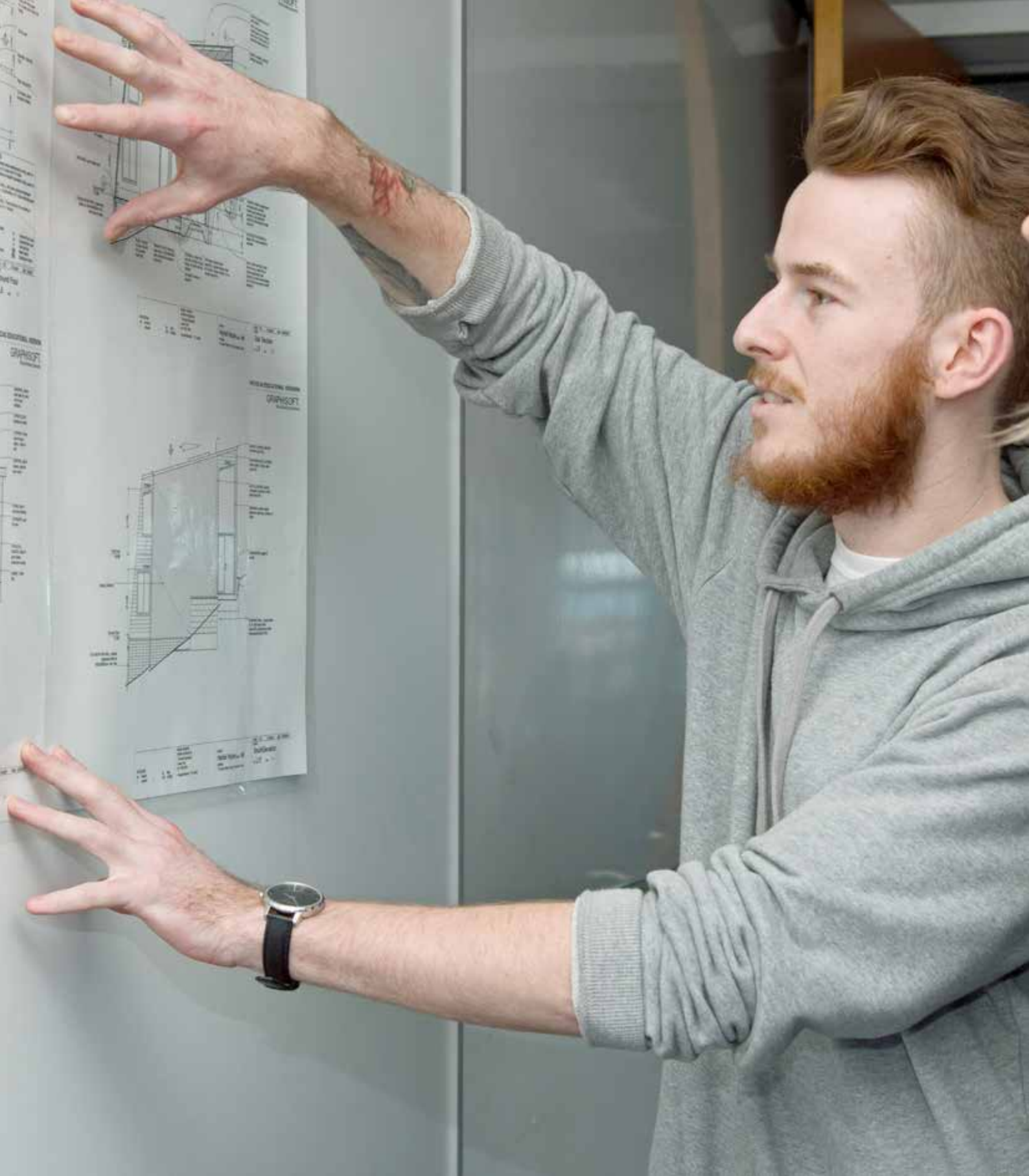
Engineering Technology

WelTec 2015 PROGRAMMES

Future thinking. Right here

WelTec



Don’t just dream it, make it. Don’t just think it, create it.

