Engineering at Waikato
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Engineering professionals are solving the world’s problems and leading the way in innovation by improving infrastructure, building smarter technologies and finding alternative energy sources.

New Zealand needs more professional engineers working in the economy. Currently, fewer than 1,000 professional engineers graduate each year. Countries with similar populations to New Zealand have more than double that number of engineering graduates.

As a trained engineer, you will be in-demand and essential for New Zealand’s growth in technology related enterprises. Our close links with New Zealand industry ensures you will be work-ready and able to apply your engineering skills and scientific knowledge to solve real-world, industrial and societal problems.

Available in Hamilton:
• Chemical and Biological Engineering
• Civil Engineering
• Electrical and Electronic Engineering
• Environmental Engineering
• Materials and Process Engineering
• Mechanical Engineering
• Mechatronics Engineering
• Software Engineering

Available in Tauranga:
• The 1st and 4th years of the following programmes are available in Tauranga
• Civil Engineering
• Electrical and Electronic Engineering
• Mechanical Engineering
• Mechatronic Engineering

ENTRY REQUIREMENTS

Direct entry into Civil, Electrical and Electronic, Mechanical and Mechatronics Engineering requires a minimum of 16 credits in NCEA at level 3 in Calculus and 14 credits in NCEA at level 3 in Physics.

Chemical and Biological, Environmental, and Materials and Process Engineering requires a minimum of 16 credits in NCEA at level 3 in Calculus, 16 credits at level 3 in Chemistry and 14 credits at level 3 in Physics.

Software Engineering requires a minimum of 16 credits in NCEA at level 3 in Calculus and 14 credits in NCEA at level 3 in two other approved subjects.

These are guaranteed entry requirements. Those without these requirements will be considered on a case by case basis.

At Waikato our eligible engineering programmes are fully accredited by Engineering New Zealand (formerly IPENZ); meaning your degree is internationally recognised and you can work just about anywhere in the world.
Chemical and Biological Engineering focuses on solutions that assist our society to sustain good health, provide sufficient food, supply clean water and produce sustainable materials.

It also uses process engineering, science, maths and economic principles to transform chemical and biological materials into high value products and services, in a safe and cost effective way.

Chemical and biological engineers are 'think big' professionals who work in cooperation with others to bring about the large-scale benefits of advances in chemistry, biotechnology, environmental and materials to solve the world’s sustainability challenges.

As a chemical and biological engineer, you can play a vital role in the creation and production of new medicines, nutritious foods, novel materials, new energy systems, better waste treatment methods and a sustainable global future.

CAREER OPPORTUNITIES:

- Biochemical Engineer
- Process Design Engineer
- Chemical Engineer
- Product Development Engineer
- Environmental Engineer
- Quality Control Engineer
- Food Processing Engineer
- Research and Development Engineer
The world needs competent and trained Civil Engineering professionals to address the increasing challenges in urban and rural facilities and infrastructure.

Civil engineers design and construct the fundamental requirements of society, in key areas such as earthquake proofing, energy recovery, water/waste management, power generation, road networks, transport management, agriculture and forestry development.

As a Civil Engineering graduate from the University of Waikato you will have the practical and theoretical skills to help create, improve and protect our built and natural environments. You will be ready to meet the strong demand for your skills both in New Zealand and around the world.

CAREER OPPORTUNITIES:

- Construction Engineering
- Project Management
- Structural Analysis
- Structural Design
- Geotechnics and Geotechnical Engineering
- Structural Dynamics and Earthquake Design
- Water Engineering
- Mathematics, Computing and Modelling
- Transport Engineering
- Environmental Engineering
The world as we know it is currently and very rapidly evolving, with the Electrical and Electronic Engineers at the forefront of all practical technology that we require in order to solve society’s needs for communication, clean energy, industry and climate change.

With electricity being an integral part of modern life, and with electronics as its vehicle for communication, artificial intelligence and computing, an Electrical and Electronic Engineering qualification will open the door to strong employment prospects, an exciting career and good job security.

Electrical and Electronic Engineers are growing in demand in virtually all areas of industry - from the design and development of smart systems and cities, to the fourth industrial revolution and Industry 4.0.

At the University of Waikato, we offer a modern and future-focused programme by integrating a strong computing strand involving programming, data management, artificial intelligence and cyber-security with core electrical and electronic principles in modern power systems, electronic design, embedded systems and communication. In doing so, our graduates will be ready to lead the electricity industry evolution from legacy generation and distribution models into an immediate future of distributed generation and storage, smart grids, new generation paradigms around renewable resources.

