

**THE ENGINEERING UNDERGRADUATE
HANDBOOK
2009**

SCHOOL OF ENGINEERING

THE AUSTRALIAN NATIONAL UNIVERSITY

This publication is intended to provide information about the School of Engineering for students and staff. It is not intended to duplicate *The Australian National University Undergraduate Handbook* **which should be referred to** whenever a student is in doubt about any aspect of the Engineering course. Copies of the *Undergraduate Handbook* may be purchased from the University Co-op Bookshop on campus, local booksellers and some newsagents. It can be found on the Web at:

<http://studyat.anu.edu.au>

The School of Engineering would like to express their sincere thanks to the Faculty of Law for giving their permission to use the LLB Handbook as a basis for developing the Engineering Undergraduate Handbook.

School of Engineering
February 2009

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1. MESSAGE FROM THE HEAD OF SCHOOL

The beginning of a new academic year is always very exciting: new students arrive, fresh out of College, full of enthusiasm and curiosity, eager to learn, keen to become professional engineers in a short four years time. The corridors of the building teem with young students, the lobby fills up with animated conversations, smiles, laughter. You would think that you have been invited to a party! If this is university life, it does not look bad at all! Indeed, university life is also this, very much so among engineering students, who are well known for creating the most vibrant and friendliest atmosphere around the campus. The Engineering Student Association organises many extra-curricular activities, including high profile technical projects, barbecues, dinners, balls, etc.

But of course, the main reason why you are coming to uni is to learn. Learning can only be the result of your own, personal activity. There is no such a thing as passive learning, so the onus is on you to find the means. We will help you the best we can, by means of courses that have been designed to produce the learning outcomes and the professional attributes that an engineer should have. But no matter how much we try to offer you here, there is always much more out there: books, publications, the internet represent an almost endless source of valuable information. University learning should be a rich experience for all of you. This great university of ours places all those resources at your disposal, use them! If you can afford the time, do not simply rely on lecture notes or the prescribed materials for a given course. Look around, consult other sources, and navigate through the vast ocean of information we live in.

As you already know, the Bachelor of Engineering at the ANU is an Honours degree, and we expect you to work hard to earn that degree. Many of you will find that it is not that hard. In fact, what some may find hard work can be a lot of fun; the trick is to like it and, based on my personal experience, I can tell you that the more you learn and understand a topic, the more you get to like it. So give yourselves time, the chances are that you will become closely attached to at least one field of engineering and of becoming an engineer. All the academics and staff here are deeply committed to helping you to become outstanding graduates. But you will keep learning even after you leave uni. It is easy to understand why: because all and every one of you will come up with new ideas and create new technologies that will further expand the field.

For those seeking the challenges of academic excellence we have created the BE(R&D), an engineering degree program that maximises research and development opportunities and immerses students in the amazing world of ANU research. Nevertheless, many of those opportunities are also available to all the BE students, because the uniqueness of our university is to offer students a research-led education.

Of course engineering is not incompatible with other fields of knowledge, on the contrary. Many of you frequently choose to expand your field of study through combined degrees. For those doing straight engineering, there are still ample opportunities to follow your personal inclinations. Our BE program is amazingly flexible, which is great, because to a large extent you can choose what type of engineering expert you want to be. And all of this without compromising the main outcome of becoming an accredited professional engineer. In fact, our program, which is built around a core that we call "Engineering Systems", is particularly effective in helping you to become very well prepared to tackle the challenges of the technical world. Believe me, here at ANU you will find one of the best and most enjoyable ways of studying engineering that I have ever seen anywhere around the world.

Let me congratulate you on becoming a student of the ANU, one of the best universities in the world, and to thank you for choosing to study engineering here. From now on you will share the prestige of its name and we expect you to contribute to it. In four or five years time you will become an ANU engineer, joining an increasing number of people that have already made that label one of the most highly regarded in the engineering profession, both in Australia and overseas. I hope that you will agree with one of them in saying: "being an engineer is the best career choice ever!"

Please read this document carefully. Having so many options can be a bit of a challenge, and there is some careful planning that needs to be done. But we are here to help you. There are a few changes to the program that will become implemented progressively. The new first year students will now take in the second semester two relatively new courses: Introduction to Electronics and Introduction to Mechanics. These two courses represent an expansion of previous material presented in a single course. Further changes will be implemented in 2010, among them the compulsory nature of the respective electrical and mechanical second year courses, to provide all students with a solid foundation in those two main fields of engineering and enable a true interdisciplinary approach to engineering.

There are several staff members who you may have contact with through your first year as well as the course lecturers. These are Dr Paul Compston, who is the Associate Dean for Undergraduate Engineering and has authority for most academic matters related to your studies. The academic advisory team also includes Dr Haley Jones and Dr Jonhgyuk Kim. Both will be very happy to assist and guide you to choose your study pattern. But the main person for you, the first point of contact is, of course, the Student Administrator, Ms Pam Shakespeare. Go to her for any matters, and she will either respond to them wisely or organise appropriate appointments for you.

The School of Engineering is formed by 40 academics, 25 technical, research and administrative staff, 100 high degree research students (mostly PhD students), 30 Master students and approximately 600 undergraduate students. At the School you will be working with very prominent researchers in various fields of engineering, with award-winning teachers, highly professional engineers and dedicated staff. The new School will facilitate access to more academics and more PhD students, who frequently

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are tutors for the undergraduate courses, and offer students many more opportunities. In 2008 the College welcomed a new Dean, Professor Chris Baker, an engineer himself with broad experience in academic, industry and government. He joins me and all my colleagues in welcoming you. Welcome to the School of Engineering!

Professor Andres Cuevas
Head of Engineering

2. ACADEMIC CALENDAR - 2009

Calendar	
FIRST SEMESTER	23 February – 05 June
First teaching period begins	Monday 23 February
First teaching period ends	Friday 9 April
2 – week teaching break	Monday 13 April – Friday 24 April
Second teaching period begins	Tuesday 28 April
Second teaching period ends	Friday 05 June
University Examination Period	Thursday 11 June – Saturday 27 June
6 – week teaching break	Monday 08 June – Friday 17 July
SECOND SEMESTER	20 July – 30 October
Third teaching period begins	Monday 20 July
Third teaching period ends	Friday 25 September
2-week teaching break	Monday 28 September – Friday 09 October
Fourth teaching period begins	Monday 12 October
Fourth teaching period ends	Friday 30 October
University Examination Period	Thursday 05 November – Saturday 21 November
Conferring Ceremonies	Thursday 10 December – Friday 11 December
PUBLIC HOLIDAYS	
	Canberra Day – Monday 09 March
	Good Friday – 10 April
	Easter Sunday – 12 April
	Easter Monday – 13 April
	Anzac Day – Monday 27 April
	Queen's Birthday – Monday 08 June
	Labour Day – Monday 05 October
	ACT Family Day – Tuesday 3 November (TBC)

3. STAFF

Head of the School of Engineering

Professor Andres Cuevas

Associate-Dean, Undergraduate Studies, School of Engineering

Dr Paul Compston

Program Advisors

Dr Haley Jones

Dr Jon Kim

Engineering Administration Office

Administrator: Ms Helen Shelper

Student Administrator: Ms Pam Shakespeare

Student Services Office

Manager, Student Services: Mr Paul Melloy

Student Services Officer: Ms Jill Mayo

Administrative Assistant: Ms Ljiljana Argy

Administration and IT Services

IT Systems Administrator: Mr Andrew Wilkinson

Academic Staff

Dr Kim Blackmore

Professor Andrew Blakers, **Director, Centre for Sustainable Energy Systems**

Dr Gerard Borg

Dr Paul Compston, **Associate Dean - Undergraduates**

Professor Andres Cuevas, **Head of School**

Dr Mike Dennis

Dr Matthew Doolan

Dr Salman Durrani

Professor Matt James

Dr Haley Jones, **Program Advisor**

Dr Shankar Kalyanasundaram

Dr Jonghyuk Kim, **Program Advisor**

Dr Keith Lovegrove

Dr Adrian Lowe

Dr Daniel MacDonald

Dr Robert Mahony

Professor Qinghua Qin

Dr Zbigniew Stachurski, **Director, Centre for Science & Engineering of Materials**

Dr Jochen Trumpf

Dr Klaus Weber

Technical Staff

Mr Rob Gresham, **Head of Technical Staff**

Mr Ian McRobert, **Electronic Projects Co-ordinator**

Mr Ben Nash, **Workshop Manager**

Mr Erasmo Scipione, **Electronics Manager**

Mr David Tychsen-Smith, **Mechanical Projects Co-ordinator**

4. SCHOOL INFORMATION

4.1 Student Administration

4.1.1 Student Administrator

Students seeking course information or advice and general student enquiries, should in the first instance see the Student Administrator, Room E241 (☎ 6125 5130).

