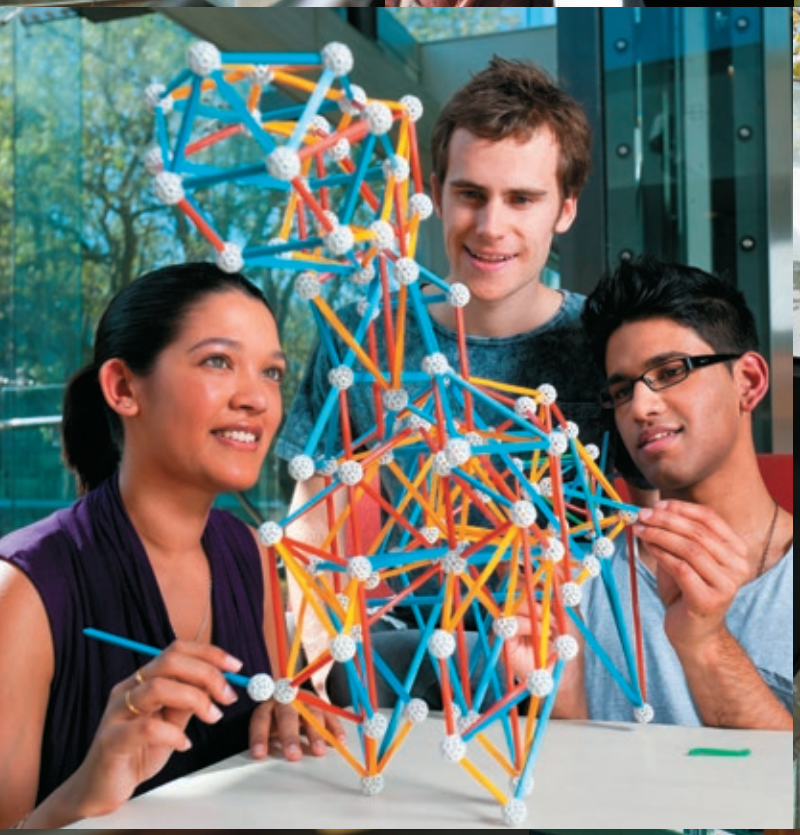
THE UNIVERSITY OF AUCKLAND
Te Whare Wānanga o Tāmaki Makaurau
NEW ZEALAND

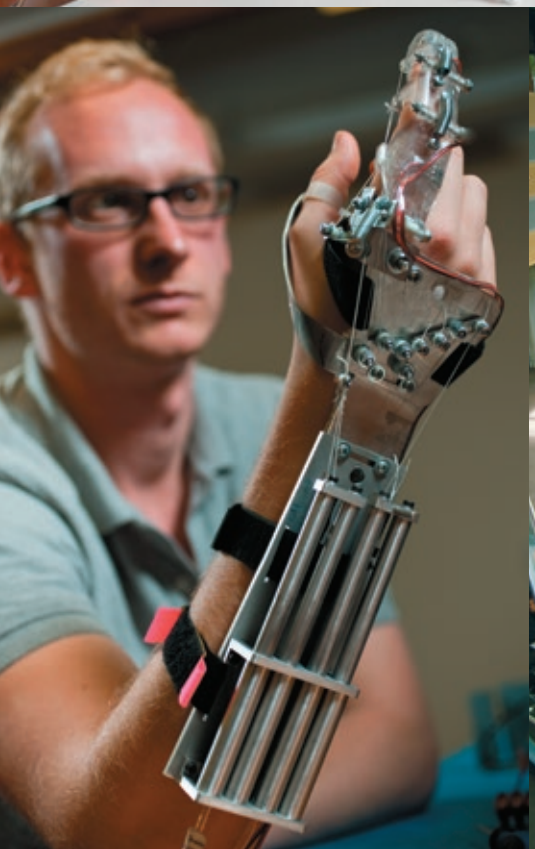
FACULTY OF ENGINEERING

UNDERGRADUATE PROSPECTUS

2016





Welcome to the Faculty of Engineering

Technology is changing our lives at an unprecedented rate, making the engineer's place in the world more important than ever before.