Engineering is about putting innovation into practice. Developing ideas and then devising technologies to deliver solutions. The global need for exploring efficiencies and achieving sustainability has seen an increased demand for engineering skills.

Take your career anywhere

Engineering facilitates growth. At WelTec we are playing our part in promoting engineering as an exciting career choice. Globally you will find a vast range of opportunities in architectural technology, quantity survey, construction management, civil, electrical and mechanical engineering.

Help build the world

Choose a career where you can watch your plans take shape from concept to construction. By studying engineering you can play your part in building tomorrow’s world. While studying at WelTec you will have opportunities to engage with employers and work on real challenges and projects.

Use our state-of-the-art technology

You will learn in high-tech facilities with state-of-the-art technology so when you enter the work place you can hit the ground running. Our range of specialist equipment includes a mechatronics production and automation lab, 3D scanner and digitiser, state-of-the-art visualisation and realisation (manufacturing) equipment, prototypers, CNC 4-axis machining centre, vacuum casting facility, geotech and fluids lab, and Computer Aided Design labs.

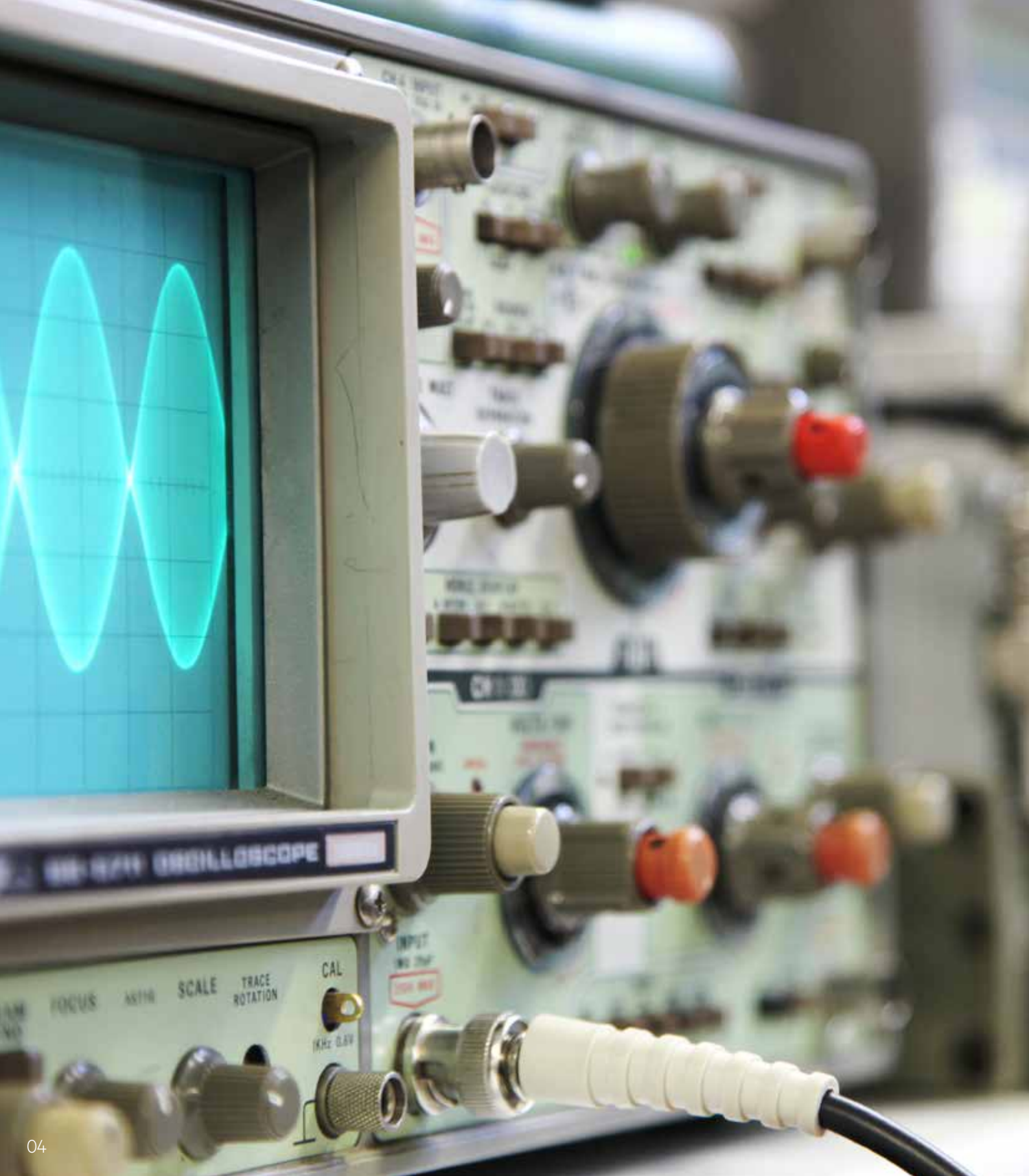
Learn from the best with industry focused programmes

