What can I do with a degree in
Mechatronics Engineering?

UC
UNIVERSITY OF
CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

Mechatronics Engineering.

Career planning: what do I need to know?

Knowledge of yourself is important for career decision making. Start by looking at your personal goals, abilities, values and interests to explore study and career options that are relevant to you. Some of these may change over time, so it is important to self-reflect and evaluate your career on an ongoing basis.

What do employers look for?

Many employers look for generic skills such as communication, customer-focus, bicultural competence, cultural awareness and teamwork. With technology and globalisation changing the nature of society, skills such as resilience, problem solving and adaptability are valuable at work as well as in life.

How can I develop these skills?

• Some skills are developed through your degree

• Extra-curricular activities can help, for example getting involved in clubs, mentoring, cultural groups, part-time work or volunteering

• Be open to professional and personal development opportunities. Whether it is undertaking an internship, overseas exchange, skills seminar, or joining an industry group — these activities will enhance your employability.

What else should I know?

The career options in this brochure are examples only and the list is not exhaustive. Some careers may require further study beyond a first degree or additional work experience. Some pathways and degrees have a recommended school background. Find more subject details at
⌨ www.canterbury.ac.nz/subjects/enmt

If this brochure does not answer your questions, talking to an expert such as a career consultant can help you to identify the next steps in your career decision making journey.
⌨ www.canterbury.ac.nz/careers

What is Mechatronics Engineering?

Mechatronics Engineering is 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 — in manufacturing, communication, energy, transport, medicine, smart farming and gaming systems. The impact of automated systems will continue to grow, for example robots are widely used to automate manufacturing processes, and mobile machines such as Unmanned Aerial Vehicle (UAV) are currently deployed.

Mechatronics Engineering covers the micro and nano worlds. Electro-mechanical systems research and technology is growing for applications such as atom-scale microscopy and spectroscopy, big data storage, sensor technology, and many more.

AT A GLANCE

40+ different employers of Mechatronics grads in NZ

90%+ of mechatronics engineering graduates were in their ideal employment or working in a step in the right direction*

$US 53.45b is the amount the global smart home industry is estimated to be worth by 2022**

* 2017, 2018, 2019 Graduate Destination Survey combined
** www.forbes.com/sites/forbestechcouncil/2018/01/12/14-
   predictions-for-the-future-of-smart-home-
   technology/?sh=4f8494b2e218

What skills have UC graduates gained?

Through their Mechatronics Engineering degree, graduates develop a valuable set of skills that are transferable to a range of careers, including:

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

Students undertake 800 hours of practical work experience as part of this engineering degree, providing them with a good understanding of industry and the confidence to apply their skills at work.

Where have UC graduates been employed?

Mechatronics engineers work in industries such as:

- Robotics
- Aerospace
- Chemical
- Defence
- Automotive
- Manufacturing industries.

UC graduates have found roles in:

- Automation companies eg, Macro Automation, Street Automation
- Information, media and telecommunications eg, Telogis, Flightcell International
- Manufacturers eg, Dynamic Controls, Fisher & Paykel, CSR, Abiliquip, Attocube Systems
- Robotics eg, Invert Robotics
- Professional, scientific and technical services eg, Dynamic Controls, Telogis, Scott Technology, Aeronavics
- Technology development eg, Syft Technologies, Tiro Medical
- Engineering consultants eg, Controlweb Ltd, Beta Solutions
- Smart technologies and network companies eg, Aviat Networks, Unison Networks
- E-commerce eg, eStar
- Software companies eg, Wireless Guard, Wynyard Group
- Aviation, aeronautics and defence eg, Royal New Zealand Air Force, Altitude Aerospace
- Electricity and energy services eg, Beca, Mainpower
- Research institutes eg, Scion, Auckland UniServices
- Government eg, Ministry of Economic Development

What jobs and activities do graduates do?

Mechatronics Engineering graduates are well prepared to join the technological revolution — see some examples of career options below.

