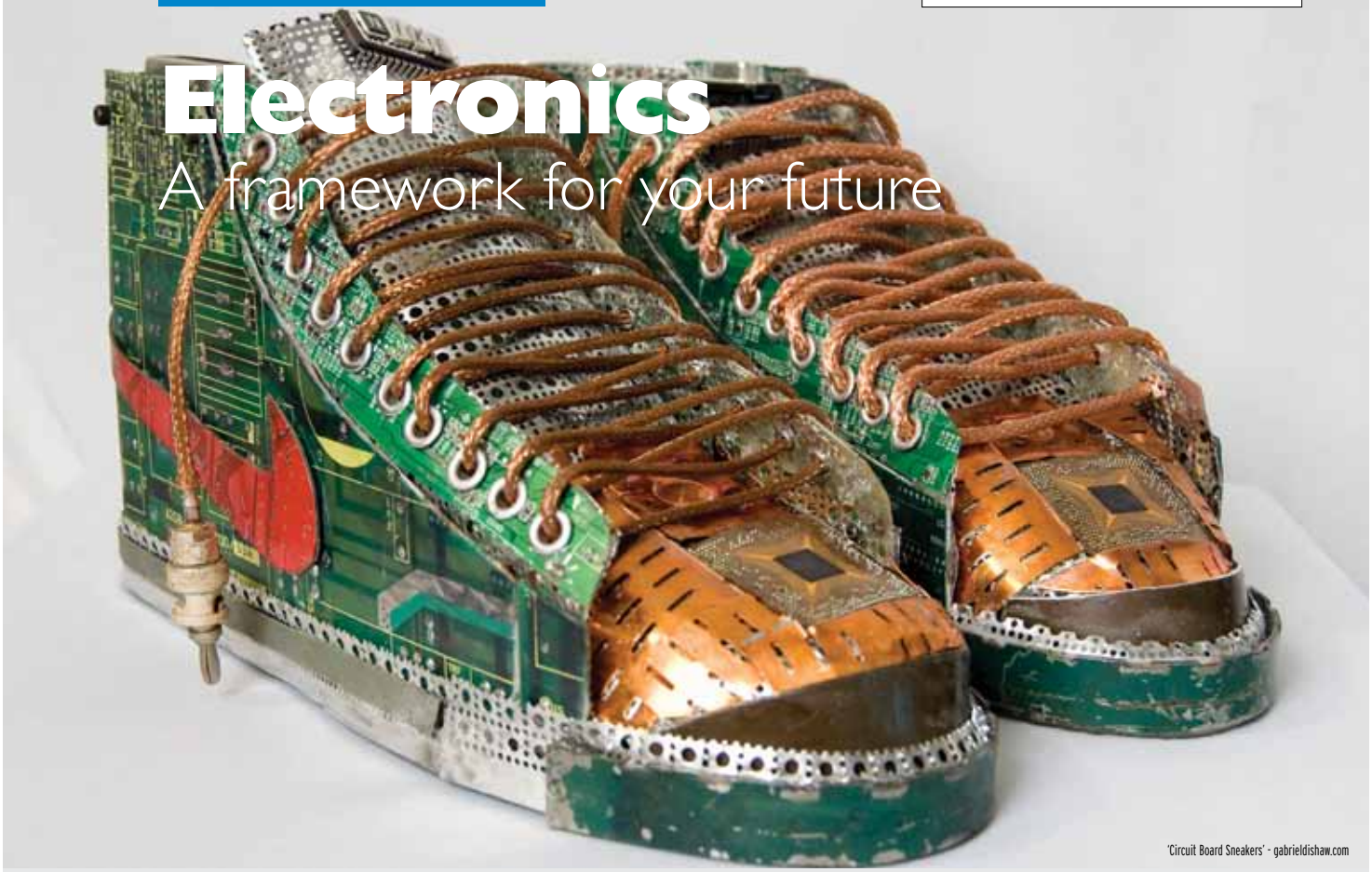
INFORMATION SHEET
ELECTRONICS

UNIVERSITY of OTAGO
Te Whare Wānanga o Otāgo
NEW ZEALAND

Electronics

A framework for your future



'Circuit Board Sneakers' - gabrieldishaw.com

"Electronics is very flexible, which is great. They pretty much let me design my own project, and the data will be very valuable because little is known about the range and movements of some native birds."

