

Bus tales not all tall stories

Dr Peter Campbell was named Victoria's Young Manufacturer of the Year for 2007 at a Hall of Fame Gala Dinner in Melbourne on Monday 28th May.

"Pete completed a combined undergraduate Engineering/Economics degree here (gaining Honours in both), and then did a PhD with me under the Stamping Technology in Automotive Manufacturing Processes Centre with Ford," said Professor Michael Cardew-Hall, Deputy Dean of the College of Engineering and Computer Science.

"I'm sure that everyone in the College, and all those who worked and studied with Pete, joins me in congratulating him on winning the award," he said.

Dr Campbell has worked as improvement manager at Volgren Australia in Hammond Road, Dandenong, for the past two years.

In that role he works to improve the manufacturing processes at Volgren, a company that is Australia's largest manufacturer of bus bodies.

And while the bus industry is booming, Dr Campbell's job is far from easy.

"We have a current situation where the bus market is going crazy," he said.

"I am trying to work out ways to satisfy demand and while it is easy to ramp up production, we have to be mindful that the bus industry goes through a period of growth before returning to a base rate.

"I have to make sure we are capable of ramping back down."

Dr Campbell said his career in manufacturing was not planned. He instead fell into it after studying for 12 years at university.

"When I graduated from my undergraduate studies I ended up getting a postgraduate job working with Ford, The Australian National University and Deakin University in the Stamping Technology in Automotive Manufacturing Processes research group, and that got me into manufacturing.

"It was never planned but I certainly enjoy what I do.

"I am very lucky to do a job day-in, day-out, that I absolutely love."

Dr Campbell said the greatest satisfaction came from seeing shop floor staff implement improvements with his encouragement.

"I teach them how to (improve processes), give them the tools and resources to do it, and get the hell out of the way," he said with a laugh. "As a result there have been massive changes in certain areas and it is satisfying to see the guys on the floor take ownership of their improvements."

Dr Campbell gave an example of one employee's ability to reduce the time it takes to produce a bus chassis which was triggered by improved knowledge and empowerment.

"One of our employees, Kevin 'Spider' Smith reduced the cycle

time in chassis production by more than 30 per cent over a six-month period," Dr Campbell said.

"In the past all the chassis steelwork was built "on-the-job" using a multitude of clamps, levels, straight edges, measurements and constant reference to engineering drawings. 'Spider' stood on the shop floor and watched his best guy at work. He would walk backwards and forwards between the job and the drawing, checking dimensions, fetching steel, measuring, clamping, re-checking, re-clamping, re-measuring etc.

"Spider recognised that most of this process was a waste. His team built jigs so that the steel modules could be built off-line, quickly, accurately and ergonomically, with minimal reference to drawings and with minimal need for measurement. This removed a lot of waste and significantly compressed the cycle time. Dropping completed modules onto the chassis enables us to do what was a 10-day chassis build, in six and half days and we have plans to go even faster.

"That is just one example of numerous improvements from the shop floor."

Dr Campbell is modest about his role in this saying it is 'just to educate and facilitate' and that Spider and his team came up with the solution and did all the work.

But the bigger picture is giving employees the support and encouragement that gives Australia's manufacturing industries a competitive edge.



"Everybody needs to make improvements every day in industry so that Australian industry remains world-class. Spider's team is one of many in my company that is achieving similar rates of improvement."

"I'd say that Pete is one of many examples of how graduates from the Systems Engineering approach with discipline specific majors and which is unique to the ANU, prepares engineers to successfully work anywhere," said Professor Cardew-Hall.

New Elite Degrees in Engineering — a world first?

The ANU College of Engineering and Computer Science recently announced the establishment of two new elite degrees in Engineering, adding to a suite that already includes the Bachelor of Computer Science (Honours). The new degrees are:

Bachelor of Engineering (Research and Development)

Bachelor of Engineering (Research and Development) / Bachelor of Science

"The new R&D program is specifically designed for students that have an interest in undertaking research and development in either industry, or an academic environment," said Professor Michael Cardew-Hall, Deputy Dean of the College.

"The program combines the unique systems engineering focus of the ANU Bachelor of Engineering degree with a more project based, research-intensive study mode,

also unique to ANU. Students undertake a number of research projects in different research groups at the University, or with associated industry, so that they get a taste of research in the discipline areas, and thus develop independent research skills," he said.