These changes are producing an array of opportunities and challenges that are large in both number and scope. Addressing questions of generating sustainable energy, protecting our infrastructure from extreme weather patterns and optimising technology in healthcare, are critical for all our futures.

As an engineer, you will be integral to how we go about answering these questions. The skills you develop during your time with us will enable you to help shape the outlook of both New Zealand and our global community.

Within New Zealand's world-ranked engineering faculty, you will have the opportunity to engage with experts who are internationally respected in their fields. You will be immersed in cutting-edge engineering technologies across nine degree specialisations, with opportunities to shape and participate in critical thought leadership that dictates how we develop and deploy engineering technologies in the future.

On behalf of the faculty I invite you to grasp these opportunities; they are unique, exciting and critical for your future professional career and the wider community that we serve, lead and live within.

Nic Smith

Professor Nic Smith
Dean of Engineering
The University of Auckland

Why study with us?

Are you interested in contributing to the health of our nation, the growth of our economy and the future of our cities? Whether it is building sustainable infrastructure, developing software for autonomous cars, or working on surgical robotics for the healthcare industry, our world-class Bachelor of Engineering (Honours) degree will give you the tools you need to make the unimaginable happen.

If you are creative, curious, resourceful, enjoy working with people, designing solutions to problems and want to use your skills to make a difference, then you should consider a career in engineering.

Studying engineering at the University of Auckland offers unique benefits:

- You'll be studying at New Zealand's leading engineering faculty.*
- We are the only New Zealand university to offer Engineering Science and Biomedical Engineering specialisations.
- You can be selected for admission based on your high school results.
- You will have access to world-class research, equipment and study facilities. We host the largest engineering library in the country, the renowned Auckland Bioengineering Institute, and state-of-the-art analysis equipment, including a specialised NanoIndenter machine, and environmental and traditional scanning electron microscopes.
- Almost 25% of students admitted to our undergraduate programme are women. This is one of the highest participation rates of females in tertiary-level engineering across Australia and New Zealand.

Join us at the University of Auckland, in the heart of New Zealand's largest city and commercial hub, to best position yourself for a life dedicated to building a better tomorrow.

**QS World University Rankings by Faculty, 2014/2015.*

What can you study?

Bachelor of Engineering (Honours)

Quick facts – BE (Hons)

Full-time: 4 years

Points per degree: 480

Taught at: City Campus

Application closing date: 8 December 2015

Classes start: 29 February 2016 and 18 July 2016

All successful applicants will gain entry into the BE(Hons) programme. The BE(Hons) degree is awarded to those students who achieve a sufficiently high Grade Point Average (GPA) in Parts II, III and IV. Students who successfully complete the programme but do not achieve a sufficiently high GPA to be awarded the Honours degree, will be awarded the BE degree.

The BE(Hons) degree at the University of Auckland is a four-year programme leading to registration as a professional engineer. It consists of 480 points usually divided into four, 120-point parts (each equivalent to one year's study).

Part I is a common first year. You gain exposure to each of the nine different engineering specialisations and study a broad base of engineering and professional fundamentals.

At the end of Part I, you will be invited to select the discipline in which you wish to specialise for the remainder of your degree. We offer nine different specialisations, each with a limited number of places. Admission into your preferred specialisation is based on your academic results in Part I.

Parts II, III and IV are customised over the following three years according to your area of specialisation. All students study a common core of mathematical modelling, technical communication and professional development, in addition to specialist subjects relevant to your chosen field. You will also have opportunities to choose elective courses, allowing you to further specialise in topics that interest you most.

Throughout your degree, your courses will involve a mixture of lectures, tutorials, assignments and exams, group projects, interactive learning and presentations.

Practical work

There are two compulsory practical work requirements of the BE(Hons) degree. In Part II, you will need to complete a zero-point 40-hour workshop practice course. You are also required to gain at least 800 hours of practical work experience throughout your degree. This will involve exposure to general trade and sub-professional skills relevant to your engineering specialisation, ensuring you're ready for the workforce by the time you graduate.

