations. Axial force, shear force and bending moment diagrams in beams and statically determinate frames. Revise geometrical properties of plane figures, bending stresses and strains, shear stresses in beams, deflection of beams. Shear centre of open thin walled sections, torsion of circular sections, combined stresses, failure criteria. Column stability.

CIVL213 THEORY OF STRUCTURES 1 5cp
Text
CIVL222 MATERIALS 2 5cp
Text
Heaton, B.S., Fundamentals of Concrete Technology, (Course Notes).

CIVL223 MATER ALS 3 5cp
Concrete manufacture and field control. Properties and behaviour of brick, masonry and timber. Theoretical background and laboratory tests of elastic and inelastic properties, creep, hardness and fracture of metals and timber. Laboratory testing of concrete and component materials.


CIVL234 GEOTECHNICAL INVESTIGATION 10cp
This subject outlines the geological concepts and soil properties that are important in geotechnical design. Techniques for sampling and field investigations will be discussed. The subject provides an introductory basis for later subjects in soil mechanics.

CIVL233 FLUID MECHANICS 3 5cp

CIVL233 FLUID MECHANICS 3 5cp

CIVL242 ENVIRONMENTAL ENGINEERING 2 5cp

CIVL251 SYSTEMS 5cp

CIVL271 TRANSPORTATION ENGINEERING 10cp
Elements of regional planning, land-use and transport interaction. Transportation models and system characteristics. Transportation demand and estimates, data collection. Traffic engineering, Highway engineering. Driver, vehicle and road characteristics, road geometrics. Road construction, drainage, pavements, maintenance.
Texts
Lay, M.G., Source Book for Australian Roads, Australian Road Research Board.


CIVL314 THEORY OF STRUCTURES 2 5cp
Faculty of Economics and Commerce Handbook for further information.

**FINANCIAL MANAGEMENT**

Information on financial consequences of business operations, interpretation of financial statements, development of internal financial assessments by management, including: operating, investment, and financial decisions of a business entity.

**ENROLLMENT TO COMPUTER SCIENCE SUBJECTS**

**BCompSc, BE(Computer Engineering), and BInfSc degree programs**

- **Computer Science Subjects**
  - COMP101 COMPUTER SCIENCE I 20cp
    - Entry to this subject by students other than those enrolled in the BCompSc, BE(Computer Engineering) and BInfSc degree programs is limited by quota. See the Faculty Secretary for details.
    - Introduction to the following aspects of computer science: The design of algorithms. The theory of algorithms. How algorithms are executed as programs by a computer. The functions of system software (compilers and operating systems). Applications of computers. Social issues raised by computers. An extensive introduction to programming Pascal and a functional programming language.
  - COMP201 ADVANCED DATA STRUCTURES 5cp
    - Basic data structures are investigated. Topics covered include a review of elementary data structures, an introduction to the concept of an abstract data type and the abstraction and implementation of data types selected from lists, stacks, queues, trees, graphs and sets.
  - COMP202 COMPUTER ARCHITECTURE 5cp
    - Provides basic introduction to the logical internal structure of computers and the implementation of computer arithmetic and memory control systems.
  - COMP203 ASSEMBLY LANGUAGE 5cp
    - The course is divided into two sections. The first section provides an introduction to computer organization and assembly language programming. Topics covered include data representation, computer structures, registers, addressing modes, instruction sets, subroutines and the use of stacks. The second section of the course is an introduction to operating system principles. Topics covered include process management, synchronization and resource allocation.
  - COMP204 PROGRAMMING LANGUAGE SEMANTICS 5cp
    - Examination of the major concepts which underlie modern programming languages. A variety of programming styles will be compared, including imperative, object-oriented, functional, and logic programming. Representative languages will be introduced to illustrate the concepts behind each style. Programming design issues such as data encapsulation, information hiding, and inheritance will also be studied. Languages studied include C, C++, Lisp, Modula-2, Pascal, Prolog, Scheme, Smalltalk, Ada.
  - COMP205 PROGRAMMING IN C 5cp
    - C programming for those already proficient in Pascal. Elementary Unix system calls and interfaces to other languages such as Pascal and Assembly Language. Use of UNEX software system tools such as "make", "lint" and "indent".
  - COMP206 THEORY OF COMPUTATION 5cp
    - An introduction to theoretical computer science, covering material in the areas of formal languages, automata theory and computability.
  - COMP212 INTRODUCTION TO PROGRAMMING 5cp
    - This subject is not available to candidates for the Bachelor of Computer Science degree, or students who have passed or been exempted from COMP101 or COMP102.
    - An introduction to structured programming and the design of algorithms using the high level language Pascal. The formal definition of high level languages and basic data structures will also be introduced.
  - COMP241 COGNITIVE SCIENCE 10cp
    - An interdisciplinary approach to the examination of models and metaphors of mind, language, knowledge and perception used by various disciplines and the potential applications of those models and metaphors by artificial intelligence researchers, computer scientists and engineers.
  - COMP259 PROJECT 5cp
    - A project in computer science for students enrolled in the Diploma of Computer Science program.
  - COMP301 COMPILER DESIGN 10cp
  - COMP302 ARTIFICIAL INTELLIGENCE 10cp
    - An introductory overview to Artificial Intelligence, covering some or all of the following topics: history of AI; game playing; knowledge representation; search techniques; natural language processing; expert systems; automatic deduction; theorem proving; computer vision; computer learning; philosophical, psychological, and social issues.
  - COMP303 COMPUTER NETWORKS 10cp
    - An introduction to communication networks. Topics include data transmission, transmission media, network protocols, OSI, public data networks, local area networks and distributed systems.
  - COMP304 DATABASE DESIGN 10cp
    - A basic introduction to database systems, with particular emphasis on relational database systems. Topics covered will include: basic concepts and terminology, types of systems (transactional, relational, network, inverted list), data design, relational theory, relational algebra, relational calculus, data integrity, recovery, security, concurrency, distributed systems.
  - COMP305 ALGORITHMS DESIGN AND ANALYSIS 10cp
    - An introduction to computer algorithms with several important examples. Analysis of algorithm performance, computational complexity, NP-completeness.
  - COMP306 COMPUTER GRAPHICS 10cp
    - This subject will cover advanced computer graphics topics with relevant mathematical and programming techniques and an overview of graphics hardware design. Topics include: hardware devices for graphics output, video; geometrical transformations; homogeneous coordinate systems; planar projections; clipping in 2D and 3D modeling and object hierarchy; standard: GKS, PHIGS; raster algorithms; antialiasing; region filling; 3D shape representation; polygons meshes; parametered curves, Hermite, Bezier and B-spines; transforming curves and patches; hidden line removal, hidden surface removal algorithms; shading and texture mapping; subdivision and smoothing; hidden surface; growth models; fractals and particle systems; animation techniques; advanced graphics hardware architectures; future trends in computer graphics.
  - COMP307 SOFTWARE ENGINEERING 10cp
    - An introduction to structured programming and the design of algorithms using the high level language Pascal. The formal definition of high level languages and basic data structures will also be introduced.
  - COMP310 OPERATING SYSTEMS 10cp
    - An introduction to computer operating system structures and design. The course begins with a review of process management and interprocess communication, covered as part of the Assembly Language course. New topics covered include advanced synchronization techniques, deadlock detection, memory management including virtual storage techniques, multiprocessing and file systems. The emphasis will be on practical operating systems, and where possible reference will be made to existing systems currently in use.
  - COMP311 SPECIAL TOPIC 1 10cp
    - A topic of contemporary relevance in computer science.
  - COMP341 ADVANCED ARTIFICIAL INTELLIGENCE 10cp
    - Techniques for operative artificial intelligence based on formal logic. The subject includes lectures, tutorials and practical work.
  - COMP342 FORMAL SEMANTICS OF PROGRAMMING LANGUAGES 10cp
    - The syntax of programming languages is generally described quite concisely and unrigorously in syntax diagrams, BNF or the like, but the semantics, the meaning or the outcome of constructs in the language, is generally described quite slippily in English. Several highly formal abstract systems have been developed for the semantic description of programming languages. This subject will look at one of these.
  - COMP403 COMPUTER ARCHITECTURE 10cp
    - An introduction to computer architecture and computer design from a software viewpoint. Topics covered will include instruction set design, compilation, machine representation, memory management, protection, capability-based addressing schemes and advanced architectures. The course will conclude with a major case study based on the MONADIS architecture.
  - COMP404 PARALLEL COMPUTATION AND VLSI 10cp
    - An introduction to theoretical aspects of the analysis and design of algorithms for parallel computation and their implementation in VLSI.
  - COMP405 DIGITAL IMAGE PROCESSING 10cp
    - Digital image processing deals with the acquisition, transformation, enhancement and restoration of digital pictures. Fuzzy (and other) transformation techniques provide the basic tools which allow us to enhance and sharpen images, and undo various forms of degradation (eg. motion blur) to restore images. Techniques of image encoding are discussed. Image segmentation techniques (edge detection, region analysis etc) are also discussed. Advanced applications include 3D reconstruction from projections, stereo viewing, computerised tomography (CAT scans). Some practical work will be done using various raster images and software facilities will be made available.
  - COMP406 ADVANCED OPERATING SYSTEMS 10cp
    - A critical study of operating system techniques, with emphasis on the nature of processes and the methods used to synchronise them, including a study of various advanced mechanisms. Other
aspects studied may include modularity, naming, file system
structures and command language design. Various new ideas for
structuring operating systems are presented.

