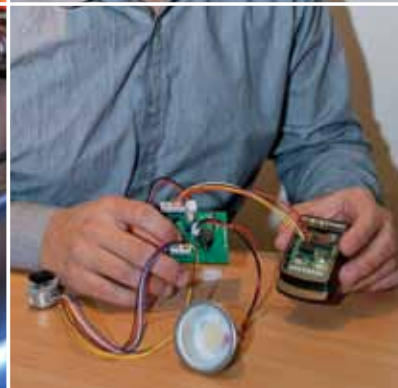
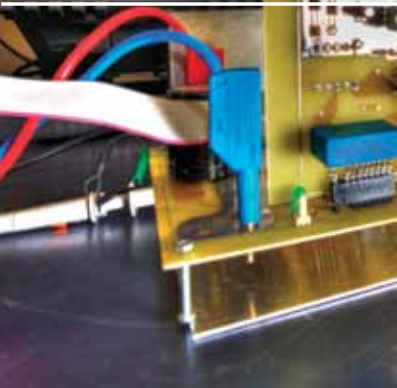
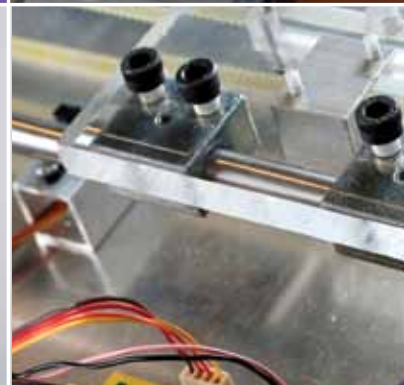
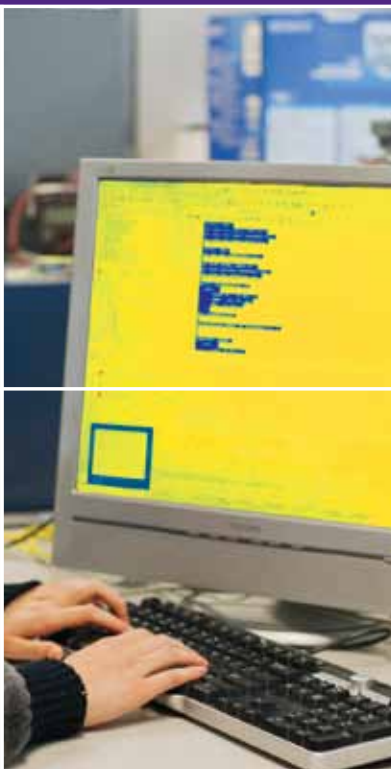




THE UNIVERSITY
OF AUCKLAND

FACULTY OF ENGINEERING

Department of Electrical and Computer Engineering



Your journey starts here with Electrical and Computer Engineering

Imagine a world without cell phones, iPods or laptops; imagine a world without the internet! Electrical, computer and software engineers are responsible for many of the technological changes and advances that we all take for granted.

Over the last two decades our society has become more mobile. In fact, the Power Electronics Group from the Faculty of Engineering leads the world in wireless electrical vehicle charging technology.

Today, engineers are at the forefront of enormous advancements in automated manufacturing, and developing life-saving diagnostic tools in the medical field to name a few. If you have passion, imagination and the determination to make a difference, then you're more than ready to join a long line of history makers – many of them engineering graduates of The University of Auckland.

Making the right choice

Choosing your career path in Electrical and Computer Engineering is a combination of matching your skills and interests in the Bachelor of Engineering (Honours) degree.

This four year degree is an internationally recognised qualification with the first year specifically designed to give you a taste of all three specialisations in electrical, computer and software engineering. As an undergraduate you will benefit from exposure to projects similar to those in industry. We build on our experience and the innovation of our researchers to provide the very best standards in research and learning.



Faculty of Engineering Atrium



"Ever since primary through to high school, I have been interested in science, technology and generally finding out how things work. As a kid, I enjoyed working with electronic kits and computers. Therefore, studying engineering seemed like a logical choice."

"I like the structure of the Bachelor of Engineering (Honours) with the general first year allowing me to take papers from different specialisations and assess my strengths and interests. I decided to specialise in Computer Systems due to its wide exciting field of work in both electronic hardware and software development."