WelTec offers a comprehensive range of engineering and built environment programmes that are developed to meet the needs of industry.

Our programmes are designed in partnership with industry advisory groups and employers. This allows us to keep up to date with the latest advancements. WelTec’s tutors are industry professionals who offer a wealth of knowledge and experience in the areas they teach.

Career opportunities

- Mechanical – Electrical – Civil Engineering Technologist / Technician
- Architectural Technician
- Building Inspector
- Quantity Surveyor
- Draughtsperson
- Quantity Survey Technician
- Architectural Designer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Engineering Technology

Certificate in Foundation Studies (Engineering)

Level 3 and 4

Start: 24 February, 20 July 2015
Length: 17 weeks (Full-time)
Campus: Petone

Engineers play a key role in designing our environment. The demand for professional engineers both here and overseas has never been so great. The opportunities for someone wishing to follow a career in engineering are diverse and rewarding. At WelTec you can embark on a journey to find the engineering career that's right for you.

WelTec's foundation engineering programmes are designed for those wanting to pursue study in engineering at level 5 or higher, and needing to build foundation skills. If your aim is to prepare for an engineering diploma or degree and go on to enjoy a satisfying engineering career, these programmes will help you.

WelTec's Certificates in Foundation Studies (Engineering) (Level 3 and 4) provide students with knowledge of mathematics, physics, algebra, calculus and engineering principles in a practical engineering setting. Students may have the opportunity to study set papers from the NZ Diploma in Engineering (NZDE) or the Bachelor of Engineering Technology (BEng Tech). Successful completion of the foundation programme will allow entry into the NZDE or BEng Tech with the opportunity to cross credit any courses that have been completed from those programmes.

Programme Overview

- Gain knowledge where you need it with four individually tailored courses in the areas of mathematics, physics, algebra and/or calculus
- Gain an understanding of practical engineering principles
- Prepare for progression into higher level study

Further Study Options

- New Zealand Diploma in Engineering (Level 6)
- Bachelor of Engineering (Level 7)

New Zealand Diploma in Engineering

Level 6

Start: 24 February, 20 July 2015
Length: 2 years (Full-time) (Part-time options available)
Campus: Petone

The aim of the New Zealand Diploma in Engineering is to provide skilled and competent engineering technicians who: apply engineering theory to practice, and competently perform technical operations to the standards, ethical and professional responsibilities required by the engineering profession; have a knowledge sufficient to permit informed, rational decision making in a specialist field of engineering and to implement these decisions; will work collaboratively with construction workers, clients, authorities, agencies, industry and other professionals to provide a comprehensive engineering service in the relevant specialist area; and have an understanding of all cultures and in particular an awareness and clear understanding of the tangata whenua and the implications of the Treaty of Waitangi and the Resource Management Act.

It is expected that graduates will attain the educational underpinnings and work ready attributes defined in the IPENZ Graduate Profile for Engineering Technicians. The graduate profile defined by IPENZ is benchmarked internationally to the exemplar graduate attributes for graduates of technician education programmes recognised under the Dublin Accord.