COMP408 NATURAL LANGUAGE 10cp

PROCESSING

Natural Language is the sort of language spoken and written by
people, as opposed to the codes used to instruct computers.
Approaches to the processing of Natural Languages (which are
very unsystematic) on computers (which require very systematic
instructlon) will be examined.

COMP409 ADVANCED COMPILER DESIGN 10cp

In addition to lectures, students will complete a major 3-phase
project. Symbol Table Structures for block structured languages,
and special features such as Importing and Exporting. Run-time
structures for block structured languages and Abstract Data
structures for block structured languages and Abstract Data
independent and machine dependent optimisation.

COMP410 ADVANCED COMPUTER NETWORKS 10cp

An investigation of the latest developments in computer net
work design. Topics include: virtual memory, networks, process
migration, remote procedure call, memory coherence algorithms,
state stability and data security.

COMP411 SPECIAL TOPIC A 10cp

COMP412 SPECIAL TOPIC B 10cp

COMP413 SPECIAL TOPIC C 10cp

COMP414 SPECIAL TOPIC D 10cp

Each of these subjects consists of a series of lectures and/or
practical work in an area of advanced computer science of
contemporary interest. The content of a particular subject may
vary from year to year according to developments in technology
and the presence of academic visitors.

COMP425 HONOURS PROJECT 20cp

A substantial practical project involving approximately 1000
hours of work which normally commences in early February.
Project topics are subject to the approval of the Course Coordinator
in Computer Science. The results of the project must be submitted by
the due date. The result in this subject will indicate the overall standard
of the project.

COMP503 MASTER OF COMPUTING PROJECT 60cp

A major project at masters level involving approximately 1000
hours of work which normally commences in early February.
Project topics are subject to the approval of the Course Coordinator in
Computer Science. The results of the project must be submitted in a
thesis and submitted by the due date.

Economics Subjects

ECON101 ECONOMICS I 20cp

This course is designed to introduce the student to the principles
of economics. While emphasis through the course is on the
theoretical underpinnings of economics the concepts are used to
give insight into contemporary issues and problems. The first
semester will examine the principles of microeconomics and their
applications. Microeconomics is concerned with the rules of
rationality for decisions made by individuals who wish to maximize
their wellbeing, and the impact these decisions have upon the
allocation of resources throughout an economy or society.
Emphasis will be placed on contrasting theoretical conclusions with
real-world emphasis.
The second semester is concerned with Macroeconomics. It will
involve a study of the relationship between aggregates such as
consumption, investment, employment, exchange rates, inflation
and growth. Basic theoretical analysis will be used to explain
policy alternatives and some of the problems involved in making
appropriate policy decisions. The course will include a discussion of
areas of theoretical controversy and provide some explanation as
to why economics can advocate incompatible "solutions" to the
same problem.

Text


Web, R., Maxwell, P. & Ronunci, J. 1989, Macroeconomics,
Harper and Row.

The subject builds on and expands the first year circuits topics. The fundamental concepts of electrical engineering are explored. Transfer functions. Fourier series. Dependent sources. Application of motors and generators. Flux Linkage and inductance, circuit and phasor diagram. Transformer testing. Polyphase systems. Introduction to electrical power generation systems and power systems; reliability. The subject comprises a series of lectures, tutorials and laboratory sessions.

**Text**

**ELEC350 COMMUNICATIONS 10cp**

**ELEC451 COMMUNICATIONS DESIGN AND MANAGEMENT 10cp**
Not available before 1994.


**ELEC452 SIGNAL PROCESSING 10cp**
Not available before 1994.


**ELEC460 COMPUTER SOFTWARE 10cp**
A subject consisting primarily of practical work on a large software development project.

**ELEC470 COMPUTER SYSTEMS 10cp**
A subject consisting of a series of lectures, tutorial and laboratory work covering the areas of advanced computer architecture and VLSI.

**ELEC480 ELECTRICAL ENGINEERING PROJECT 30cp**
The final year project for Electrical Engineering students. Usually consisting of literature survey, and review, analytical and/or experimental investigation of an electrical engineering problem. Two (2) copies of the Project Report are required. Students are required to present a seminar based on their project work. A series of seminars is also given by invited guest speakers. Weekly attendance at seminars is compulsory.