4.1.2 Office Hours

The Engineering Student Administration office will be open during the following times:

Tuesday - Friday	9.00 am - 12.30 noon
Tuesday - Friday	1.30 pm - 5.30 pm

4.1.3 Associate-Dean, Undergraduate Studies

The School has an Associate-Dean for Undergraduate studies who provides advice to undergraduate students on the following:

- transfers to or from other Engineering Schools; cross-institutional study; application for status; exchange programs;
- advice on School and College policies and practices relating to the undergraduate program.

If a student is concerned about an individual course, it is better first to discuss the problem with the Lecturer of the course concerned, rather than with the Associate-Dean. General concerns about the School or personal problems can be raised with any member of staff whom students feel will be sympathetic and helpful. Sometimes, the solution to a student's problem will require formal approval from the Associate-Dean (such as the granting of credit towards the ANU degree for courses completed at another university), but all members of staff are equally qualified to listen and give advice.

ASSOCIATE DEAN APPOINTMENTS MUST BE BOOKED THROUGH THE STUDENT ADMINISTRATOR (☎ 6125 5130).

4.1.4 Program Advisors

Program Advisors are members of the teaching staff appointed to advise students on matters requiring academic knowledge or judgment and from whom students should seek advice on the following matters:

- advice on enrolment patterns.
- approval for enrolling in more than the usual load of 4 courses per semester.
- Matters for special consideration. Advice on reduction of workload when study is interrupted by illness or other personal difficulties

PROGRAM ADVISOR APPOINTMENTS MUST BE BOOKED THROUGH THE STUDENT ADMINISTRATOR (☎ 6125 5130).

4.1.5 Head of School

The Head of School is responsible for the overall management of the School, including all academic matters. Students are welcome to consult the Head on matters of concern to them. However, students must first consult relevant lecturers, or the Student Administrator or the Associate-Dean.

HEAD OF SCHOOL APPOINTMENTS MUST BE MADE THROUGH THE STUDENT ADMINISTRATOR (☎ 6125 5130), OR THE SCHOOL ADMINISTRATOR (☎ 6125 3378).

4.2 ANU Engineering Students Association (ANUESA)

The Engineering Students Association will have a significant impact on your life as an engineering student at ANU. The main goal of the Association is to ensure all engineering students have a rich and positive university experience. ANUESA does this through two main routes: the organisation of social events to get you away from the study desk and out with your fellow students and faculty staff, and to facilitate and offer links to the Australian engineering community and their related industries.

PAST SUCCESSES

Over the last few years ANUESA has had considerable success in achieving its goals. The Engineering Careers Event, now entering its fifth year, has attracted numerous companies from a diverse range of engineering fields, creating an access point between you and industry to employer project information and prospects, part-time jobs, vacation employment, and graduate positions in some of the world's top engineering firms and Australian Government agencies. It is also a great opportunity to see the successes other engineering graduates have experienced. ANUESA has also organised several presentations over the last few years from professional organisations including APESMA and Engineers Australia.

In addition, the Association runs several barbeques for its members throughout school terms. We also strive to fund and organise as many social events as possible, including bar nights at local drinking spots and the annual Engineering Ball, which is the envy of the rest of the university as a first class social event and consistently attracts over 200 guests. For those in their graduating year we organise a Graduation Dinner, and strengthen the relationship between staff and students through social soccer matches culminating in the "Engineers Cup".

GOALS FOR 2009

In addition to replicating and improving upon all these past successes, ANUESA plans to further its commitment to engineering students in 2009. Some of the additional aspects we intend to pursue include:

- **Course Feedback:** Each semester ANUESA holds a student forum in conjunction with the faculty in order to give feedback to the university on the success of the course content and quality. We plan to continue this forum in 2009, as it has resulted in significant improvements to the degree.

- **More Social Events:** ANUESA intends to expand its current assortment of social events this year. This may include social dinners and bar nights, and possibly movie or trivia nights.
- **Better Communication:** We hope to improve notification of barbeques and events this year through use of online social tools, websites and email. A Facebook group has been created to ensure as many students as possible will know about and can attend our free barbeques.

MEMBERSHIP

ANUESA is a not-for-profit association which raises funds through sponsorship and fundraising, and the most important thing you can do to keep accessing the social and industry links created by ANUESA is attend as many of our events as possible. However, just being an engineering student doesn't automatically get you access to these great events. To become a member, just show up to our stall on Market Day or any of our barbeques, and you will be able to join our organisation for a mere \$5 annual fee.

You should also be aware that our organisation is wholly run by engineering students. As engineering students yourselves, you will have the opportunity to be involved from day one of your degree. If you would like to be involved please contact me, as the more good help we have the more we can accomplish for everybody. It is a great experience, and a definite plus to any résumé.

For details of our upcoming events check out our website at <http://engnet.anu.edu.au/anuesa>, join our Facebook Group (Search for ANU Engineering Students' Association 2009) or send me an email on anuesa@anu.edu.au.

5. BE PROGRAM INFORMATION

5.1 Full-Time Program

The School of Engineering has a policy that students should ordinarily conform to the full-time program structure. Students are therefore advised not to enter into any prior work or other commitments that are incompatible with full attendance to lectures, laboratories and tutorials of the courses.

5.2 Eligibility to Graduate

Students having completed all the requirements of the BE program (see ANU Undergraduate Handbook (Study@anu.edu.au) and also this document section 5.4.1.1) are eligible for graduation. A few important points to remember:

- Students must have completed 192 units, as set out in the BE program rules. Combined degree students must complete at least 240 units.
- All final year students must enrol in the course ENGN4100 Engineering Honours to be able to receive a final grade (H1, H2A, H2B or Pass). This course has a weight of 0 units and does not involve payment of HECS.
- Students must complete ENGN3100 Practical Experience. The equivalent of 60 days of full-time work experience must be completed. Enrolment in this course must be in the semester in which the student intends to submit their report. The course has a weight of 0 units and does not involve HECS.
- Students will be notified by Student Administration (SASS) of their eligibility to graduate and will be provided with acceptance or deferment forms for completion.

5.3 Honours

For information on the awarding of honours see the Undergraduate Handbook:

<http://Study@anu.edu.au>

The awarding of honours in engineering is based on meritorious performance over the entire four/five year program. The assessment of meritorious performance includes the calculation of an average percentage mark (APM), together with consideration of the overall academic progress of the student and the Individual Project result. To determine the global APM, the first year average mark is weighted by a factor 0.1, and the combined average of Years 2, 3 and 4 by a factor 0.9.

The first year average mark is the average of the marks awarded in the following courses: ENGN1211 Discovering Engineering, ENGN1217 Introduction to Mechanics and ENGN1218 Introduction to Electronics (or ENGN1221 Electromechanical Technologies), ENGN1215 Introduction to Materials, MATH1013 Mathematics & Applications 1 (or MATH1115), MATH1014 Mathematics and Applications 2 (or MATH1116), PHYS1101 Advanced Physics 1, COMP1100 Introduction to Programming & Algorithms.

The average mark for the remaining years is the average mark awarded in all the additional engineering courses (that is having an ENGNxxxx code number) completed by the student, excluding ENGN4200 Individual Project, which is considered separately.

