Dean’s Report

Our first Engineering Sydney Careers Fair was held on 4th April and was a great success with 25 companies and 800 students attending. The fair achieved its major objective to allow the companies and students to meet in a multidisciplinary environment. Companies which previously had a strong leaning for students from a particular discipline such as Civil Engineering commented very favourably on being able to meet students from other disciplines such as Mechanical and Electrical Engineering. More detail is given later in this Newsletter. We are already working on the 2007 Fair scheduled for the 3rd April 2007 with a target of 40 companies.

Significant restructuring of the University has occurred since the last Newsletter. The College structure, where we worked closely with the Faculties of Science, Architecture, Agriculture Food and Natural Resources, and Veterinary Science as part of the College of Science and Technology, was disbanded on 3rd April. The University’s 17 faculties will now be clustered into 7 which will eventually become single faculties. In our case, we will join with the Faculty of Architecture and the School of Information Technology to become Engineering, Architecture and IT will allow for significant sharing of resources in such areas as finance, student support, information technology, human resource management and infrastructure. We are already working on shared teaching programs between the School of Electrical and Information Engineering and the School of IT. We are also collaborating with the Dean of the Faculty of Architecture, Professor Tom Kvan, to improve the teaching of design in the Faculty of Engineering, including Engineering and Architecture students working together in a studio environment. We hope that other academic synergies will be possible and we will continue to explore these.

Our strategy to employ early career staff continues with 4 new appointments in the School of Aerospace, Mechanical and Mechatronic Engineering, Dr Hala Zreiqat in Tissue Engineering, Dr Michael Kirkpatrick in Computational Fluid Dynamics, Energy & Environment, Dr Xiaozhou Liao in Materials and Dr Qing Li in Biomechanics and Multi-scale Modelling, with 2 new appointments in Electrical Engineering with an offer in Computer Engineering and Dr Dylan Lu in Power Engineering, and with 2 new appointments in Chemical and Biomolecular Engineering, Associate Professor Fariba Dehghani in Bio-Manufacturing, and Dr Andrew Harris in Sustainable Technologies. We are also pleased to welcome Professor Vojin Oklobdzija as the new Chair in Computer Engineering. Vojin comes from the University of California, Davis.

Gregory Hancock, Dean of Engineering
School of Electrical and Information Engineering

Photonic Signal Processing and Microwave Photonics

An Invited Paper by Professor Robert Minasian of the School of Electrical and Information Engineering has been published in the IEEE Transactions on Microwave Theory and Techniques, the premier journal in the world in this field. Invited Papers in the Institute of Electrical and Electronics Engineers IEEE Transactions publications recognise significant contributions that have had a major impact on knowledge in the field.


Professor Minasian’s work is in the field of photonic signal processing and microwave photonics. This is a new area, which enables processing of high bandwidth signals. It exploits the unique high time-bandwidth product of photonic approaches to overcome the inherent bottlenecks caused by limited sampling speeds in conventional electrical signal processors. These new techniques transcend the limitations of existing electronic methods and enable novel types structures to be realised, these can process high-speed signals and realise highly adaptive and reconfigurable operation. They also allow direct processing of high frequency signals that are already in the optical domain, such as high capacity optical fibre communication systems. This opens up new possibilities for the realisation of high resolution, wideband processing of signals contained within the fibre.

The research conducted by Professor Minasian has recently led to the resolution of a number of long standing problems associated with the important coherence and noise limitations in photonic signal processors. It has proposed new photonic processor topologies that can solve the fundamental problem of eliminating the dominant noise mechanism, opening the way to the realisation of high-speed, high-resolution and wideband adaptive processing of signals directly inside the fibre. Novel structures based on parallel processing using multiple wavelength techniques and extremely high sampling frequencies have also been discovered, these offer high frequency selectivity and reconfigurability. These photonic signal processors are inherently compatible with fibre-optic microwave systems, and provide new capabilities for the realisation of high-performance and high-resolution signal processing.

This work has been supported by the Australian Research Council.