CAREER OPPORTUNITIES:
• Computer Systems Engineer
• Control Systems Engineer
• Design Engineer
• Electrical Engineer
• Electronics Engineer
• Instrumentation Engineer
• Network Engineer
• Power Systems Engineer
• Systems Developer
Environmental Engineering is concerned with the application of scientific and engineering principles to the protection and improvement of the environmental quality of the world in which we live.

Environmental engineers make a major contribution to mitigating environmental harm. As the world’s demand for materials, food and energy grows, it is environmental engineers who ensure that practices are developed to meet this demand and contribute to protecting and enhancing our natural and man-made environments.

Environmental engineers evaluate and assess options, design equipment and systems as well as develop regulations and controls to solve issues of water quality and supply, waste reduction and disposal, soil and air quality management and noise.

**CAREER OPPORTUNITIES:**
- Environmental Engineer
- Water and Sanitary Engineer
- Public/Environmental Health Engineer
- Resource/Waste Management Engineer
- Sustainability Engineer
- Restoration Engineer
- Infrastructure Engineer
Materials and Process Engineering focuses on the processes and activities of converting raw materials into valuable products needed by manufacturers and the end consumer.

You will learn how to add value to raw materials used to manufacture a number of useful products, while minimising waste. These products can be as varied as dietary formulae, foods, ceramics that can withstand high temperatures, new metal alloys, pharmaceuticals, laminated boards, functional proteins, and composites.

Materials engineers make critical decisions in selecting and developing the best materials for a particular product, while process engineers make critical decisions in the processes and utilities required to manufacture the product.

**CAREER OPPORTUNITIES:**

- Energy Efficiency Engineer
- Products/Process Development Engineer
- Environmental Engineer
- Process Design Engineer
- Materials Engineer (plastics, composites, metallurgy)
Mechanical Engineering uses mechanics and energy principles to design, research, develop and manufacture tools, engines, motors and other devices. At the University of Waikato we align what you learn with what industry requires.

Our Mechanical Engineering programme is founded on project-based learning. It combines mechanical engineering, science and mathematics papers to give you a good understanding of engineering theory and practice.

You will study topics such as mechanics, kinematics, thermodynamics, materials science, structural analysis and electricity. In your second and third years you can choose papers to focus on either a Mechatronics Stream or a Manufacturing and Energy Stream.

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**CAREER OPPORTUNITIES:**

- Aeronautical Engineer
- Materials Engineer
- Agricultural Engineer
- Mechanical Engineer
- Automation Engineer
- Energy Engineer
- Equipment Prototype Engineer
- Process Engineer
- Product Developer
- Project Manager
Mechatronics Engineering

Mechatronics Engineering integrates mechanical, electrical, electronics and computing technologies to create innovative new devices and autonomous systems.

At the University of Waikato we pay significant attention to important issues like sustainability, innovative culture, and care for society.

Our mechatronics engineering degree programme aims to produce highly skilled engineers who are avid problem solvers, ready for life, ready for work, and ready for the world.

To do this, we offer papers emphasising hands-on experience in solving real life problems throughout the degree programme.

CAREER OPPORTUNITIES:

• Robotics Engineer
• System Engineer
• Automation Engineer
• Project Manager
• Control Engineer
• Instrumentation Engineer
• Product Design & Development
• Computer Aided Engineering
Software Engineers specify, design and build the software that society relies on. The Software Engineering programme at Waikato emphasises the software engineering process, formal methods for software engineering, and human-computer interaction.

Our goal is to teach you how to build software that is dependable and economic. Our papers include systematic techniques to test software systems and methods for formally proving safety critical systems.

Our BE(Hons) in Software Engineering is an innovative four-year degree that starts with C# programming and building model boats in the first year, progresses through advanced programming techniques and computer hardware labs in the second year, then branches out into a wide variety of programming skills in the third and fourth years.

**CAREER OPPORTUNITIES:**

- Network Engineer
- Software Developer
- Product Development Engineer
- Systems Engineer
- Software Architect
- Software Consultant
- Test Engineer
# BE(HONS) DEGREE OVERVIEW

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# BE(HONS) & DIPEM (DIPLOMA IN ENGINEERING MANAGEMENT)

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CONTACT US:

Any questions? Reach out to us at:

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- 0800 WAIKATO (0800 924 528)
- contact-hecs@waikato.ac.nz

For more information or entry requirements scan the qr code or visit waikato.ac.nz.