Message from the Dean

In Australia our summer holiday period is over January and so many assume Universities tend to be less busy at this time of the year. However, this remains very busy for us as this is the time when we are not only enrolling new students for the first half of our academic year (a second enrolment also occurs in June for the second half), but this ‘holiday’ period is also when we organise a number of activities aimed at high school and college students to convince them that a future career in Engineering is a good choice.

For example, students interested in Science, Physics and Engineering from Schools all over the State of NSW (which in area is as big as many medium sized countries around the world) took a break from their school holidays and came to our University for a week in January to carry out entertaining and informative scientific experiments in laboratories in the Faculties of Science, Engineering and Informatics.

Forty one school students entering Year 10 in 2011 participated in this University of Wollongong Science Experience. Workshops that students participated in included examining the effect of lava flow on volcanic eruption styles, the science of computer hacking, creating crazy chemical concoctions, exploring the concepts of temperature of absolute zero and DNA investigations. The program also included a field trip to the Futureworld Eco-technology Centre, the Wollongong Science Centre and Planetarium, and a Science Show presented by Young Scientists of Australia.

Continued on page 2...

Prof Metcalfe Continues to set Benchmark for NSW Radiation Services NSW

The University of Wollongong’s Engineering Physics Professor Peter Metcalfe has recently been re-appointed as the Academic Chair in Medical Physics by Cancer Institute NSW. Professor Metcalfe has held the prestigious position since 2005 and his contract has now been extended today until 2016. The Academic Chair in Medical Physics role is co-funded by the University of Wollongong and Cancer Institute NSW.

The Academic Chair in Medical Physics provides leadership and guidance for radiotherapy departments across NSW and is responsible for generating and translating the latest research findings into the next-generation of radiation treatment for cancer patients.

The University of Wollongong Foundation Chair in Medical Physics, Professor Anatoly Rozenfeld, said the position of Academic Chair was crucial in realising future plans for the Centre for Medical Radiation Physics (CMRP).

“During the next five years Professor Metcalfe will be concentrating on putting quality assurance tools for modern radiation therapy into routine clinical practice,” Professor Rozenfeld said.

The Cancer Institute of NSW, Australia’s first state government cancer control was established in 2003 and is responsible for reducing cancer rates, increasing survival statistics and improving the quality of life for cancer patients and their carers.

Cancer Institute NSW CEO, Professor David Currow commented that Professor Metcalfe has excelled during his time as Academic Chair in Medical Physics and that his internationally renowned work has helped address a skills shortage in cancer treatment.

Graduates from the University of Wollongong’s Centre for medical Radiation Physics account for 40 per cent of new entries into the country’s radiation oncology workforce.

Professor Peter Metcalfe years of research into new radiation treatment techniques has directly resulted in refining invasive prostate cancer treatment to limit exposure to other parts of the body, as well as reducing the severity of neck and head cancer treatment so that patients have less difficulty with swallowing and eating. In an article in Wednesday, March 9 edition of the Illawarra Mercury Professor Peter Metcalfe was quoted saying:

“What we try to do behind the scenes is make a patient’s life more tolerable by finding better ways of delivering treatment.”

Continued on page 2...

Inside . . .

Prof Metcalfe-Continues to set Benchmark for NSW Radiation Services 1-2
Another NHMRC Grant for Engineering Physics 2
The Excellence in Research for Australia (ERA) 3
Twelfth East Asia-Pacific Conference on Structural Engineering & Construction 4
4th International Conference on Construction Engineering & Project Management 4
35th Annual Condensed Matter and Materials Meeting 4
A/Prof Muhammad Hadi visits Tokuyama College of Technology, Japan 5
CME BBQ Fundraiser for Queensland Flood Appeal 5
Discovery Day 2011 6
Flying High with Engineering-Orientation 2011 7
Editorial-Continued from page 1...

We also ran our ‘Women in Engineering Summit 2011’ in January which was originally conceived by an inspiring and enthusiastic lecturer from electrical engineering, Dr Montse Ros. She developed this event several years ago and has made it a wonderful success ever since. This year 50 young women in Year 10 from schools attended and met industry leaders, academics and other women with similar interests.