Note: Some of the jobs listed may require postgraduate study. See the 'Further study' section

Mechatronics engineer

- Uses mechanical, computer and controls knowledge to design and create products
- Researches components of design
- Tests products for efficiency and adaptability

Robotics technician, roboticist

- Works in teams to design and develop robots
- Tests robotic operations and processes
- Services and maintains robotic functioning

Software engineer

- Analyses customer needs, evaluates computer software and researches new technologies
- Develops software programs for new products
- Manages software development projects

Industrial designer, product designer, product development engineer

- Researches a client's brief, an organisational or social need, or a gap in the market
- Prepares drawings, models and proposals for new products or product improvements
- Designs and produces a prototype
- Tests the prototype, ergonomics and investigates patents

Mechanical /control systems engineer

- Assists in the development of products using drafting tools or computer software
- Designs testing control equipment
- Researches and advises on design modifications to resolve problems

Programmer, software developer

- Determines specifications and writes code
- Builds prototypes of software programs
- Tests and fixes computer programs and systems
- Maintains and upgrades programs and systems
- May develop and integrate technical aspects of websites/mobile apps

Mechanical design engineer

- Designs power machinery
- Uses computer software to create visual plans
- Assists in testing machinery

Project engineer, project manager

- Manages project plan, times, costs, compliance
- Manages procurement, purchasing, contracts
- Liaises with project staff and clients

Avionics / flight engineer

- Manages avionic development projects
- Oversees a part's lifecycle, from idea to launch
- Designs and tests the project prototype
- Manages workflows and issues

Patent examiner

- Researches to assess if a product is new/unique
- Maintains knowledge of laws and regulations
- Writes patent applications for new inventions
- Advises businesses, government and industry

Automation engineer

- Designs and programs high-tech computer-controlled equipment for industrial processes
- Identifies and fixes machine issues

Entrepreneur & self-employment

Entrepreneurship and innovation are an increasing part of the working landscape. Through generating a business idea, or getting involved in a start-up/business venture, you have the potential to create a work opportunity that aligns with your knowledge, skills, values and risk profile. To get started on how to establish, run and grow a new business, go to Te Pokapū Rakahinonga | Centre for Entrepreneurship at the University of Canterbury ⌨ www.canterbury.ac.nz/uce

What professional organisations can I engage with?

Connecting with professional bodies and organisations can help you to establish professional networks and learn more about different career options in your area of interest. Gaining valuable insight into a profession can assist in making informed career decisions.

- Engineering New Zealand
  ⌨ www.engineeringnz.org
- The Association of Consulting Engineers New Zealand Inc. ⌨ www.acenz.org.nz
- New Zealand Heavy Engineering Research Association ⌨ www.hera.co.nz
- New Zealand Technology Industry Association ⌨ www.nztech.org.nz

Having a professional presence on social media networks such as ⌨ www.linkedin.com and Facebook can help you to keep up to date with important industry developments and trends, networking opportunities, events and job vacancies. Following relevant professional bodies, organisations, companies and thought leaders is a great way to gain a deeper awareness of the industries that interest you. Social media presents an opportunity to build and enhance networks as well as to display your involvement in projects and any academic successes.

Why do further study and what are my options?

Postgraduate study can facilitate career benefits such as specialist skills, entry into a specific occupation, faster progression rate, and advanced research capability. Advanced study can lead to a career in academia. It is important to determine which, if any, further study will help you in your future career.

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. For UC qualification listings visit ⌨ www.canterbury.ac.nz/courses

Useful links

Te Rōpū Rapuara | UC Careers
⌨ www.canterbury.ac.nz/careers

Careers New Zealand
⌨ www.careers.govt.nz
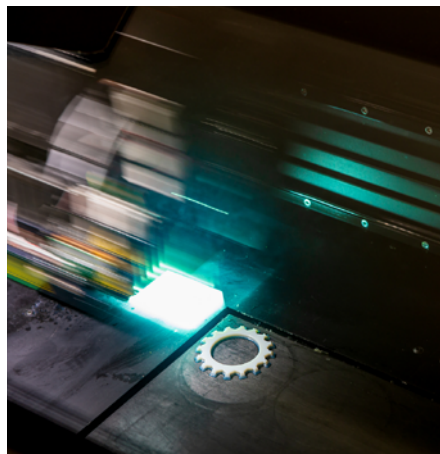
Ailsa

Studying towards a Bachelor of Engineering with Honours in Mechatronics
Business Systems Aide, Syft Technologies

What motivated you to pursue Mechatronics Engineering?