The final honours result is formally recorded on the student's academic transcript in accordance with the following marking scale, which is used elsewhere in the University:

- H1 80 - 100%
- H2A 70 - 79%
- H2B 60 - 69%

5.4 Degree Rules

5.4.1 The BE Degree Rules, Majors and Degrees

5.4.1.1 Bachelor of Engineering – program requirements for 2009

The BE degree program requires the completion of at least 192 units including:

1. 54 units of the following professional development courses:
 - ENGN1211 Discovering Engineering (6 units)
 - ENGN2225 Systems Design (6 units)
 - ENGN2226 Engineering Systems Analysis (6 units)
 - ENGN3211 Investment Decisions & Financial Systems (6 units)
 - (or specified equivalent: BUSN1001 or Asian Studies equivalent or Arts equivalent)
 - ENGN3221 Engineering Management (6 units)
 - ENGN3100 Practical Experience (0 units)
 - ENGN4200 Individual Project (12 units)
 - ENGN4221 Systems Engineering Project (6 units)
 - ENGN4611 Engineering Law (6 units)
 - (or specified equivalent: BUSN1101 or Asian Studies equivalent or Arts equivalent)
2. 72 units of engineering discipline courses listed in Schedule 1, including ENGN1217 Introduction to Mechanics (6 units), ENGN1218 Introduction to Electronics (6 units), ENGN1215 Introduction to Materials (6 units), ENGN2217 Mechanical Systems & Design (6 units), ENGN2218 Electronic Systems & Design (6 units) and at least one engineering discipline major (42 units).

2. 12 units of mathematics, being
MATH1013 Mathematics & Applications 1 (or MATH1115) (6 units)
MATH1014 Mathematics & Applications 2 (or MATH1116) (6 units)
3. 12 units of computing, being
COMP1100 Intro to Programming & Algorithms (6 units)
ENGNXXXX Computing for Engineering Simulation (offered 2010).
4. 6 units of physics, being
PHYS1101 Advanced Physics I (6 units)
5. 36 units of courses offered by the University.
6. The degree program may not include more than 60 units of 1000-series courses.

Schedule 1: Engineering Discipline Courses

Courses from the following list may be taken to fulfil item 2 of the BE requirements:

- ENGN1215 Introduction to Materials (6 units)
- ENGN1217 Introduction to Mechanics (6 units)
- ENGN1218 Introduction to Electronics (6 units)
- ENGN2211 Electronic Circuits (6 units)
- ENGN2214 Mechanics of Materials (6 units)
- ENGN2217 Mechanical Systems & Design (6 units) (offered in 2010)
- ENGN2218 Electronic Systems & Design (6 units) (offered in 2010)
- ENGN2221 System Dynamics (6 units)
- ENGN2222 Thermal Energy Systems (6 units)
- ENGN2224 Semiconductors (6 units)
- ENGN2228 Signal Processing (6 units)
- ENGN3212 Manufacturing Technologies (6 units)
- ENGN3213 Digital Systems and Microprocessors (6 units)
- ENGN3222 Manufacturing Systems (6 units)
- ENGN3223 Control Systems (6 units)
- ENGN3224 Energy Systems Engineering (6 units)
- ENGN3226 Digital Communications (6 units)
- ENGN3227 Analogue Electronics (6 units)
- ENGN4226 System Theory (6 units)

- ENGN4507 Microelectronic & Photonic Technologies (6 units)
- ENGN4511 Composite Materials (6 units)
- ENGN4513 Fibre Optic Communications (6 units)
- ENGN4516 Energy Resources and Renewable Energy Technologies (6 units)
- ENGN4528 Computer Vision (6 units)
- ENGN4536 Wireless Communications (6 units)
- ENGN4545 Radiofrequency Engineering (6 Units)
- ENGN4601 Engineering Materials (6 units)
- ENGN4612 Digital Signal Processing and Control (6 units)
- ENGN4615 Finite Element Analysis (6 units)
- ENGN4625 Power Electronics (6 units)
- ENGN4627 Robotics (6 units)

5.4.1.2 Bachelor of Engineering (Research and Development)

This program is specifically designed for students who have an interest in undertaking research and development in either industry or an academic environment.

Program Requirements: The Bachelor of Engineering (Research and Development) is a four year full-time program with graduates obtaining a Bachelor of Engineering with Honours. Students will have to complete 192 units including:

1. An Engineering core major consisting of 42 units of the following professional development courses:
 - ENGN1211 Discovering Engineering (6 units)
 - ENGN2225 Systems Design (6 units)
 - ENGN2226 Engineering Systems Analysis (6 units)
 - ENGN3211 Investment Decisions & Financial Systems (6 units)
 - ENGN3221 Engineering Management (6 units)
 - ENGN3100 Practical Experience (0 units)
 - ENGN4221 Systems Engineering Project (6 units)
 - ENGN4611 Engineering Law (6 units)
2. 60 units of Engineering courses from Schedule 1 of Engineering Discipline courses listed (see page 20) including ENGN1215 Introduction to Materials, ENGN1217 Introduction to Mechanics, ENGN1218 Introduction to Electronics, ENGN2217 Mechanical Systems & Design, ENGN2218 Electronic Systems &

- Design. This will include the requirements of at least one major listed (see page 25).
3. 12 units of Mathematics being:
MATH1115 Mathematics & Applications1 (Honours) and
MATH1116 Mathematics & Applications 2 (Honours).
 4. 6 Units of Computing being
COMP1100 Introduction to Programming & Algorithms.
 5. 6 units of Physics being:
PHYS1101 Advanced Physics 1.
 6. 30 units of courses offered by the University (ie University electives). These can include additional engineering courses. The degree program may not contain more than 60 units of 1000-series courses.
 7. A 42 unit R&D major made up of ENGN4221 Systems Engineering Project and 36 units of project based courses made up of 6 unit, 12 unit, 18 unit and 24 units listed below and which one must be at least 12 units. These can be taken in Years 1, 2, 3 and 4 of the program -
ENGN2706 R&D Project (Methods) (6 unit)
ENGN3706 R&D Project (6 unit)
ENGN3712 R&D Project (12 units)
ENGN4706 R&D Project (6 unit)
ENGN4712 R&D Project (12 unit)
ENGN4718 R&D Project (18 unit)
ENGN4724 R&D Project (24 unit)
ENGN2706 R&D Project (Methods) is compulsory. The remaining 30 units will be comprised of any combination of the other R&D Project courses subject to approval by the program convener.
 8. The School of Engineering will determine annually whether the level of performance of a student is sufficient to remain in the program. Generally, the expectation is for performance at, or very near, a high distinction average. Students deemed not to be performing at an appropriate level will be able to transfer to the Bachelor of Engineering program, with appropriate status granted for courses successfully completed.
 9. Graduation from the BE(R&D) Program will require the award of 1st Class Honours.

5.4.1.3 Engineering majors

The School offers six engineering majors (42 units) that may be selected in terms of fulfilling item 2 of the BE degree requirements. These majors are:

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- Electronic Systems
- Manufacturing Systems
- Materials and Mechanical Systems
- Mechatronic Systems
- Sustainable Energy Systems
- Telecommunication Systems

Where a student has completed the requirements for a major, this will be indicated on academic transcripts.

For further information on these majors, please refer to the 2009 Undergraduate Handbook (study@anu.edu.au) and the School of Engineering website.

5.4.1.4 Science and Other Majors

The 36 units of courses under Item 6 of the BE program requirements may be used by students to further their interests in other subject areas. The School of Engineering has developed the following majors from other areas in fulfilment of the requirements under Items 5 and 6 of the BE program requirements:

- Digital Systems
- Environmental Systems
- Photonic Systems

Note that these majors cannot be counted towards Item 2 of the BE Program requirements. For more information please refer to the 2009 Undergraduate Handbook (study@anu.edu.au) .

5.4.1.5 Combined Degrees

All BE combined degrees are 5 year programs comprising 240 units.

The BE degree may be combined with:

- Bachelor of Science
- Bachelor of Information Technology
- Bachelor of Commerce
- Bachelor of Economics
- Bachelor of Asian Studies
- Bachelor of Arts

5.5 Enrolment Patterns

This section provides some information that will help students select courses and develop their program of study.

5.5.1 Standard Bachelor of Engineering Program Pattern

The following table shows how the BE degree requirements can be met.