**ELEC482 PROJECT/SEMINAR 30cp**
The final year project for Electronic and Communications Engineering students. Usually consisting of literature survey, and review, analytical and/or experimental investigation of a computer engineering problem. Two (2) copies of the Project Report are required. Students are required to present a seminar based on their project work. A series of seminars is also given by invited guest speakers. Weekly attendance at seminars is compulsory.

**ELEC485 COMPUTER ENGINEERING PROJECT 30cp**
The final year project for Computer Engineering students. Usually consisting of literature survey, and review, analytical and/or
exercise investigation of a computer engineering problem. Two (2) copies of the Project Report are required. Students are required to present a seminar based on their project work. A series of seminars is also given. Submission of the final Project Report will be required topresent a seminar based on their project work. A series is also given. Students are required to present a seminar based on their project work. A series of seminars is also given. Submission of the final Project Report will be required.

ELEC51 CONDITION MONITORING 5cp


ELEC52 POWER SYSTEM OPERATION AND CONTROL 5cp


ELEC54 CONTROL SYSTEM DESIGN AND MANAGEMENT 5cp

The aim of this course is to acquaint students with design issues in Control Systems as well as their integration with corporate and management policies. Emphasis will be given to the assessment of control opportunities in the industrial context, the evaluation of cost benefits, and potential performance improvements. The course will be illustrated by a number of design examples, including telecommunication systems, superpower temperature control, and fault protection in rolling mills, and flow control in continuous chemical processes.

ELEC55 OPTIMIZATION TECHNIQUES 5cp

Nonlinear programming. Convex optimization theory. Optimal control. Text

Luenberger, D. 1969, Optimization by Vector Space Methods, Wiley.

ELEC54 LINEAR SYSTEMS THEORY 5cp

Advanced treatment of multivariable linear systems from frequency domain, matrix fraction, state-space and geometric viewpoints.

ELEC54 NONLINEAR SYSTEMS ANALYSIS 5cp

Basic techniques in nonlinear systems analysis: Lyapunov stability theory, Gronwall Lemma, input-output methods, oscillations, singular perturbations. Text


ELEC56 TOPICS IN SYSTEM DESIGN 1 5cp

A topic oriented to students concerned with advanced design rather than basic research.

ELEC57 TOPICS IN SYSTEM DESIGN 2 5cp

A topic oriented to students concerned with advanced design rather than basic research.

ELEC58 ADVANCED DIGITAL SIGNAL PROCESSING 5cp

Advanced techniques in recursive filter design: bandwidth, ambiguity function, two-dimensional imaging, array processing.

ELEC59 COMPUTER AND ELECTRONICS SYSTEM 1 5cp

ELEC60 COMPUTER AND ELECTRONICS SYSTEM 2 5cp

ELEC61 COMPUTER AND ELECTRONICS SYSTEM 3 5cp

Each student consists of a series of seminars for research graduate students. Each student will prepare a seminar on research literature.

ELEC62 PROJECT 30cp

Available to M.Eng.Sci students only.

ELEC63 PROJECT 40cp

Available to M.Eng.Sci students only.

ELEC64 SYSTEMS AND CONTROL SEMINAR 1 15cp

ELEC65 SYSTEMS AND CONTROL SEMINAR 2 15cp

ELEC66 SYSTEMS AND CONTROL SEMINAR 3 15cp

Each student consists of a series of seminars for research graduate students. Each student will prepare a seminar on research literature.

ELEC67 INDUSTRIAL SYSTEMS PROJECT/ SEMINAR A 20cp

The final section of the major project in the Master's Engineering Science - Power Engineering program undertaken in the Department of Electrical and Computer Engineering. It is expected that most projects will be of an applied research nature in an area relevant to the candidates employment and co-supervised by a professional engineer on site. Coursework component will cover areas of problem identification, research skills, communication skills, and ethics in applied research. Projects will be reported at seminars given by candidates and by the submission of progress reports in July and November. Satisfactory completion of the subject will result in the award of a result of ungraded pass (UP).

ELEC68 INDUSTRIAL SYSTEMS PROJECT/ SEMINAR B 20cp

The final section of the major project in the Master's Engineering Science - Power Engineering program undertaken in the Department of Electrical and Computer Engineering. It is expected that most projects will be of an applied research nature in an area relevant to the candidates employment and co-supervised by a professional engineer on site. Coursework component will cover areas of problem identification, research skills, communication skills, and ethics in applied research. Projects will be reported at seminars given by candidates and by the submission of progress reports in July and November. Satisfactory completion of the subject will result in the award of a result of ungraded pass (UP).

ELEC69 COMPUTER NETWORKS 5cp

Network architectures and topologies. Local network and campus networks. Distributed operating systems.

ELEC70 ADVANCED TOPICS IN COMPUTERS 5cp

Variable content emphasizing recent developments.

ELEC71 ADAPTIVE CONTROL 5cp

Terminology, gradient and least squares estimation, certainty equivalence, principle control laws, stability and convergence of adaptive controllers, industrial applications.

ELEC72 ESTIMATION AND SYSTEM IDENTIFICATION 5cp


Text


ELEC73 COMPUTER AND ELECTRONICS SYSTEM 1 5cp

ELEC74 COMPUTER AND ELECTRONICS SYSTEM 2 5cp

ELEC75 COMPUTER AND ELECTRONICS SYSTEM 3 5cp

Each student consists of a series of seminars for research graduate students. Each student will prepare a seminar on research literature.

ELEC76 PROJECT 30cp

Available to M.Eng.Sci students only.

ELEC77 PROJECT 40cp

Available to M.Eng.Sci students only.

ELEC78 SYSTEMS AND CONTROL SEMINAR 1 15cp

ELEC79 SYSTEMS AND CONTROL SEMINAR 2 15cp

ELEC80 SYSTEMS AND CONTROL SEMINAR 3 15cp

Each student consists of a series of seminars for research graduate students. Each student will prepare a seminar on research literature.

ELEC81 INDUSTRIAL SYSTEMS PROJECT/ SEMINAR A 20cp

The final section of the major project in the Master's Engineering Science - Power Engineering program undertaken in the Department of Electrical and Computer Engineering. It is expected that most projects will be of an applied research nature in an area relevant to the candidates employment and co-supervised by a professional engineer on site. Coursework component will cover areas of problem identification, research skills, communication skills, and ethics in applied research. Projects will be reported at seminars given by candidates and by the submission of progress reports in July and November. Satisfactory completion of the subject will result in the award of a result of ungraded pass (UP).