I was involved with RoboCup NZ throughout high school and the connections I made through robotics really inspired me to study Mechatronics Engineering. I also had a bunch of really supportive teachers and mentors; they really pushed me and opened doors to industries and opportunities I had never even thought of!

What do you enjoy about studying at UC?

The E-Week camp definitely convinced me UC was for me and that I wanted to be somewhere in the Electrical and Computer Engineering Department. The staff I met were really genuine about their passions and encouraging others into their fields. I enjoy that you can see what you learn everyday, it's very relevant and interesting.

Any cool experiences so far?

Mechatronics first pro (second year) took a field trip to Fonterra which was pretty interesting. The university is keen for you to go out and get a job with your degree so they foster heaps of industry relations!

What are your career goals?

I would love to work for a company with a strong sense of teamwork and fostering growth. In engineering, I have only worked at Syft Technologies where both of the aforementioned points are key to the company. I'm also very sustainability minded, so eventually I would like to work in a company whose sustainability goals and mentality around using technology to help others align with my own.

How do you stay connected with your field outside of the degree?

I am a member of Women in Engineering (WIE) and Institute of Electrical and Electronics Engineers (IEEE). I really enjoy industry-related events and meeting UC alumni through these groups.

Do you have any tips for students?

Time management and curiosity have been the keys to this degree for me. If you are struggling, reach out straight away, whether it be with course work or health problems, UC and the UCSA has a great network to help you achieve.

Read more online

Read more stories about our students' university experiences online. UC alumni make a difference in varied ways around the globe. To find out where graduates are now visit ⌨ www.canterbury.ac.nz/getstarted/whyuc/student-profiles

The information in this brochure was correct at the time of print but is subject to change.

More information

UC students seeking study advice.

Te Tari Pūhanga Pūrere, Pūhanga Kōhikohiko | Department of Mechanical Engineering, Mechatronics Programme

Mechatronics is strongly supported by research into cutting-edge mechatronics, control systems, and robotics at UC, spanning bio-mechatronics, bio-mimetic robotics, mobile robotics, assistive devices, instrumentation and control, biomedical systems, and manufacturing automation. The programme is jointly run by the Dept of Mechanical Engineering, and the Dept of Electrical and Computer Engineering.

T: +64 3 369 2166
E: engdegreeadvice@canterbury.ac.nz

⌨ www.canterbury.ac.nz/engineering/schools/mechatronics

Anyone seeking careers advice.

Te Rōpū Rapuara | UC Careers

UC offers intending and current students and recent graduates a wide range of services, including individual career guidance, seminars, career resources and student and graduate employment opportunities.

T: +64 3 369 0303
E: careers@canterbury.ac.nz

⌨ www.canterbury.ac.nz/careers

Prospective students seeking study advice.

Te Rōpū Takawaenga | Student Liaison

The liaison team provide advice to future students who are starting their degree for the first time. They can assist with information on degrees, scholarships, accommodation, and other aspects of university life. We have offices in Christchurch, Auckland and Wellington.

Ōtautahi | Christchurch
T: 0800 VARSITY (0800 827 748)
E: liaison@canterbury.ac.nz

Tāmaki Makaurau | Auckland
T: 0800 UCAUCK
E: auckland@canterbury.ac.nz

Te Whanganui-a-Tara | Wellington
T: 0800 VARSITY (0800 827 748)
E: wellington@canterbury.ac.nz

⌨ www.canterbury.ac.nz/liaison

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