	FIRST SEMESTER		SECOND SEMESTER	
Year 1	ENGN1211 Discovering Engineering	6 units	ENGN1217 Introduction to Mechanics	6 units
48 units	MATH1013 Mathematics & Applications 1	6 units	ENGN1218 Introduction to Electronics	6 units
	PHYS1101 Advanced Physics I	6 units	ENGN1215 Introduction to Materials	6 units
	COMP1100 Introduction to Programming & Algorithms	6 units	MATH1014 Mathematics & Applications 2	6 units
Year 2	ENGN2217 Mechanical Systems & Design	6 units	ENGNXXXX Computing for Engineering Simulation	6 units
48 units	ENGN2218 Electronic Systems & Design	6 units	ENGN2225 Systems Design	6 units
	ENGN2226 Engineering Systems Analysis	6 units	Engineering major	6 units
	University elective for example MATH2305 Calculus and Differential Equations	6 units	University elective	6 units
Year 3	ENGN3211 Investment Decisions (OR equivalent)	6 units	ENGN3221 Engineering Management	6 units
48 units	Engineering major	6 units	Engineering major	6 units
	Engineering elective	6 units	Engineering elective	6 units
	University elective	6 units	University elective	6 units
Year 4	ENGN4200 Individual Project	6 units	ENGN4200 Individual Project	6 units
48units	ENGN4221 Systems Engineering Project	6 units	ENGN4611 Engineering Law (OR equivalent)	6 units
	Engineering major	6 units	Engineering major	6 units
	University elective	6 units	University elective	6 units

5.5.2 Recommended Pattern for Interdisciplinary Systems Engineering

The following table shows a recommended enrolment pattern for students intending to study a broad systems engineering program:

	FIRST SEMESTER		SECOND SEMESTER	
Year 1	ENGN1211 Discovering Engineering	6 units	ENGN1215 Introduction to Materials	6 units
48units	MATH1013 Mathematics & Applications 1	6 units	ENGN1217 Introduction to Mechanics	6 units
	PHYS1101 Advanced Physics I	6 units	ENGN1218 Introduction to Electronics	6 units
	COMP1100 Introduction to Programming	6 units	MATH1014 Mathematics & Applications 2	6 units
Year 2	ENGN2226 Engineering Systems Analysis	6 units	ENGN2225 System Design	6 units
48 units	ENGN2217 Mechanical Systems & Design	6 units	ENGN2221 Systems Dynamics	6 units
	ENGN2218 Electronic Systems & Design	6 units	ENGN2222 Thermal Energy Systems	6 units
	MATH2305 Calculus & Differential Equations	6 units	ENGNXXXX Computing for Engineering Simulation	6 units
Year 3	ENGN3211 Investment Decisions (or equivalent)	6 units	ENGN3221 Engineering Management	6 units
48 units	ENGN3212 Manufacturing Technologies	6 units	ENGN3222 Manufacturing Systems	6 units
	ENGN3213 Digital Systems and Microprocessors	6 units	ENGN3223 Control Systems	6 units
	ENGN3224 Energy Systems Engineering	6 units	ENGN3227 Analogue Electronics	6 unit
Year 4	ENGN4200 Individual Project	6 units	ENGN4200 Individual Project	6 units
48units	ENGN4221 Systems Engineering Project	6 units	ENGN4611 Engineering Law (or equivalent)	6 units
	Major/elective(*)	6 units	Major/elective(*)	6 units
	Major/elective(*)	6 units	Major/elective(*)	6 units

5.5.3 Standard Bachelor of Engineering (Research & Development) recommended program pattern.

	FIRST SEMESTER		SECOND SEMESTER	
Year 1	ENGN1211 Discovering Engineering	6 units	ENGN1217 Introduction to Mechanics	6 units
48 units	MATH1115 Mathematics & Applications 1 (Honours)	6 units	ENGN1218 Introduction to Electronics	6 units
	PHYS1101 Advanced Physics I	6 units	ENGN1215 Introduction to Materials	6 units
	COMP1100 Introduction to Programming & Algorithms	6 units	MATH1116 Mathematics & Applications 2 (Honours)	6 units
Year 2	ENGN2217 Mechanical Systems & Design	6 units	ENGNXXXX Computing for Engineering Simulation	6 units
48 units	ENGN2218 Electronic Systems & Design	6 units	ENGN2225 Systems Design	6 units
	ENGN2226 Engineering Systems Analysis	6 units	Engineering major	6 units
	ENGN2706 R&D Project (Methods)	6 units	R&D Project or University elective	6 units
Year 3	ENGN3211 Investment Decisions (OR equivalent)	6 units	ENGN3221 Engineering Management	6 units
48 units	Engineering major	6 units	Engineering major	6 units
	R&D Project	6 units	R&D Project	6 units
	University elective	6 units	R&D Project	6 units
Year 4	ENGN4221 Systems Engineering Project	6 units	ENGN4611 Engineering Law	6 units
48units	Engineering major	6 units	Engineering major	6 units
	R&D Project	6 units	R&D Project	6 units
	University elective	6 units	University elective	6 units

5.6 Engineering Majors

The following six majors may be selected to fulfil item 2 of the BE rules.

Electronic Systems		
ENGN1218 or ENGN1221	Introduction to Electronics or Electromechanical Technologies	6 units
ENGN2211 or ENGN2218	Electronic Circuits or Electronic Systems & Design	6 units
ENGN2224 or ENGN3227	Semiconductors or Analogue Electronics	6 units
ENGN3213	Digital Systems and Microprocessors	6 units
ENGN3223	Control Systems	6 units
ENGN4507 or ENGN4625	Microelectronic & Photonic Technology Power Electronics	6 units
ENGN4545 or ENGN4612	Radiofrequency Engineering or Digital Signal Processing & Control	6 units
TOTAL		42 units

Manufacturing Systems		
ENGN1215	Introduction to Materials	6 units
ENGN2214 or ENGN2217	Mechanics of Materials Mechanical Systems & Design	6 units
ENGN2221	Systems Dynamics	6 units
ENGN3212	Manufacturing Technologies	6 units
ENGN3222	Manufacturing Systems	6 units
ENGN4627	Robotics	6 units
ENGN4601	Engineering Materials	6 units
TOTAL		42 units

Materials and Mechanical Systems		
ENGN1215	Introduction to Materials	6 units
ENGN2214 or ENGN 2217	Mechanics of Materials or Mechanical Systems & Design	6 units
ENGN2221	Systems Dynamics	6 units
ENGN2222	Thermal Energy Systems	6 units
ENGN3224	Energy Systems Engineering	6 units
ENGN4601	Engineering Materials	6 units
ENGN4511 or ENGN4615	Composite Materials or Finite Element Analysis	6 units
TOTAL		42 units

Mechatronic Systems		
ENGN1218 or ENGN1221	Introduction to Electronics or Electromechanical Technologies	6 units
ENGN2211 or ENGN2218	Electronic Circuits or Electronic Systems & Design	6 units
ENGN2221	System Dynamics	6 units
ENGN3213	Digital Systems and Microprocessors	6 units
ENGN3223	Control Systems	6 units
ENGN4528	Computer Vision	6 units
ENGN4627	Robotics	6 units
TOTAL		42 units

Sustainable Energy Systems		
ENGN1218 or ENGN1221	Introduction to Electronics or Electromechanical Technologies	6 units
ENGN2211 or ENGN 2218	Electronic Circuits or Electronic Systems & Design	6 units
ENGN2222	Thermal Energy Systems	6 units
ENGN2224	Semiconductors	6 units
ENGN3224	Energy Systems Engineering	6 units
ENGN4516	Energy Resources and Renewable Energy Technologies	6 units
ENGN4524	Solar Energy Systems	6 units
TOTAL		42 units

Telecommunication Systems		
ENGN1218 or ENGN1221	Introduction to Electronics or Electromechanical Technologies	6 units
ENGN2211 or ENGN2218	Electronic Circuits or Electronic Systems & Design	6 units
ENGN2228	Signals Processing	6 units
ENGN3213 or ENGN3215	Digital Systems & Microprocessors or Communication Technologies	6 units
ENGN3226	Digital Communications	6 units
ENGN4536	Wireless Communications	6 units
ENGN4545 or ENGN4612 or ENGN4513	Radiofrequency Engineering or Digital Signal Processing & Control or Fibre Optics Communication Systems	6 units
TOTAL		42 units

5.7 Practical Work Experience

Engineers Australia specifies that students are required to complete at least 60 days of engineering work experience during the Degree Program through approved professional employment taken in the vacation periods. A report needs to be submitted covering the work undertaken and submitted to the Work Experience Coordinator, through the Undergraduate Administrator. For details see the course outline for ENGN3100 Practical Experience.

5.8 Cross-institutional studies

A student may be given status towards an Engineering Degree for engineering courses completed at another university. Before undertaking any cross-institutional study, a student should first discuss the proposal with the Associate-Dean. Particular attention is paid to whether the proposed course of study overlaps with courses studied at the ANU, whether the proposed study can adequately substitute for a course that is compulsory in the ANU degree, and whether the proposed study is roughly equivalent in "load" to study at the ANU. After consultation on these matters, it is the responsibility of the student to seek enrolment in the other institution and, after completion, to provide an official transcript of the assessment results to the School of Engineering.

