

WORK WITH US TO HELP CREATE THE ENGINEERING GRADUATES THAT NEW ZEALAND NEEDS



Engineering e2e is now 'business as usual' for TEC

From 1 March, Engineering e2e becomes 'business as usual' for the Tertiary Education Commission (TEC), with each of our significant projects finding a home within one of TEC's new teams.

Thank you to everyone involved with Engineering e2e over the past four years. We are hugely grateful for the advice and assistance given by engineering employers, engineering educators, professional organisations and others. The willingness of stakeholders to engage and collaborate has led to the programme's achievements. These relationships promise to continue to benefit the profession into the future.

By midway through the programme, Engineering e2e achieved the government's goal of an additional 500 engineering graduates. While this was an important step forward, there was still a major shortfall in graduates from our New Zealand Diploma in Education (NZDE) and Bachelor of Engineering Technology (BEngTech) programmes – graduates with qualifications that meet New Zealand's current engineering employment needs.

However, recent trends are positive, showing a general rise in enrolments in tertiary engineering programmes. A look at TEC's enrolment statistics for 2013-2017 gives a sense of what graduate numbers will look like over the next few years.

Key trends include:

- The number of learners enrolled in the NZDE, BEngTech and Bachelor of Engineering (Honours) (BE[Hons]) increased by over 25% between 2013 and 2017.
- Domestic students made up 74.3% of enrolment growth between 2013 and 2017.
- The growth in domestic students was concentrated in the BE(Hons) (up 31%) with enrolments in the NZDE up just 7.4%

and the BEngTech declining (down 5%).

- Participation by women in all engineering programmes grew at twice the rate of their male peers between 2013 and 2017 (47.5% compared with 21.8%) with increases in each programme subtype.
- Engineering enrolments at universities increased by 28.9% and at ITPs by 12.5% between 2013 and 2017.
- Enrolments by Māori in BE (Hons) increased between 2013 and 2017, however, enrolments in other subtypes decreased slightly.
- Enrolments by Pasifika in all engineering programmes have steadily increased overall between 2013 and 2017.

These trends are heartening, particularly in the current context of generally declining enrolments in Level 6 and 7 programmes overall, and the slowing growth at Level 8 between 2013 and 2017.

The Engineering e2e programme has been about working together to address the shortfall in engineering graduates and to give engineering the support and profile it deserves. Our research and collaborative approach have led to initiatives that now have the potential to permanently change engineering education and employment in New Zealand.

By working together we've seen some genuine progress – we now look forward to meeting the first degree apprentices, seeing skills and experience acknowledged through micro-credentials, and welcoming more Māori, Pasifika and women into the engineering profession. And, with key projects still underway, there's definitely more to come.

IN THIS ISSUE . . .

- *Micro-credentials;*
- *Graduate capability;*
- *A diverse engineering workforce;*
- *Degree apprenticeships & regional hubs.*

Progress updates from our key initiatives

MICRO-CREDENTIALS

Five pilots of micro-credentials are underway, and each will be completed by the year's end. These pilots are led by Unitec, the New Zealand division of the Institute of Public Works Engineering Australasia (IPWEA), Otago Polytechnic, Manukau Institute of Technology (MIT) and the Electricity Engineers Association of New Zealand (EEA).

Most pilot teams are currently finalising their planning for delivery and confirming that their models align and support existing engineering education pathways.

During February and March, the pilot teams are briefing the New Zealand Board for Engineering Diplomas (NZBED) about how their approaches contribute to the quality and relevance of the NZDE and will convene for a further community of practice workshop to validate their approaches with others involved in micro-credentials.

GRADUATE CAPABILITY

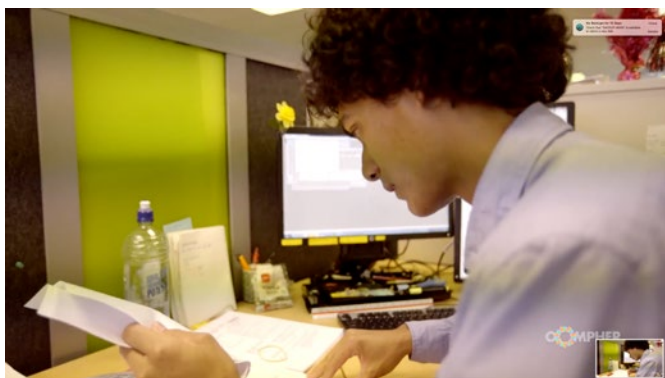
The project team has completed a round of focus groups with educators and employers. The results of the project are being presented in a series of reports.

One of these reports is *The Good Practice Guide*, which sets out what effective teaching and learning practice looks like in engineering education and the structural changes needed to make engineering education work better.

Another – the *Engineering Education Practice* report – sets out how well tertiary education organisations (TEOs) align with these practices and links that to analysis of the educational performance.

A Roadmap report will set priorities for the engineering education system to produce work-ready graduates and raise the visibility of the NZDE and BEngTech.

A DIVERSE ENGINEERING WORKFORCE



The Waikato-Tainui Research and Development College has partnered with TEC in a project to increase the number of engineering enrolments from 2020 onward through a project

based in the North Island. This project includes a numeracy intervention for Kura Kapapa Māori Taura students based at Rākaumangamanga Kura Kauapapa Māori.

The second part of this project will offer and deliver a cultural competence micro-credential or digital badge to engineering tutors at MIT and Wintec. This is the first of its kind and has the potential to be available in English and Te Reo. The team members for this initiative are **Taamoko Ormsby** (*pictured*) and Dr Damon Witten.

DEGREE APPRENTICESHIPS & REGIONAL HUBS

Phase 2 of the degree apprenticeship initiative is finding more ways to involve employers in developing the staff they need. A pilot Bachelor of Engineering Technology degree apprenticeship in Asset Management is underway this year, with some employers having already employed apprentices in anticipation of enrolling them in the programme.

This apprenticeship pathway relies on employers within the asset management industry providing apprentices with a wide range of experiences and learning opportunities in order for them to satisfy the required learning outcomes and gain the BEngTech's twelve graduate attributes.

However, many employers are from businesses that are too small or too specialised to provide all the learning opportunities an apprentice would need – and this is where a regional hub could prove most valuable.

Hubs can provide a mechanism for employers in different parts of the asset management process, or, with different specialties, help to group together and jointly support apprentices through their learning programme.

Each hub would have a manager who facilitates the movement of apprentices between employers and projects, ensuring a diverse and effective learner experience.

Institutes of technology and polytechnics (ITPs) work with hubs, hub managers, and apprentices to negotiate comprehensive Individual Learning Plans (ILPs), outlining which learning outcomes will be delivered in the workplace and which will be delivered by the ITP.

Employers benefit from being able to participate in the apprenticeship programme while committing to delivering only those learning outcomes that are pertinent to their business.

FIND OUT MORE

This is our final newsletter. Communications about all Engineering e2e projects will continue on our website – www.engineeringe2e.org.nz – until at least July, and through general TEC communications.