"Students also complete an engineering specialisation, which complements the R&D specialisation and produces a

professional engineering graduate who has the skills, knowledge and capability to go on to advanced research programs."

Scholarships: Scholarships valued at \$20,000 total (\$5,000 pa for four years) are available to students with a minimum UAI of 99 who enrol in this program. Bonus points are not included in assessing a student for a scholarship.

Bonus points: Students may apply to College to be awarded up to two bonus points (should they require them for entry) on the basis of capacity to succeed in a research-based undergraduate degree, as demonstrated by success in Olympiads or similar competitions. Regional students who apply for the Countrywide Access Scheme are eligible for up to two bonus points.

meet

Jason Schiemer

Combined Bachelor of Engineering/Bachelor of Science

I'm a local guy from Canberra and spent my high school years at Marist College before going on to Narrabundah College. After this I went on to the Australian Defence Force Academy (University of New South Wales) for my first year of university and then, discovering that I preferred a more academic focus, I transferred to ANU.

I decided to do two engineering majors; Materials and Mechanical Systems and Manufacturing and Management, and I chose a Chemistry major in Science. During my first year of study I found I had a passion for materials and the only way I could pursue it and combine this with chemistry, was to come to ANU.

Eventually many engineers cease to be technical specialists within industry and move on to management positions relatively early in their careers, and that's why I chose to focus on management too.

At the moment I have an internship at Asea Brown Boveri (ABB) Ltd in Switzerland. ABB Ltd is a major global supplier of various electronic, power, control and robotics solutions. It employs more than 100,000 people in several countries around the world, and is headquartered in Zurich.

While the company's focus is mainly on electrical engineering, its research agenda also includes materials as a natural component of many of the products that it researches.

The internship is for approximately six months and I'm part of a team that is investigating new curing technologies for thermosetting polymers used for electrical insulation. Details of the work are confidential, but it involves familiarisation with

many different test methods. As well as full-time employment, a reasonable budget and access to high quality equipment and personnel, I am in Europe where I can ski! I've travelled around a bit too, and the next stop is France.

I heard about the internship from Dr Paul Compston who is an academic in the Department of Engineering. He recommended me to colleagues in ABB Ltd and I was lucky enough to be selected. This just goes to show the power of networking and having access to academics at ANU that build important relationships with industry and academia around the world.

Professionally, this internship gives me valuable contacts within the industry, a substantial amount of work experience in a professional environment, and exposure to European engineers and engineering.

Academically, it gives me more breadth, allowing an extension to the practical research focus fostered through the ANU Research and Development program. I'm also writing up the thesis required for my Honours in engineering and completing the work experience requirement of the BE program at ANU.

I'm not yet sure if I want to go straight on to PhD study, or to go into industry first. One of the great benefits from the internship is that it has really helped me to broaden my horizons.

Whatever I decide to do, my study at ANU, the academics I studied with and the friendships and networks that I have made will all help me to make a choice that's right for me. And I know I can get a job anywhere in the world.



It's not all work
– Jason gets to see a lot of Switzerland too.



Courtesy Canberra Times

Grant for solar energy storage system

The first large scale working demonstration of a solar energy storage system based on research undertaken at The Australian National University will be developed thanks to a \$7 million grant from the Commonwealth Government.

The system uses ammonia-based thermochemical solar energy storage and is intended for use with 'Big Dish' solar concentrators. The prototype Big Dish, located on the ANU campus, is the world's biggest dish solar concentrator, with an aperture area of 400m².

The technology was developed by Dr Keith Lovegrove and colleagues at the ANU College of Engineering and Computer Science, and is being commercialised by Canberra company Wizard Power. Wizard Power has received the

grant from the Australian Greenhouse Office to build a commercial scale demonstration of the storage system.

"The ability to build in high capacity energy storage is one of the key competitive advantages for solar thermal," Dr Lovegrove said.

"Because we are storing energy before generating electricity, we can deliver multi-megawatt base-load electricity and meet peak loads on-demand in the same way as coal, nuclear or gas fired power stations do. The efficiency of our storage system is also very high because we use a chemical process that has no extra energy losses regardless of how long the energy is stored.

Our partnership with Wizard Power is the essential element that we need to get our technologies into the market place. It has

also provided valuable resources to accelerate our joint R&D program.

With the world increasingly looking for utility scale renewable energy the time for solar thermal power has finally come," Dr Lovegrove said.