ELEC82 INDUSTRIAL SYSTEMS PROJECT/ SEMINAR B 20cp

The final section of the major project in the Master's Engineering Science - Power Engineering program undertaken in the Department of Electrical and Computer Engineering. It is expected that most projects will be of an applied research nature in an area relevant to the candidates employment and co-supervised by a professional engineer on site. Coursework component will cover areas of problem identification, research skills, communication skills, and ethics in applied research. Projects will be reported at seminars given by candidates and by the submission of progress reports in July and November. Satisfactory completion of the subject will result in the award of a result of ungraded pass (UP).

ELEC83 COMPUTER NETWORKS 5cp

Network architectures and topologies. Local network and campus networks. Distributed operating systems.

ELEC84 ADVANCED TOPICS IN COMPUTERS 5cp

Variable content emphasizing recent developments.

ELEC85 COMPUTER NETWORKS 5cp

Network architectures and topologies. Local network and campus networks. Distributed operating systems.

ELEC86 ADVANCED TOPICS IN COMPUTERS 5cp

Variable content emphasizing recent developments.

ELEC87 COMPUTER NETWORKS 5cp

Network architectures and topologies. Local network and campus networks. Distributed operating systems.

ELEC88 ADVANCED TOPICS IN COMPUTERS 5cp

Variable content emphasizing recent developments.
structured/unstructured. The computer as a personal support tool, word-processing, spreadsheets, data base management. The importance of people in the information network, the social, organisational and personal implications of computer based information systems.

INF0102  INFORMATION STORAGE AND MANAGEMENT  10cp

The design and implementation of the data repository for any computer based information system is a skilled and extremely critical task. Overall performance of the system will be seriously compromised by an inefficient data storage and retrieval strategy. This course introduces the tools needed to design, implement and maintain computer based database systems. It will be of particular interest for students who will need to design and/or access large databases regularly in their chosen profession.

Topics covered include: Storage and representation of data in computer systems. Data types, records, file structures and access mechanisms. Standard file maintenance procedures. Introduction to COBOL, a business-oriented third generation language. Semantic data modelling, entity-relationship modelling, functional dependence and other constraints on attribute values. Introduction to database management systems, the hierarchical, network and relational models. Data manipulation languages, with particular emphasis on relational techniques using SQL. Physical database design, normalization.

INF0302  ANALYSIS OF INFORMATION SYSTEMS  10cp

Structured analysis and design methodology will be introduced. Specific topics include: Characteristics of a system. Information systems. The role of the system analyst. The system life cycle. Interview techniques. Report writing. Documentation techniques (data flow diagrams, data dictionary, flowcharts, etc). Cost benefit analysis. Implementation techniques.

INF0303  INFORMATION SYSTEMS DESIGN  10cp

Using the techniques introduced in Information Systems Analysis student will work in small groups to design and implement small on-line computer based information processing systems. Specific topics include: File design techniques, form design, security controls and backup, system testing and implementation, the ongoing maintenance of systems.

INF0304  COMMERCIAL PROGRAMMING  10cp

COBOL as a business data processing and file organisation language. Basic concepts of file handling and maintenance. Sequential, relative and indexed sequential file organisation. Structured techniques, as applied to COBOL programming, are emphasized. Structure diagrams, pseudo-code, programming standards, etc. Students are expected to complete assignments using both COBOL 74 and COBOL 85.

Mathematics Subjects

MATH02  MATHEMATICS 102  10cp


Law Subjects

LAW101 FOUNDATIONS OF LAW  10cp

This subject consists of a study of basic legal concepts, the division of law, and the institutions of the Australian legal system. It also enables students to acquire special skills for the examination of legal materials, such as an ability to analyse statements contained in judgements and to interpret provisions of statutes. Foundations of the processes of law-making through judicial decisions, and primary and delegated legislation are considered in detail.

Tests


LAW291 LEGAL PROCESS  5cp


LAW292 PROPERTY AND SURVEY LAW  5cp

The notion of property. Classifications of property. Estates in land; Interests in land; estates of title to land; dealing with land; statutory control of land use with particular reference to the Local Government Act 1919 (N.S.W.). The regulation and legal liability of surveyors; survey investigations and searches.

Tests

Hallinan, P. 1973, Legal Aspects of Boundary Surveying as applied in New South Wales, Inst. of Surveyors Aust.

Willis, Notes on Survey Investigations, NSW Government Printer.

LAW391 and LAW292 are service subjects offered by the Department of Law. Other Law subjects may be taken as electives in most programs and are described in the Faculty of Economics and Commerce Handbook.

Law Exam

1992, Tutorial Notes for Mathematics 111, University of Newcastle.

MATH111 MATHEMATICS 111  10cp


See Faculty of Science and Mathematics Handbook for further information.

Tests

1992, Tutorial Notes for Mathematics 111, University of Newcastle.

MATH203 ORDINARY DIFFERENTIAL EQUATIONS  5cp


See Faculty of Science and Mathematics Handbook for further information.

Text

1992, Mathematics II Tutorial Notes, University of Newcastle.

MATH204 COMPLEX ANALYSIS I  5cp


See Faculty of Science and Mathematics Handbook for further information.

MATH213 GROUP THEORY  5cp

Groups, subgroups, isomorphism. Permutation groups, groups of linear transformations and matrices, isometries, symmetry groups of regular polygons and polyhedra. Cosets, Lagrange's theorem, normal subgroups, isomorphism theorems.

Text


MATH214 DISCRETE MATHEMATICS  5cp

An introduction to various aspects of discrete mathematics: Graphs, set theory, relations and functions, logic, counting, and recurrence equations.

See Faculty of Science and Mathematics Handbook for further information.

Text


MATH215 MATHEMATICAL MODELLING  5cp

This topic is designed to introduce students to the idea of a mathematical model. Several realistic situations will be treated beginning with an analysis of the non-mathematical origin of the problem, the formulation of the mathematical model, solution of
Section Eight

the mathematical problem and interpretation of the theoretical results. The use of computers is an integral part of this subject. See Faculty of Science and Mathematics Handbook for further information.

Math214 Mechanics

5ep

Math215 Operations Research

5ep
Operations research involves the application of quantitative methods and tools to the analysis of problems involving the operation of systems and its aim is to evaluate the consequences of certain decision choices and to improve the functional values of the system as a whole. This subject will cover a number of areas of operations research which have proved successful in business, economics and defense. These include such topics as network analysis and linear programming. See Faculty of Science and Mathematics Handbook for further information.

Math216 Numerical Analysis

5ep

Text

Math217 Linear Algebra 1

5ep

Math218 Linear Algebra 2

5ep

Management Subjects

Mng203 Foundations of Management 10ep

Mng209 Commercial Programming 10ep
COBOL as a business data processing and file organisation language. Basic concepts of file handling and maintenance. Sequential, relative and indexed sequential file organisation. Structured techniques, as applied to COBOL programming, are emphasised. Structure diagrams, pseudo-code, programming standards, etc. Students are expected to complete assignments using both COBOL 74 and COBOL 85.