Conjoint programmes

Quick facts – BE(Hons) conjoints

Full-time: 5 years (6 years with LLB)

Points for BE(Hons): 405 points

Points for other degree: 270 points (390 points for LLB)

Conjoint combinations: Arts, Commerce, Law, Property, Science*

Conjoint programmes enable you to complete a BE(Hons) and another degree faster than if you were to complete them separately. They can be an excellent choice if you know that the other degree component will be beneficial in your proposed career, or if you are a capable student wanting skills in various areas.

As with the standalone BE(Hons) degree, you will cover Part I of the BE(Hons) in the first year of your conjoint programme (although you will take 90 points of engineering courses, rather than 120 points). You will then select your preferred specialisation for Parts II-IV, and complete the requirements of your other degree around it.

The workload for a conjoint programme is higher than that of a single degree (usually 135 points per year, compared with 120 points per year for a single degree). As the BE(Hons) programme alone is considered to have a high workload, conjoint students should be prepared for an even greater challenge.

There are higher entry requirements for BE(Hons) conjoint programmes. Before applying, consult with both faculties concerned and refer to the Conjoint Degrees Regulations in the University of Auckland Calendar. As conjoint programmes can be structured in several ways and planning your timetable can be complex, we suggest you consult with a faculty adviser for help and advice.

**BE(Hons)/BSc conjoint programmes are subject to prior approval from the Faculty of Engineering, so as to avoid substantial overlap of course content.*

General Education

General Education courses are a distinctive feature of the University of Auckland's bachelors degrees that are designed to broaden your education. As a BE(Hons) student, you must pass one General Education course (15 points) in Part I. Special arrangements may apply if you transfer from another tertiary institution with credit. For more information, visit **www.auckland.ac.nz/generaleducation**

Sample BE(Hons) degree structure

Part I	**CHEMMAT 121** Materials Science	**ELECTENG 101** Electrical and Digital Systems	**ENGGEN 115** Principles of Engineering Design	**ENGGEN 121** Engineering Mechanics	**ENGGEN 131** Engineering Computation and Software Development	**ENGGEN 140** Engineering Biology and Chemistry	**ENGSCI 111** Mathematical Modelling 1	General Education	**ENGGEN 199** English Language Competency
Part II	**ENGGEN 204** Managing Design and Communication	**ENGSCI 211** Mathematical Modelling 2	Specialisation course	Specialisation course	Specialisation course	Specialisation course	Specialisation course	Specialisation course	**ENGGEN 299** Workshop Practice
Part III	**ENGGEN 303** Managing Projects and Innovation	**ENGSCI 311** Mathematical Modelling 3	Specialisation course	Specialisation course	Specialisation course	Specialisation course	Specialisation course	Elective	**ENGGEN 499** Practical Work
Part IV	**ENGGEN 403** Managing a Business	Specialisation course	Research Project		Elective	Elective	Elective	Elective	

Common core courses *Specialisation courses* *Elective courses* *General Education courses* *Part IV research project* *Compulsory degree components*

Accelerated Pathway

Are you an academic high-achiever?* If so, you can apply for admission into the BE(Hons) Accelerated Pathway programme. The Accelerated Pathway programme allows very-able students to bypass the general first-year programme, begin their specialisation straight away and complete their degree within just three years. Selection is based on exceptional academic achievement and confidential references from teachers who have taught you at school. If accepted, your semester will commence slightly earlier with a compulsory induction week, during which you'll meet your assigned staff mentor. Expressions of interest from students or their teachers should be directed to foe-beaccelerated@auckland.ac.nz.

**In Year 13 or transferring from one year of a BSc degree with at least an A- average.*

Interested in further study?

The Faculty of Engineering offers a range of postgraduate options from graduate certificates and diplomas, to masters and PhD degrees. Many of our brightest students choose to move on to postgraduate study after completing their BE(Hons), enabling them to work alongside internationally respected researchers on projects of global significance. For more information about our postgraduate offerings, visit **www.engineering.auckland.ac.nz/postgrads**

Student support

Every student admitted to the BE(Hons) programme has the ability to succeed in this degree. We have a dedicated team of staff available within the faculty to provide academic and pastoral support to ensure that you have a smooth transition to university and to support you in your studies. Our Student Engagement Team are here for you from Orientation through to employment, organising initiatives such as the Part I Assistance Centre, the Women in Engineering Network, the Tuākana tutorial programme and employer networking evenings. The vibrant student culture of our faculty, the open-door policy of teaching staff, and the array of student clubs and societies means there will always be someone to talk things through with.