ANU Vice-Chancellor Professor Ian Chubb congratulated the ANU research team and Wizard Power.

Professor Chubb echoed Dr Lovegrove's comments on the potential for this technology to play an important role in meeting the World's future energy needs and noted the grant will encourage further significant investment in the research and commercialisation of this leading edge technology.

Not too much lifeblood spilled at the 'Big Feast'

More than 100 research students from the ANU College of Engineering and Computer Science braved pouring rain to gather at University House on Friday 15th June to participate in an animated debate between students and supervisors entitled, "We are the lifeblood of the University: We deserve better!"

This is the College's second 'Big Feast' of ideas, food, discussion and networking, which is specifically geared to the needs of graduate students within the College.

The debaters in the student team included Lachlan Blackhall, David Ferrari, Priscilla Kan John, Christopher Monteith and Stuart Wilson. The supervisor's team included Associate Professor Steve Blackburn, Dr Adrian Lowe, and Professor Bob Williamson. Professor Penny Oakes, Dean of Students, was moderator.

The student team started the debate on a lighthearted note by supplying the supervisor team with their speeches (just in case they had forgotten to prepare their own). They argued strongly that, "we, the students are the lifeblood of the

University, and consequently we deserve better. Without us, academics as we know them, would not exist!" They emphasized that, "we do a lot of work; we are at the peak of productive creativity (as opposed to ageing academics); we are fun to have around."

The supervisor team responded by arguing that without students the University would still have an intellectual life. They referred to Michelangelo and the Master and Apprentice model and claimed that there were so many elementary things that they have to teach students, that they did not deserve better! The supervisor team were so confident of their intellectual contribution to university life that they even had the temerity to use Wikipedia as a reference source.

Professor Oakes did an excellent job of keeping both students and supervisors in order. She awarded the best question prize to Tim Jones who derisively pounced on the supervisor team's gaffe and asked why it used Wikipedia as a source of information, but deplored students doing the same.

Professor John Richards, Director and Dean of the College, focussed his closing remarks on the fact that the University cultivated a 'community of scholars' including both students and academics. In his final speech he highlighted student activism in the 1960s and 70s, commenting that there is much less activism in the new century. While not inciting students to go out and riot for their beliefs, he wondered aloud whether the loss of student activism was because of the changing nature of study that put increased pressure on students financially and intellectually, and that this was a sentimental loss to the scholarly community.

"Students and staff had a great time," said Dr Jochen Trumpf, Associate Dean (Research Training). "I'd like to thank fellow members on the organising committee for their time and commitment to the Big Feast this year, and of course thanks to the debating teams, Professor Richards and Professor Oakes.

"We'll be back again next year!"



Get Wired @ANU



THE AUSTRALIAN NATIONAL UNIVERSITY

ANU College of Engineering and Computer Science W: <http://getwired.cecs.anu.edu.au>

James Sheridan, a PhD student in the Department of Computer Science at the ANU College of Engineering and Computer Science is investigating ways in which physiological signals from the brain can be used to 'talk' to computers.

FAQs about undergraduate study in engineering and computing at ANU

What are the maths requirements?

Elite Degrees

Desirable: ACT Specialist Maths Double Major or NSW Maths Extension 2

Possible: ACT Specialist Maths Major/Minor or NSW Maths Extension 1

Engineering/Software Engineering

Desirable: ACT Specialist Maths or NSW Maths Extension

Possible: ACT Maths Methods or NSW Mathematics. Students confident of their maths ability can do the normal maths subject. Those less confident can do an additional introductory maths subject prior to doing the normal engineering requirement. This adds no extra time to the degree.

Information Technology

Desirable: ACT Maths Methods or NSW Mathematics

Possible: Students with lower level maths may be admitted provided they do some bridging maths. This can be done in 1st Semester prior to enrolment in the normal maths course, which is offered in 2nd Semester. This adds no extra time to the degree.

What if I don't quite get the UAI I need?

Options for students within 5 UAI points of entry requirements*

The College currently has two schemes for students that feel they may not quite achieve the UAI required for entry into specific CECS undergraduate programs. These schemes include:

Maths Bonus Points. Up to 5 UAI points may be accessed for students that have undertaken specific maths subjects.

Special Consideration Bonus Points. Up to 5 UAI points can be accessed for students that can demonstrate evidence of a particular interest or ability.