Mng203 Computing and Information Systems 10ep
This course is designed to provide students with an overview of information systems in today’s business environment. The course will introduce personal support software available on microcomputers and their applications to management decision making. During compulsory workshop sessions students will gain "hands on" experience using software packages such as electronic spreadsheets, database management systems, and word processing.

Text

Mechanical Engineering Subjects

Mech101 Introduction to Engineering 5ep
A course of lectures, seminars and plant visits intended to enhance an understanding of the role of the professional engineer in industry and society.

Mech102 Programming 5ep
An introduction to the use of computers and computer programming in Engineering. The programming language is FORTRAN 77 under a Unix operating system. Emphasis is placed on the development of a good programming style and on the logical development of a program. Lectures will cover variable types and their uses, file and data handling, functions, subroutines, arrays, the computer operating system and Text editors. Assessment is based partly on programs written by students.

Text
Friedman, F.L. 1987, FORTRAN 77, 4th edn, Addison Wesley.

Mech103 Engineering Chemistry 5ep

Text

Mech111 Engineering Drawing 5ep
A study in communication methods and visualisation by pictorial means. Review of drafting types. Methods of projection including orthographic, axonometric and perspective in both rectangular and freehand modes. Sectioning, dimensioning and use of standards and symbolism in engineering pictorial communication. Draftsmanship, true shapes and intersection of entities.

Text
Technological Drawing for Students - SAA H01-1988, Standards Association of Australia.

Mech211 Materials 1 5ep
This course provides a general introduction to materials of engineering significance and to the relationships which exist between structures, properties and applications. The following sections are given approximately equal amounts of time and emphasis. Atomic bonding; atomic arrangements in metals, glasses and polymers; the effects of stress and temperature on simple metals, the control of metallic structures by composition and thermal treatments; common metals of engineering importance; the structures and properties of ceramics and cement products. Polymers and rubbers; engineering applications for polymers; the mechanical testing of materials; composite materials; the electrical, magnetic, optical and thermal properties of solid materials.

Text
March, G.E. & Browne, J.D., 1992, Department of Mechanical Engineering, University of Newcastle.

Mech191 Industrial Experience 5ep
Students will be required to present a seminar relating to aspects of their experience and to report to his industrial experience tutor twice per term. Students will also be required to present a report giving a connected account and critical evaluation of their engineering activity during the period. A weekly diary commencing on 1 November of the previous year must be kept and handed to the Class Supervisor at the beginning of the first semester.

Mech291 Industrial Experience 5ep
These subjects are designed to formalise periods of Industrial Experience which is worth 5 credit points. Students who wish to study any or all of the Industrial Experience subjects will be required to attend nominated lecture and tutorial periods which will deal with working and professional environments, essentials of communication and report writing. In addition, each student will be required to present a seminar relating to aspects of their experience and to report to his industrial experience tutor twice per term. Students will also be required to present a report giving a connected account and critical evaluation of their engineering activity during the period.
MECH240 EXPERIMENTAL METHODS 5ep
A series of laboratory experiments designed to give the student
familiarity with mechanical, optical, and electronic systems used
to measure basic physical quantities such as length, strain,
pressure, temperature, force, torque, and fluid flow. Problems of
correct interpretation of experimental data and basic principles of
error analysis are discussed. Proficiency in technical report
writing is emphasized.

MECH205 ENGINEERING COMPUTATIONS 5ep
This course is concerned with developing a student’s ability
to write computer programs that use numerical analysis techniques
to solve problems in the engineering field. Some discussion of the
theory behind the numerical analysis techniques is given but the
main emphasis is on computing. The programming work of
MECH102 is extended to include some advanced FORTRAN
programming techniques, the use of graph-plotted routines and
the use of computer libraries such as the NAG library. Emphasis
is placed on curve fitting to well-ordered data and to experimental
data and the differentiation and integration of such data. Systems
of equations, both linear and non-linear, are considered. Other
material covered includes solution of ordinary differential
equations and partial differential equations.

Text
Gerald, C.F. & Wheatley, P.O. 1984, Applied Numerical Analysis,
3rd edn, Addison-Wesley.

Handbook of VAX/VMS, The University of Newcastle Computing
Centre.

MECH213 MECHANICAL ENGINEERING 15ep
DESIGN 1
Philosophy and fundamentals of mechanical engineering design.
Conceptual design problems. Basic components of mechanisms
and machinery. Load and stress calculations, allowable stresses and
safety. Design of shafts and couplings and bearing selection for
mechanical power transmission. Design of boiled joints,
welded connections, brackets, bosses, and hinges.

Text
Shigley, J.E. 1986, Mechanical Engineering Design, 1st Metric
edn, McGraw-Hill.

MECH223 MATERIALS 2 5ep
The mechanical behaviour and properties of engineering materials
and how they are affected by the environment and by use. An
introduction to the factors governing the selection of materials.
The topics treated will include equilibrium and non-equilibrium
effects, i.e. martensitic transformations, heat treatments, TTT
diagrams and welding. Creep, fracture and fatigue. Friction and
wear.

Text
Ashby, M.F. & Jones, D.R.H. 1980, Engineering Materials 1,
Pergamon.

MECH232 DYNAMICS 10ep
Basic concepts. Newton’s and Euler’s laws of motion for particles
and systems of particles, centre of mass. Laws of gravitation and
friction. Straight-line and plane motion of particles: kinematics
and kinetics. Energy and momentum principles. Relative motion
in translating reference frames. Plane motion of rigid bodies:
kinematics, equations of motion, energy and momentum
and principles.

Three-dimensional motion of particles in inertial, translating and
rotating reference frames. Kinematics of plane mechanisms.
Kinetics of systems of particles and rigid bodies in three-
dimensional motion. Undamped and damped simple harmonic
motion. Forced oscillations in simple 1st and 2nd order linear
systems.

Text
Dynamics, 2nd edn, PWS-Kent.

MECH241 MECHANICS OF SOLIDS 1 5ep
Uniaxial loading, stress of stress and strain, stress and strain
relationships, internal forces, internal stresses, deflection of beams,
tension, buckling.

Text
McGraw-Hill.

MECH251 FLUID MECHANICS 1 5ep
Fluid properties and definitions. Fluid statics—forces on surfaces,
buoyant forces. Types of flow, continuity equation, Euler and
Bernoulli equations, energy equation, linear and angular
momentum applications. Introduction to dimensional analysis.
Analysis of fluid machinery.

Text
Fox, R.W. & McDonald, A.T. 1985, Introduction to Fluid
Mechanics, 3rd edn, Wiley.

MECH271 THERMODYNAMICS 1 5ep
Fundamental thermodynamic concepts, first and second laws and
corollaries. Reversible and irreversible processes. Properties of
perfect gases, liquids and vapours. Calculations of property
changes and energy flows from one flow to another, steady flow and
unsteady flow processes using various working substances. Examination
of various energy conversion systems as examples of the above
calculations - Carnot cycles, Rankine cycle, regenerative
feed heating, Otto cycle, Diesel and mixed cycles, Stirling and
Einstein cycles, gas turbine cycles, refrigeration cycles.

