Message from the Dean

This year has seen another very healthy intake of new students entering our Engineering and Physics Degree programs. The good reputation of the University of Wollongong and the Faculty of Engineering in particular has resulted in a larger number of students requesting admission to our degrees in 2012. So we again have had to lift our academic requirements for entry to limit our overall numbers to make sure we have enough capacity in our laboratories and amongst our staff to ensure we can provide a high quality teaching experience to every student.

We have been very fortunate to be able to open many new laboratories in the University’s new $61 million SMART (http://smart.uow.edu.au/) facility to benefit our students. These laboratories have also been fitted with new equipment, and so the practical experience all our students receive, with their access to modern equipment they will find in Industry, continues to be of a very high standard.

This year was the first year of the new ‘deregulated’ environment that Universities everywhere in Australia are now required to operate in. This means that from this year onwards the Government has removed ‘caps’ on University enrolments, and that all Universities are now free to enrol as many students they wish in whatever degrees they wish. So it was even more difficult than usual to predict where new students would choose to attend Universities, and which courses they would choose. However, in the case of University of Wollongong there was very little change in student demand, and in the case of Engineering and Physics there was an increase. This is despite the fact that some Universities offered far more places in 2012 than they had ever offered before. It is a tribute to the University that despite this radical shift in Government policy there was no shortage of talented students choosing to study here.

The Faculty also did very well again in International enrolments, with another significant increase in undergraduate enrolments this year from overseas students. This is despite the high value of the Australian $ relative to other currencies which has made it more difficult for overseas students, and their parents, to fund study in Australia. Nevertheless the overall percentage of international students in our undergraduate courses has now increased to about 15%, so these international students receive a very ‘Australian’ experience during their time here, and domestic students are enriched by the sharing of a common teaching and learning experience with their overseas colleagues. We are again proud to receive excellent students from several overseas countries, with students from China, India, Indonesia, Malaysia, Vietnam, Bhutan, and many other countries amongst our student population.

Continued next page.....
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These students have the opportunity to participate in international competitions, such as the Formula SAE racing Car (http://www.uow-fsaecom), and for this year, the International Solar Decathlon (http://sbrc.uow.edu.au/sd/UOWandTAFE/index.html). These international student competitions enable our students to interact with the world wide community of students from the world’s best Universities and greatly enrich their University experience.

Annual Engineering Studies Days

The 11th Annual Engineering Studies Days were held on 1st and 3rd November 2011. The Engineering Studies Days were well attended by over 250 Year 11 High School students from 24 schools in the Illawarra and Southern Sydney regions. The aim of the Engineering Studies Days is to assist students in their various assessment tasks for Engineering Studies and other Senior Technology subjects that they may be studying.

Bob Wheway once again coordinated a team of staff and student volunteers from the different Schools in Engineering as well as the School of Electrical, Computer and Telecommunications Engineering to provide various fun activities for the students to partake in. The program consisted of the following activities:

- Testing of concrete
- Desalination of seawater with reverse osmosis
- Mechanical testing of various materials
- Rock testing
- Computer control of machines
- Generating electrical power
- Formula SAE Team car simulation

The teachers and students from the various high schools all enjoyed the activities. Special thanks to all the volunteers that contributed their time and expertise into making this an enjoyable experience for the Year 11 students and teachers.

MMM Success

Professor Kiet Tieu from the School of Mechanical, Materials and Mechatronics (MMM) Engineering has recently been honoured with two awards – the Quangcheng Friendship Award by the Jinan Municipal’s Government and the Qilu Friendship award by the Shandong Provincial People’s Government, China. He was nominated by Jinan Steel for the successful implementation of the work arising from the contract research, “Flatness and shape control in the hot strip mill”, which has contributed to a significant improvement of the product quality. Another key researcher involved in the research was UOW’s Dr Hongtao Zhu from the School of Mechanical, Materials and Mechatronic Engineering.

The contract research was initiated by the Vice President of Jinan Steel Company, Dr Weihua Sun, who was awarded a Provincial Government grant to improve the quality of their hot strip product in terms of the shape and flatness. The UOW researchers have successfully introduced artificial intelligence techniques to improve the control model in the company’s new hot strip mill. The model can predict accurately the interacting effects of multitude of parameters and therefore can control the strip quality to satisfy stringent customer’s specifications. It has been beneficial to collaborate with Jinan Steel as UOW has an opportunity to work with dedicated and hard working Chinese researchers/engineers on new equipment for practical applications. Personnel from both UOW and Jinan steel have been able to learn from each other, and cooperate to carry out successfully the technology transfer.

The Awards are significant to the researchers as they represent an appreciation of the research outcomes of the project, and a continued collaboration and friendship between the UOW, Jinan Steel, and the Chinese research community.
In November last year the UOW F SAE Team officially launched the 2012 Design of their car.