"Specialising in Computer Systems deals with programmable electronics and has allowed me to gain experience in electrical, electronic and software engineering, there is the opportunity to focus on Robotics, Embedded Systems, Industrial Automation and much more. I find this field is extremely exciting and it provides me with a huge amount of knowledge I will be able to use once I graduate."

"In this specialisation, we've worked on various projects, from a FM transmitter and receiver in Part II, a social networking website, various computer games, embedded systems and an autonomous

robot in Part III, to my final year project which involved the development of a sensor network that monitored various vital signs of the human body. This project allowed me to work with both hardware and develop software that allowed the sensors to record, communicate and transfer the data to be displayed on a computer. The final year projects usually involve drawing upon knowledge previously gained during the degree while also assessing a student skill at researching new information. It was challenging, however carrying out the project in groups of two, sharing the work load, picking up on each other's strengths and constantly learning along the way resulted in a truly rewarding experience and sense of accomplishment."

"Next year once I have graduated I will start work for a large New Zealand design and manufacturing company as part of their Embedded Systems Software Design team. There I hope to put to practice all the knowledge and skills gained throughout my degree to help design and create the most human-centred appliances in the world."

Jervis Ferreira, Bachelor of Engineering (Honours) in Computer Systems Engineering Part IV. Awarded The University of Auckland Summer Research Scholarship (2011-12)

Our degrees

The Department of Electrical and Computer Engineering is recognised for its comprehensive and flexible educational programmes in three recognised and respected bachelor degrees:

Computer Systems Engineering focuses on embedded systems, computational intelligence, distributed computing, information engineering, intelligent robotics, industrial decision support systems, home automation, automobiles and instrumentation. These fields are driving rapid change in industry and society, and leading to the creation of new businesses with both industrial and domestic applications.

Electrical and Electronic Engineering focuses on communications and information technology, control, the applications of microprocessors and computers, electric power generation and modern instrumentation and power electronics. These engineers develop new technologies which support the next generation of electricity transmission, industrial automation, electric vehicles and communication infrastructure.

Software Engineering focuses on the development of quality software systems. Software engineers work in many industries including banking, health, architecture, medicine and telecommunications. Employment opportunities for software engineers are available nationally and internationally - from start-up companies to large multinationals and government departments to private consultancies.



"The first year of the Bachelor of Engineering (Honours) allows you to try a little bit of all nine types of engineering offered at the Faculty. I really enjoyed the software paper we did, but I decided to specialise in mechatronics engineering. After a year of mechatronics which included another software paper that I really enjoyed, I decided to switch to software engineering."

"Most software engineering papers have small classes of 50 students or less, this means everyone knows each other and is happy to work together, making even challenging projects more enjoyable. I really enjoy the social environment in software engineering."

"The first software project I did in year one of engineering was sorting different size packages into boxes, trying to minimise the amount of wasted space and doing so quickly. I really enjoyed thinking about this and figuring out the problem, then being able to see the changes I was making improving performance."

"Once I finish my degree I would really like to work in a software company overseas."

Brett Yukich, Bachelor of Engineering (Honours) in Software Engineering Part III



"I chose software engineering because it is everywhere around us from games to automating everyday routines. Software is expanding rapidly and is only limited by ones imagination."

"The broad coverage of fundamental concepts like software design, theory, databases and testing is what I really enjoy. These interesting projects mean we can apply the skills we have learnt."

"The projects allow for creativity and imagination, and are a great way to learn to use new programme languages or technologies."

"In our Augmented Reality group project, we manipulated images captured by a camera to recognize objects. We used a fighter plane as a virtual object and then projected it on top of a real object - a book, and animated it to respond to the movements of the real object."

"In the future I would like to work for a major engineering company such as Microsoft, Google, Apple etc and be a part of the team that comes up with the latest technology innovations."

Alice Wang, Bachelor of Engineering (Honours) in Software Engineering Part IV

Career opportunities for graduates

The Department of Electrical and Computer Engineering drives industry partnerships that enable cutting edge learning. Our graduates are contributing to and leading a wide range of industries worldwide.

As innovative design and product development continues at a rapid pace, so does the demand for qualified engineers. Auckland is New Zealand's largest financial and industrial centre so there's no shortage of career prospects.