The Summit aims to encourage more women to take up engineering as a career. Over the course of the summit, the participants visited local engineering industry sites and were involved in a wide range of engineering activities in UOW’s world-class engineering facilities. Recent female graduates and current students from the Faculty of Engineering and Faculty of Informatics contributed to the success of the event by acting as live-in mentors during the event. NSW Chief Scientist and Scientific Engineer Professor Mary O’Kane, was one of the guest speakers at the summit. As a high profile woman working in an engineering field, Professor O’Kane was a wonderful role model for these girls.

Industry is very supportive of this event and the 2011 summit sponsors were Transport NSW, including the major NSW Roads and Rail authorities, as well as Transgrid, the NSW high voltage transmission authority, and Adelaide Brighton Cement.

We also contributed to the University’s ‘Discovery Days’ over January during which several thousand school students each experience, for a day, life as a university student. Our Faculty arranges practical ‘hands-on’ experiences for these students. For example we provide simple equipment such as fans, paper, plastic pipe, sticky tape etc and the challenge is for the students to work in small groups to design and build a system able to transport polystyrene beads from one container to another. The group that can achieve this in the fastest time is the winner. This not only has practical interest, as in all parts of the world bulk materials such as wheat, ore, coal, milk powder etc have to be transported in enormous quantities, but the groups’ main excitement comes from the team work and organisation involved, as well as the technical challenges in building a working system.

Article-Continued from page 1...

“There is no way I would say we are as important as some of those Illawarra oncologists who are applying world-class treatment each day.”

“During the remainder of his term with The Cancer Institute of NSW, Professor Metcalfe has decided to focus on introducing quality control measures into clinical practice, which also includes ensuring radio therapy machines deliver correct dosages.

Another NHMRC Grant for Engineering Physics

Dr Michael Lerch, Prof Anatoly Rozenfeld, Dr Marco Petasecca and Dr Susanna Guatelli (all from the Centre for Medical Radiation Physics in the Faculty of Engineering) received funding of $394,615 over 3 years for the project: Radiosurgery with sub-millimeter x-ray beams: development of the X-Tream real-time beam monitoring and Quality Assurance system. This is one of only three grants awarded to NSW research teams in this round.

The UOW team will be collaborating with Dr Daniel Hausermann and Dr Christopher Hall from the Australian Synchrotron and Dr Alberto Bravin from the European Synchrotron Radiation Facility.

NHMRC Development Grant will certainly contribute to further strengthening the University’s growing research capacity. Congratulations to Dr Michael Lerch, Prof Anatoly Rozenfeld, Dr Marco Petasecca and Dr Susanna Guatelli on achieving these outstanding results.

In photo from left: Dr Michael Lerch, Prof Anatoly Rozenfeld, Dr Marco Petasecca and Dr Susanna Guatelli
Recent Results for The Excellence in Research for Australia (ERA)

On the 11 February 2011, the entire Engineering Faculty including our academic staff, technical and administration staff, and our research students were invited to join together to celebrate the release of the 2010 results for The Excellence in Research for Australia (ERA).

The ERA rating scale scores range from 1-5, the top rating 5 indicating "well above world standard". Across the whole of the University of Wollongong, a total of three ratings of 5 were received, one for the four-digit code 0915 Interdisciplinary Engineering. This is an excellent outcome for Engineering and the results reflect the faculty's strong multidisciplinary research approach.

The rating of 4 indicates "above world standard performance". This rating was received for:

- 0204 Condensed Matter Physics (largely ISEM)
- 0299 Other Physical Sciences (largely CMRP)
- 09 Engineering
- 0905 Civil Engineering
- 0910 Manufacturing Engineering
- 0912 Materials Engineering
- 0913 Mechanical Engineering

Another excellent outcome is outlined below where the Faculty of Engineering sits well within the top "eight" in comparison to ratings from other Australian Universities.

Relative to other Australian universities assessed, our standings are:

- 0204 Condensed Matter Physics- Equal 3rd out of 15
- 0299 Other Physical Sciences- Equal 1st out of 5
- 09 Engineering - Equal 4th out of 31
- 0905 Civil Engineering - Equal 3rd out of 15
- 0910 Manufacturing Engineering - Equal 1st out of 2
- 0912 Materials Engineering - Equal 4th out of 18
- 0913 Mechanical Engineering - Equal 3rd out of 12
- 0915 Interdisciplinary Engineering - Equal 1st out of 4

The Faculty of Engineering has improved our assessments substantially from the 2009 trial and we are aiming to even higher in ERA2012!