Programme Overview

Depending on which discipline you are enrolled in, the programme content might consist of:

- Workshop Practice
- Mechanics
- Thermodynamics and Heat Transfer
- Land Surveying
- Engineering Management
- Hydraulics
- Geotechnical Engineering
- Water Systems
- Electrical & Electronic Principles
- Microcontrollers
- Mathematics
- Materials
- Fluid Mechanics
- Drawing
- Civil and Structural Drawing
- Highway Engineering
- Traffic Engineering
- Waste Systems
- Computer Programming

Further Study Options

- Bachelor of Engineering (Level 7)

Career Opportunities

You may find employment as a engineering technician in the fields of civil, electrical or mechanical engineering.

For complete programme code, course descriptions and entry requirements please refer to **www.weltec.ac.nz/engineering**

Bachelor of Engineering Technology

Level 7

Start: 24 February, 20 July 2015
Length: 3 years (Full-time) (Part-time options available)
Campus: Petone

The Bachelor of Engineering Technology is an internationally-led qualification offered in collaboration with five other Institutes of Technology throughout New Zealand and forms the basis for a career as an Engineering Technologist – an area in huge demand across the country and around the world.

Engineering technologists apply current and emerging technologies, often in new contexts, or apply established principles in the development of new practice. It is an area that suits students who are looking to combine both the engineering theory aspect of a career with the applied and practical component. Engineering technologists are application oriented and need to have a deep knowledge of the practical situations and applications in which they work.

Programme Overview

- Learn the fundamental principles of management and economics to function successfully in a variety of engineering and management roles within industry.
- Develop modern design techniques in your area of specialisation.
- Develop communication skills for effective functioning in a variety of technical and managerial positions.
- Gain sufficient in-depth understanding of the principles underlying the technology in their area of specialisation to be able to keep up with the technological developments in the future.
- Develop an awareness of the social and environmental impact of engineering.
- Learn how to use advanced technology to design and develop a project.
- Develop problem solving and critical thinking skills.

Programme Structure

Available majors*

Civil Engineering
Civil Engineers work in the design, construction and maintenance of the natural and physically built environment.

Electrical Engineering
Electrical Engineers deal with the study and application of electricity, electronics and electromagnetism.

Mechanical Engineering
Mechanical Engineers are involved in the design, manufacturing and maintenance of mechanical systems.

*Majors will be offered subject to sufficient enrolments.

Bachelor of Engineering Technology

Major: Civil Engineering

Civil Engineers work in the design, construction and maintenance of the natural and physically built environment. With WelTec's Major in Civil Engineering you can specialise in water and waste. This area deals with water treatment, water supply, drainage and waste water. Other specialisations such as structural, geotechnical, roading and transportation, and environment can be started at WelTec and completed at another Metro Polytechnic.

You will also have the opportunity to select your electives during Year 1. During Year 2 of the degree you will continue to build on your specific selected major and develop further in your specialist strand.

The third year of the degree incorporates a significant industry-based development project, giving you real-world experience within the civil engineering profession.

Programme Overview

- Learn the fundamental principles of management and economics to function successfully in a variety of engineering and management roles within industry
- Develop modern design techniques in your area of specialisation
- Develop communication skills for effective functioning in a variety of technical and managerial positions
- Gain sufficient in-depth understanding of the principles underlying the technology in your area of specialisation, to enable you to keep up with technological developments in the future
- Develop an awareness of the social and environmental impact of engineering
- Learn how to use advanced technology to design and develop a project
- Develop problem-solving and critical thinking skills

Career Opportunities

You may find employment as an engineering technologist. Career options include work in the fields of environmental engineering, geotechnical engineering, geophysics, structural engineering, transportation engineering, earth science, atmospheric sciences, municipal or urban engineering, water resources engineering, coastal engineering surveying and construction engineering.