As a graduate of the Bachelor of Engineering (Honours) degree, you leave the University with the skills and knowledge required to embark on a successful and professional career. You could enter the workplace as a:

- Computer Network Manager
- Engineering Facilities Manger
- Product Development Engineer
- Power Systems Engineer
- System Test Engineer
- Automation Engineer
- Embedded Systems Designer
- Electronic Designer
- Field Specialist
- Robotics Engineer
- Mobile Phone System Engineer



"When I was young I enjoyed playing with old computers, repairing, maintaining, and programming them, it was one of my favourite pastimes. As I grew older, this evolved into a passion for computer engineering, so it was only natural that I fell into Computer Systems Engineering at The University of Auckland.

"In the future I would like to become involved with robotics or satellites."

Hammond Pearce, Bachelor of Engineering (Honours) in Computer Systems Engineering Part II



"I decided to study a Bachelor of Engineering (Honours) because I have always wanted to understand how things work, particularly electronic devices. I fell in love with the Apple Macintosh very early on and it fascinated me to the degree that I wanted to build one.

"Studying Computer Systems Engineering meant that I had the opportunity to work in peer groups, working alongside talented students who stimulated my intellectual growth.

"While studying my undergraduate degree I wanted to make a difference with the knowledge I gained. I went on to start a project called 'OneBeep' with three other undergraduate Electrical and Electronic Engineering students. With OneBeep, we created a way to transmit data to remote areas – particularly those without internet access. While many programmes have been set up to give low cost computers to children in poorer communities, these children are often in areas so remote that there is no way for them to access up-to-date information. OneBeep's software converts digital files to audio, and then transmits them via radio waves. These

can be received on any AM/FM radio, which passes it on to the laptop via an inexpensive audio cable. As every village has AM radios, we created a low-cost way to beam out daily lessons, health material and other data over long distances to thousands of devices. The OneBeep technology won us first place in the Microsoft Imagine Cup New Zealand in April 2010, and second place in the world.

"This project earned my team and I many accolades. Most important for me being selected as General Electric Alva Emerging Fellow. This award recognises three up-and-coming entrepreneurs throughout the world. I share the honour with Tony Fadel, the man who designed the iPod.

"Since I have graduated I have started two companies that are doing well and I have just moved to Asia to understand the market there and build a bridge between here and New Zealand. The Faculty of Engineering empowered me with the knowledge I needed to start my career."

Vinny Lohan, Graduate, Bachelor of Engineering (Honours) in Computer Systems

Campus Life

Undergraduates have so many opportunities to get involved in campus life. Members of the Auckland University Engineers Society (AUES) are the students' voice within the Faculty. The society hosts many events throughout the year building student networks as well as providing an important link between students and the Institution of Professional Engineers New Zealand (IPENZ).

There are many other clubs or sports teams you can join at the University. You can also enter competitions, go to art galleries, and see live bands. As a student you receive an email account that ensures constant contact with lecturers and peers, as well as access to support services available here at the University.

If you live outside Auckland you can apply to live at one of our halls of residence. For some, this may be the first time living away from home and a little daunting, but it is a great way to meet new people and the city campus is only a five minute walk to Auckland's city centre where there's always something to do.



Scholarships and Awards

School-leavers and those embarking on their first year of study may be eligible for a scholarship. Read more about what's on offer. For more information visit: www.scholarships.auckland.ac.nz

Kick Start scholarships: The Faculty of Engineering wants to help you kick start your studies by providing 24 Kick Start Scholarships in 2013 for first year Bachelor of Engineering (Honours) students.

First-year scholarships: If you are a new student enrolling at The University of Auckland, you may be eligible for a scholarship - regardless of your background or where you live.

*Entry-level scholarships and awards range in value from one-off payments of up to \$5000 to scholarships that pay for your tuition fees and \$2500 living costs for up to three years.

For more information on the Faculty of Engineering Scholarships visit: www.engineering.auckland.ac.nz



"My keen interest in gadgets and electronics led me to pursue studying electrical engineering. I have focused my electives around a telecommunications background.

"My final year project has by far been the most fun and challenging project at the Faculty of Engineering. The amount of time that my project partner and I dedicated to it compared to past projects was something we weren't

used to. It was a huge learning curve for us both due to our unfamiliarity with the subject but with the help of our supervisors and the support from fellow students we were able to produce a prototype design. The biggest reward was the great feedback we received on the exhibition day and the amount of people that showed interest in something we spent so much time on.

"I really liked the variety of electives that allow you to choose what field you want to specialise in. In Part III and IV we were given the opportunity to shape our path and I was able to select the papers I am most interested in. The interaction with staff who are heavily knowledgeable in their fields is awesome.