For the 2012 campaign, the goal is to achieve a podium finish in the Australasian competition with the prospect of competing internationally in 2013.

They plan on achieving their goal with a reliable, lightweight and tuneable vehicle, with more time for testing, tuning and driver training.

UOW Formula’s SAE Performance at Werribee

UOW Formula, the University’s F SAE Team had another successful campaign at last year’s Australian Championship at Werribee. This campaign was the Team’s 15th – 11 in Australia and 4 in the United States.

For the first time, the Team ran a “second year car” that is it was not completely new – it was based on the 2010 car.

As a result, the Team accepted a 50 point penalty in the Design Event. Nevertheless, the Team still performed creditably and achieved the following results:

<table>
<thead>
<tr>
<th>Category</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost</td>
<td>3rd – 80.0/100</td>
</tr>
<tr>
<td>Design</td>
<td>19th – 95/200</td>
</tr>
<tr>
<td>Presentation</td>
<td>8th – 46.9/50</td>
</tr>
<tr>
<td>Skidpad</td>
<td>8th – 36.4/75</td>
</tr>
<tr>
<td>Acceleration</td>
<td>12th – 36.0/50</td>
</tr>
<tr>
<td>Autocross</td>
<td>6th – 56.1/100</td>
</tr>
<tr>
<td>Endurance / Fuel</td>
<td>8th – 198.0/425</td>
</tr>
<tr>
<td>Overall</td>
<td>6th – 548.4/1000</td>
</tr>
</tbody>
</table>

2011 Engineering Promotions

Congratulations to the following members of academic staff for their promotions. They are:

Dr Long Nghiem to Associate Professor,
Dr Lip Teh to Senior Lecturer, and
Dr Vinod Jayan Sylaja to Senior Lecturer.

In addition Dr Senevi Kiridena has been confirmed in a Continuing Appointment.
Learning Labs – Gifted and Talented kids

Students attending the inaugural Learning Labs were welcomed by the Dean of Education Professor Paul Chandler.

The Faculty of Education hosted various workshops over 2 days from 12th to 13th January for 300 high achieving students from Years 7 to 10 from the Illawarra and South Coast region.

The aim of the Learning Labs is to provide school-age students the opportunity to challenge their minds.

In parallel with this Brad Stappenbelt from the Faculty of Engineering devised and ran the Engineering workshops. Brad gave these primary school students a taste of engineering by running an Exploring Engineering workshop held in the thermodynamics and hydraulics laboratories inside the SMART Infrastructure Facility. This included hands on experiments in aerofoils, the power of the sun, a wave tank, the FSAE racing car, and experiments to test the students’ designs of an egg parachute whose success was determined by whether or not an egg tossed off the top floors of SMART could land without breaking in the car park.

Feedback from the students and their parents was very positive and it is planned to make the Learning Labs an ongoing UOW holiday program in the summer and winter breaks.

Special thanks to Brad, PhD student Daniel Daly, Stuart Rodd from the workshops, and the UOW FSAE team for making the inaugural program a success.


Honeywell Summer School

In December over 120 students attended workshops organised by the Faculty of Engineering and SECTE (Faculty of Informatics School of Electrical, Communications Telecommunications Engineering) as part of the Honeywell Engineering Summer School (HESS). The aim of the workshops is to bring together Year 11 students who are interested in pursuing engineering as a career. In past years students have come from all over NSW and the ACT, including regional and city centres such as Broken Hill, Tumbarumba and Inverell.

Throughout the week-long program, students are introduced to five universities, including University of New South Wales (host university), University of Sydney, University of Western Sydney, University of Technology Sydney, and University of Wollongong.

Whilst here at UOW the students participated in various activities and also spent time at BlueScope to see engineers at work.

Thank you to Marina, SECTE and Engineering staff for running the various activities.
CC2011 Conference

Associate Professor Muhammad Hadi attended The Thirteenth International Conference on Civil, Structural and Environmental Engineering Computing (CC2011) which was held concurrently with The Second International Conference on Soft Computing Technology in Civil, Structural and Environmental Engineering (CSC2011). The conference was held in Chania, Crete, Greece on 6-9 September 2011. Muhammad was on the organising committee of the conference and chaired two sessions. He also presented two papers the first co-authored by PhD candidate Mr Thaer M.S. Alrudaini entitled “Preventing the Progressive Collapse of Reinforced Concrete Buildings”. The second paper with title “Seismic Modal Response Histories of Two-Way Asymmetric Adjacent Buildings with Soil-Structure Interaction Effects Subject to Earthquake Excitations” was co-authored by PhD candidate Mr M.Eren Uz.

