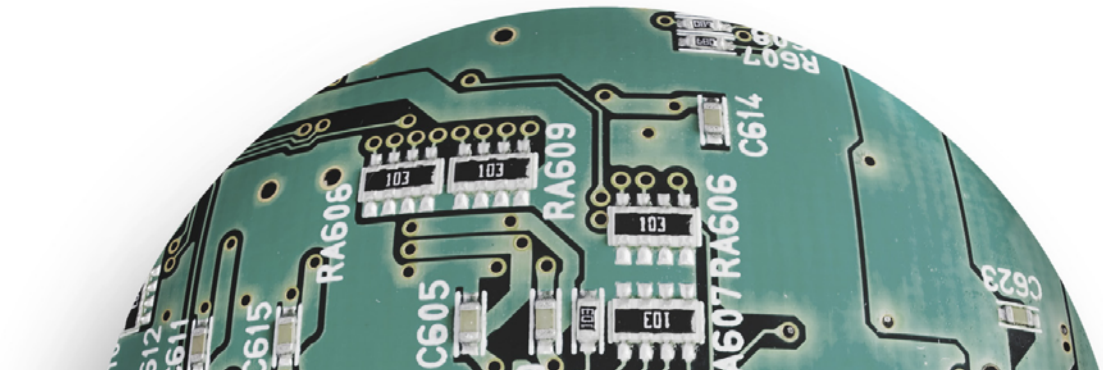
What can I do with a degree in
Computer Engineering?

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

Computer 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/ence

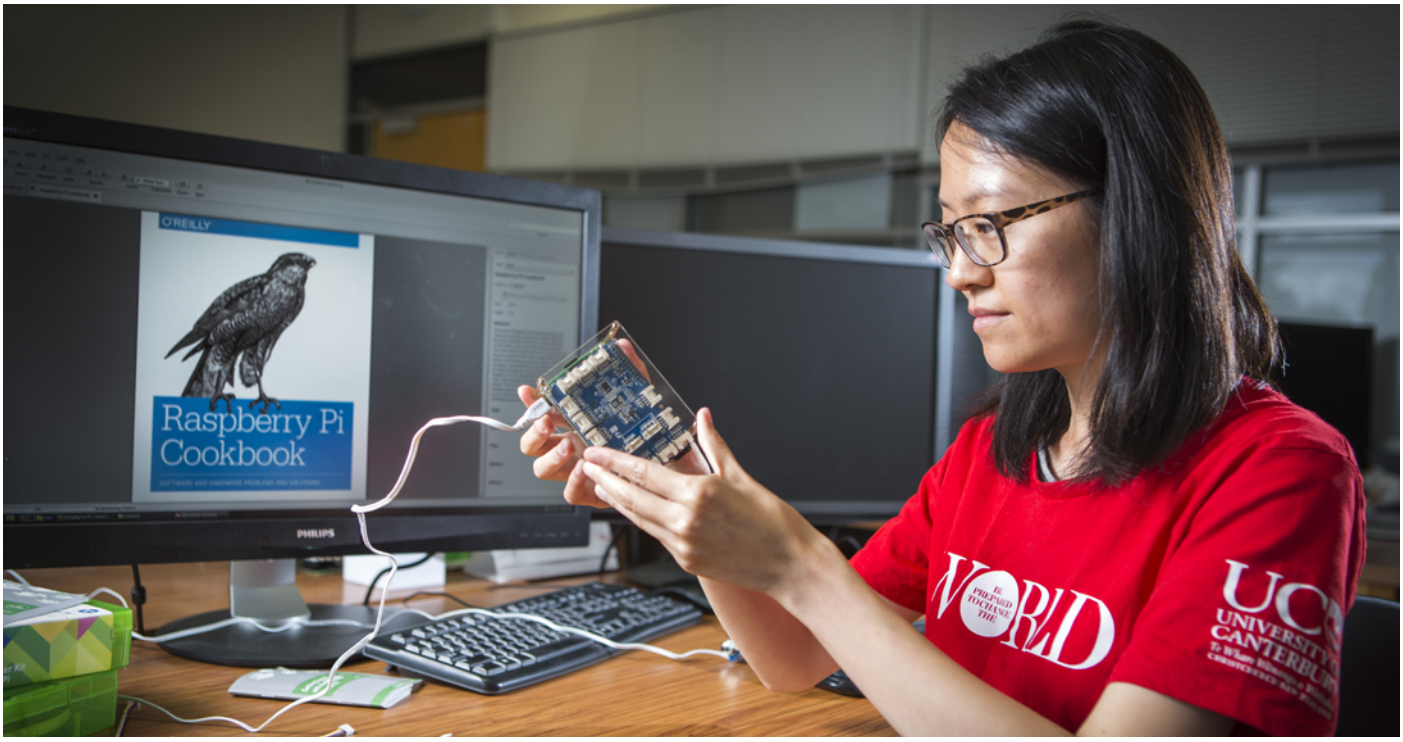
If this brochure does not answer your questions, talking to an expert such as a career consultant can help you to identify the next steps in your career decision making journey.
💻 www.canterbury.ac.nz/careers