Programme Structure

YEAR 1	TRI 1	Engineering Mathematics **MG5004**	Engineering Communication **MG5003**	Engineering Mechanics **MG5002**	Land Surveying **MG5006**
	TRI 2	Engineering Computing **MG5001**	Engineering Design and Drawing **MG5005**	Engineering Management Principles **MG6103**	Civil Materials **MG5107**
YEAR 2	TRI 1	Engineering Site Investigation **MG5009**	Basic Structures **MG5032**	Fluid Mechanics (Civil) **MG5008**	Highway Engineering **MG5012**
	TRI 2	Civil Engineering Detailing and Modelling **MG6005**	Civil Engineering Construction Practices **MG6106**	Civil Pathway Elective	Common Elective Level 6
YEAR 3	TRI 1	Engineering Developement Project (Tri 1) **MG7101**	Professional Engineering Practice **MG7121**	Civil Pathway Elective Level 7	Civil Pathway Elective/ Common Elective
	TRI 2	Engineering Developement Project (Tri 2) **MG7101**	Common Elective Level 7	Civil Pathway Elective Level 7	Common Elective Level 6 or 7

This programme structure is a guide only.
It is subject to academic approval timetable confirmation.

= Compulsory = Major = Electives

For complete programme code, course descriptions and entry requirements please refer to **www.weltec.ac.nz/engineering**

Bachelor of Engineering Technology

Major: Electrical Engineering

Electrical Engineers deal with the study and application of electricity, electronics and electromagnetism. With a major in Electrical Engineering at WelTec you will study the area of mechatronics.

The degree consists of compulsory and elective courses which develop your skills in communication, management, mathematics, engineering science, electrical/ electronic principles and basic engineering practices.

You will also have the opportunity to select your electives during Year 1. During Year 2 of the degree you will continue to build on your specific selected major and develop further in your specialist strand. The third year of the degree incorporates a significant industry-based development project, giving you real-world experience within the electrical engineering profession.

Programme Overview

- Learn the fundamental principles of management and economics to function successfully in a variety of engineering and management roles within industry
- Develop modern design techniques in your area of specialisation
- Develop communication skills for effective functioning in a variety of technical and managerial positions
- Gain sufficient in-depth understanding of the principles underlying the technology in your area of specialisation, to enable you to keep up with technological developments in the future
- Develop an awareness of the social and environmental impact of engineering
- Learn how to use advanced technology to design and develop a project
- Develop problem-solving and critical thinking skills

Career Opportunities

Career choices can include areas such as electric power transmission and electrical machines and the study of electronic systems including computers, communications systems, integrated circuits, automation robotics and control systems.

Programme Structure

YEAR 1	TRI 1	Engineering Mathematics **MG5004**	Engineering Communication **MG5003**	Engineering Mechanics **MG5002**	Electrical Principles 1 **MG5034**
	TRI 2	Engineering Computing **MG5001**	Engineering Design and Drawing **MG5005**	Management for Engineers **MG6103**	Electronic Principles **MG5035**
YEAR 2	TRI 1	Electrical Pathway Elective Level 5	Electrical Pathway Elective Level 5	Electrical Pathway Elective Level 5 or 6	Electrical Pathway Elective Level 5 or 6
	TRI 2	Design 1 **MG6136**	Electrical Pathway Elective Level 6	Electrical Pathway Elective Level 5 or 6	Common Elective Level 6 or 7
YEAR 3	TRI 1	Engineering Developement Project (Tri 1) **MG7101**	Professional Engineering Practice **MG7121**	Electrical Pathway Elective Level 6 or 7	Electrical Pathway/ Common Elective Level 6 or 7
	TRI 2	Engineering Developement Project (Tri 2) **MG7101**	Electrical Pathway Elective Level 7	Electrical Pathway/ Common Elective Level 7	Electrical Pathway/ Common Elective Level 6 or 7

This programme structure is a guide only.
It is subject to academic approval timetable confirmation.

