

# Engineering





'I take pride in being part of inspiring and motivating the next generation of civil engineers, instilling in students a sense of curiosity, enthusiasm, and dedication to the field.'

# Swetha



Civil Engineering Tutor

Civil Engineering tutor Swetha joined Whitireia and WelTec in 2023, bringing with her a vast background of experience, and a passion for instilling in students a sense of curiosity, enthusiasm, and dedication to the field. Swetha teaches land surveying, geotechnical engineering, highway engineering, structures and materials (civil) courses.

## What are the main components of the Civil Engineering programme?

We offer diplomas in civil and mechanical engineering. The main components of these programmes are the core engineering courses, mathematics, laboratory work, and design projects.

In civil engineering, we offer courses related to geotechnical engineering, water and waste management, highway engineering, structures, materials, fluid mechanics, land surveying and mathematics.

## What sort of skills do you teach students studying civil engineering?

Students studying engineering develop a wide range of technical, analytical, and interpersonal skills.

## Are there any opportunities for students to connect with industry?

We organise multiple site visits for students throughout the year. Last year, our civil engineering students visited Seaview Wastewater Treatment Plant to provide them

with firsthand exposure to sewage treatment processes and operations. They also visited Totara Park, Moonshine Bridge and Harcourt Park. We had a guest lecture by Fulton Hogan team to gain industry insights into emerging technologies, where diverse perspectives and experiences are shared to enrich the learning experience.

## What career opportunities and pathways are there for graduates?

Graduates of our civil engineering programme have a variety of career opportunities and pathways available to them: civil engineering technician; construction inspector; CAD technician; surveying technician; estimator for project planning, budgeting and resource allocation; engineering assistant and land development technician. Graduates can also pursue careers in land development, assisting with site planning, land use analysis, and environmental impact assessment for residential, commercial, and industrial development projects.

## What do you enjoy most about teaching?

I enjoy the opportunity to share my expertise and passion for civil engineering with students, introducing them to the principles, theories, and practices that form the foundation of the profession.

Follow the QR code below to read the full story.





# Civil engineering students at Whitireia and WelTec | Te Pūkenga tackle New Zealand's housing and three waters needs with new build projects

Published on 18 May 2023

Civil engineering students at Whitireia and WelTec have taken on some of New Zealand's toughest infrastructure issues around housing and three waters with their recent practical project assignments.

The ākonga (learners) have been designing housing subdivisions on real-life sections which have completely self-sustainable water capture and reticulation systems, making them more resilient and self-reliant in weather or other natural events.

The subdivision proposals have been done for sites in Newlands and Khandallah in Wellington, on Waiheke Island in Auckland, and in Central Otago.

The subdivision projects involve research on legislative requirements, environmental considerations, geotechnical information, must incorporate project and construction deadlines, detailed technical drawings and very importantly - design processes for the harvesting of rainwater for drinking water, and storm and wastewater management.

"These projects are problem solving some of New Zealand's biggest civil engineering challenges and the student gets significant real world experience in bringing these solutions to life," says Mary-Claire Proctor, Head of School Innovation, Design and Technology at Whitireia and WelTec

"Students are focusing on three water systems design, the implications of climate change, and the current and future water issues New Zealand is facing.





"It is critical that the students completing their engineering qualifications can solve these problems because New Zealand is experiencing frequent flash floods, a shortage of freshwater, and an increase in wastewater, and there is an acute shortage of civil engineering technicians in the field to address these issues and facilitate our country's adaptability to the implications of climate change.

"As we know, water is a lifeline for humans and the need for drinking water will soon increase due to the growth of the population. It is critical that our graduates can explore and implement new ways and means to relieve pressure on our freshwater bodies.

"The hands-on experience that students get at Whitireia and WelTec | Te Pūkenga makes them very employable after study," says Mary-Claire.

"It has been very valuable for me to have developed my practical skills as part of my study," says Mominur Rahman, a student in his second year of the New Zealand Diploma in Engineering. "Getting experience of the regulatory system, undertaking feasibility and risk management studies, assessing health and safety, as well as using professional engineering applications and programmes will all make it much easier for me to get work once I have completed the diploma because it mirrors what actually happens in the workplace."

# New Zealand Diploma in Engineering - Mechanical

 Level 6
 2 years, full-time (part-time options)
 \$7,504 per year (indicative for 2025 intake)
 \$29,120* per year (indicative for 2025 intake)

Become a fully qualified mechanical engineering technician. Put engineering theory into practice and perform technical mechanical operations to professional standards. Become the driver of change, working on projects that are innovative and essential. The diploma is accredited both nationally and internationally.

## What you will learn

- Mathematics
- Engineering fundamentals
- Drawing
- Report production
- Engineering management

The mechanical engineering strand also teaches students the following:

- CAD skills
- Mechanics
- Materials
- Fluid mechanics
- Thermodynamics and heat transfer
- Strength of materials
- Manufacturing processes
- Electrical Fundamentals

## More detail about this qualification

Students will gain the skills and attributes required by [Engineering New Zealand](#), which are benchmarked internationally and accredited to the [Dublin Accord](#).

## Career options

Become an engineering technician in the mechanical engineering field or design engineer.

Gives entry to the Bachelor of Engineering Technician qualification with 180 credits from the NZDE being cross-credited.

## Entry requirements

### Domestic

#### Under 20

NCEA Level 2\* and a minimum of 48 credits at level 2 in four subjects including at least 12 credits in mathematics (preferably achievement standards in algebra, calculus or trigonometry), or equivalent qualifications (e.g. International Baccalaureate or Cambridge), or equivalent credits from appropriate trades training and/or demonstrated skills and experience.

\*including a minimum of 10 literacy credits at level 1 or higher (for those who achieved NCEA Level 2 before 2013)

#### 20+ years

If you're 20 years or over, you may qualify for special admission on this programme. Contact us if you don't meet the Under 20 entry criteria.

### International

Minimum IELTS (academic) score of 6, with no band score lower than 5.5 or equivalent.

Find your country's [equivalent academic entry requirements here](#)

*\*International fee displayed is for 1 year of study (equivalent to 120 credits) and does not include insurance, administration and student service fees. For more details, please email: [international@wandw.ac.nz](mailto:international@wandw.ac.nz).*

### Special entry

Special entry may be granted by the Head of School responsible for the programme to an applicant who does not meet all entry requirements, where the Head of School is satisfied the applicant is capable of undertaking the programme of study.

Disclaimer: The information contained in this document is correct at the time of print. Whitireia and WelTec | Te Pūkenga reserves the right to cancel or postpone any of the programmes, and shall not be liable for any claim other than the proportion of programme fees that the cancelled portion bears. Some programmes may be dependent upon formal approval from NZQA (New Zealand Qualifications Authority), TEC (Tertiary Education Commission) funding allocation, and the number of enrolments. As part of the NZQA targeted review of all Level 1-6 New Zealand qualifications, there may still be changes to some programmes starting in 2024. Fees, programmes, entry and selection criteria, and dates, are subject to change. Please check the relevant programme pages at [whitireiaweltec.ac.nz](http://whitireiaweltec.ac.nz) for up-to-date information and full entry regulations before applying to enrol. Information regarding English language requirements is available on each course page at [whitireiaweltec.ac.nz](http://whitireiaweltec.ac.nz).

**Course selection sheet**



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