In principle, the maximum amount of status that can be granted for cross-institutional study is the equivalent of one full-time year of study at ANU (48 units). Where the study is undertaken at an Australian summer school (other than ANU), the maximum status that will be granted is 12 units. For study undertaken at an overseas Engineering school, a maximum of 48 units may be granted.

5.9 Prizes and scholarships

A list of prizes and scholarships available to Engineering students can be found in the ANU Undergraduate Handbook.

A number of local scholarships are also offered by the School and College. Applications for these scholarships in 2010 will be open from October 2009 to December 2009. Application forms will be available from the following web site

http://feit.anu.edu.au/UG_CECS_scholarships.php

Students must be enrolled in an Engineering Degree Program to be eligible to apply for these scholarships.

6. GENERAL INFORMATION

6.1 Careers and employment

For information on the Careers Centre see their web site:

<http://www.anu.edu.au/careers/>

6.2 Alumni

For information on the ANU Alumni see their web site:

<http://anu.edu.au/Alumni/>

6.3 Student Identification Number

Because of the University's policy on privacy you will be asked to show your student card whenever you are making an enquiry about details of your program, checking marks, asking for your examination script or assignments, or making an appointment to see the Associate-Dean.

6.4 Youth Allowance/Austudy/Abstudy

Students who receive a government study allowance are advised that it is their responsibility to ensure that their semester load is sufficient for full-time study. Semester load (EFTSU) will be shown on the Enrolment Confirmation notice. If, in any semester, EFTSU load falls below 0.375, affected students should notify Centrelink immediately. Failure to do so may result in their being required to repay the allowance.

6.5 IT Facilities

Located within the Engineering Building is an Information Commons laboratory, administered by the Division of Information, for computer use by Undergraduate and Postgraduate students as well as Staff members. There are also three other more specialised computer labs used for project and class work.

More information on IT Facilities for students at the ANU can be found at:

<http://student-iguide.anu.edu.au/>

6.6 Problems with After Hours Access

After hours access to the Engineering Building is automatically linked to student cards for engineering students. However, any problems with access should be brought to the attention of the Student Administrator (Room E241).

6.7 Design Studio

The Design Studio is an area for both undergraduate students doing their group design projects and Honours students, as well as ME students. The Design Studio is located on the ground floor of the Ian Ross Building. There are toilets, a microwave, hot water facilities, white boards and quiet rooms. There are also lockers, which are only for the use of students doing their group design project, Honours students and ME Students. Lockers are allocated by the Senior Technical Officer – Rob Gresham, Room E201.

It is the student's responsibility to provide their own lock for use on a locker and they are to clear the lockers by the end of Semester 2, otherwise the locks will be cut during the first full working week in January of the following year and the contents removed. The contents will then be kept in the Student Administrators office for a period of one month, after this period any unclaimed contents will then be sent to ANU Security "Lost and Found".

6.8 Parking

Permit parking restrictions apply on campus. A Parking Permit and Label will be issued to eligible staff and students on completion of a "Parking Permit Application" form (available from the Traffic Office, John Yencken Building, Sullivans Creek Road) and payment of the appropriate fee. Pay Parking spaces are available for visitors on campus.

There are also certain restrictions, which all users of the College car park must observe:

- do not park in the loading area
- do not park in the areas reserved for specified vehicles
- do not block off other vehicles
- **motor bikes** – must be parked in the designated parking area located opposite the entrance of the Engineering Building
- **bicycles** – are not to be brought into the School of Engineering. Bicycle racks are available at the front and rear of the Engineering building. Bicycles are not permitted near lecture rooms. A secure bicycle cage is also available at the rear of the Computer Science Building. Enquiries should be made to the Faculty office located in the Ian Ross Building.

University parking inspectors are authorised to impose a fine for breach of parking rules.

6.9 Changes of addresses and phone numbers

It is essential that students keep the University informed of their current address, phone number and e-mail address. Students are able to change their address and/or phone number themselves by using the University online system ISIS.

The web address is:

<http://isis.anu.edu.au>

There is also a form available from the Student Services Office or Student Administration (Pauline Griffin Building). **Do, please, be meticulous in notifying changes of contact details throughout your program.**

6.10 Emergency Evacuation Procedures

Chief Fire Warden	Ben Nash	☎ 6125 5644
Fire Warden - Engineering Building	Ben Nash	☎ 6125 5644
Fire Warden - Ian Ross Building	Adrian Lowe	☎ 6125 4881

6.11 First Aid

Neil Kaines ☎ 61255682

6.12 Student Welfare

Within the University you can get help quickly and confidentially from many student welfare areas. Feel free to either make enquiries with the Student Administrator or contact any of the areas found at the following web site.

<http://students.anu.edu.au/#>

7 POLICIES AND PROCEDURES

7.1 Enrolment

7.1.1 Student Enrolment and Administrative Procedures (SEAP) Guide

All students should obtain a copy of the SEAP Guide, which is usually made available at the end of each year for the subsequent academic year. The Guide contains important information on enrolment and administrative procedures. The Web address is:

http://www.anu.edu.au/sas/SEAP_guide/

7.1.2 Registration of Enrolment

Information for re-enrolling undergraduate students is available to each currently enrolled student in November each year. At about the same time, the *Undergraduate Handbook* is published. Students must complete re-enrolment procedures on the Web by the date advertised – see SEAP Guide for details.

<http://isis.anu.edu.au>

For problems with self-enrolment, in the first instance please see the Student Administrator (☎ 6125 5130).

7.1.3 Suspension of Enrolment

A student may suspend their studies, with approval of Student Services, for a maximum period of one year at any stage of the degree course. Suspension for a longer period will be permitted only in exceptional circumstances, which should be discussed beforehand with the Associate-Dean. A student is **NOT** permitted to suspend studies for the purpose of undertaking another degree or diploma course, whether at ANU or elsewhere. The *Bachelor Degree Rules* expressly forbid a student enrolling in another degree course concurrently with enrolment in a Bachelor of Engineering.

7.1.4 Variation of Enrolment

Students will have access to the web to add and/or drop courses for 2009 during the following times:

- Addition of first semester courses can be made up to 6 March 2009 without financial penalty.
- Second semester courses can be added or dropped up until the 31 July 2009.
- Addition of courses will only be permitted up to the end of the second week of each semester

Withdrawal from a course can be made at any time up to the first day of the examination period. It is a dated withdrawal (and attracts a HECS liability) after the relevant HECS census date. See the SEAP Guide for further details.

PLEASE NOTE

- appointments with the Associate-Dean will not be held during the Academic Advisory Sessions in Melville Hall.
- you should check your confirmation of enrolment form, sent to you in February, very carefully as **it is your responsibility to ensure that your enrolment is accurately recorded**. During each semester, all students will receive this notice advising of the courses in which they are enrolled and their HECS liability. If the information on the notice is not correct, contact the HECS Officer or the Student Services Office immediately.

Important Notice to All Students

You are reminded that it is your responsibility to ensure that your enrolment is correct. It is your obligation to read every communication from the University, especially your confirmation of the enrolment, HECS notice, and even results notices! All these notices contain information about your enrolment. Variation of enrolment can only be done by following the correct procedures.

7.2 Academic Misconduct

Misconduct in the preparation and submission of written work and other assessment will have serious consequences for a student. This may include failure in the course or a mark penalty. In some circumstances students suspected of misconduct may face formal disciplinary proceedings.

The nature of misconduct and the range of consequences are outlined below.

7.2.1 Misconduct

The University's Misconduct in Examination Rules defines "misconduct" as including:

- (a) cheating;
- (b) plagiarism;
- (c) reproducing in, or submitting for assessment, any examination, the work of another person, whether in whole or in part and whether with or without the knowledge or consent of that other person;
- (d) except with the approval of the Dean, submitting for an examination any work previously submitted for an examination;
- (e) failing to comply with the University's instructions to examination candidates at, or in relation to, an examination;

- (f) acting, or assisting another person to act, dishonestly in or in connection with an examination.