= Compulsory = Major = Electives

For complete programme code, course descriptions and entry requirements please refer to **www.weltec.ac.nz/engineering**

Bachelor of Engineering Technology

Major: Mechanical Engineering

Mechanical Engineers are involved in the design, manufacturing and maintenance of mechanical systems. In Mechanical Engineering work takes place across a broad area and is always in high demand. Career choices can include work involving manufacturing plants, industrial equipment and machinery, heating and cooling systems, transport systems, aircraft, watercraft, robotics and medical devices.

The degree consists of compulsory and elective courses which develop your skills in communication, management, mathematics, engineering science, basic electrical/ electronic principles and basic engineering practices.

During Year 2 of the degree you will continue to build on your specific selected major and develop further in your specialist strand. The third year of the degree incorporates a significant industry-based development project, giving you real-world experience within the mechanical engineering profession.

Programme Overview

> Learn the fundamental principles of management and economics to function successfully in a variety of engineering and management roles within industry

> Develop modern design techniques in your area of specialisation

> Develop communication skills for effective functioning in a variety of technical and managerial positions

> Gain sufficient in-depth understanding of the principles underlying the technology in your area of specialisation, to enable you to keep up with technological developments in the future

> Develop an awareness of the social and environmental impact of engineering

> Learn how to use advanced technology to design and develop a project

> Develop problem-solving and critical thinking skills

Career Opportunities

You may find employment as an engineering technologist. Career options include work in the fields of product engineering, draughting, mechanical engineering and mechanical design.

Programme Structure

YEAR 1	TRI 1	Engineering Mathematics **MG5004**	Engineering Communication **MG5003**	Engineering Mechanics **MG5002**	Electrical Fundamentals **MG5033** or Electrical Principles **MG5034**
	TRI 2	Engineering Computing **MG5001**	Engineering Design and Drawing **MG5005**	Management for Engineers **MG6103**	Materials Science **MG5028**
YEAR 2	TRI 1	Strength of Materials 1 **MG6136**	Fluid Mechanics **MG6032**	Thermodynamics and Heat Transfer **MG5030**	Mechanical Major Elective Level 5 or 6
	TRI 2	Strength of Materials 2 **MG6038**	Mechanics of Machines **MG6033**	Advanced Thermodynamics **MG6037**	Design 1 **MG6136**
YEAR 3	TRI 1	Engineering Developement Project (Tri 1) **MG7101**	Professional Engineering Practice **MG7121**	Mechanical Major Elective Level 7	Mechanical Major Elective Level 6 or 7
	TRI 2	Engineering Developement Project (Tri 2) **MG7101**	Mechanical Major/ Common Elective Level 7	Mechanical Major Elective Level 7	Mechanical Major Elective Level 6 or 7

This programme structure is a guide only.
It is subject to academic approval timetable confirmation.

= Compulsory = Major = Electives

For complete programme code, course descriptions and entry requirements please refer to **www.weltec.ac.nz/engineering**

Built Environment

National Diploma in Architectural Technology

Level 6

Start: 2 March 2015
Length: 2 years (Full-time) (Part-time options available)
Campus: Petone

Make your plans a reality with a National Diploma in Architectural Technology. At WelTec, you'll develop your technical drawing skills using architectural computer-aided design (CAD) software, and build a comprehensive knowledge of architecture, building methods and materials and building code requirements. This qualification meets the academic requirements of the New Zealand Institute of Building and provides entry as an associate member to the Design Association of New Zealand.

Programme Overview

- Prepare preliminary designs and develop building concepts
- Create working drawings for residential, commercial and industrial buildings
- Evaluate the principles of architectural design
- Understand commercial services and how they operate within the industry
- Become proficient in architectural drawing using ArchiCAD (computer-aided design software)
- Understand how the principles of published data relate to the provision of services for a construction project

Further Study Options

- After you complete the National Diploma in Architectural Technology (Level 6), you can then choose Cross-credit components of your learning towards a degree in Architecture or Building Science at Victoria University of Wellington.

Career Opportunities

You'll be qualified to work in roles such as architectural technician or draughtsperson, architectural designer, working for others or running your own business.

