

# What can I do with a degree in Mechatronics Engineering?

# Mechatronics Engineering.



## What is Mechatronics Engineering?

Mechatronics Engineering involves the integration of electronics and intelligent control in mechanical systems. Mechatronics engineers employ skills and theories from engineering, computer science, mathematics and technology to design 'smart' products, processes and systems.

Mechatronic systems are everywhere, and their impact continues to expand in such areas as manufacturing, communication, energy, transport, aerospace, medicine, smart farming and gaming systems. For example, robots are widely used to automate manufacturing processes, while mobile machines such as Unmanned Aerial Vehicle (UAV) have had beneficial impacts in industries such as forestry and farming.

Mechatronic systems have an impact on a range of scales, from contributing to the control of spacecraft, automated vehicles, to prosthetic limbs, and household products and small devices.

## Learn more

It is important to do some research when planning a future career. Speak with, ask questions of, and follow relevant professional bodies, organisations, companies, thought leaders and industry professionals to learn more about:

- Career opportunities, work environments and salary information
- Education and training requirements.

### Examples of professional bodies

- Engineering New Zealand  
🌐 [www.engineeringnz.org](http://www.engineeringnz.org)
- Institute of Electrical and Electronics Engineers 🌐 <https://www.ieee.org>
- The American Society of Mechanical Engineers  
🌐 [www.asme.org](http://www.asme.org)
- The Association of Consulting Engineers New Zealand Inc. 🌐 [www.acenz.org.nz](http://www.acenz.org.nz)
- New Zealand Technology Industry Association  
🌐 [www.nztech.org.nz](http://www.nztech.org.nz)

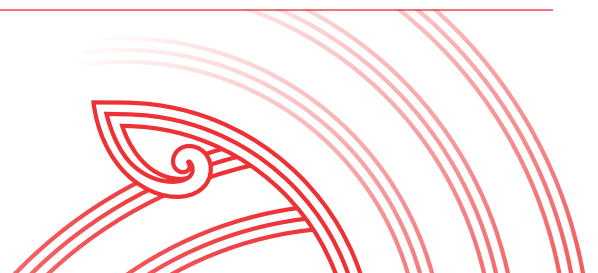
## Career and study information

Some study pathways and degrees have a recommended school background, and some careers may require further study beyond a first degree or additional experience.

### Gather helpful information from:

- Subject-specific content at  
🌐 [www.canterbury.ac.nz/beng-honours](http://www.canterbury.ac.nz/beng-honours)
- Job profiles on career websites like  
🌐 [www.careers.govt.nz](http://www.careers.govt.nz)
- Job adverts/vacancy descriptions
- Industry professional bodies.

This resource is part of a set of brochures focused on subject majors; many can also be studied as minors.





## What skills can graduates gain?

Through studying a degree in Mechatronics Engineering, graduates develop a valuable set of skills that are transferable to a range of careers. These skills can include:

- Practical application of engineering technology and science
- Technology, mechanical and computing abilities
- Broad knowledge of a range of engineering disciplines
- Problem solving that applies to real world challenges
- Analytical, logical and quantitative thinking
- Teamwork, planning and organisation
- Creativity and innovation.

### Applied learning

Students undertake 800 hours of work experience as part of this engineering degree, providing them with a good understanding of the industry and the confidence to apply their skills in a workplace setting. This experience can deepen students' skillset, awareness of others, working knowledge and employability.

### What do employers look for?

Many employers look for generic skills such as communication, client/customer-focus, bicultural competence, cultural awareness, teamwork and initiative.

With technology, globalisation, and other drivers changing society, skills such as resilience, problem solving, and adaptability are important.

Skills that are likely to grow in importance include analytical and creative thinking, systems thinking and technological literacy.\*

\*World Economic Forum: [www.weforum.org/agenda/2023/05/future-of-jobs-2023-skills](http://www.weforum.org/agenda/2023/05/future-of-jobs-2023-skills)

### How can these skills be developed?

- Some skills are gained through studying
- Extra-curricular activities can help, such as getting involved in clubs, mentoring, cultural groups, part-time work or volunteering
- Be open to professional and personal development opportunities, whether it is undertaking work experience, overseas exchange, skills seminar, or joining an industry group.