Bonus Points and Combined Degrees. Students that put Engineering, Software Engineering or Computing (single degree) as a preference via UAC will automatically be assessed for bonus points. Bonus points cannot be applied for combined degrees, except for the College's own Engineering/Information Technology program. For students selecting combined degrees that are concerned about their UAI score, the College recommends that they also put in a preference for a single degree in their area of interest (where bonus points can be applied). This provides a backup in case they don't get the score they require for the combined degree.

*Maximum of 2 UAI bonus points for Elite degrees.

See the likely UAI entry scores for 2008 in this issue

What is a combined degree?

A combined degree means students obtain two degrees for only one extra year of study. To calculate length of study, add one more year to the longest of the two degrees nominated, for example: Engineering (four years) combined with Science (three years) becomes a five-year program. If both programs are three years each, the combined program is four years. In a combined degree students do exactly the same amount of work each year as for a single degree, which is usually four subjects per semester.

The difference with a combined degree is that students lose the elective subjects that are available in a single degree, as these are replaced by subjects from the combined degree.

This means no extra work for two degrees. But students have less flexibility to do more subjects in one degree area, or choice to do subjects from a wide range of other areas.

I'm new to the ACT, where can I find accommodation?

Undergraduate students that are new to ANU from outside the ACT and who are commencing study in Semester 1, 2008, are guaranteed a place in a University Hall, affiliated college or other approved University accommodation.

More information can be found on the University Accommodation website: <http://accom.anu.edu.au/UAS/200.html>

Students that are interested in accommodation should register Online between 25 August 2007 (ANU Open Day) and 17 January 2008: http://accom.anu.edu.au/Accomm/Halls/Register_2007.php

What kind of scholarships do you offer?

The College has a number of scholarships available for students entering undergraduate programs in 2008. Students with a minimum UAI of 99 are eligible for a scholarship. Students below this UAI may be offered a scholarship depending on availability. See the scholarship information in this issue.

Students are automatically considered for a scholarship. There is no application form to complete. The College Student Services will contact those students that have put Engineering or Computer Science as high preferences and that are eligible for a scholarship.

Some important UAC dates to remember

25 August	ANU Open Day
28 September	UAC applications closing date
21 December	ACT/NSW UAI's available Online from UAC
4 January	Last date to change preferences for the UAC main round
17 January	UAC main round offers e-released

Saturday 25 August Open Day 2007

As well as displays and activities, staff will be available to discuss degree programs and answer your enquiries in the ANU Sport and Recreation Centre [Building No 19].

Information Booths - Ian Ross Building [No 31]

A huge range of activities will be available, with displays, information booths and hands-on workshops covering all major areas of study.

Engineering: digital systems, electronics, environment, manufacturing & management, mechanical & materials, mechatronics, photonics, sustainable energy and telecommunications

Computing: computer science, software engineering, information systems, new media arts, computer systems and software development

• Professional associations like the

Australian Computer Society and Engineers Australia will have information booths - find out what a professional engineer or computer scientist does

- Students and staff from the Women in Technology program will be available to talk to prospective female students about what engineering and computing have to offer women

Displays & activities - Ian Ross Building [No 31]

- Student projects in engineering & computing - Formula SAE racing car, SAE plane and solar bike. Learn how our students become involved in these projects and then take part in national and international competitions
- Unmanned mini sub, unmanned aircraft, robotic demolition derby, robots that can write your name on paper
- Remote control car racing

- Circuit milling machines and other machine demonstrations
- Test the strength of a human hair
- Telecommunications demonstrations
- Virtual reality theatre
- Programming activities
- Computer graphics
- Music and art activities