Text
Black, W.Z. & Hartley, J.G. 1985, Thermodynamics, Harper and
Row.

MECH204 EXPERIMENTAL METHODS 2 10ep
Selected engineering laboratory experiments designed to extend
the concepts of experimental procedures and to complement
formal subject matter in the course.

SCG SECTION EIGHT
GUIDE TO SUBJECT DESCRIPTIONS

MECH305 ADVANCED NUMERICAL PROGRAMMING 5ep
Complex algebra, multiple entry and return points for segments,
use of disc and magnetic tape files, use of library subroutines, etc.
Some advanced computing techniques. For example: Solution of
and value differential equations; Finite element techniques;
Advanced finite difference techniques; Eigenvalue problems.

MECH309 INTRODUCTION TO NOISE POLLUTION CONTROL 5ep
Introduction to problems of community noise, industrial noise
Noise measurement. Criteria for community, building and vehicle
noise standards.

MECH314 MECHANICAL ENGINEERING DESIGN 2 15ep
Design of friction drives, clutches and brakes. Hydrodynamic
drives, torque converters and epicyclic gear trains. Lubrication
and journal bearings. Types of mechanical springs. Gear design
and selection according to Australian Standards.

Text
Shigley, J.E. 1986, Mechanical Engineering Design, 1st Metric
edn, McGraw-Hill.

MECH315 COMPUTER AIDED DESIGN 5ep
The CAD/CAM geometric environment. 2-Dimensional drawing,
solids modelling, surface modelling and macro programming.
Construction of basic geometric entities; polylines, lines, circles,
arcus, profiles, surfaces and solid primitives. Manipulation of
views, windows and levels. Preparation of objects, templates and
patterns. Editing. CGS using Boolean operations on solid
Preparation of part macros. Interface to analysis packages.

MECH316 FINITE ELEMENT METHODS IN DESIGN 5ep
Basic concepts of finite element techniques. Introduction to finite
element computer packages and their use as tools in Mechanical
Engineering design. Application to problems of stress analysis of
complex shapes, thermal stresses and vibrations.

Text
Cook, R.D., Malkus, D.S. et al 1988, Concepts and Applications
of Finite Element Analysis, 3rd edn, John Wiley & Sons.

MECH317 BULK MATERIALS HANDLING SYSTEMS 1 5ep
Principles of granular mechanics. Flow patterns and
characteristics. Strength and flow properties of bulk solids in
relation to hopper design. Gravity reclaim stockpiles. Analysis
and design of hoppers for “mass flow”, “funnel flow” and
“expanded flow” conditions. Hi-wall pressure; Flow rate analysis.
Feeder loads.

MECH318 CONVEYING OF BULK SOLIDS 5ep
Comparison based on economic and technical considerations of
different modes of continuous and discontinuous transportation
of bulk solids. Overview of freight pipelines - pneumatic, hydraulic
and capsule - and mechanical conveying - belt, screw and bucket
elevators. Technical and economic considerations in the design of
conveyors. Examples will be selected from the continuous
conveyor systems mentioned above. In the case of belt conveyors
the dynamic characteristics and the influence of these
cartographs and design will be studied in some detail. In the case
of pneumatic conveyors, the design of both lean and dense phase
systems will be discussed.

Text
and Handling, 2nd edn, TUNRA, ISBN 0 7259 0 303

Robert, A.W. & Hayes, J.W. 1981, Economic Analysis in
the Optimum Design of Conveyors, TUNRA, ISBN 0 7259 0340 6
Selected research papers

MECH322 MATERIALS 3 5ep
This subject deals with metals, polymers, ceramics, composites
and biological materials in conjunction with the following topics;
review of traditional strength tests; fundamentals of fracture
mechanics; rate, environment and temperature effect on toughness;
fatigue crack propagation; scaling in static fracture and fatigue
fracture; classification of materials according to mechanical
properties.

Text
Ellis Horwood.

MECH324 CERAMIC SCIENCE AND TECHNOLOGY
Discussion of the engineering properties of ceramics and how
these properties are dependent on atomic structure, chemical
composition, microstructure and processing. Structures of oxides,
silicates and glasses. Phase transformations. Firing - grain growth,
sintering and vitrification. Micromechanical properties, mechanical
properties, semiconduction and ionic conduction.

Texts
with Non-durable Materials, Applied Science.

Kingsley, W.D., Brown, H.K. et al 1976, Introduction to Ceramics,
2nd edn, Wiley.
MECH47 THERMODYNAMICS 3 5cp
Thermodynamic relations; the Maxwell relations; general equations for enthalpy, internal energy and entropy; compressibility factor; equations of state; generalized charts for enthalpy and entropy. Availability concepts and applications. Thermodynamics of irreversible processes. Applications of statistical thermodynamics. Direct energy conversion. Text

MECH47 HEAT TRANSFER 2 5cp
Development of the general form of the continuity, momentum and energy equations. Application of these equations to a range of conveyance heat transfer problems. Advanced conduction and radiation heat transfer. Heat transfer with change of phase. Text

MECH48 ENGINEERING ECONOMICS 2 5cp

MECH517 BULK MATERIALS HANDLING SYSTEMS 5cp
Text

MECH518 CONVEYING OF BULK SOLIDS 5cp
Computation based on economic and technical considerations of different modes of continuous and discontinuous transportation of bulk solids. Overview of pipe systems - pneumatic, hydraulic and capsule - and mechanical conveying - belt, screw and bucket elevators. Technical and economic considerations in the design of conveyors. Examples will be selected from the construction of conveyors mentioned above. In the case of belt conveyors the dynamic characteristics and the influence of these characteristics on design will be studied in some detail. In the case of pneumatic conveyors, the design of both loss and dense phase systems will be discussed.
Text

MECH519 MAINTENANCE MANAGEMENT 5cp

MECH520 PROJECT/DIRECTED READING 5cp
Private work of laboratory, literature search or theoretical nature requiring preparation of a report. Work will be undertaken at the discretion of a supervisor with whom the topic should be negotiated. The work undertaken in this subject may form part of an extended MECH496 project or an independent topic.

MECH521 PROJECT/DIRECTED READING 10cp
Private work of laboratory, literature search or theoretical nature requiring preparation of a report. Work will be undertaken at the direction of a supervisor with whom the topic should be negotiated. The work undertaken in this subject may form part of an extended MECH496 project or an independent topic.

