

# The Secondary-Tertiary Pathways Projects

Engineering e2e is funding six collaborative initiatives between secondary and tertiary institutions to deliver programmes to prepare and pathway students into tertiary engineering study.

## Unitec's West Auckland Engineering Pathway initiative



Unitec Institute of Technology is partnering with

six West Auckland secondary schools and a number of engineering firms to create a vocational pathway into engineering qualifications. The programme uses engineering problems to contextualise maths and physics, with courses co-created and co-delivered by secondary school teachers and Unitec staff. Students will then gain entry into the NZDE and/or the Bachelor of Engineering Technology.

The programme includes professional development for school maths and physics teachers – key influencers in the choices that secondary students make. Teachers will be linked by IPENZ, the National Association of Women in Construction and other industry bodies with commercial engineering companies.

## Otago Polytechnic's project with schools and Otago University



Otago Polytechnic's project involves

working closely with Otago secondary schools and the University of Otago to build applied, project-based science and maths learning into the school curriculum. This is achieved by developing modules that can be taught as part of NCEA maths and science studies.

Learning resource kits linked to NCEA standards are being developed on these topics, in collaboration with secondary teachers. They include learning activities, assessments, and specialist equipment if required. The resources developed will be made available to any schools or institutions nationwide.

The project includes a number of events for Year 10-13 students, including Engineering Days where engineers and Otago Polytechnic engineering students share their passion and projects, and talk about study pathways and career

options. There are also events showcasing engineering at community events and in community facilities, and the STAR newspaper-funded one-week course in engineering problem-solving.

## Ara Institute of Canterbury's in-schools programme



In 2016, staff from the Department of Engineering

and Architectural Studies at Ara Institute of Canterbury taught electronics to 27 students at Papanui High School for two periods a week, and in turn the students visit Ara for two sessions a week, where they use the extensive electronics facilities.

The programme uses hands-on electronic activities combined with relevant theory to engage students with the course material. Support from the Canterbury Development Corporation and local industry has seen visits to local industry so students can see some of their future career possibilities.

The TEC funding will be used to expand this programme into more high schools in the Canterbury region.

## WITT's in-schools programme



The Western Institute of Technology at Taranaki's initiative

gives Year 13 students the opportunity to study NZDE engineering papers for half a day a week within school time. Students from Year 11 on will also be actively encouraged by their school and WITT staff to consider an engineering programme.

The first paper is a taster, examining core ideas behind both electrical and mechanical engineering and will engage with WITT's strong local community of engineering companies as it evolves.

It is hoped the hands-on nature of the engineering programme will excite and engage students, and be particularly attractive to female, Māori and Pasifika students.

## NorthTec's in-schools programme



This project engages Year

10-13 students via introductory engineering tasters. This leads to a part-time programme in 2018 for Year 13 students, where they can gain an early start in a two-year New Zealand Diploma in Engineering [NZDE] in Civil or Electrical. They will also have the opportunity to apply for cadetships with engineering firms.

Working with schools and communities both locally and in remote regions of Northland, this project will also link students with high-profile and experienced engineers as mentors.

## Wintec's Year 13, PD & In-schools programme



Wintec is running three models as

part of its engineering secondary/tertiary partnership::

- An integrated engineering programme for Year 12-13 students, offering engineering contexts and project-based learning assessed by maths and physics standards. Students spend 15 hours a week at school and 12 hours a week at Wintec. In 2017 the project will include Civil, Mechanical, Electrical and CAD.
- A holiday and PD programme in response to a need identified by Waikato Tainui. In the first two days, teachers and experts explore ways to contextualise (engineering) maths and physics and use a project-based learning approach. In the final three days, students participate in a project offering a taste of the different engineering options.
- An in-school programme offering students the opportunity to achieve Standards that are pre-requisites to further tertiary engineering study.

## FIND OUT MORE...

Progress reports on all Engineering e2e initiatives can be found at [www.engineeringe2e.org.nz/Progress](http://www.engineeringe2e.org.nz/Progress)