The essence of *cheating* is the attempt to gain advantage by dishonest means. It can take many forms. One example, of which there have been instances in the past, is where a student has asserted dishonestly that s/he has submitted work for assessment which cannot subsequently be found.

Submission of work previously submitted for assessment in another course is of particular concern in courses where the choice of essay topic is left to the student and it is therefore possible to submit substantially the same piece of work for each course. The practice is dishonest if done without knowledge of the examiners concerned. A full disclosure of the essay topics and content in related courses should be made to examiners who will then decide whether or not they will accept an essay on a given topic. A full disclosure must also be made where a student is studying a related course in another Faculty.

See the section on Plagiarism below.

7.2.2 Assessment Penalties

Examiners will consult with the Head of School on penalties.

Where a student has been proved, to the examiner's satisfaction, to have engaged in misconduct, the maximum penalty is failure in the course. A lesser penalty such as a reduced mark, or 0% for the work, may be given where the examiner in consultation with the Head of School decides it is appropriate in the circumstances. The Head of School will keep a record of all instances of misconduct to ensure consistency of treatment.

7.2.3 Disciplinary Penalties

In addition to the assessment penalties outlined above, a student may face disciplinary proceedings under the Misconduct in Examinations Rules which provide that, following an inquiry by the Head of School into the alleged misconduct, where the candidate may furnish information or excuse, the Head of School may, if he or she finds there has been misconduct:

- (a) reprimand the candidate;
- (b) suspend for a specified period, or terminate, the enrolment of the candidate in the program of study or course in which the candidate is enrolled;
- (c) refer the matter to the Discipline Committee;
- (d) take no action.

NOTE THAT "EXAMINATION" INCLUDES ANY PIECE OF WORK— INCLUDING, BUT NOT LIMITED TO, RESEARCH PROJECTS, WRITTEN REPORTS, THESES, SUB-THESES, ASSIGNMENTS, ESSAYS— REQUIRED FOR THE PURPOSES OF ASSESSMENT.

7.2.4 Plagiarism

Plagiarism is the use of another person's idea, writing or other work as if it is your own. When it is desirable, or necessary, to use other people's material, take care to include references and attribution, do not pretend the ideas are your own. Plagiarism and other forms of misconduct may lead to a reduction in the mark for the assignment or a zero mark for that assignment.

Cases may be referred to the Head of School, who may suspend for a specified period, or terminate, a candidate's enrolment in the course of study, course or subject in which the candidate is admitted or enrolled.

7.3 Assessment Policies

7.3.1 Academic Performance

The University has introduced minimum academic performance criteria which apply across all Faculties.

The policy preserves the existing provision that a student who has failed a course twice is not permitted to enrol in that course for a third time, and requires that the overall academic performance of all students enrolled in bachelor degrees in The Faculties be monitored.

Where a student has, over four consecutive semesters of effective enrolment (excluding periods of approved leave) failed courses to the value of more than half the credit points in which the student has been enrolled, the student's enrolment in the award course will be terminated. Fail includes N, NCN or WN.

There will continue to be a process whereby a student may appeal against the decision of a Faculty in relation to academic performance.

Details of the academic performance policy may be obtained from Faculty and School Offices and from the University's website at:

<http://www.anu.edu.au/sas/>

7.3.2 Consultation Process

The consultation process between staff and students on assessment is based on the principle that, while Lecturers should explain their assessment proposals and respond to student comments and suggestions, the Lecturers in each course are nevertheless responsible for determining the assessment method in the course.

- At the start of each semester, the Chair of Examiners of a course shall prepare for distribution to students a statement of assessment that outlines the intended scheme of assessment in the course.

- The Lecturer in each class shall explain the proposed scheme of assessment and provide an opportunity for discussion of the scheme with students, permitting due consideration of student views. The lecturer will give reasonable consideration to those views and respond to them. However, the lecturer is under no obligation to win the support of a majority of the class to a particular proposal.

7.3.3 Default penalties

The following penalties will be applied in all engineering courses unless the lecturer indicates otherwise in the approved scheme of assessment:

Excess wordlength: Where an assignment exceeds the stated word limit, the mark which is awarded initially will be reduced by the same proportion by which the word limit has been exceeded. As an example, if the word limit is 2,000 words, and the essay submitted is 3,000 words long, then the initial mark for the essay would be reduced by 50%.

Late submission without an extension: All assignments submitted after 10.00am on the due date will be reduced by 10% of the total number of marks awarded for the assignment per day, including weekends.

7.3.4 Default Penalties

An extension of time to submit an assignment will only be granted on grounds that would warrant a special examination. Unless the lecturer specifies otherwise, a request for an extension of time should be submitted to the lecturer, should be submitted in writing, before the due date, and should be accompanied by any medical or other evidence that supports the special circumstances on which the request is based.

7.3.5 Submission and Return of Assignments

All assignments are due at 10:00am, on the nominated day in the nominated due week (see Extension of time to submit).

All assignments must be submitted with a completed assignment cover sheet. Assignments must be submitted for marking in the assignment boxes located on the first floor in the Engineering Building. Each box is marked with a specific course code.

All late assignments must be placed in the Late Assignment Box, late assessment will not be accepted if it is placed in any other assignment box.

It is the students responsibility to collect return assignments at appropriate tutorials, labs or lectures.

7.3.6 A Guide to Marks in Engineering

7.3.6.1 Marks and grades

Each piece of assessable work is given a numerical mark by the examiner. Each of these marks falls within a grade so that a student's performance in a course is graded as well as earning a specific mark.

The following descriptions adopted by the Department provide a guide to the determination of grades for each item of assessment:

				CRITERIA FOR THE AWARD OF GRADES:
High Distinction	HD	=	80 +	An outstanding piece of work of exceptional quality, consistent with the award of first class honours.
Distinction	D	=	70 - 79	A superb piece of work of superior quality.
Credit	Cr	=	60 - 69	Work of good quality, more than satisfactory.
Pass	P	=	50 - 59	Work of a satisfactory standard. A pass grade means the work is of an acceptable standard, not that it is poor work.
Fail	N	=	0 - 49	If you receive a fail grade for a piece of work, it is an indication that you are misjudging the standard of work expected or don't understand significant aspects of the subject.
Course Requirement Satisfied	CRS			

The papers of all students in a course who receive a fail grade are second marked.

The responsibility for determining the final grade and mark in a course rests with the Department, although it usually endorses the recommendations of the Meeting of Examiners, which in turn are based upon the marks awarded by the examiners in each course.

7.3.6.2 Discussion

The marks you receive for assignments, quizzes, reports and units are a good guide to how well you are doing on the course. In order for you to properly interpret the marks and grades awarded, please note the following definitions of grades:

FAIL: >44%

Work of an inadequate standard will be awarded a fail grade.

Work which is inadequate but shows reasonable effort will attract a 4/10 grade for example, while work showing little understanding, effort, care or diligence will attract a bad grade such as 2/10 or 3/10. When a piece of work is failed, suitable comments in the margin or at the end of the piece should indicate where the inadequacies lie.

If you receive a fail grade for a piece of work, it is an indication that you are misjudging the standard of work expected or don't understand significant aspects of the subject. In that case, please talk to your tutor, your lecturer or the year coordinator as soon as possible. Remember that a fail in assignments etc means you have to do better to pass the subject.

MARGINAL: 45%-49%

Work of borderline standard or work acceptable for the most part but deficient in some aspects will be awarded a marginal mark (eg., 4.5/10). If you receive a marginal mark for a piece of work, please talk to your tutor or your lecturer. A marginal mark means that you need to improve your work.

A marginal performance in a unit overall may lead to the award of a FAIL, a PASS, or a SUPPLEMENTARY grade (indicating that you will be required to undertake further examination in that unit). A marginal performance *does not* automatically mean you will be awarded PX. The decision on which grade will be awarded is made at the Examiners' Meeting and is based on the nature of your performance on the subject in question and your performance across the range of subjects taken. The award of a SUPPLEMENTARY grade is not a sure route to a PASS, as further examinations are challenging and can be failed.

Marginal performance on vital aspects of the first year and second year course such as Mathematics will *not* be viewed positively.

PASS: 50%-59%

Work of a satisfactory standard will be awarded a pass grade (eg., 5/10). A pass grade means the work is of an acceptable standard, not that it is poor work.

CREDIT: 60%-69%

A good piece of work will be indicated by the award of a credit grade (eg., 6/10). Suitable comments in the margin, at the end of the piece, or both should indicate why a credit grade has been awarded.