For more detailed information about the recent results from The Excellence in Research for Australia (ERA) please refer to the link:

Twelfth East Asia-Pacific Conference on Structural Engineering & Construction

Postgraduate research student from the School of Civil, Mining and Environmental Engineering, Mrs Hua Zhao, recently attended the Twelfth East Asia-Pacific Conference on Structural Engineering and Construction (EASEC-12), which was held in the Hong Kong Convention and Exhibition Centre from 26th to 28th January 2011. This conference was organised by the City University of Hong Kong in cooperation with the Hong Kong Institution of Engineers. More than 700 participants from over 50 countries attended this conference. Keynote speakers are highly internationally recognised in different disciplines related to structural engineering and construction.

Hua successfully presented a paper titled “Experimental Investigation on Using Mesh as Confinement materials for High Strength Concrete Columns”, co-authored by her supervisor, Associate Professor Muhamad Hadi from the School of Civil, Mining & Environmental Engineering.

During this conference Hua also visited Associate Professor Smith of the department of civil engineering, Hong Kong University and Professor Teng of the Research Centre for Advanced Technology in Structural Engineering, Hong Kong Polytechnic University. Both universities take a leading role in the research area of concrete columns confined with FRP.

4th International Conference on Construction Engineering & Project Management

PhD student, Maria Rashidi from the Faculty of Engineering’s School of Civil, Mining and Environmental Engineering (CME) represented the University of Wollongong at the 4th International Conference on Construction Engineering and Project Management (ICCEPM 2011). The event was held from the 16-18 February 2011 and was organised and hosted by the School of Civil and Environmental Engineering and the Faculty of Built Environment, at the University of New South Wales, Sydney. The ICCEPM-2011 aims for academics and professionals to share their ideas and recent findings on all aspects of construction engineering and project management.

During the Conference, Maria Rashidi delivered a paper entitled "Holistic Decision Support for Bridge Remediation" which was co-authored by the Faculty of Engineering’s Associate Professor Brett Lemass. ICCEPM 2011 was Maria’s third international conference paper and she has expressed that it was a good opportunity for her to network with different researchers from around the world.

35th Annual Condensed Matter and Materials Meeting

Physics staff and students from the Faculty of Engineering recently attended the 35th Annual Condensed Matter and Materials Meeting from Tuesday the 1st to Friday the 4th of February 2011. The conference was held at Charles Sturt University in Wagga Wagga, NSW.

This meeting was an opportunity for all condensed matter and materials scientists to meet in an informal setting to discuss the current and future direction of their research and other matters of significance in their field of study.

The format of the event included oral presentations with an emphasis on contributed poster papers. Terahertz was a hot topic of discussion, as well as talks in areas of superconductivity and nanowires. Two of the Faculty of Engineering’s terahertz PhD students successfully won prizes in their research areas:

- Evan Constable - Student Prize for his poster
- Krunal Radhanpura - Graham Bowden Prize for his talk

Congratulations to both Evan and Krunal on this outstanding achievement!
A/Prof Muhammad Hadi visits Tokuyama College of Technology, Japan

In January, 2011, the Faculty of Engineering’s Associate Professor Muhammad Hadi made a visit to Tokuyama College of Technology, Japan.

During his visit, Muhammad delivered eight hours of lectures about engineering design to the final year students and two hours of lectures about his current research. Several research ideas were exchanged with Professor Takashi Hara and other members of staff.

Muhammad had a meeting with the President of the College (Professor Yukihiro Hirano), during which he gave an overview about the Faculty of Engineering and the University of Wollongong. Please see several photos below of Associate Professor Muhammad Hadi’s Tokuyama College of Technology visit.

CME Postgraduate Students host BBQ as Fundraiser for Queensland Flood

The 24th of January 2011 was another memorable day for the University of Wollongong. It was a special day in particular for the Faculty of Engineering’s Postgraduate students who had the opportunity to lend a helping hand to Australians in need. Postgraduate students from the School of Civil, Mining and Environmental Engineering (CME) were the key organisers and hosts of a fundraising Barbecue in honour of the victims of the recent Queensland floods. The event took place on the university premises and was attended by the University of Wollongong’s staff and students, and by many other distinguished guests.