## Where have graduates been employed?

Mechatronics engineers find work in a variety of areas, including:

Industrial production and engineering:

- Manufacturing e.g. Fisher & Paykel
- Automation e.g. Macro Automation

- Robotics e.g. Invert Robotics
- Aerospace, aviation, and aeronautics e.g. Kea Aerospace, Rocket Lab, Altitude Aerospace
- Transport, shipping, boating, and automotive e.g. Hamilton Jet

Primary sectors:

- Energy and Utilities e.g. MainPower
- Agriculture, horticulture, aquaculture

Science and Technology:

- Health technology e.g. TASKA Prosthetics, Tiro Medical, Fisher & Paykel Healthcare
- Information, media and telecommunications e.g. Verizon Connect, Flightcell International
- Smart technologies and network companies e.g. Aviat Networks, Unison Networks
- Software and embedded systems e.g. Wynyard Group
- Engineering consultants e.g. Beta Solutions
- Research institutes e.g. Scion

Public and Defence Sectors

- Government e.g. Ministry of Business, Innovation and Employment
- Defence e.g. Royal New Zealand Air Force

Start-ups and e-commerce e.g. Partly.

## What jobs and activities might graduates do?

Graduates with this degree are employed in a range of jobs — see some examples below.

Note: This list is not exhaustive, and some jobs may require further study, training or experience. It is recommended to start with the section 'How can I gain a sense of career direction?'

### Product development engineer, design engineer, industrial designer

- Research a client's brief, an organisational or social need, or a gap in the market
- Prepare drawings, models and proposals for new products or product improvements
- Design and produce a prototype
- Test the prototype, ergonomics and investigate patents

### Automation engineer

- Design and program high-tech computer-controlled equipment for industrial processes
- Identify and fix machine issues

### Mechatronics engineer

- Use mechanical, computer and controls knowledge to design and create products
- Research components of design
- Test products for efficiency and adaptability

### Process development engineer

- Optimise manufacturing processes for efficiency, scale, and cost-effectiveness
- Collaborate with cross-functional teams, analyse data, and ensure regulatory compliance

### Software engineer

- Analyse customer needs, evaluate computer software and research new technologies
- Develop software programs for new products
- Manage software development projects

### Robotics technician, roboticist

- Work in teams to design and develop robots
- Test robotic operations and processes
- Service and maintain robotic functioning

### Mechanical/control systems engineer

- Assist in the development of products using drafting tools or computer software
- Design testing control equipment
- Research and advise on design modifications to resolve problems

### Programmer, software developer

- Determine specifications and write code
- Build prototypes of software programs
- Test and fix computer programs and systems
- Maintain and upgrade programs and systems
- May develop and integrate technical aspects of websites/mobile apps

### Mechanical design engineer

- Design power machinery
- Use computer software to create visual plans
- Assist in testing machinery

### Project engineer, project manager

- Manage project plan, time, budget, compliance
- Manage procurement, purchasing, contracts
- Liaise with project staff and clients

### Avionics / flight engineer

- Manage avionic development projects
- Oversee a part's lifecycle, from idea to launch
- Design and test the project prototype
- Manage workflows and issues

### Patent examiner

- Research to assess if a product is new/unique
- Maintain knowledge of laws and regulations
- Write patent applications for new inventions
- Advise businesses, government and industry

### Examples of other job titles and careers include:

- Consultant
- Systems engineer
- Electronics engineer
- Hardware engineer
- Research assistant
- Test engineer
- Analyst
- Computer vision engineer
- Digital consultant
- Firmware designer
- Field technician or service engineer
- Policy advisor
- Integrated operations engineer
- Mechanical engineer
- Research and development engineer.

## Further study options

UC offers postgraduate programmes in Mechanical Engineering, Electrical and Electronic Engineering, Engineering Management, Human Interface Technology, and Software Engineering.

Research opportunities are available through the HITLabNZ, Wireless Research Centre, and Spatial Engineering Research Centre.

Further study may facilitate career benefits such as specialist skills, entry into a specific occupation, higher starting salary, faster progression rate, and advanced research capability.

It is important to determine which, if any, further study options align with future career aspirations.