What is Computer Engineering?

Computers are at the heart of most modern products, transforming them into devices capable of sensing, making intelligent decisions, and taking collaborative actions. Computer Engineering brings together elements of electronics and software to create the next era of powerful smart electronic devices.

Computer engineering involves using technical knowledge and creativity to solve real-world problems with application specific design.

Portable electronics, autonomous robotics, biomedical devices, household electronics, telecommunications, manufacturing and infrastructure, and high-performance supercomputers are all associated with Computer Engineering.



AT A GLANCE

MORE computer network and systems engineers are needed in Aotearoa New Zealand*

3.3% growth in the employment of engineering professionals expected by 2023+

92% of computer engineering graduates are working in their ideal employment or a step in the right direction^

* *Immigration New Zealand's 2019 long-term skill shortage list www.skillshortages.immigration.govt.nz*
\+ *MBIE Occupational Outlook*
^ *2018 and 2019 Graduate Destination Survey combined*

What skills have UC graduates gained?

Through their Computer Engineering degree graduates develop a valuable set of skills that are transferable to a range of careers. These skills include:

- Creativity and innovation
- Understanding of computer hardware
- Designing programs, writing code and testing software
- Applying engineering and scientific knowledge in real-world situations
- Analytical, logical and quantitative thinking
- Technological understanding
- Problem solving.

Applied learning is an important part of your degree, through work placements, consulting projects and team projects. These experiences can deepen your skillset, awareness of others, working knowledge and employability.

Where have UC graduates been employed?

Computer Engineering graduates are able to develop hardware and industrial software, so the range of industries in which computer engineers are found is extensive. There are plenty of exciting job opportunities locally, nationally and internationally.

Graduates have found employment in both public and private sectors, including:

- Government
- Telecommunications
- Healthcare
- Manufacturing
- Transportation
- Product development.

Many find employment with companies who create devices with embedded systems.

UC graduates have found roles in :

- IT companies eg, Tait Communications, Intergen
- Internet giants eg, Google
- Smart technologies and network connectivity companies eg, Allied Telesis Labs, Silver Peak Systems, Aviat Networks, PMC Sierra
- Banks eg, Kiwibank
- App developers eg, Smudge Apps
- Technology companies eg, ABB Ltd
- Software companies eg, ARANZ Geo
- Electronics manufacturers eg, Toyota Tsusho Electronics, Dynamic Controls Ltd
- Energy companies eg, Cortexo
- Medical innovators eg, ARANZ Medical, Fisher & Paykel Healthcare
- Tracking systems companies eg, Blackhawk Tracking Systems, Telogis.

What jobs and activities do graduates do?

Computer Engineering graduates are employed in a wide variety of jobs — see some examples below.