DISTINCTION: 70%-79%

A superb piece of work of superior quality will be awarded a distinction grade (eg., 7/10).

HIGH DISTINCTION: >80%

An outstanding piece of work of exceptional quality consistent with the award of first class honours will be awarded a high distinction grade (eg, 8/10 or 9/10).

There may be times when you slip behind in one or two courses. This is especially easy to do when one or more courses particularly interest you and you want to work hard on them. While this is laudable, *do not* allow some subjects to slip to the point where you may fail them. If you fail a compulsory course you will have to repeat that subject the next year, and will not be able to continue with courses for which it is a prerequisite until you pass the course in question. Usually this will prevent you completing your degree in the nominal number of years. In Semester 1, be especially careful to avoid failing courses required for progress to courses in Semester 2.

If you are having difficulty with a particular course, talk to the tutor or lecturer. Often, 30 minutes with the tutor or lecturer can make a big difference if you need help understanding particular concepts or techniques. If you are struggling with a number of courses, talk it over with the Associate-Dean as well. Should you end up with a marginal performance in the course or courses, having talked with tutors, lecturers or the Associate-Dean will count in your favour.

Students sometimes operate on the mistaken assumption that asking questions or exposing their weaknesses by consulting lecturers or tutors will adversely affect them. Nothing could be further from the truth. Marks for assignments, quizzes, reports and exams are not awarded on the basis of how many questions you asked in lectures, how much you consulted lecturers or the degree of ignorance you might expose to a lecturer during a consultation. Grades are awarded on the basis of how you perform in specific examinable pieces of work. That is, on what you actually write down in assignments, quizzes, reports, exams etc. Your aim in consulting tutors and lecturers should be to put yourself in a good position to perform adequately on those examinable pieces of work. The best way of doing that is to develop a thorough understanding of the subject. Read the textbook. Participate in tutorials. Consult other books in the Library. Attempt some of the problem sets. Write your own summaries of the key concepts in the course. If you find you can't determine what the key concepts are, or cannot adequately summarize them, it is a good sign that you should consult the tutor or lecturer.

Finally, there is no quota on the number of people awarded HD's, D's or other grades.

7.3.7 *Review of Results*

The University policy on review of final results in a course can be found at

<http://www.anu.edu.au/sas/results/index.php>

In accordance with this policy:

- students are entitled to view all their marked assignments and examination scripts
- students are also entitled to discuss their performance in relation to assessment with an examiner or other staff member involved in the teaching of a particular course.

If, following such discussion, a student wishes to seek a review of, and to appeal against, their final result in a course, the following procedures apply.

Step one: A student may make representations querying the mark awarded in a course to the Chair of Examiners, bearing in mind the obligation of the Chair to "ensure that the academic performance of each candidate attempting the course is adequately and fairly assessed" (Examinations (The Faculties) Rules, rule 7(2)(a)). The Chair of Examiners may, after consultation with other examiners in a course, recommend that a mark in the course be varied. The Chair of Examiners will inform the student of the reasons for their decision.

Step two: A student who is dissatisfied with the outcome of his or her representations to the Chair of Examiners should discuss the matter with the Head of School. The Head of School will discuss the request with the Chair of Examiners. Apart from determining the rationale for awarding the particular mark, the Head of School will also determine whether established assessment procedures were carried out. At this stage the Head of School may involve a third examiner in the process of reviewing the mark. The Head of School will inform the student of the result of the review process and the reasons for it. Students may also seek the advice of the Dean of Students.

Step Three: If after Step 2 a student still believes the result in the course is inappropriate, they should submit to the Head of School, in writing, a formal appeal of the result. Reasons why the result is considered inappropriate must be clearly stated and other relevant material included. The Head of School, after consideration of the student's submission, and following consultation with the Chair of Examiners, will determine whether an Appeals Committee will be appointed. If an Appeals Committee is appointed it will examine:

- A written submission from the student explaining why the result in dispute does not accurately reflect his/her performance;
- A written statement from the Chair of Examiners involved and/or Head of School explaining why the result is justified;

- Assessment criteria for the course;
- A copy of the work in question;
- Any other relevant documents;
- The student's own statement if he/she chooses to appear in person before the committee.

The Appeals Committee determines:

- Whether established assessment procedures have been carried out; and
- Whether additional evidence or extenuating circumstances have come to light which might change the final result.
- The Committee, on delegation from the Head of School, will determine whether the original result should be upheld, or a remark is warranted, or that there is to be further examination. The Committee's decision is final. The decision and the reasons for it will be conveyed in writing to the student.

There are two matters that should be emphasised, to clarify common misconceptions. **The first** is that a student is not entitled simply to lodge a request that an item of assessment be remarked. A student who is dissatisfied with the mark received in an item of assessment should discuss the matter with a lecturer or Chair of Examiners, as outlined above. **The second** is that the School will not as a general rule give any weight to a submission made after marks have been returned that a student was ill or disadvantaged at the relevant time. There are well-established procedures for seeking special consideration (see page 39) which require that a request be made before assessment is completed. Although the School does not currently enforce set time limits on applications for review of results, students are warned that unreasonable delays in initiating a review may significantly undermine their application.

7.4 Examinations

A student who wishes to be granted a degree has an obligation to attend the exams required by the School on the date and under the conditions prescribed by the School. These exams are required in order that the work undertaken in the semester may be assessed under conditions which, so far as possible, are the same for all students.

The attention of students is drawn to the University requirement that students must be available for examination during the entirety of the published examination period. Only in very exceptional circumstances will the School of Engineering arrange an earlier examination for a student in order to accommodate work or personal commitments.

The University does, however, make the following provisions for students who have been seriously ill or have had serious personal problems, and who anticipate that their studies may have been adversely affected:

- (a) a student may seek a deferred examination; or

- (b) a student may seek to have his or her performance in an exam given special consideration by the examiners.

In addition, students with particular problems, such as writing or sitting difficulties due to medical condition or disability, may request special examination arrangements.

A request for a special examination or for special consideration must be lodged on the appropriate form which is available from the Student Administrator's office or on the student forms web site. The completed form should then be lodged with the Student Administrator. The completed form should be submitted BEFORE the date for the exam or assessment. As a general rule the School is not prepared to give any weight to a submission made after marks have been returned.

Therefore, if you have a serious problem you should see the Associate-Dean, who can help you receive the assistance you need. However, the following problems **are not** regarded as so out of the ordinary as to warrant help:

- (a) the 'flu' for a few days preceding exams (it is the whole semester's work which is assessed);
- (b) a sore throat, feeling out of sorts, etc, on the day of the exam;
- (c) a minor accident involving a few hours paperwork;
- (d) two 3 hour exams on the same day;
- (e) exams on succeeding days;
- (f) what you regard as an inconvenient or onerous exam timetable;
- (g) an interruption to study during the year; and
- (h) travel arrangements, which conflict with the exam timetable.

Students who make travel arrangements or work or other commitments during the examination period do so at their own risk.

It is important that people with minor problems do not abuse the system so that it falls into disrepute and is not available to help those students who genuinely require it. It is equally important that students who have serious problems seek help at the time. The Associate-Dean may be almost powerless to help a student, no matter how genuine the need, who seeks help after sitting the exam, or after the papers have been marked.

7.4.1 Special Exam Arrangements

The University will endeavour to accommodate the special needs of students with a problem/disability, which makes it difficult to undertake a formal examination without extra services. Students requiring special conditions or equipment must complete a "Request for Special Examination Arrangements/Consideration" form with the Examinations Office at least 10 working days before the scheduled date of the examination.

7.4.2 Special Consideration

The rules governing "special consideration" provides that a student who considers that their academic performance in a course "has been adversely affected by illness or other cause during the period of studies to which an examination relates may request the examiners to take those circumstances into account in making their assessment of the performance of the candidate in the course.

It is important to bear in mind the context in which special consideration is given. The purpose of assessment is to enable an examiner to gauge the performance of a student, usually in demonstrating his or her comprehension of the content of a course. That is, the purpose of assessment is not to decide whether the mark awarded to a student is "fair", or is an appropriate reward either for the innate ability of a student or for the amount of study preparation undertaken by a student.