For further UC study options visit:

[www.canterbury.ac.nz/study/academic-study](http://www.canterbury.ac.nz/study/academic-study)

## How can I gain a sense of career direction?

Understanding yourself and others is important to gain a sense of direction. This grows with experience; therefore, trying new things and reflecting on an ongoing basis is important.

## Career planning checklist

### Discover and reflect on:

- Your values, interests, strengths, abilities, and aspirations
- Your connection to whānau, people, and places
- Lifestyle preferences and location
- The skills you want to gain, use, or enhance

### Engage in a variety of experiences to learn about:

- How you want to contribute to society, the environment, and global challenges
- The tasks, responsibilities and work environments you prefer
- Your work values, priorities and interests

### Learn more and gather career and study information (refer to page one of this resource)

- Speak with people working in careers that interest you; check the realities of a job/career
- Gather information from various sources

### Identify your next steps

- Talking to a career consultant can help you to identify your next steps. Visit: [www.canterbury.ac.nz/life/jobs-and-careers](http://www.canterbury.ac.nz/life/jobs-and-careers)

## What have other students and graduates done?

Explore career stories of students' university experiences and UC alumni who make a difference globally in varied ways.

Visit: [www.canterbury.ac.nz/about-uc/why-uc/our-students/student-stories](http://www.canterbury.ac.nz/about-uc/why-uc/our-students/student-stories)



### Zane

Development Engineer, Tiro Medical

Bachelor of Engineering with Honours in Mechatronics Engineering

### How did you decide on a career in engineering?

I wanted to make a positive difference. This goal developed in me an interest in biomedical engineering, where I saw an opportunity to give back fuller lives to others. I saw a Mechatronics degree as a great way to learn a very broad set of skills, which when applied take a different perspective to problems in medicine.

### How would you summarise your experience studying Mechatronics?

As you go through your first year you'll learn a lot about what's involved in each specialisation and the different opportunities they can lead to. By the end of this first year you'll be well informed to decide what path you want to follow next.

The skills I learnt in my Mechatronics degree have given me a broad foundation to find solutions to a range of problems. Getting to study aspects of Mechanical, Electrical and Computer Engineering is really valuable as it helps to think about technical problems from a wider perspective.

### What do you do as a Development Engineer?

I work on range of tasks involved with the hardware and software aspects of the screening system, these include: embedded software and hardware developments; computer vision modelling; and post data analysis for cancer diagnostics.

### What are your aspirations for your future?

It is exciting to work on the forefront of a project with the potential to make a life changing impact. Every day there are new challenges which provide a real sense of accomplishment to solve.

## Career guidance

Career services are available for future and current students, and recent graduates. To learn more, contact:

Te Rōpū Rapuara | Careers

T: +64 3 369 0303

E: [careers@canterbury.ac.nz](mailto:careers@canterbury.ac.nz)

[www.canterbury.ac.nz/life/jobs-and-careers](http://www.canterbury.ac.nz/life/jobs-and-careers)

### Helpful career insights

- Speaking with employers is key to finding opportunities; not all jobs are advertised
- Developing an online presence is useful as employers can search for future employees online
- Learning about recruitment patterns and where to find opportunities is important.

## Study advice

Student Advisors at UC help with questions focused on starting, planning and changing studies. To connect with Student Advisors, visit:

[www.canterbury.ac.nz/study/study-support-info/study-support](http://www.canterbury.ac.nz/study/study-support-info/study-support)

### Future students – contact:

The Future Students team

T: 0800 VARSITY (0800 827 748)

E: [futurestudents@canterbury.ac.nz](mailto:futurestudents@canterbury.ac.nz)

### First year students – contact:

Kaitoko | First Year Student Advisors

T: +64 3 369 0409

E: [firstyearadvice@canterbury.ac.nz](mailto:firstyearadvice@canterbury.ac.nz)

### Continuing students – contact:

Pūhanga | Faculty of Engineering

T: +64 3 369 1717

E: [engdegreeadvice@canterbury.ac.nz](mailto:engdegreeadvice@canterbury.ac.nz)

[www.canterbury.ac.nz/study/academic-study/engineering](http://www.canterbury.ac.nz/study/academic-study/engineering)

