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OVER THE PAST FEW YEARS, Engineering eze has established excellent working relationships with companies, professional organisations, tertiary institutions and government agencies, all of which are vitally important to the success of our work. I have enjoyed meeting with representatives from a wide range of engineering-related organisations – together we have initiated Engineering eze's core projects.

As we look forward to the next months of operation, our aim is to better connect with these groups. We'll work to ensure we are fully aware of their needs and the opportunities they can offer to help us increase enrolments and, importantly, address the balance of graduates across the NZDE, NZDEP, BEngTech and BE(Hons).

This year, our focus is employer engagement with engineering education and we encourage you to get in touch if you'd like our support for the work you're doing in this area.

Sir Neville Jordan
Chair, Engineering eze Steering Group

Initiatives undertaken through the Engineering eze programme contribute directly to the achievement of the Government's Business Growth Agenda priority of building a more productive and competitive economy.

Record number of female engineering degree students

A recent radio report on record numbers of women enrolling in engineering degrees focused on Auckland and Canterbury.

At Auckland University, the number of women studying undergraduate engineering has almost doubled in nine years, from about 470 in 2008 to 900 this year. The University aims to have women make up a third of its engineering students by 2020 and 40 percent within the next decade.

Dean of engineering, Professor Nic Smith says many were interested in careers that help people and new courses – such as biomedical engineering – offer that. "Among our female engineers we see an interest in the difference that they're making, and engineering technology has an enormous power to make a huge difference."

At Canterbury University, first-year female enrolments in engineering have also nearly doubled in the last ten years, to just over 210 last year. Professor Philippa Martin, associate dean for postgraduate engineering, credited more female role models for boosting the numbers.

Both universities have dedicated organisations that support female engineers. Both professors say that getting girls interested at a young age is key, and that a range of coding, robotics and science programmes for girls has sprung up in the last few years.

For Robyn Thorpe, 11, from New Plymouth, it was after going to GirlGuiding NZ's Wicked Science Discovery Camp, an engineering programme for girls across the country, that inspired her to consider a path in engineering. "It was great – I learnt that engineering isn't just building bridges and roads and it was actually [solving] world problems," she says.

www.radionz.co.nz/news/national/339191/record-number-of-women-enrol-in-engineering

THE DOWNER NMIT STUDENT ROAD TRIP



Twenty-two students from the Nelson Marlborough Institute of Technology (NMIT) were recently hosted by Downer on a two-day road trip to Kaikoura where Downer is part of the North Canterbury Transport Infrastructure Rebuild (NCTIR) Alliance. This relationship offers local site visits that align with the curriculum, making the theory real.

More...



FEATURED INDUSTRY LINKS CASE STUDY

BEngTech – A STRONG ‘WORK-READY’ FOCUS

Control system engineer David Hale says a BEngTech, with its strong focus on industry and being ‘work ready’, provides a strong foundation for employment in his field.

“We wear a few hats,” he says. “You have to be a bit process engineer, a bit mechanical engineer, a bit electrical and then a bit software engineer – you have to understand every part of the system to control it.”

Read more... www.engineeringe2e.org.nz/Employers/Case_study.cfm?ID=72

MICRO-CREDENTIALS INFO SHEET

With many local and international models, and current NZQA and other pilots, to draw upon, Engineering e2e is looking closely at opportunities to offer micro-credentials across the spectrum of engineering education. We are considering five potential pilots, with a priority on the uptake of the NZDE in engineering disciplines that have been under-served, and for people in employment.

A background of this initiative can be found in our recently published info sheet **Micro-credentials in engineering education: Finding ways forward in the NZ context**



During the year, Downer offers practical work experience to students through its 12-week summer intern programme and through its ‘Five days, five cadets, five departments’ taster week. The road trip will be this year’s highlight, immersing students in a significant project.

This year, the scale of the Kaikoura earthquake recovery works offered a unique learning environment for the diploma students and provided an insight into their potential future career pathway as civil engineers.

Downer cadets Joel and Mitchell, NMIT graduates, were challenged to organise the trip, work with NMIT to establish strong learning outcomes and connect with NCTIR to offer a wide range of sites and stories to showcase the amazing work undertaken in the region. Senior project engineers joined the group to talk about what happened, from the initial ground response hours after the earthquake to the challenge of reconnecting Kaikoura by rail and road, reconstructing the marina to return tourism and commercial traffic and undertaking slip removal, slope protection work and sea wall and road reconstruction to get Kaikoura open for business.

“The opportunity of being on the various work sites with the people in charge has been one of the highlights of my education so far,” says NMIT student Margo.

“We need graduates ‘job ready’ and fit for business, so industry has a responsibility to support education providers to offer more than just the theory,” says Paul Duffy, Downer general manager infrastructure projects. “Downer has stepped up, offering greater access to sites and engineers across New Zealand, giving students a real taste of what their future could look like. Engineering is a great way of life – we should be showcasing our profession to the next generation.”

OTAGO POLYTECHNIC: RESOURCES FOR TEACHING MATHS

The six Secondary-Tertiary Pathways Project (STPP) institutions are busy delivering programmes aimed at engaging and preparing students for tertiary engineering study. This month we look at Otago Polytechnic.

Otago Polytechnic’s STPP team is developing resources for teaching maths and science within an engineering context, while building links with schools and industry.

The team is working with secondary school teachers on a research project aimed at teaching Maths, Science and Technology in an engineering context. So far they have completed a literature review into topics likely to excite student interest in STEM-related learning.

Engineering Programmes Advisor John Findlay says it was tricky finding ideas that interest students and also relate to engineering-relevant NCEA Achievement

Standards. They came up with six topics, trialling the first in Term 2. This pilot lesson with Kaikorai Valley High Year 13 Calculus students involved a practical demonstration of conics (the maths around ratio changes as sand flows out of a cone) to give students practical insights into the application of calculus.

“The students were really interested,” John says, “and we could show them other aspects of engineering also.”

Once piloted and tweaked, all resources will be freely available for other schools throughout the country to use. “We want this to be sustainable – a system that everyone uses and adds to, so that it doesn’t have to be done as a funded project again.”

Find out more at www.engineeringe2e.org.nz/Employers/Case_study.cfm?ID=75

IF YOU HAVE ANY ENQUIRIES, PLEASE CONTACT US: ENGINEERING E2E PROGRAMME TEAM

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