“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
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.

Past 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.
**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 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.

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**PROFILE**

**Dylan Rasburn**

**MAppSc in Electronics**

Dylan Rasburn’s dad got him interested in building circuits when he was younger. “Dad was a programmer and an electronics hobbyist who tinkered with analog audio electronics and micro-contollers – so I gave the first year electronics course a go and found it really engaging. I wanted to create things that interacted with the physical world, and an electronics degree was the gateway to that.”

Dylan chose Otago “because it was where my brother had come to study – and close friends had chosen Otago as well.”

“I heard that the facilities here were very good and that the lecturers and courses were some of the best in New Zealand. The student life in Dunedin also seemed a lot more appealing than other options around New Zealand, I think that’s because everywhere around campus is a short walk away.”

“The teachers in the electronics department are fantastic! They are very clever with a wealth of experience they happily impart onto the students. As a 3rd year student I was part of the inaugural expedition to the top of Mount Benmore. It was great experience and not something I’d expected to be doing when signing up for an electronics course. The teachers were very accessible and always had the time and patience to explain something I didn’t understand.”

Dylan now works at Dunedin tech company ADInstruments as a tester in the Hardware team.

“We design and manufacture data acquisition hardware and software for Life Science Education and Research. The signal processing and electronics theory I learned at Otago has been invaluable.”

The analytical thinking Dylan learned during his time at Otago has helped him in his personal life as well as at work.

“Not only have the maths, physics and electronics skills I learned been very helpful; I also left Otago with the belief that I was capable of tackling any problem. With my Master of Applied Science in Electronics, I won the first job I applied for out of University and started the Monday after graduating – you can’t ask for more than that!”

For questions about Electronics otago.ac.nz/electronics

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Guide to Enrolment.

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