IESL Young Members Forum

Congratulations to Niroshan Karunarathna for receiving first place in the young members’ section paper competition by the Institute of Engineers in Sri Lanka (IESL) for Annual session 2010.

The title of Niroshan’s paper was, “Analysis of Truss Type Steel Bridges in Sri Lanka”, and is based on the optimisation of truss type steel bridges by 3-D finite element modelling using SAP2000. Scaled down model bridges were made and tested to observe failure loads and modes. These results and details of historic failed bridges were used to validate SAP models. Span vs. Tonnage graphs were obtained for the selected truss type bridges which are commonly used in the country. The weights of the actual existing bridges are presented in the same graph and the deviation from the graph was discussed. Further analyses which were done to improve the lateral stability of truss type steel bridges and obtained results also were presented in the paper.

This was a joint paper with three other members and based on Niroshan’s Master Research. Special thank you to Dr. K Baskaran for his supervision.

Niroshan was presented the award in October last year at the Bandaranaike Memorial International Conference Hall (BMICH) in Sri Lanka.

He plans on using the knowledge gained from his MSc research for his Doctoral thesis. Niroshan is currently studying a PhD at UOW on Railway Bridge Asset Management, funded by the CRC for Rail Innovation and is supervised by Associate Professor Richard Dwight and Dr Lip Teh.

Australia Day 2012

At this year’s Australia Day celebrations, two of our Miners - Ting Ren and Zhongwei Wang were duly ‘honoured’ by our Hon PM Julia Gillard.
Women in Engineering Summit

So you think you can engineer?

That was the question asked of a group of young women with a keen interest in science and mathematics. They were given an opportunity to explore the various options a career in engineering has to offer at the Women in Engineering Summit held in January at UOW.

The four day camp was open to senior high school girls from NSW and ACT high schools.

The summit was officially opened by the NSW Parliamentary Secretary for Transport and Roads, John Ajaka. Mr Ajaka quipped that he held some right to be undertaking the opening as he was the father of six daughters – two of whom had hopes of undertaking engineering.

He urged the young women to seriously consider a career like engineering where was there was a clear shortage.

“Start looking at your employment options from today,” he told his audience.

Other guest speakers at the event included RailCorp environmental engineer, Ms Fiona Christensen, and UOW Vice-Chancellor Professor Paul Wellings.

Summit organiser Dr Montse Ros, highlighted how there was fewer than 7 per cent of females represented in the engineering workforce in Australia.

“Women are equal users of technology, why can’t they be creators of it as well? The exciting thing about being an engineer is that you are able to take the discoveries of science and apply them to your designs.”

The students had the opportunity to experience a range of engineering disciplines including Environmental, Civil, Mining, Mechatronics, Materials, Mechanical, Electrical, Computer and Telecommunications Engineering. Students also visited various worksites to see engineers in action.

A big thank you to industry sponsors Roads and Maritime Services, RailCorp, Transgrid, Adelaide Brighton, BlueScope Steel and Illawarra Coal. Congratulations also to the following staff for making the Women in Engineering a success: Monste Ros from SECTE, Sandra Cram from MMM, Guanghui Meng from CME, Mitra Safavi-Naeni from Physics, as well as Marina and Ashleigh from Engineering administration, Tim from SECTE, and the large number of other academic and technical staff and students.

Conversation Groups

Wednesdays and Thursdays (in session) 12.30pm to 1.30pm room 6.206
Autumn Orientation – Flying High with Engineering

Enrolment numbers for the Faculty of Engineering were up again with over 540 new students joining the Faculty for Autumn session 2012. Many of these students attended the 2012 Engineering First Year Orientation Program on Wednesday 22nd February 2012.

The orientation activities began with the new students first meeting at Building 40 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 Zizi, 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 an 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 planes made out of balsa wood. At the completion of the plane making exercise the student groups progressed outside to the Faculty of Engineering test flight area, the groups then competed for the longest flight. The winning plane, Team Laser, flew a record 18.5 metres! Rodney presented the winning team with an Engineering Goodie bag.

Representatives from the various Engineering Clubs and Societies were also present to meet and greet the new students.

Highlights of the program were the FSAE car racing around the area outside of building 8, and also the Physics Society with their free ice cream made with liquid nitrogen.

The Faculty of Engineering sends out a big thank you to our technical staff, particularly Stuart Rodd for organising the Engineering Orientation BBQ.

A huge thank you also goes out to our Administration staff, especially to Julie Curcio, Marina Evans, Ashleigh Dewar, Jessica Brown and Rebecca Wearne for organising the orientation lecture and orientation day activities, also thank you to the Engineering clubs and societies, and Engineering O‐Hosts for making our new students feel welcome as new members of the Faculty of Engineering.