Academic English Language Requirement

In 2016, the University will introduce an Academic English Language Requirement (AELR) into all its undergraduate programmes. The aim of the AELR is to ensure you have a sufficient level of competence in academic English to support your study at University. The AELR will not affect whether you are offered a place on a programme, and may be met through your entry qualification or through satisfactory completion of an approved course in your first year of study. Applicants who have not met the AELR through their entrance qualification will be provided with advice at the time of enrolment. For further information, see **www.auckland.ac.nz/aelr**

Choose your specialisation

All University of Auckland BE(Hons) specialisations are accredited by the Institution of Professional Engineers New Zealand (IPENZ), a signatory to the Washington Accord. IPENZ accreditation makes your degree a recognised qualification in many overseas countries.

Biomedical Engineering

Biomedical engineers combine engineering, medicine, and biology to resolve challenges in the healthcare industry. They respond to challenging problems like: how can we diagnose ill health sooner? How can we design medical solutions for more effective treatment and quicker recovery? How might autonomous technology and telemedicine improve healthcare delivery? It is a field of rapid diversification, and as the role of technology in healthcare becomes more prominent biomedical engineers find themselves at the forefront of real-world, life-changing outcomes.

Topics include: Tissue and biomolecular engineering, continuum modelling, biomedical imaging, biotechnology, medical devices, drug design, computational physiology and sports science.

Choose your career

Biomedical engineers often gain employment in biomedical companies, research facilities, hospitals and government regulatory agencies. They design medical devices, prostheses or implants, develop drugs or drug delivery systems, improve sports and injury assessment, and work in medical IT. As some of the most versatile engineers, biomedical engineers can also be found in fields like software development, electronics, consulting, financial modelling, and the food/meat/wool industries.

"I really enjoyed calculus and biology in high school, and when a couple of faculty representatives came to my school and highlighted the connection Biomedical Engineering could have to the sporting industry, I was hooked! I wasn't studying physics at the time and had to pick it up in my last year of high school which was a struggle, but definitely worth it in the end.

"Now that I'm here, I can see there are opportunities to not only focus on orthopaedic bioengineering, but also new and intriguing fields like rehabilitation engineering, biomechatronics and neuroscience. The diversity of subjects definitely keeps things interesting, but the small number of students is my favourite thing about this particular specialisation. I didn't know anyone at the beginning of the year and was dreading being without my first-year friends. Now looking at us, you'd think we had all been friends for years.

"I've been grateful that the University has been supportive of my sporting aspirations alongside my studies – balancing the two can be hard. I can't say I get it right all the time, but the University support has really helped."

***Shannon Leota** is studying for a Bachelor of Engineering (Honours) in Biomedical Engineering.*

Chemical and Materials Engineering

Do you wonder how products like petrol, plastic bottles, and synthetic polyester are produced from oil? Or are you more interested in developing new, sustainable replacements to these everyday items? These topics fall under Chemical and Materials Engineering, a discipline that involves understanding how to chemically or physically alter a substrate in order to produce something useful. As "big picture" professionals, these engineers are often responsible for the overall design, operation and quality of giant-scale processes.

Topics include: Chemical and process engineering, materials science and engineering, energy, food process engineering and biotechnology.

Choose your career

Major industries employing chemical and materials engineers include dairy and food, pharmaceuticals, paper and pulp, petrochemicals, energy processing and production, construction and cement, timber, water treatment, resource development and management, electronics, and mineral processing industries such as aluminium and steel production. As sustainable practices become increasingly critical, chemical and material engineers will also be required to re-evaluate and re-design many of the fundamental products and processes that these industries have been built upon.

"This year's research project on alternative energy made me more aware of the current and future issues around energy supply in response to an increasing population. I hope to apply my knowledge to the alternative energy industry and contribute to pushing the world towards a more sustainable future.