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

Computer systems engineer

- Designs complex systems based on computers
- Researches and develops hardware and software modules for products eg, healthcare products, telecommunications systems

Embedded systems engineer, firmware engineer

- Creates and programs embedded software (firmware) in electronic devices
- Assists in manufacturing and design
- Works on debugging and testing firmware

Hardware engineer

- Designs the physical components of computer systems
- Researches and tests hardware components
- Considers the costs of hardware to end users

Software engineer

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

Systems developer

- Works with both hardware and software systems to analyse and resolve system faults
- Designs and writes diagnostic programs, operating systems and software
- Troubleshoots inefficiencies, system security

Design engineer, junior design engineer

- Uses software/technology to develop new ideas
- Designs and tests prototype components
- Liaises with suppliers, manufacturers
- Oversees quality control

Software developer

- Identifies requirements and writes programs
- Tests programs and systems are working
- Maintains and upgrades programs
- May develop and integrate technical aspects of websites along with other workers eg, designers

Test analyst, validation tester

- Designs and develops tests for computer software and systems to detect problems
- Identifies defects and bugs, and suggests fixes
- Records issues and tracks solution results

Mobile application developer

- Researches the user market, and works with clients to meet their needs
- Builds and tests mobile applications
- Uses coding techniques and software

Telecommunications and network engineer

- Designs and maintains telecommunications equipment and systems
- Supervises the installation and use of equipment
- Provides training to staff after installation

Entrepreneur and 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.

- Institute of Electrical and Electronic Engineers
  💻 www.ieee.org
- Association for Computing Machinery
  💻 www.acm.org
- Engineering New Zealand
  💻 www.engineeringnz.org
- Te Pou Hangarau Ngaio IT Professionals NZ
  💻 www.itp.nz
- Digital Government
  💻 www.digital.govt.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 many 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 will help you in your future career.

UC offers postgraduate programmes in Computer Science, Electrical and Electronic Engineering, Engineering Management, Human Interface Technology, and Software Engineering. Advanced study can lead to an academic career in teaching and research. For 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

Xiaohan (Sasha)

Bachelor of Engineering with First Class Honours in Computer Engineering
Master of Science in Computer Science
Design Engineer, Tait Communications

What motivated you to study Computer Engineering?

I took a STAR computer programming course when I was in Year 12 and was fascinated by the wide range of applications for computer programs. I decided to learn more about computers and was told that computer engineering involves both hardware and software. I really wanted to know all of them so I chose Computer Engineering.

How did your degree prepare you for the future?

Being a Computer Engineering student, I've taken courses from Electrical and Electronic Engineering and Computer Science. The courses not only provide knowledge that the student needs to be familiar with but also many opportunities to practically apply the theory.

The projects involved in the courses widened my knowledge in the area. I've learned systematic ways of solving engineering problems which did not limit my creativity to the solutions but helped me to think in the right direction.

What did your postgraduate project involve?

My master's project was about improving the wireless communication process for bus finders — the blue device at bus stops that display the minutes till the arrival of a bus — so they can be more energy-saving and reliable.

I worked on my project at the Wireless Research Centre which provides students with opportunities to work on industry-focused problems with the co-supervision of UC academics. I went on to work for them as a research engineer. This is typical of the way the Centre makes connections between industry and the broader university pool of expertise.

What advice would you give?

Be prepared to develop your perseverance during the course of your study. I don't think intelligence is a prerequisite for doing an engineering degree, but determination in achieving your goal definitely is.

If you are interested in technology and want to be someone that contributes to the innovation of technology in the future, UC Engineering is a good platform for you to develop all the necessary skills.

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 Hangarau | Department of Electrical and Computer Engineering

We have excellent facilities for both teaching and research in Electrical and Electronic, Computer, and Mechatronics Engineering. Staff are engaged in a wide range of research activities including communications, image and signal processing, biomedical engineering, electric power engineering, power systems, power electronics, microelectronics and nanotechnology.

T: +64 3 369 3366
E: engdegreeadvice@canterbury.ac.nz

💻 www.canterbury.ac.nz/engineering/ schools/ece

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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