MECH534 ENGINEERING ECONOMICS 5cp
Review of basic principles of micro-economics - scarcity and choice, supply and demand, market system. Review of basic principles of accounting: financial statements; working capital; capital expenditure; budgets; costing; overheads; marginal cost. Economic Evaluation of projects: time value of money; present worth; annual equivalent; rate of return; cost-benefit; inflation; taxation; depreciation; capital budgeting. Renewal Analyses, Economic life concepts. Risk analysis: sensitivity; expected value and variance; sequential decision; decision trees. Economics of Technical Systems: systems concepts; quality; inventory; lead time; reliability; maintainability; models and optimisation techniques.

MECH594 INDUSTRIAL SYSTEMS PROJECT/SEMINAR A 20cp
The first section of the major project in the Master of Engineering Science - Power Engineering program undertaken in the Department of Mechanical Engineering. It is expected that most projects will be of an applied research nature in an area relevant to the candidates' employment and co-supervised by a professional engineer on site. Course work components will cover areas of problem identification, research skills, communication skills and strategies for applied research. Progress will be reported at seminars given by candidates and by the submission of progress reports in July and November. Satisfactory completion of this subject will result in the award of a result of ungraded pass (UP).

MECH595 INDUSTRIAL SYSTEMS PROJECT/SEMINAR B 20cp
The final section of the major project in the Master of Engineering Science - Power Engineering program undertaken in the Department of Mechanical Engineering commenced in MECH594. Submission of the final Project Report will be required by 31 October followed by formal presentation of the results of the project at a later date. The result awarded for this subject will reflect the quality of the Project Report resulting from the work undertaken in both MECH594 and MECH595.

MECH596 PROJECT 30cp
A major project for MEngSc students. Work will be undertaken at the direction of a supervisor with whom the topic should be negotiated. Two (2) copies of the Project Report are required.

MECH597 PROJECT 35cp
A major project for MEngSc students. Work will be undertaken at the direction of a supervisor with whom the topic should be negotiated. Two (2) copies of the Project Report are required.

MECH598 PROJECT 40cp
A major project for MEngSc students. Work will be undertaken at the direction of a supervisor with whom the topic should be negotiated. Two (2) copies of the Project Report are required.
PHIL392 TECHNOLOGY AND HUMAN VALUES 10cp
A team project on the role of technical and value factors in technological decision making. Students will form small teams under staff leadership for a year-long intensive study of a specific example of technological decision making. The aim is to provide a comprehensive and accurate understanding of the interaction between technical and value factors in the decision. Each team will produce a report of a quality aimed at management/ministerial approval. Evaluation will be by the Team Report plus staff leader's assessment of individual contributions. Example projects are Nuclear Electric Power for Canada, Australia.

PHIL591 TECHNOLOGY AND THE ENVIRONMENT 10cp

Physics Subjects
PHYS101 PHYSICS 101 10cp
This is an introductory course in physics concentrating primarily on the core topics of classical physics. The lecture course consists of three main strands: mechanics; electromagnetism; waves, optics and thermal physics. There will also be 3 hrs/week of laboratory as well as tutorial sessions.
See Faculty of Science and Mathematics Handbook for further information.

PHYS201 QUANTUM MECHANICS AND ELECTROMAGNETISM 10cp
Basic principles of modern quantum mechanics, and electromagnetic theory. Laboratory, computational and tutorial work in these areas.
See Faculty of Science and Mathematics Handbook for further information.

PHYS203 SOLID STATE AND ATOMIC PHYSICS 10cp
Solid state physics and applications, atomic physics and spectroscopy, optics and laser physics.
See Faculty of Science and Mathematics Handbook for further information.

Additional Physics subjects are described in the Faculty of Science and Mathematics Handbook.

Psychology Subjects
PSYC101 PSYCHOLOGY INTRODUCTION 3 10cp
Three written laboratory reports. Introductory Methodology and Statistics for Psychology; Biological Foundations; Perception and Learning.
See Faculty of Science and Mathematics Handbook for further information.

PSYC201 PSYCHOLOGY INTRODUCTION 2 10cp
Three written laboratory reports. Cognition; Social Psychology; Developmental Psychology.
See Faculty of Science and Mathematics Handbook for further information.

Statistics Subjects
STAT203 QUEUES AND SIMULATION 5cp
Random number generation. Simulation, including the use of MINITAB.
See Faculty of Economics and Commerce Handbook for further information.

STAT205 ENGINEERING STATISTICS 5cp
See Faculty of Economics and Commerce Handbook for further information.

Additional Statistics subjects are described in the Faculty of Science and Mathematics Handbook.

Surveying Subjects
SURV111 SURVEYING 1 10cp
Elementary surveying principles. Nature, causes and classes of error; elementary error propagation. Linear measurement with tapes. Ordinary differential levelling. Theodolite; angle measurement; magnetic compass. Field notes, traversing and traverse calculations; simple plane drawing.

Texts

SURV112 SURVEYING 2 10cp
Plane table; contour surveys by stadia; detail surveys; traverse surveys, area and volumes, horizontal curves, transition curves, vertical curves. A brief history of surveying and surveying instruments. A three-day series of field-work exercises from a compulsory component of this subject.

Texts
1. SURV344 ERROR THEORY 5cp
   - Revision and extension of error theory. Adjustment by least squares. Error ellipse calculations.
   - Texts: 

2. SURV351 GEODESY 1 10cp
   - Texts: 

3. SURV361 PHOTOGRAMMETRY 1 10cp
   - Stereoscopic vision — geometry of single aerial photograph, stereoscopic pairs — fundamental mathematical relationships — radial triangulation. Inner, relative and absolute orientation with respect to direct optical projection. Cameras, physical properties of photographs.
   - Text: 
     - Wolf, P.R. 1974, Elements of Photogrammetry, McGraw-Hill.

4. SURV371 REMOTE SENSING 5cp
   - Introduction to sensing and sensors; sensor platforms; ground-based, aerial and satellite; applications.
   - Texts: 
     - As for SURV361.

5. SURV383 LAND BOUNDARY DEFINITION 10cp
   - Cadstral surveys in NSW Surveying Law. Tumins and Common law titles surveys and searches. Identification surveys. Field records and plans. A ten-day survey camp is a compulsory part of this subject.
   - Text: 
     - Hallman, F. 1973, Legal Aspects of Boundary Surveying as Apply in NSW, Inst. of Surveyors NSW.

6. SURV417 INDUSTRIAL AND OTHER SURVEYING 10cp
   - Review of statistics. Mechanical principles of instrument design, optical tools in industry, pointing accuracy theory. Construction project surveys, establishing control net and monitoring construction, such as dam deformation surveys.
   - Texts: 
     - Richardus, P., Project Surveying, North Holland.

7. SURV418 CONTROL NETWORKS 5cp
   - Analysis of field procedures and design of surveys. Survey control for subdivision projects, integrated surveys.
   - Texts: 
     - Richardus, P., Project Surveying, North Holland.