National Diploma in Quantity Surveying

Level 6

Start: 2 March 2015
Length: 2 years (Full-time) (Part-time options available)
Campus: Petone

Count on a qualification which measures up. Learn about quantifying projects, estimating building costs and materials, and tendering and administering contracts.

This qualification meets the academic requirements of the New Zealand Institute of Building and provides entry as an affiliate member to the New Zealand Institute of Quantity Surveyors.

Programme Overview

- Develop your understanding of cost estimation, and learn how to create preliminary cost estimates and cost plans for a construction project
- Understand how the principles of published data relate to the provision of services for a construction project
- Learn how to measure and manage quantities of resources required for construction projects
- Learn how to administer contracts and value building works, as well as how to prepare a construction programme for quantity surveying

Further Study Options

- After you complete the National Diploma in Quantity Surveying (Level 6), you can then choose Cross-credit components of your learning towards a degree in Quantity Surveying at Massey University.

Career Opportunities

Career opportunities include work as a Quantity Surveying Technician for Construction Engineering Companies

For complete programme code, course descriptions and entry requirements please refer to **www.weltec.ac.nz/engineering**


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Construction Management

National Certificate in Construction Trades (Supervisor)

Level 4

Start: 2 March 2015
Length: 1 year (Part-time)
Campus: Petone

The National Certificate in Construction Trades (Supervisor) (Level 4) is designed to recognise the skills and knowledge required to be a supervisor in the construction industry. This qualification is for people already working as a construction supervisor, or for people who want to move into the role. The compulsory section includes standards which cover skills and knowledge essential for construction supervision. The Business Management optional strand allows people to gain the skills and knowledge required to manage construction businesses.

Programme Overview

- Gain an understanding of conflict management
- Learn about employment law
- Learn skills in time management
- Gain a working knowledge of building site administration
- Gain an understanding of building legislation
- Gain a good knowledge of Health and Safety requirements
- Build your skills in all areas of construction site supervision
- Learn how to use working drawings and specifications
- Build your knowledge in industry specific communications and marketing
- Learn how to handle costings
- Learn about construction programme management
- Gain an understanding of taxation, financial and insurance responsibilities for small business employers

Further Study Options

- National Diploma in Construction Management (Level 6)

Career Opportunities

Career opportunities include work as a site foreman, site manager or project manager after further study.

National Diploma in Construction Management

Level 6

Start: 2 March 2015
Length: 2 years (Full-time) (Part-time options available)
Campus: Petone

Take charge of your career with a National Diploma in Construction Management and gain a knowledge base essential to building a career in this dynamic industry. At WelTec, you'll develop an understanding of construction planning and project management within the construction industry. This qualification also meets the academic requirements of the New Zealand Institute of Clerks of Works and the New Zealand Institute of Building.

Programme Overview

- Develop your knowledge of construction site procedures
- Learn how to produce a quality assurance plan and a site-specific safety strategy for a construction project
- Gain an understanding of the principles and processes of construction site management and survey requirements for the set-out of a commercial building
- Learn how to measure and manage quantities of resources required for a construction project
- Learn about the fit-out and management of commercial buildings, as well as quality control and safety
- Develop your understanding of bidding for construction projects

Further Study Options

- After you complete the National Diploma in Construction Management (Level 6), you can then choose to Cross-credit components of your learning towards a Bachelor of Construction at Unitec.

Career Opportunities

Career opportunities include work as a technician for construction companies.

For complete programme code, course descriptions and entry requirements please refer to **www.weltec.ac.nz/engineering**


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WelTec

Contact us. Right here

Petone Campus

11 Kensington Avenue, Petone
Private Bag 39814, Wellington

Telephone: (04) 920 2400
Facsimile: (04) 920 2401

Wellington Church St Campus

11–17 Church Street (off Boulcott Street)
Private Bag 39814, Wellington

Telephone: (04) 920 2400
Facsimile: (04) 931 6959

0800 WelTec (935 832)
information@weltec.ac.nz
www.weltec.ac.nz

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