"I enjoyed chemistry, physics and maths at school and knew that Chemical and Materials Engineering would provide me with a creative and fulfilling degree and a wide range of career opportunities. I find it exciting that once I graduate I could be involved in ground-breaking scientific research, work as a field engineer and eventually occupy a senior management position. With practical experience, I hope to develop my career further by working towards becoming an IChemE chartered engineer.

"I've loved learning from the lecturers in the Chemical and Materials Engineering department. They are always willing to share their knowledge and expertise, and I've appreciated their open-door policy. The willingness of everyone to help each other and see one another succeed has provided me with a very strong support structure throughout my degree."

***Prianka Naidu** is studying for a Bachelor of Engineering (Honours) in Chemical and Materials Engineering.*

Civil and Environmental Engineering

Civil engineers make modern life possible. They work on the planning, design, construction and maintenance of projects such as skyscrapers, motorways, bridges, tunnels and dams. They are the ones who calculate the maximum weight that a bridge will be able to hold, or work out how to earthquake-proof buildings. Environmental engineers design practical solutions that help mitigate further harm to our planet. You can see how, as disciplines, civil and environmental engineering will only become further entwined as time passes.

Topics include: Structural engineering, environmental principles, fluid mechanics, hydrology, geomechanics, transportation, traffic systems, administration and project management.

Choose your career

The demand for civil and environmental engineers will soon exceed supply as cities continue to grow, ageing infrastructure needs replacing and the need to rectify human harm to the environment becomes critical. You will find opportunities in state-owned enterprises, regional and district councils, and in the private sector, working as an engineering contractor or consultant. A number of our graduates have progressed into the top echelons of businesses around the world.

"I have always enjoyed the mathematical side of problem solving, as well as the opportunity to get my hands dirty. Civil and Environmental Engineering provides a great balance between these, giving you the chance to mentally challenge yourself to create amazing designs, and then getting out of the office to see those designs being realised.

"I like how in the first couple of years of this degree, even after you've chosen your specialisation, the classes are broad and cover a wide range of topics. Then as you progress and can see what you personally prefer, the programme provides more opportunities to specialise, allowing you to focus on what really interests you.

"Looking to the future, I want to be working on innovative designs that really push the limits. I find myself drawn to bridge design, as no two bridges will ever be the same. With the advanced construction techniques and materials available, there is so much room to grow in a field that will constantly keep you engaged and interested."

***Daniel Cvitanich** is studying for a Bachelor of Engineering (Honours) in Civil and Environmental Engineering.*

Computer Systems Engineering

Computer systems engineering now pervades almost every aspect of our world. It constitutes the core of controllers and components of wireless communication systems, home automation systems, appliances, automobiles, factory processes, mechatronics, instrumentation, embedded systems and nano-systems. Computer Systems Engineering is the crucial branch of the discipline that solves practical engineering problems with computer-based solutions, often by embedding a computer system into a complex operation that can sense, problem-solve and act in the real world.

Topics include: Hardware and software design, circuits, microcomputers and embedded systems, electromagnetics, computer networks, distributed computing, communication systems and intelligent robotics.

Choose your career

As innovative design and product development continues at pace, so too does the demand for qualified engineers. As a graduate, you will find opportunities in multinational computer companies, consultancy firms, the telecommunications industry, and in the research and development teams of companies in a multitude of sectors. You might extend your Part IV research project, develop a new technology and form your own start-up company.

"Because Computer Systems Engineering has elements of both electrical and software engineering, I now have the flexibility to go into either field. My goal is to use my qualification in a job that is enjoyable, challenging and that makes other people's lives easier. Soon I will be starting my career as a Graduate Software Developer at Xero.

"I decided to pursue engineering because physics and maths were my favourite subjects at school, I enjoyed being up for a challenge, and I knew it would give me skills in a field that has a shortage of workers so I wouldn't have trouble finding a job afterwards.

"The highlight of my time at the University of Auckland is definitely the lifelong friendships I've made. The atmosphere in Engineering is friendly and supportive, which makes it easy to make friends. I've been a leader of the Women in Engineering Network (WEN) for the past three years and have loved talking to girls about why I chose engineering."