The best evidence available to the examiner of a student's performance is usually the examination scripts and written assignments completed by the candidate. A request for special consideration can only cause the examiner to reflect whether the exam scripts and assignments provide satisfactory evidence of a candidate's performance. There is no presumption that a student who has requested special consideration should be given additional marks, nor that a fail mark should be altered. A request for special consideration can, at best, cause an examiner to reconsider the usual practice of recording the marks received in prescribed assessment as the final mark for the course.

Two main options face an examiner who has received a request for special consideration. The first is to allow a student to undertake further written or oral assessment, and for the mark in that assessment to substitute for or to moderate an earlier mark. Most examiners will allow further assessment only where a student has failed a course, accepting that in that situation there is sufficient reason to outweigh the presumption that a mark received by a student in prescribed assessment is the best available evidence of the student's performance. It may be appropriate too, where a student is being examined for a second time in a course, to impose a ceiling of 50% on the second attempt at the assessment.

Further assessment is not allowed as a general rule where defects in a student's paper display a lack of understanding of basic principles. The appropriate course of action is to require a student to undertake the course again.

A second option facing an examiner is to vary the mark of a student who has requested special consideration. This option is appropriate only if there is a reason for thinking that the existing mark does not accurately reflect a student's performance. For example, a comparison of items of assessment undertaken at different stages in a course may indicate that a student was impaired by illness or adversity at one of those stages.

Quite commonly it is not possible for an examiner to gauge whether a student's performance was affected by illness or adversity. This difficulty frequently arises where the assessment comprised a single examination, where a student performed better at a time when affected by illness, or where the evidence to support a request for special

consideration is sketchy or based on assertion. It is usually appropriate in those situations to rely upon the prescribed assessment as the best available evidence of a student's performance.

Where a student is one or two marks below a higher grade, examiners are sometimes prepared to raise the mark to the higher grade, if there is reliable evidence that the student was suffering from a condition or interruption that would normally affect a person's examination performance. That variation, it should be emphasised, is often a concession made by the examiner contrary to the other evidence of the student's performance. It is wrong to assume from that concession that a student should normally expect to receive a couple of extra marks whenever a request for special consideration is lodged, or that a concession should be made as readily for a student whose mark falls midway between two grades. Whether it is appropriate to amend a student's assessment is a judgment made in the light of all the considerations outlined above.

7.4.3 Special Examinations

The School may grant special examinations in the following circumstances:

- (a) where a student has failed to attend an exam—see sub-rule 5(2) which requires notification of a request for a special examination within three working days after the time fixed for conclusion of the examination;
- (b) where a student's performance has been adversely affected by illness or other causes in the period of studies to which the exam relates—see sub-rule 6(1), which requires a written statement of the circumstances, supported by medical or other evidence, before the examination is held; and
- (c) where a student's performance during the exam has been adversely affected by illness or other causes—in this case an invigilator should be notified—see sub-rule 6(2).

Students seeking special examinations must submit the request form to the School of Engineering prior to or 3 working days after a scheduled examination. If the Associate-Dean approves a special examination, a fixed date and time will be specified, and these arrangements will normally be non-negotiable.

Students should not assume that each request for a special examination will automatically be granted after lodgement of a written request. Requests should normally be discussed with the Associate-Dean. The University provides formal written notification of whether a request has been approved, but the obligation nevertheless rests upon the student to confirm this. The School will not accept, as an explanation for a student's failure to sit a scheduled or deferred examination, that the student did not receive the University's letter advising whether the request had been approved.

Students may find that the timing of special examinations is inconvenient. Nevertheless, they have an obligation to attend. If, for whatever reason a student does not attend a special examination, no further exam will be set.

7.4.4 Timetable

The Examinations Office conducts examinations at the end of each semester, and in some cases in mid-semester. **Students must take their Student Identity Card to all examinations.** A draft timetable is published approximately 4 weeks before the June examinations and 6 weeks before the November examinations. It is available on the Web and is posted onto noticeboards outside the Chifley Library. The final timetable is available approximately two weeks before the June examinations and four weeks before the November examinations.

Absence from an examination through misreading, misunderstanding or failure to read the timetable does not entitle a student to a special examination.

7.4.5 Illegible Scripts

In the event that a student submits examinations answers which are indecipherable to the examiners, the following procedure will be followed:

- (a) a photocopy will be made ;
- (b) the student will provide, on the photocopy (to be collected from the Student Administrator), a word-by-word translation in red ink and block letters above the word as written (for example, any abbreviations used must be reproduced as they appear in the original script);
- (c) the original will be marked with the aid of the translation.

In these cases, the examiners will not be able to guarantee that normal timing for notification of results will be met.

7.4.6 Supplementary Examinations

Under the rules adopted by the College of Engineering and Computer Sciences, eligibility for a supplementary exam arises where:

- the student received a final mark in a course which falls between 45-49; and
- the student attempted all the compulsory items of assessment in the course (ie, this policy does not apply to students receiving the grade of NCN (non complete fail)).

Students who are eligible for a supplementary exam will be assigned a result of PX against the relevant course on their Notification of Results. This interim result constitutes an offer of a supplementary exam in the course. Students will then be notified by the School and given details of the supplementary exam and must inform the School of their intention to undertake the exam in writing within 7 working days from the date of notification of their results. There is no limit to the number of supplementary exams which a student may be eligible to sit. A student who attempts a supplementary exam will receive a result of PS (with a maximum mark of 50) or NCN (fail).

This general right to supplementary exams does not override the School policy entitling students, in certain circumstances, to supplementary exams in their final year of study. Any student who fails a course in their final year of study should contact the Student Services Office.

7.5 Teaching Practices and Other Matters

If a student has concerns about aspects of a course which they are undertaking, which they are unable to resolve with the lecturer, the student may raise them with the Associate-Dean, Head of School, Dean or PVC (University Community), who will endeavour to resolve them informally. If the student is not satisfied with the outcome and wishes to invoke the formal complaints mechanism, the student must lodge the complaint, in writing, with the lecturer concerned, with a copy to the Head of School/Division in departmental Faculties or, in the case of the Faculties of Asian Studies and Law, to the Dean of the Faculty. If the student is not satisfied with the lecturer's consideration of the complaint, the student may require the complaint to be considered by the Head of School. A copy of the original complaint, together with any other material which the student considers relevant, is to be provided to the Head of School.

7.5.1 Dispute Resolution

A student who wishes to complain about a teaching practice or another matter other than consultation on assessment (see page **Error! Bookmark not defined.**), course content, method of assessment in a course, or marks and grades in a course (see page 47), must first seek to have the complaint resolved by the informal means available within the School for dealing with students' concerns. In this context, a student may raise 'worries' or 'concerns' with the Associate-Dean, Head of School, Dean or PVC (University Community) who will endeavour to resolve them informally. No record is kept of these matters and the anonymity of the student is preserved at this stage if requested by the student.

If the student is not satisfied with the outcome and wishes to invoke the formal complaints mechanism, the following University procedures apply:

- the student must lodge the complaint with the lecturer concerned. The complaint must be in writing and be signed by the complainant. The name of the signatory must be clearly identified. A copy of the complaint should be given by the student at the same time to the Head of School or Division in departmental Faculties or, in the case of the Faculties of Asian Studies and Law, to the Dean;
- if the student is not satisfied with the lecturer's consideration of the complaint, the student may require the complaint to be considered by the Dean. The student should provide the Dean with a copy of the original complaint together with any other material which the student considers relevant;

- throughout these proceedings, the Head of School or Dean should take any steps necessary to ensure that a students' performance in a subject is not affected by the making of a complaint;
 - the Dean, having first consulted with the Head of School, will proceed as far as possible within his/her abilities to do so, to resolve the complaint in accordance with the University's practices and procedures. Where a dispute cannot be readily resolved to the satisfaction of both parties, the Dean shall seek the advice of one or more persons who are not members of the College, appointed by the Dean after consultation with the Pro-Vice-Chancellor and Chair, Education Committee;
 - the Dean, at the conclusion of his/her attempts to resolve the complaint, shall prepare a report stating the ways in which he/she has sought a resolution, including the persons consulted, and the outcome. The report shall be placed on a file maintained by the Registrar and copies given to the complainant and the staff member;
 - where a circumstance arises in which it is considered by the Dean, or a party to the dispute, that it is not appropriate for the Dean to be involved in the procedures set out in paragraphs 2 to 5, the Vice-Chancellor may appoint another person to act for the Dean.
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