Keith Payne PhD candidate, Electronics

Modern electronics is about the four C's – communication, computation, control, and circuits. Research and teaching in the Electronics Group covers these topics, getting us involved in electronic devices, extreme computer architectures, radio astronomy, inverse problems, machine vision and learning, and industrial process monitoring.

In the last year projects produced lightweight GPS tags for birds, modelling and control of a robotic elbow, design and development of FPGA computation devices, network theorems for random resistor networks, non-invasive imaging of electrical capacitance, calibration of numerical models for geothermal fields, and more.

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Why study electronics?

A career in Electronics provides huge opportunities to use your initiative and creativity, and rewards people who come up with practical, fun and innovative ideas.

Changing technology means you will always be facing new challenges and problems.

Electronics is a growth industry with a promising future worldwide. When you are ready, you might even take your own product to the market, or launch your own business.

You'll gain an understanding of the basic building blocks of electronic devices, electronic communications technologies such as radio and lasers, large-scale integrated electronics systems, and the software that governs the application of this technology.

The electronics industry is vast, and is one that rewards creativity and expertise. There will always be plenty of business opportunities waiting to be explored.

Background Information

Students from a range of backgrounds are welcome to study for Otago's BSc in Electronics. There is some flexibility in entry requirements, but in most cases Year 13 physics and mathematics are recommended.

Career Opportunities

There are countless research and commercial career opportunities in New Zealand and overseas for our graduates and their technical expertise.

New Zealand's involvement in the Square Kilometer Array radio telescope (SKA) provides exciting opportunities for electronics graduates to become part of an international research project to explore the fundamental nature of the Universe. Graduates also work as electronics professionals in the rapidly evolving business climate of new electronic technologies, including communications. Examples are radio and optical systems, commercial or industrial control systems, consumer goods, entertainment products, computers and peripherals, scientific and medical equipment, wireless applications or research and development.

To major in Electronics you must study:

MATH 160: Mathematics 1 (first semester)
PHSI 131 *or* PHSI 191: (first semester)
MATH 170: Mathematics 2 (second semester)
PHSI 132: (second semester)

This first year programme will also allow you to major in physics, energy studies, mathematics. It also forms a good foundation for other degrees in the physical sciences.

As well as learning theory in lectures, advanced courses provide hands-on experience in practical classes in the University's well-equipped electronics laboratories.

NB: Details of first-year papers are in the in the Guide to Enrolment.

Postgraduate Degrees

If you already have an undergraduate degree that includes mathematics and physics, there are opportunities to study electronics at graduate level. Opportunities are available at PgDipSc, MSc and PhD level.

Electronics is often combined with other subjects:

After your first year a range of major and minor degree options are available to you. These include physics, energy studies, mathematics, information or computer science and telecommunications. Throughout the degree, there is also scope for you to choose additional papers such as computer science and telecommunications.

PROFILE

Jesse Teat MSc Electronics, 2001

"I started uni at Otago in 2005. It wasn't my first time as I had previously spent two years at uni in the USA and studied a few extramural papers through Massey. I was involved in Alpine skiing at national level – represented New Zealand at the winter Olympics in Salt Lake City, 2002 and had always held my studies secondary to my sport.

I was living in Sweden for a few years after I finished with Alpine skiing and began to tinker with computers. At that stage my desire to design electronics started….

After a few years of living abroad I finally realised I needed to study. I came back home to New Zealand and started at Otago, doing Applied Science in Electronics and Telecommunications, which is a really good combination. Gradually I focused more on the Electronics, and ended up doing a Masters – that's when the real fun started.

The project I worked on was an electric short range vehicle – We started off with an electric scooter; my supervisor wanted to create a vehicle that would be ideal for short trips, but wouldn't leave you out in the weather – quite important in Dunedin. I was keen on the motor control aspects, but I could have worked on anything from lighting and vehicle charge controls to GPS mapping or range algorithms.

During my Masters degree I was able to secure part time work at Kamahi Electronics, based in Brighton. At Kamahi we do contract design and manufacturing, making electronic devices for other companies. We make a range of devices from controllers for wind turbines to desktop systems for electro-chemists.

When I started working at Kamahi 3 years ago it was a small firm of five people. Now at over 10 staff – four of those most recent have Electronics degrees from Otago.

I now specialise in PCB design and sports electronics. I really enjoy the product design process, following the development. Otago University helped me discover that…"

For questions about Electronics
www.otago.ac.nz/electronics