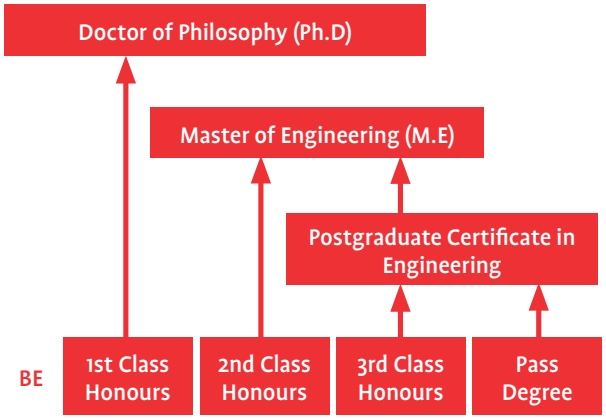
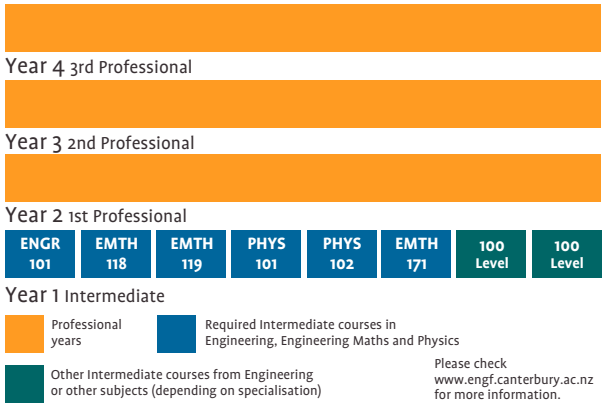
# Department of Electrical and Computer Engineering

The Department of Electrical and Computer Engineering is involved in teaching the Electrical and Electronic Engineering, Computer Engineering and Mechatronics Engineering degree programmes. We have excellent facilities for both teaching and research in all three of these disciplines, and staff engaged in a wide range of research activities, including communications, image and signal processing, biomedical engineering, electric power engineering, microelectronics and nanotechnology.




**Bachelor of Engineering with Honours - EEE, CE, MT**




# The University of Canterbury Te Whare Wānangao Waitaha

The University is located in Christchurch, the largest city in New Zealand's South Island. There are approximately 13,000 students enroled, and 2,000 postgraduate students.
The University's modern and well-equipped facilities are spread across a spacious suburban campus, with easy access to the city and the cultural and recreational facilities it provides. There are several ski-fields within an hour and a half's drive, and good access to the scenic and recreational resources of the Southern Alps and Banks Peninsular.

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## What is Electrical & Computer Engineering?
*College of Engineering*

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

# Electrical.

*www.elec.canterbury.ac.nz* *2014*

# What is Electrical and Computer Engineering?

Professional engineers harness the power of science to design innovative and practical solutions to real world problems.

Through this process they create the new technologies that can revolutionise society and are capable of making life better for people. Electrical and Computer Engineering involves a very wide range of engineering systems, from the smallest of electronic circuits made in the world of nanotechnology, to electric power systems and communications networks spanning nations and continents. Electrical and Computer Engineering is also at the heart of the recent computer and communications revolutions that have swept the world.

Our graduates work for Microsoft, IBM, Vodafone, Qualcomm, Opus, Tait Electronics, Navman, Trimble Navigation, Meridian Energy and many more well known local and international companies. Electrical and Computer Engineers are needed in New Zealand, Australia and all over the world. Our graduates are well prepared to work anywhere and their degree from UC is well respected wherever they go. An engineering career is well paid, well respected, varied and offers extensive opportunities to travel.

Please visit to find out more about the Department of Electrical and Computer Engineering at UC. www.elec.canterbury.ac.nz

EPECentre
ELECTRIC POWER ENGINEERING CENTRE

Centre of Excellence in Electric Power Engineering

# Research areas

Electrical engineering is a diverse field, and the research interests of our department reflect this fact.

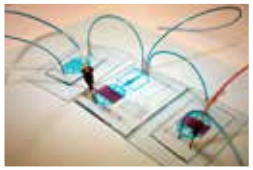
Whilst each staff member pursues individual interests, there are several research groups which combine resources and collaborate on a regular basis. To support staff and student research, the department has a wide array of well-equipped labs, ensuring ready access to state-of-the-art tools and facilities. At present, research groups include:

- Acoustics
- Communications
- Computational Imaging
- Microwave and RF
- Nanotechnology
- Networks
- Power Electronics
- Electric Power Engineering
- Neural Engineering

The MacDiarmid Institute
*for Advanced Materials and Nanotechnology*

# Facilities

Computer laboratories: the principal research resource is a AMD Opteron-based Linux Beowulf cluster.



There are currently a total of 188 cores with 1 TB RAM in this cluster. A suite of 66 machines is provided to 2nd and 3rd professional year students for teaching use and over 200 additional machines are networked to research groups. The computers in the undergraduate labs have dual boot to run Microsoft Windows and Linux operating systems. Nanofabrication laboratory: for semiconductor material processing and sensor and microfluidic device development. Available equipment includes a Raith 150 e-beam lithography system, reactive ion etch and RF sputter systems, thermal evaporator, 100 mm wafer mask aligner, silicon wafer furnace, atomic force microscopy, profilometer, solar simulator, micro-mill, wet benches, electrical characterisation and PC-2 biological containment with fluorescence microscopy. High Voltage laboratory: for testing of equipment and material insulation under both dry and wet conditions. This includes an inverted Marx multistage impulse generator with a peak voltage of 1.4 MV, which can be used to generate standard lightning impulses of the form 1.2 us rise time with a 50 us decay to 50% of the peak voltage. The HVac transformer has a dual rated output voltage of either 150 kV or 300 kV at the secondary. The power rating of the transformer is 100 kVA on continuous basis and 200 kVA on a 5 min on, 15 min off duty cycle.