Ian Ross Building BUILDING 31
Sport & Recreation Centre BUILDING 19

Come along and be inspired by these informative talks! SEMINAR SERIES

TIME	VENUE	SEMINAR
10am-10:30am	Engineering Lecture Theatre (31)	Student Projects in Engineering: Find out about the exciting projects you can get involved in, like the formula SAE racing car, SAE plane and solar bike.
10:30-11:00am	Engineering Lecture Theatre (31)	Student Projects in Computing: Find out about the fantastic industry projects on offer with real clients in software engineering.
11am-12:00pm	Manning Clarke Lecture Theatre 1	Welcome to the ANU College of Engineering and Computer Science Engineering and Computing Degrees.
12:00-12:45pm	Ian Ross Building (31)	Free BBQ outside Ian Ross Building (31). Women in Technology lunch in the Ian Ross staff room - all welcome!
12:45-1:30pm	Engineering Lecture Theatre (31)	Careers in Engineering: Hear from a panel of industry, professional association, university staff and our own graduates about the great career opportunities in engineering.
1:30-2:15pm	Engineering Lecture Theatre (31)	Careers in Computing: Hear from a panel of industry, professional association, university staff and our own graduates about career opportunities in computing.
2:15-3:00pm	Engineering Lecture Theatre (31)	Elite Degrees in Engineering & Computer Science: Find out more about our R & D program for high achieving engineering students, as well as the Bachelor of Computer Science (Honours) degree and our Distinguished Scholars Program.

Likely UAI entry scores for 2008

Single Undergraduate Degrees

Programs for 2007	Duration	UAI required*
Bachelor of Engineering	4 years	80
Bachelor of Engineering (Research and Development)	4 years	98+
Bachelor of Computer Science (Honours)	4 years	98+
Bachelor of Software Engineering	4 years	80
Bachelor of Information Technology	3 years	75

Combined Undergraduate Degrees

Programs for 2007	Duration	UAI required*
Bachelor of Engineering (Research and Development)/ Bachelor of Science	5 years	98+
Bachelor of Engineering/ Bachelor of Information Technology	5 years	80
Bachelor of Engineering/ Bachelor of Science	5 years	80
Bachelor of Engineering/ Bachelor of Commerce	5 years	80
Bachelor of Engineering/ Bachelor of Arts	5 years	80
Bachelor of Engineering/ Bachelor of Economics	5 years	80
Bachelor of Engineering/ Bachelor of Asian Studies	5 years	80
Bachelor of Software Engineering/ Commerce	5 years	80
Bachelor of Software Engineering/ Bachelor of Science	5 years	80
Bachelor of Information Technology / Bachelor of Arts	4 years	75
Bachelor of Information Technology / Bachelor of Commerce	4 years	75
Bachelor of Information Technology / Bachelor of Economics	4 years	75
Bachelor of Information Technology / Bachelor of Science (Forestry)	4 years	75
Bachelor of Information Technology / Bachelor of Law	5 years	95-96

* Indicative UAI's only - UAI scores required for 2008 are yet to be published.

College Scholarships

The ANU College of Engineering and Computer Science (CECS) has a number of scholarships for students commencing undergraduate programs in 2008.

Scholarship	Amount \$AUD	How To Apply	Requirements
ANU Bachelor of Computer Science (Honours) Award	\$20,000 total (\$5,000pa for years 1, 2, 3 and 4)	Automatic Consideration*	UAI 99+ Conditions apply
Bachelor of Engineering (Research and Development) Award	\$20,000 total (\$5,000pa for years 1 and 2 and 3 and 4)	Automatic Consideration*	UAI 99+
College Undergraduate Award	\$10,000 total (\$5,000pa for years 1 and 2) Additional scholarships available for 3rd & 4th year students	Automatic Consideration*	UAI 99+ Conditions apply
College Undergraduate International Award	\$10,000 total (\$5,000pa for years 1 and 2) Additional scholarships available for 3rd and 4th year students	Students must complete an expression of interest form (see below)	Outstanding final school results equivalent to an entry score of 99, or outstanding results in an approved diploma program Conditions apply
College Undergraduate Award	\$3,500 total (one-off payment)	Automatic Consideration*	UAI 98+
College Undergraduate Relocation Award	\$3,500 total (one-off payment)	Automatic Consideration*	Interstate students moving to the ACT with a UAI of 98+ Conditions apply

*STUDENTS SHOULD REGISTER AN EXPRESSION OF INTEREST AT: http://feit.anu.edu.au/CECS_scholarships.php

Sung Cha a rising star

Postgraduate student, Sung Han Cha, was awarded the National Committee on Automatic Control and Instrumentation Undergraduate Thesis Prize by Engineers Australia at a ceremony in Sydney on 1 June 2007.

"Sung was a gifted student in the Research and Development Scholarship Program at the Faculty of Engineering and Information Technology," said Dr Rob Mahony from the ANU College of Engineering and Computer Science who supervised Sung during his (Honours) Bachelor thesis in 2006.