***Humaa Yaqoob** has recently completed a Bachelor of Engineering (Honours) in Computer Systems Engineering.*

Electrical and Electronic Engineering

Modern society is highly dependent on reliable power, communications and electronic systems. Electrical and electronic engineers design the equipment and systems that provide these essential services. The discipline encompasses a range of exciting and diverse fields, from heavy electrical power generation, to sophisticated medical electronics, computer modelling, electromagnetics, information technology and the global telecommunications network. We will have electrical and electronic engineers to thank when new forms of green electricity are developed and electric vehicles replace our fossil fuel-powered fleet.

Topics include: Electrical materials and electronic devices, circuit theory, electromagnetics, transmission systems, power electronics, wireless communication and digital signal processing.

Choose your career

This engineering discipline changes so rapidly that it may be difficult to envision the types of technology you will be working on by the time you graduate – they may not even be invented yet! Today, our graduates are employed in roles relating to communications, wireless computing technologies, electronics, instrumentation, power electronics and motor-control. Opportunities also exist in processing industries such as timber, pulp and paper, steel, aluminium, meat and dairy.

"I've always been a very creative and practical person and I enjoy challenges – engineering really sums me up! Plus, engineering has always been considered a leading career with great job prospects, which only made the choice easier for me.

"What I like most about this faculty is the wide range of specialisations you can choose from – there are even more options when you enter postgraduate study. All of our courses are taught with the utmost professionalism, and genuine care is taken to help us through any problems. A real emphasis is placed on making sure we get a feel for how the industry works, so that it's easy for us to transition into working life later on.

"Once I've finished my bachelors degree, I plan to pursue a masters in my chosen field to gain more in-depth knowledge and further exposure to the industry. After that, I intend to jump at any opportunity to work in different parts of the world."

***Ankita Ghai** is studying for a Bachelor of Engineering (Honours) in Electrical and Electronic Engineering.*

Engineering Science

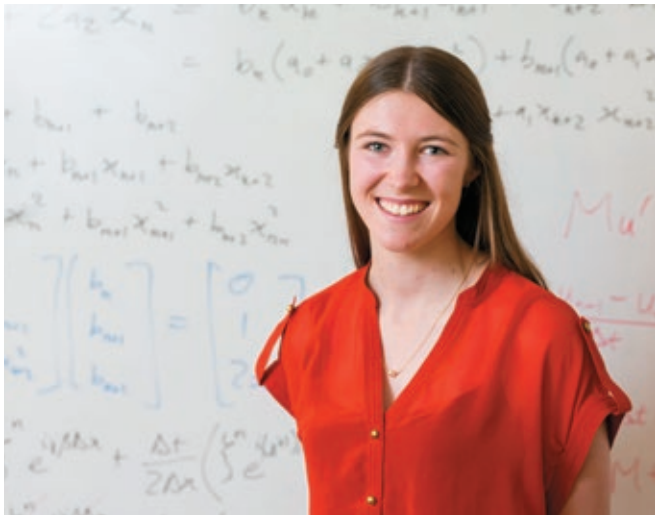
Engineering scientists are problem solvers committed to the science of "better". They use their intellect and advanced mathematical skills to design ways to optimise and improve systems. How can a forest be managed to make a profit while still remaining environmentally friendly? How can a sail be designed to work in low wind conditions? What prices should be charged for airline tickets to maximise the revenue from a given flight? These are all questions an engineering scientist would relish.

Topics include: Advanced mathematical modelling, computational techniques, operations research, scheduling and optimisation, advanced mechanics, simulation and algorithms for signal processing.

Choose your career

The diverse range of options available throughout your degree will directly contribute to your professional versatility. You might end up developing software, modelling production processes for a large manufacturer, or in a management position with a bank. Our graduates can be found in leading New Zealand companies like Fonterra, Air New Zealand, and Meridian Energy, in government organisations including NIWA and Transpower, and consultancy firms such as Beca and Maunsell.

"Being surrounded by so many successful researchers, academics and students makes the University of Auckland an inspiring place to study."



"I've always hoped for a career that will have an impact, one that will make a tangible difference in people's lives. One of the reasons I chose Engineering Science was because of the wide variety of careers it can lead to. It's very much a mind-set and a way to approach problems, rather than learning about any one particular industry.