"I've always wanted to work for a large, worldwide recognised company and to hopefully move my way up the ranks to fill a managerial position, overseeing large projects. This is where I believe my qualification will take me."

Mohammad Hadi, Bachelor of Engineering (Honours) in Electrical and Electronics Engineering Part IV

About us

The Department of Electrical and Computer Engineering is committed to research and dedicated to the pursuit of excellence in teaching, innovation and knowledge. We are proud to offer strong research and industry links to support this.

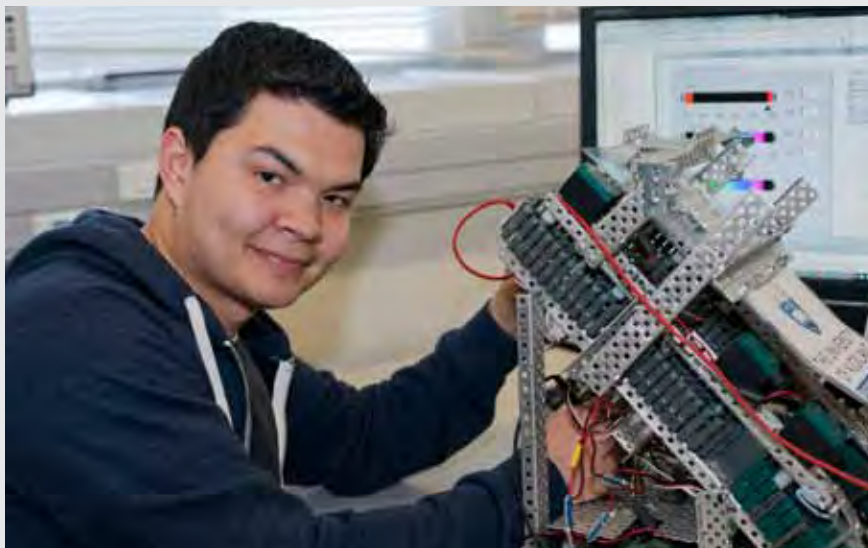
The Faculty of Engineering is committed to creating an environment where people thrive and contribute to improving the quality of life in national and global communities, as well as enhancing the wealth creation of the nation, through excellence in teaching, research and service.

The University of Auckland is New Zealand's leading university and is the only one ranked among the world's top 200 universities by the Times Higher Education World Rankings of Universities. It is also the highest ranked New Zealand university in the QS World University Rankings and the Shanghai Jiao Tong Academic Ranking of World Universities.

"I have always had a keen interest in science and technology. As a young boy, I enjoyed pulling wristwatches apart to replace batteries and opening gadgets to see how they worked. This grew into a fascination with computers, both in hardware and software. I found myself wanting to learn about all the internal components and their functions.

"I chose to specialise in Computer Systems Engineering and I really enjoy learning skills from both hardware and software disciplines. This means I get the best of both worlds because I have learnt how to write software programs, and implement this software on real circuits and systems.

"For my final year project, I was involved in the development and design of an autonomous robot. Our robot was designed to compete in the National Instruments Autonomous Robotics Competition, which required the robot to carry out specific tasks in a simulated disaster rescue mission. Our project focussed on camera based object detection and handling. Using a network camera and an industrial controller, we were able to capture images and perform several processing steps such as colour thresholding and morphological operations to identify cubes that the robot needed to pick up and transport. We qualified to the final round of the



competition and competed in Melbourne with nearly 20 other universities from Australia and New Zealand. It was a challenging and worthwhile experience.

"I have enjoyed the range and depth of material offered in Computer Systems Engineering. Working in groups has developed my communication skills and given me the opportunity to express my creativity. I appreciate the friendships I have developed while studying at the Faculty of Engineering and I hope they will continue long into the future.

"I hope my engineering degree will allow

me to contribute to the development of current and future embedded technologies that will improve our standard of living. I believe there are huge potentials for home automation and smart appliances in the future, as well as a greater demand for internet-based services and telecommunications. I would love to be able to solve real world problems using computer systems and embedded technologies. The possibilities are limitless.

Aonghas Anderson, Bachelor of Engineering (Honours) in Computer Systems Engineering Part IV. Received the University of Auckland Jubilee Award, 2009.



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OF AUCKLAND**
FACULTY OF ENGINEERING

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