Many of the students hosting the event were international students, and they brought their own international flair to the Barbecue with an array unique dishes representing the various cultures within the university including; Australian, Sri Lankan, Indian, Persian, Chinese and Portuguese. The Barbecue turned out to be a very successful event and the student organisers managed to collect a total amount of approximately $500 in donations at the end of the day. All the proceeds collected at the Barbecue will be directly deposited in the Queensland Flood Relief Fund.

Professor Buddhima Indraratna, the head of School of CME, commended all of the postgraduate students for their tremendous and meritorious efforts in organising such a successful event.

Thanks and appreciation go out not only to the Faculty of Engineering’s Postgraduate students who organised and hosted this event, but also to the other University staff and students who played an important role in participating and contributing to this event.

The donations received at this Barbecue will surely make a great contribution towards helping the many Australian families who were affected by the Queensland floods.
Discovery Days 2011

The University of Wollongong Discovery Days were held on Monday 7th to Friday 11th February 2011, and attracted more than 5,100 prospective students from 140 schools in the NSW and ACT regions. The Discovery Days program is designed for Year 12 students who are eligible for an ATAR and who are interested in future university study.

Discovery Days provide High school students with the opportunity to experience a day in the life of a University of Wollongong student. Upon their arrival on campus, students are provided with campus maps and timetables so they can navigate around the university grounds, attend lectures and participate in other fun activities which are organised during the day.

During the Discovery Day proceedings, The Faculty of Engineering ran a Design and Build Competition, called– “Capture and Transport of Styrofoam® Beads. Academic and technical staff from the School of Mechanical, Materials & Mechatronic Engineering (MMM) and the School of Civil, Mining and Environment Engineering (CME) divided the students into groups where their task was to design a “Test Rig” constructed from a bag of goodies containing various items (a fan, paper, plastic tubs, Styrofoam®, mesh, stormwater pipe, scissors and sticky tape). The aim of the exercise was to design and build a device to transport as many Styrofoam® beads as possible in 30 seconds from one plastic tub to another. There were many clever designs that came about during the activity which is a very positive indication that there are many young, bright, and creative minds that could become University of Wollongong’s engineers of the future.

Discovery Days aim at helping to better prepare and inform High School students prior to them choosing their course and University preferences later in the year. The event is also a way for high school students to interact with other students and University of Wollongong staff while at the same time having a great day of fun!

For more information about Discovery Days, please refer to the links below:

Future Students Facebook page: www.facebook.com/uowfuture
Flying High with Engineering-Orientation Day 2011

Just over 530 new students joined the Engineering Faculty for Autumn 2011, which made for a huge rabble of students at the 2011 orientation activity “Flying High in Engineering”. Over 300 students came along for the 2011 Engineering First Year Orientation Program on Thursday 24th February 2011. The new students first met at the Mckinnon Building where the Dean of Engineering, Professor Chris Cook welcomed the students on behalf of the Faculty and introduced the Heads of School and Faculty Staff. The Faculty of Engineering’s Sub-Dean, Rodney Vickers introduced the students to University life and the key staff in the Faculty such as Virginie, Ashleigh and Jessica, then the students spent some time with the discipline adviser getting into the important study information.

Once the formal introductions of the orientation were over, the students were given orientation activity as a way of getting to know each other and to learn how to navigate around the Faculty of Engineering. This year’s orientation activity theme was “Flying High with Engineering.” Students were split into groups and set the task of building paper aeroplanes. At the completion of the paper making exercise the student groups progressed outside to the Faculty of Engineering Airport test flight area, the groups then completed for the longest flight. The winning plane, piloted by Scott Shields, flew a whopping 16 metres! Associate Professor Rodney Vickers presented the winning team with certificates and vouchers for surfing lessons with Pines Surfing Academy. The winning team was last seen swapping names and numbers - mission accomplished!

The Faculty of Engineering sends out a big thank you to our technical staff, particularly Frank Crabtree for organising the cooking of over 600 sausages, scores of veggie patties and kilos of onions to feed our hungry new students during the Engineering orientation barbecue.

A huge thank you also goes out to our Administration staff, especially to Julie Curcio, Marina Evans and Anji Phillips for organising the orientation lecture and orientation day activities. The contribution and enthusiasm from our Faculty staff helps enormously in making our new students feel welcome and at ease as new members of the Faculty of Engineering.

Engineering Orientation BBQ...

Paper plane flying completion...

The winning team with Associate Professor Rodney Vickers, Sub-Dean of the Faculty of Engineering.