"One of our recent projects was to design a functioning wind turbine according to a set of provided parameters. The project applied a lot of the skills we had been learning. Taking the design right through from the maths and design code, to building the blades ourselves after the sections were laser cut, to testing them in the faculty's wind tunnel at the Newmarket Campus, was a great learning curve.

"Being surrounded by so many successful researchers, academics and students makes the University of Auckland an inspiring place to study. There is so much motivation to succeed, which I think really influences how enjoyable my studies are. Working alongside some of New Zealand's top academics has really given me a step in the right direction for my future career."

***Penelope Maxwell** is studying for a Bachelor of Engineering (Honours) in Engineering Science.*

Mechanical Engineering

Mechanical engineers use science and technology to design and produce mechanical devices, machinery and systems - think robots, wind turbines and cars. Their work spans a range of scales, from nanotechnologies to large-scale industrial machinery and processes, such as paper mills or car assembly plants. Mechanical engineers also understand how to efficiently use energy in processes, so they might be involved in designing a heating system for a hospital or a refrigeration plant for a food export company.

Topics include: Dynamics, fluid mechanics, heat transfer, thermodynamics, industrial engineering, control systems, solid mechanics and materials.

Choose your career

As a graduate, you might pursue opportunities in the manufacturing or transport industries, or in major primary process plants that produce things like wood pulp, dairy products, meat, steel, petroleum and electricity. Many of our graduates enjoy the variety involved in consultative engineering, where they are commissioned by companies to plan, design and implement a range of projects often confined by interesting and industry-specific parameters.

"I always enjoyed maths and science, from primary through to secondary school. In sixth form I discovered that the application of these was not mutually exclusive or purely theoretical, and that mechanical engineering was the career path for me.

"I have been lucky enough to be involved with the University of Auckland's Formula SAE Team. Designing and building an internationally competing formula-style race car from scratch each year has been the most fun I could imagine – I get to work with forty of my friends and play a part in the management, design, manufacture and racing of the car. The range of topics and the material we cover in class has been directly applicable to Formula SAE. I've really valued the chance to put the theory into practice.

"I am passionate about aviation and automotive engineering, and would like to be involved in all parts of a project – from design through to manufacture and testing. My dream job would involve high-level motorsport or aircraft design."

***Isaac Grigor** is studying for a Bachelor of Engineering (Honours) in Mechanical Engineering.*

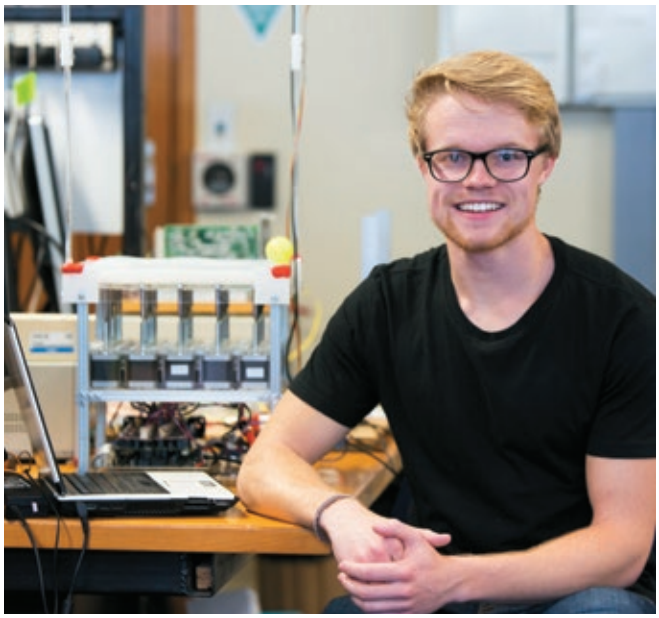
Mechatronics Engineering

Mechatronics Engineering integrates specialist knowledge in mechanics, electronics and computer systems to design and develop automated systems, such as chassis-stabilising systems, anti-lock brakes, engine control units, disk drives, cameras, service and surgical robots and medical devices. All of these systems are largely mechanical in nature, but could not function without their essential electronic and computer control system components. As "jacks of all trades", mechatronics engineers are often generalists rather than specialists, with a versatility that is highly valued in the workforce.