8. SURV421 ASTRONOMY 10cp
   - Texts: 
     - Bennett, G.G. & Preuschl, J.O. 1979, Field Astronomy for Surveyors, UNSW.

9. SURV422 GEODESY 2 5cp
   - Least squares adjustment of control surveys: variance/covariance matrix, variance factor and weight coefficient matrix, elementary statistical testing of observations and adjusted values. Relationship between geoid and ellipsoid, astro-geodetic levelling, ellipsoidal elevations, mean sea level and the geoid-gravity and its use in geodesy, methods for establishing a world geodetic system. Precise levelling.
   - Texts: 
     - Torge, W., Geodesy, de Gruyter.
     - Michael, E.M., Observations and Least Squares, IEU.

10. SURV423 PHOTOGRAMMETRY 2 5cp
    - Photogrammetric orientation. Design principles and practical application of exact and approximate restitution instruments. Flight and project planning — aerial mapping — aerial triangulation of strips.
    - Text: 
      - Wolf, P.R. 1974, Elements of Photogrammetry, McGraw-Hill.

11. SURV429 SPECIAL TOPIC 5cp
    - A contemporary topic in surveying approved by the Head of Department.

12. SURV430 SPECIAL TOPIC 5cp
    - A contemporary topic in surveying approved by the Head of Department.
SCHEDULE OF SUBJECTS

About This Section

This section contains the details of the subjects offered by the departments of the Faculty of Engineering together with subjects offered by departments of other faculties which are included in the course programs set out in Sections 5 and 7. The content descriptions of the listed subjects are set out in Section 8.

Guide to Subject Detail Schedule

Subject Codes

Each subject has been given a unique code (eg CIVL111). This code identifies the subject within the University's computer system and should be entered on each form dealing with subjects. The alpha section of the code indicates the department responsible for offering the subject. The first number in the code indicates the level at which the subject is offered (ie. 100, 200, 300, 400 etc.) and, in the Faculty of Engineering, also indicates the WAM weighting of the subject. The latter two numbers usually indicate the sequence of a subject in a stream of subjects or within a course.

The departmental indicators included in this Handbook are listed in Section 8.

Credit Point Value

The credit point value of a subject thus indicates the workload of a subject as a proportion of a normal annual full-time program. Similarly, the credit point value of a subject indicates the proportion of the annual HECS liability which arises from enrolment in that subject. Further information on the meaning of credit points is given in the General Course Rules and Information in Section 4.

Assumed Knowledge

Many subjects also have assumed knowledge requirements. These are also set out in the following pages. Students are strongly advised to have completed the subjects prescribed as assumed knowledge before enrolling or to otherwise discuss the extent of their disadvantage with the head of department or the lecturer concerned.

T.B.D. = To be determined

Enrolment restrictions:

- Elective subjects. Not all elective subjects will be available in any one year. Elective subjects indicated as potentially available may be cancelled if enrolments are insufficient. Availability should be confirmed with the Department Office.
### SECTION NINE

CIVIL ENGINEERING AND SURVEYING SCHEDULE OF SUBJECTS

#### Schedule of All Subjects Listed by the Department of Civil Engineering and Surveying

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject Name</th>
<th>Credit Points</th>
<th>Semester Available</th>
<th>Prerequisites</th>
<th>Corequisites (CR)</th>
<th>Assumed Knowledge (AK)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIVL111</td>
<td>Mechanic and Structures</td>
<td>5</td>
<td>Both I and II</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIVL121</td>
<td>Fluid Mechanics 1</td>
<td>5</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIVL141</td>
<td>Environmental Engineering 1</td>
<td>5</td>
<td>Full year</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIVL191</td>
<td>Industrial Experience</td>
<td>5</td>
<td>Full year</td>
<td>Part-time Enrolment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIVL192</td>
<td>Industrial Experience</td>
<td>5</td>
<td>Full year</td>
<td>Part-time Enrolment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIVL212</td>
<td>Mechanics of Solids</td>
<td>5</td>
<td>1</td>
<td>CIVL111</td>
<td>AK: MATH102 or MATH112</td>
<td></td>
</tr>
<tr>
<td>CIVL213</td>
<td>Theory of Structures 1</td>
<td>5</td>
<td>2</td>
<td>CIVL111</td>
<td>AK: MATH102 or MATH112</td>
<td></td>
</tr>
<tr>
<td>CIVL222</td>
<td>Materials 2</td>
<td>5</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIVL223</td>
<td>Materials 3</td>
<td>5</td>
<td>2</td>
<td></td>
<td>AK: MICH101</td>
<td></td>
</tr>
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### SECTION NINE

CIVIL ENGINEERING AND SURVEYING SCHEDULE OF SUBJECTS

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T.B.D.: To be determined
I.O.D.: Head of Department

* Elective subjects. Not all elective subjects will be available in any one year. Elective subjects indicated as potentially available may be cancelled if enrolments are insufficient. Availability should be confirmed with the Department Office.
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**Subject Approval:**
- Elective subjects. Not all elective subjects will be available in any one year. Elective subjects indicated as potentially available may be canceled if enrollments are insufficient. Availability should be confirmed with the Department Office.
- COMP500 requires attendance at lectures in Semester 1 and completion of a project report in Semester 2.
- COMP506 may not be available in 1992 in which case students will take COMP509 or an alternative subject approved by the Course Coordinator.
### Electrical and Computer Engineering Schedule of Subjects

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T.B.D. = To be determined
H.O.D. = Head of Department

* Elective subjects. Not all elective subjects will be available in any one year. Elective subjects indicated as provisionally available may be cancelled if enrollments are insufficient. Availability should be confirmed with the Department Office.

### Schedule of All Subjects Listed by the Department of Mechanical Engineering

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### Schedule of Selected Subjects Listed by Departments Outside the Faculty of Engineering

The list below contains only those subjects which are compulsory or recommended elective choices for courses offered in the Faculty of Engineering. For the details of other subjects which may be chosen as electives, please consult the Handbook of the relevant Faculty. Note that the prerequisite and corequisite requirements of subjects listed in other Handbooks relate to the courses offered in that other Faculty. Students who do not meet the prescribed prerequisites for a particular elective subject but believe that they have a suitable background to attempt that subject, should consult the Head of the Department offering the subject, obtain written permission to enrol and submit it with the Variances of Programmes Form requiring addition of the subject.

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject Name</th>
<th>Credit Point Value</th>
<th>Semester Available</th>
<th>Prerequisites</th>
<th>Corequisites (CR): Assumed Knowledge (AK):</th>
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T.D.D. = To be determined

H.O.D. = Head of Department

* Elective subjects. Not all elective subjects will be available in any one year. Elective subjects indicated as potentially available may be cancelled if enrolments are insufficient. Availability should be confirmed with the Department Office.
<table>
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<tr>
<th>Code</th>
<th>Subject Name</th>
<th>Credit Point Value</th>
<th>Semester Available</th>
<th>Prerequisites</th>
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