Online Database Access for Alumni

Alumni of the University of Sydney who apply for membership of the University of Sydney Library are now able to access Proquest 5000 online databases remotely. Proquest contains 13 databases including ABI/Inform, Proquest Computing, Pharmaceutical News Index, Proquest Telecommunications and Business Dateline.

Members are also given borrowing rights across the University of Sydney Library system.

For further information about this service please see the Library Services for University of Sydney Alumni webpage at http://www.library.usyd.edu.au/clients/alumni/
Engineering Sydney Careers Fair

Engineering Sydney held its inaugural Careers Fair in the PNR Drawing Rooms on April 4 2006.

The fair targeted 3rd, 4th and 5th year engineering students, giving them the opportunity to meet prospective employers, to discuss recruitment and work experience placements.

Students showed enthusiasm for the fair, many queuing for entry well in advance of the advertised 12 noon start time. Approximately 800 students attended, filling the venue to capacity.

25 Companies signed up to attend, including:

- ABB Australia Pty Ltd
- Coffey Geosciences
- Douglas Partners Pty Ltd
- TransGrid
- Railcorp NSW
- GHD Pty Ltd
- Energy Australia
- Evans & Peck
- Tenix Pty Ltd
- Taylor Thomson Whitting
- Arup Pty Ltd
- Connell Wagner Pty Ltd
- BOC Ltd
- Qantas Airways
- Lend Lease
- NHP Electrical Services
- CAE
- Cardno Group
- Sinclair Knight Merz
- NSW Department of Commerce
- Leighton Contractors Pty Ltd
- Parsons Brinckerhoff Australia Pty Ltd
- Hughes Trueman

Companies and students expressed great satisfaction with the fair, particularly appreciating the specific focus on engineering.

The next Engineering Sydney Careers Fair is scheduled for April 3 2007. Enquiries can be directed to Susanna Smith on 02 9036 6571 or susanna@eng.usyd.edu.au
Distinguished guests entered a full house at the Great Hall to strains of the theme from *2001 a Space Odyssey* for the Annual Dean’s Lecture on March 13.

Greg Hancock, Dean of Engineering, welcomed astronauts, Dr Andy Thomas and Dr Shannon Walker, to deliver the lecture. Other distinguished guests included Australia’s first female pilot, University of Sydney graduate, Nancy Bird Walton.

Dr Walker presented a lecture on the astronaut training that she completed in 2004. She explained the broad range of skills that need to be mastered to complete training including: learning to fly high performance T38 jets, water and aeronautical safety, high altitude training and emergency escape training. Other aspects included studies in geology and hardware systems. One part of the training that Dr Walker identified as particularly important, were the team building exercises in which trainees must function and react as a team, often in extreme conditions. Trainees also undergo cultural training to become aware of the variety of lenses that people view the world through.

Dr Thomas vividly recalled seeing the sky turn deep purple, then black with bursts of plasma during a hypersonic flight through the earth’s atmosphere on take off. He also recalled with pride, his first view of Australia from space, flying over Perth and the rest of the West Coast of Australia.

Video footage of Dr Thomas floating in zero gravity inside the shuttle illustrated the “amazing adventure” that he has had on space missions. He describes the feeling of coming back to earth as; “like having run a marathon without training for it” as the weight of limbs and organs in gravity returns.

Dr Thomas reflected on the downside of his career, such as the search for 100,000 pieces of debris scattered over Texas after the disastrous breakup of the Columbia in 2003 and the evidence of damage that human behaviour has inflicting on the earth.

When asked what he dreams about, Dr Thomas reflected on a dream he had while on the Mir mission; he was still a kid in Adelaide, playing in the street, but with the ability to float.
A Word of Advice for Aspiring Astronauts...

Thinking about becoming an Astronaut? Then study hard! That’s the advice that Astronaut, Andy Thomas, had for students at the annual Dean’s lecture, held in the Great Hall on March 13.

Andy has been part of NASA’s space program since 1992, participating in four space flights. He believes that the reason he was chosen as one of 20 recruits from a pool of over 2,000 applicants, was his education. Andy completed a Bachelor of Engineering Degree with First Class Honours at the University of Adelaide in 1973, followed by a Doctorate in Mechanical Engineering. He then went to work for Lockheed Aeronautical Systems in the US, before joining NASA.