Sung's thesis entitled, "Coupled Non-linear State Estimation and Control for Low-cost Aerial Robotic Vehicles," investigates the development of a non-linear altitude filtering and control algorithm for attitude

stabilization of any Aerial Robotic Vehicles including Unmanned Aerial Vehicles (UAVs).

"Most existing remote control systems for UAVs are tele-operative systems. That is, a trained operator controls the vehicle with on-board cameras while the vehicle orientation is stabilised automatically using an on-board controller," said Sung.

"These remote control systems are essential to the UAVs performance. Currently many UAVs use an expensive Inertial Navigation System (INS) to determine where they are in the air, so that they can then be told where to go," said Sung.

"At the moment these are in operation mainly in military vehicles, but the commercial world is also interested in UAVs for other applications like dangerous search

and rescue, high building inspections and so on. To make them cost-effective and robust enough for commercial use, researchers like me are looking at ways to come up with a cheaper remote control system that doesn't compromise performance, and this is what my thesis is about," he said.

Sung is now studying for his PhD at ANU with Distinguished Professor Brian D. O. Anderson, who is acknowledged worldwide as the pioneer of systems control research in Australia.

"Sung's award certainly is richly deserved," said Professor Anderson. "He is a young man of serious intellect and ambition, and I have high hopes that he will continue to grow into the kind of engineer that will stimulate controls systems research in academia, and in industry in the future," he said.



Affirmative action gets 'Yes' vote

The ANU College of Engineering and Computer Science recently developed an Equal Opportunity Plan. The major objective sets a target of achieving 25 percent women in the academic staff complement of each of the four academic departments in the College, and is one of a number of recruitment initiatives that are designed to increase the appeal of the College to academic women.

Despite a significant number of initiatives to increase the potential pool of female academics by the professional community, including special incentive schemes for female graduate students, re-entry scholarships following raising a family, and targeted, recruitment campaigns, the hoped for significant increase in women academics has not occurred – at least in the English speaking world.

"I think that traditional ways of attracting women into our disciplines are not working well enough and we needed to do something different," said Professor John Richards, Dean and Director of the College.

"An increased proportion of women on the academic staff is important as a role model in the recruitment of academic staff, female undergraduate students and postgraduate research scholars. Even

though our undergraduate numbers are good on a national scale, at about 16% female undergraduates, much more needs to be done in order to increase the attractiveness of engineering and computer science as professions for young women school leavers," he said.

"Our College works hard to attract young women on the basis that they have much to offer intellectually and socially to professions that

are exciting, sociable, creative and financially rewarding. Having more women on staff that demonstrate this may be another way to increase our female undergraduate cohort in the long term," he said.

After extensive consultation with staff and legal affairs, the College has used the provisions of the Sex Discrimination Act 1984 to allow it to take 'special measures' for the purpose of achieving substantive equality

between men and women. This, coupled with existing University recruitment policy that allows for advertisement, targeted advertisement, search committees, and invitations forms the basis of its Equal Opportunity for Women Plan.

The College Equal Opportunity for Women Plan 2007 is published on the College website:

http://cecs.anu.edu.au/newsletter/cecs_publications

Engineers critical in cutting greenhouse gases: Expert

More needs to be done to equip engineers with the knowledge to reduce carbon emissions and other environmental impacts, an expert from The Australian National University argues.

"I agree with former US Vice President, Al Gore, who said recently that he has come to see the climate crisis as the most dangerous and important collision between our civilization and the ecosystem, and that climate crisis should be seen as an opportunity for engineers, particularly young upcoming engineers, to bring focus and creativity to a worthy goal," said Mr Michael Smith from

the Fenner School of Society and Environment, and a visitor in the Department of Engineering.

Mr Smith believes that the Department of Engineering at ANU has world-leading courses on Systems Design and Sustainable Energy Systems. This is part of the reason why he is currently based at the department to help improve training in areas like energy efficiency.

"There are significant energy efficiency opportunities of 30 to 60 per cent in most sectors of the Australian economy, and half of greenhouse gas emissions

come from the built environment and infrastructure, which means what engineers do is incredibly important," said Mr Smith.

"When new buildings and infrastructure are constructed, engineers should always be mindful of the 40 to 100 year design life. When Australian car manufacturers retrofit plants, they should be aware that new cars bought from the plant will be in service for up to 20 years. Most of Australia's infrastructure either needs maintenance, retrofitting or will roll over in the next 30 to 40 years, including many coal-fired power stations. This is a 'once in a

generation opportunity' to engineer sustainable solutions."