The personal and academic skills required for a career as an astronaut are many and varied. In 1997, Andy spent a year at the Gagarin Cosmonaut Training Centre in Star City, Russia, where he studied the Russian space flight system and the Russian language, which he was required to complete exams in before serving as Board Engineer 2 aboard the Mir space station. “I never thought I would be a Cosmonaut!” he mused.

Andy describes his career as: “An extraordinary adventure” that he never would have thought possible for, “A kid from Adelaide.” He encouraged Engineering students in the audience, telling them they too might one day get to space.

Susanna Smith
Discovering Engineering Day

Over 60 year 10 students from across Sydney spent a day of their school holidays attending Discovering Engineering Day on April 20.

Organised by Marketing and Scholarships Officer, Myra Koureas, Discovering Engineering Day is designed to introduce students to the different engineering disciplines offered by the faculty and to encourage them to consider engineering as a career.

Students spent time in each of the five discipline areas.

Dr Gianluca Ranzi from the School of Civil Engineering presented a brief lecture on bridges before supervising students in a bridge building exercise. Students worked in groups to build model bridges from straws and pins. The best incrementally launched bridge was declared the winner.

Associate Professor Fariba Dehghani from the School of Chemical and Biomolecular Engineering outlined the chemical processes involved in making ice cream before demonstrating rapid freezing technology. Students then performed the ultimate test – tasting the end product.

Senior Lecturer Paul McHugh from the School of Aerospace, Mechanical and Mechatronic Engineering, instructed students in the use of Solid Modeller CAD systems. Students were given the opportunity to manipulate robot arms using the system.

Alexander Hall, Postgraduate Student in the School of Aerospace, Mechanical and Mechatronic Engineering in association with Dr KC Wong, taught students to build high tech paper planes that roll and coast. Students then put their plane to the test in target practice.

Dr Andre Van Schaik from the School of Electrical and Information Engineering instructed students in the use of Cadence software to build a schematic and then design an integrated circuit (computer chip).

Students enjoyed their day and left with new ideas and knowledge.
Scholarships

The Faculty of Engineering held its annual scholarship function to recognise 2006 and existing scholars in “The Hearth”, Faculty of Architecture, on May 10. Recipients were presented with certificates by representative sponsors and the Dean of Engineering. Scholarships are an invaluable opportunity for students, employers and the University to collaborate.

Brian Gibson, Department of Learning and Development at the RTA, acknowledges the value of scholarship students to an organization. Gibson believes that the RTA scholarship students, who complete work experience within the organization throughout their degree, provide the organization with up-to-date expertise and knowledge and an important link to scholarship and research at the University. In return students receive work experience in a structured supervised program that is tailored to their individual interests as far as possible. Students also receive the benefit of forming networks within the organization and financial remuneration. The RTA are able to offer work experience in a wide range of areas.

Traditionally large employers of Civil Engineers, the RTA also offer scholarships in other branches of engineering, such as Electrical and Mechanical Engineering.

Gibson encourages all students to consider applying for RTA scholarships. His advice to potential scholars is to be well rounded. The RTA look for students who contribute to the community, possess leadership skills and are able to cooperate with others to meet goals, rather than high academic standards alone.

Gibson believes there is value in nurturing young people in their career development years at university and this is what the RTA scholarship program aims to achieve.

For further information on scholarships please contact Myra Koureas, Marketing and Scholarships Officer on 9351 2131 or m.koureas@eng.usyd.edu.au

Moses Bangura, 1st Year Bachelor of Aero Space Engineering and University of Sydney Merit Scholar.

Moses Bangura is a student with passion for learning and for helping others. After arriving in Australia from war-torn Sierra Leone as a refugee in 2004, he completed the HSC as dux of his school, was accepted into the Bachelor of Aerospace Engineering degree and was awarded a University of Sydney Merit Scholarship.

Moses believes that his drive and ambition come from his experience of poverty in Sierra Leone. Having always had "a passion for school," he has always worked hard and seized the opportunity to do well in Australia. As a child his family couldn’t afford toys so he built his own, “We made cars from milk tins and made motors for them. My friends and I often entered competitions and won.” It was this creative spirit combined with a love of learning that inspired his decision to become an aerospace engineer from a very young age.

Moses’ philosophy of life is “To succeed in everything I do.” He repeats this like a mantra. He is also passionate about helping his fellow Sierra Leonians. He feels it is his duty to share the results of his success with those who have been less fortunate. His studies in Advanced Engineering have given him inspiration to plan desalination programs for people who live in the desert regions of the country with inadequate access to clean water supplies and to plan solar energy programs for the many Sierra Leonians who live without adequate electricity.

Moses believes his scholarship will provide him with the practical things that he needs to complete his degree and develop his career. His goal throughout the HSC was to study at The University of Sydney and he is now determined to continue his success at tertiary level.

Interview by Susanna Smith
Reunions

1956 Civil Engineering Graduates Celebrate 50th Anniversary

On May 1, 18 members of the Civil Engineering class of 1956 travelled from as far as Scotland and Canada to celebrate the 50th anniversary of their graduation in the Great Hall.

40 Civil Engineers graduated in 1956, including nine students who had come to the university as part of the Colombo Plan, an aid scheme that allowed Asian students to study in Australian tertiary institutions.

After a nostalgic morning coffee at Manning, the graduates made their way to the Great Hall, scene of their original graduation and for some, their February posts. Vice-Chancellor, Professor Gavin Brown and Dean of Engineering, Professor Greg Hancock, welcomed the group and presented them with commemorative certificates.

The graduates then visited the Parramatta Road Bridge, many of them reminiscing about surveying exercises on the Union Steps and the student demonstration for pedestrian lights to ensure students could cross the road in safety.

A luncheon in the Chancellor’s room of the Union followed. The class of 1956 plan to get together again in 2009, a year in which many of them will celebrate their seventy-fifth birthday.

Planning a Reunion?

Held a Successful Reunion?

Engineering Sydney and the Office of University Relations would love to hear any reunion stories and are happy to publicise any upcoming reunions in The Engineering Sydney Newsletter, The Sydney Alumni Magazine and on the University Website.

Please contact Susanna Smith 61 2 9036 6571 susanna@eng.usyd.edu.au or Tracey Beck in the Office of University Relations on 61 2 9036 9222 alumniadmin@vcc.usyd.edu.au or visit www.usyd.edu.au/alumni
School of Aerospace Mechanical and Mechatronic Engineering

Expansion of the Biomedical Engineering Program

The School of Aerospace, Mechanical and Mechatronic Engineering have recruited two new academic staff to strengthen the growing Biomedical Engineering program.

Dr Qing Li has extensive national and international collaborations in place in his area of interest, computational biomechanics and computational tissue engineering.

Dr Hala Zreiqat is a leading expert in studies of bone tissue engineering when in contact with biomaterials. Dr Zreiqat’s specific interest is in modifying biomaterials chemistry for tissue regeneration.

The new recruits have boosted the expertise of existing staff members: Dr Andrew Ruys (Biomaterials), Associate Professor Greg Roger (Orthopaedic Engineering), Dr Jane Liu (Biomechanics) and Dr Jean Nightingale (Biomechanics).

Dr Zreiqat manages the Biomaterials and Tissue Research Unit, a 120 square metre, state-of-the-art research lab in the new Bone Biomaterials Unit. This new unit complements the existing and well-resourced Biomaterials Synthesis Laboratory established and maintained by Dr Andrew Ruys over the past nine years. The new laboratory has allowed a synergy between the biological approach of Dr Zreiqat and the biomaterials engineering approach of Dr Ruys to develop.

Both Dr Ruys and Dr Zreiqat have a number of important collaborative projects with key research centres and industrial partners who are now benefiting from the research that is being conducted in the new facilities.

Dr Hala Zreiqat, bone tissue engineering expert.