Mr Smith said that while most university engineering schools already have innovative education programs and engineering practices that are taking into account environmental impacts, more needs to be done. For instance, university and professional development courses for engineers need to take into account advanced energy efficiency strategies like Whole System Design, which allows engineers to identify greater energy efficient savings for less cost.

Mr Smith is Research Director

for the Natural Edge Project, a multi-university group of young engineers and scientists who are developing advanced education and training programs to achieve more sustainable engineering practices worldwide. In collaboration with UNESCO and other partners, the Natural Edge Project is developing an Engineering Sustainable Solutions Program providing training modules freely available online to assist University engineering departments and professional bodies provide the capacity building needed.

In brief

Atomic win for Polyatomic!

Each year 4th Year engineering students from the Department of Engineering get to put their business skills to the test in the Young Achievement Australia program. Students form small teams of 15 members to launch a company, develop a business plan, design and sell a product, sell shares in the company, and finally liquidate the company to return profits to the shareholders. Members of Canberra's business community mentor the teams throughout the program.

Professor Mick Cardew-Hall, Deputy Dean of the ANU College of Engineering and Computer Science, included the venture in the engineering program as part of students' engineering management studies.

"Being part of YAA helps students to gain good experience in creating a company and they learn other business skills by being exposed to the sorts of strategies, business people, and business principles that they will need if they intend setting up business on their own," he said.

In the most recent awards, the ANU team, Polyatomic, won the coveted JP Morgan Tertiary Company of the Year award beating all other university teams across Australia.

"Criteria for this prestigious award was based on Polyatomic's operations as a whole, in particular the business plan and annual report, share return and quality of product," said Craig Gibbons, Polyatomic team member.

"We had a lot of interest from the public and the local media throughout Polyatomic's lifetime," he said.

"More than anything else, the program demonstrated that engineers are not only technically capable, but also have a keen eye for business."

ANUESA careers evening a success



On 15th March 2007 the ANU Engineering Student's Association (ANUESA) held its annual careers fair in the Ian Ross Building. This is a student initiative involving volunteer students in approaching companies and government departments that are looking for engineers in a range of occupations, and inviting them to visit the campus and talk to students.

"The fair is a chance for students to make connections with various companies that are interested in employing graduate engineers in Canberra and the region," said Nathan Brewer who was a member of the organising committee.

2007 saw the highest turnout seen at an ANUESA careers fair with 25 companies in attendance and around 200 students visiting various exhibition stands and talking to industry representatives.

"The most frequently asked questions from students are of course on career prospects after graduation, but they also like to discuss opportunities for part-time work during study, and industrial experience," said Mr Brewer.

Positive feedback from both the companies attending, and the students, has ensured the careers fair will continue to be a mainstay of ANUESA's calendar.

The organisers would like to thank the exhibitors and event sponsors including GHD Pty Ltd, Bovis Lend Lease and NICTA

A freak in the night



Photo courtesy Felix Schill

Canberra's freak hailstorm on 27th February had a big impact on some of the buildings, and people, in the ANU College of Engineering and Computer Science.

"Two buildings which house the Department of Information Engineering, the Computer Sciences Laboratory, and the Department of Computer Science were the worst hit," said College Executive Officer, Michelle Searle.

The morning after the hailstorm the grounds outside the buildings gave little idea of the damage to be found inside. But the skylights that are an architectural and environmental feature of the top floors of the RSISE and CSIT buildings were almost completely destroyed.

Both the Engineering and Ian Ross buildings also sustained minor water and hail damage.

"The final damage bill is yet to be assessed," said Ms Searle. "The third floor of the RSISE building was recently re-carpeted and the skylights have now been replaced. The same goes for the CSIT building. But new student cubicles need to be built in the RSISE building and new computers and software are yet to be installed."

"I'd like to thank all those staff and students who helped to mop up in the immediate aftermath, and all staff who have had to deal with the extra work involved in liaising with building contractors, and insurers, to get us back into operation as speedily as possible," she said.

ACT & Region Science & Engineering Challenge



More than 500 Year 9 and 10 students from the ACT and region converged on the Australian National University to compete in the 2007 Science and Engineering Challenge on 14 and 15 May.