Dr Qing Li, computational biomechanics and computational tissue engineering expert.

The New Bone Biomaterials Unit

The Biomedical Engineering Team
Awards

Raymond C. Reese Research Prize

Professor Kim Rasmussen, Head of the School of Civil Engineering, and former student, Dr Mike Bambach, have been awarded the Raymond C. Reese Research Prize by the American Society of Civil Engineers.

The Raymond C. Reese Research Prize recognizes outstanding contributions to the application of structural engineering research.

Professor Rasmussen and Dr Bambach received the award for their paper Design Provisions for Sections Containing Unstiffened Elements with Stress Gradient. Published in the Journal of Structural Engineering in October 2004.

2006 IEEE Communications Best Tutorial Paper Award

Associate Professor Abbas Jamalipour of the School of Electrical and Information Engineering, has been awarded the 2006 IEEE Communications Society Best Tutorial Paper Award for the paper: A tutorial for multiple access technologies for beyond 3G mobile networks. IEEE Communications, Vol 43, No. 2, February 2005.

Chinese Government Award for Outstanding Self-Financed Students Abroad

Yahua Li, student in the School of Electrical and Information Engineering, was awarded The Chinese Government Award for Outstanding Self-Financed Students Abroad at a ceremony held at the Chinese Consulate General in Sydney.
Alumni in Profile

Jillian Kilby, Bachelor of Civil Engineering (Honours) 2006

2006 Civil Engineering graduate, Jillian Kilby, has been awarded the Rod McGee Medal. Engineers Australia and Arminox Australia award the Rod McGee Medal to encourage students to pursue careers in public works engineering. Jillian now works for Waterway Constructions, on the refurbishment of a 100 year old timber structure at Walsh Bay. Associate Professor Rob Wheen of the School of Civil Engineering describes Jillian as, “an outstanding scholar with a genuine desire to serve the communities in which she lives and works.”

Jillian was also chosen as The Land Sydney Royal Show Girl for 2006. Competitors are judged on personality, confidence, ambition, life goals, general knowledge, rural knowledge, presentation, speech, knowledge of current affairs, knowledge of local community and ambassadorial qualities. Jillian’s commitment to improving rural infrastructure impressed the judges and resulted in her being awarded first place.

Life-long Partnerships

The University is strengthening its ties with alumni as part of a major new initiative by the Standing Committee of Convocation (SCC) to involve alumni in the life of the University.

Last year, the SCC – an alumni body established over 60 years ago – responded to the University’s growing recognition of the importance of alumni by developing new strategies to help represent their interests. Reinvigorated with representatives from a range of Alumni Associations and Faculties, the SCC’s mission is to bring about a life-long partnership between the University and its former students.

Through the Alumni Relations Office the SCC will be boosting support to the various alumni associations and to faculties – there are over 30 faculty, regional and internationally based associations of alumni. Existing associations will be strengthened and collaborative opportunities developed, while new chapters will be created to service the large number of alumni based overseas and within Australia. The SCC will also be working to increase participation in the prestigious Alumni Awards program, which recognises service to the community by alumni in areas such as creativity, dedication and leadership. Past recipients of an award include Bell Shakespeare Company founder John Bell AM OBE (BA ‘63, D Litt ‘96), architect Louise Cox AM (B Arch ‘63 Dip TCP ‘71) and social commentator Hugh Mackay (BA ‘62).

“Strengthening the awards program gives us the opportunity to highlight the diverse contributions made by University of Sydney alumni throughout society,” says Tracey Beck, Director of Alumni Relations. “Alumni are one of the University’s most valuable assets, and they will play a vitally important role in our success into the future.”

For further information about the SCC or to get involved with your alumni association, contact the Alumni Relations Office on 61 2 9036 9222 alumniadmin@vcc.usyd.edu.au or visit www.usyd.edu.au/alumni
Deans Advisory Committee

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Student Organization

Rachel Hollis                                SUEUA President

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Please let us know if you have changed address, telephone number or email or job so that we can update our records and keep you up-to date with Engineering Sydney information.

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