"The Challenge helps students to understand the dynamics of cooperation in teams, as well as providing theory and practice in elements of science, engineering and technology," said Mr Paul Melloy, Manager of Student Services at the ANU College of Engineering and Computer Science.

Practical and academic skills are put to the test in fun ways, with activities designed for class-sized groups split into eight teams. Each team works on an individual problem or project requiring strong cooperation amongst team members.

Participation trophies are awarded to all schools, as well as for first and second place on each day.

Congratulations to the schools that participated over the two days:

Canberra High School
Daramalan College
MacKillop Catholic College,
Isabella Plains Campus
Lyneham High School
Marist College
Melba High School
Merici College

MacKillop Catholic College,
Wanniassa Campus
Mt Carmel Central School, Yass
Queanbeyan High School
Snowy Mountains Grammar
School, Jindabyne
St Clare's College
Telopea Park School
Tumut High School
Ulladulla High School

Winners and runners up on Day 1

1st place: Canberra High School
2nd place: Telopea Park School

Winners and runners up on Day 2

1st place: MacKillop Catholic College,
Isabella Plains Campus
2nd place: Marist College

"I'd like to thank all the sponsors this year," said Mr Melloy. "I hope they will continue to support the Challenge as it becomes ever more popular in the ACT."

"We couldn't do the Challenge without the generous support of several volunteer staff and students, including people from the University of Newcastle, who put in weeks of hard work organising the event, and in chaperoning teams over the two days," he said.

The Science & Engineering Challenge in the ACT was sponsored by the ANU College of Engineering and Computer Science, ANU College of Science, Business ACT, Engineers Australia and NICTA.

We welcome enquiries from schools interested in participating in this event in 2008.

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Archimedes Day 2007



Photo courtesy Daramalan students

The College's annual 'Archimedes Day' event for Year 11 and 12 students was held on June 6 and 7 at ANU. Over 350 students took part, participating in three engineering, computing or science workshops throughout the day.

"A number of new schools participated this year including Yass High, Wagga Wagga High and Koorringal High," said Paul Melloy, Manager of Student Services.

They joined other interstate participants, Snowy Mountains Grammar and Karabar High.

ACT College participants included: Radford, Erindale, Canberra College, Copland, Narrabundah, Daramalan, Merici, St Edmunds, St Francis Xavier, Lake Ginnindera, Mackillop, and Trinity Christian College.

"We had lots of new workshops this year, including Mechanics where students built and fired trebuchet's, which are machines that were used in medieval siege warfare for hurling large missiles," said Mr Melloy.

"Other new workshops included a session on geographic information systems (GIS) called Mapping your Day, a workshop on the Michelson Interferometer where light can be used to detect gravity, and Computer Games on the Big Screen where students made a flock of dinosaurs run across the countryside," he said.

These new workshops were combined with the ever popular Spooky Slime Chemistry, Mechatronic Mayhem, Solar Energy - Discover the Big Dish, and Coding to Keep a Secret.

"According to students, the workshops were a great success, and along with pizza and Goodberry's for lunch, everyone enjoyed the day."

The College welcomes enquiries from other schools interested in participating in this annual event.

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Mixing science with wearable art at reSkin

It was with a little trepidation that six presenters from the ANU Centre for Science and Engineering of Materials (CSEM) got up in front of a group of artists and crafts people from all over Australia to discuss various aspects of materials science and engineering. After all, artists are a different race from scientists and engineers. They think differently, use different language and approach things in a different way. Could materials science offer any thing of value or of interest to them?

The occasion was a workshop called 'Welcome to my material world' and it was run as part of reSkin, a Media Lab run by the Australian Network for Art and Technology (ANAT). The lab was organised at the ANU School of Art in January 2007 and involved around 30 artists designing and producing wearable technology.

CSEM was asked if it could arrange a workshop in which some of the University's work on materials might be showcased. The hope was that the artists might find some inspiration in the research, and a possible reference point for their own work. The six presenters were David Salt (CSEM), Tim Senden (Applied Mathematics), Erica Seccombe (Artist in Residence/Applied Mathematics), Ray Prowse (Centre for Sustainable Energy Systems) and Milli Styles (Department of Engineering).

"As it turned out, the CSEM presenters had nothing to worry about. The artists found the presentations informative, educational and exciting," said David Salt.

Following the talks the reSkinners engaged the speakers in lengthy discussions over drinks. Who knows what wearable art we will see in the future?

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