Topics include: Mechatronics design, electric circuit analysis, software design, robotics, industrial automation, biomechatronic systems, manufacturing and microcontroller systems.

Choose your career

This specialisation is fully in line with the modern world's desire for a high-tech, knowledge-based economy. As society moves toward 'smart' homes, cities and grids, mechatronics engineers will be in high demand. Our graduates can be found in a wide range of jobs that involve the design and improvement of high-tech products, such as home appliances, medical devices and machine tools, and processes related to precision agriculture and remote sensing.



"I really enjoyed the programming, electronics and mechanical components of my first year and didn't want to give any of them up. So I chose to specialise in Mechatronics so I could continue with all three. It also has a really cool name and I get to work with robots. The choice was pretty obvious.

"This year we had to design a microcontroller for a car. It had to handle things like collision detection, engine temperature readings and general monitoring tasks in real-time. It was a very challenging and time-consuming project but was a great learning process and very rewarding to finally complete.

"I spent a semester on exchange in the US studying at the University of California, Santa Barbara, and it was the best experience of my life! I made so many friends from all over the world, had the craziest adventures, travelled to awesome places and got to experience a new university system. It was just awesome. I'd like to do a masters overseas somewhere one day, and then start working in healthcare or aeronautics/ space travel."

***Mark Walbran** is studying for a Bachelor of Engineering (Honours) in Mechatronics Engineering.*

Software Engineering

Software engineering is behind many of the things we now take for granted – internet banking, online shopping, and mobile payments. It is the apps on your smart phone, the games on your computer, and the cloud storage you depend on to back up your devices. This area of engineering is being propelled by widespread demand for faultless software support. The creative possibilities literally stretch as far as your imagination.

Topics include: Programming languages, operating systems, algorithm design, database systems, software architecture, system performance and quality assurance.

Choose your career

As infrastructure, government agencies, businesses, and individuals are increasingly reliant on intuitive, dependable, cloud-based solutions, software engineers are emerging as the newest generation of IT workforce leaders. As a graduate, you could end up in virtually any company, managing their information storage and sharing technologies. You might choose to join a dedicated software consultancy firm, or work your way up to management. Some students have extended their Part IV projects with postgraduate research, using this to kick-start their very own start-up companies.

"The world around us is changing rapidly due to the constant development of new technologies. I've always wanted to be a part of this change. The technological community sees every day as a new day, and every new day we evolve. This outlook made me fall in love with Software Engineering. The atmosphere of betterment that surrounds studying and working with technology is what drives me.

"I really enjoyed making my first android app. It was a plain old contacts manager (found on even the simplest of phones), but that development experience helped me to secure my first job as a handset tester. I plan to go on to develop some really worthwhile software that will make the world a better place to live in.

"Besides making some really good friends, I'm glad I chose to study at one of the best engineering faculties around the world. It is a proud feeling to find out that your very own lecturer writes the textbook you are learning from."

***Juhi Kamal Goswami** is studying for a Bachelor of Engineering (Honours) in Software Engineering.*

How do you get in?

To study at the University of Auckland you must have a university entrance qualification and be selected into a programme. The following information details the specific programme requirements for admission to the BE(Hons).

University Entrance Standard

If you are applying for admission to the University of Auckland in 2016 based on secondary school qualifications, you will be required to meet the University Entrance Standard, as established by Universities New Zealand. For details please see The University of Auckland Undergraduate Prospectus or visit **www.auckland.ac.nz/entry-requirements**

BE(Hons) programme requirements

In addition to achieving university entrance, you must meet specific programme requirements for admission to a BE(Hons) programme. The following table indicates the rank score, credit and subject requirements that will guarantee you a place in a BE(Hons) programme in 2016.

Guaranteed entry requirements for BE(Hons) programmes in 2016

Programme	NCEA (Level 3)	CIE (taken in NZ)	IB
Bachelor of Engineering (Honours) (BE(Hons))**	260 with 17 external Level 3 credits in Calculus and 16 external Level 3 credits in Physics	310 with Mathematics and Physics at A levels*	33 with Mathematics and Physics at HL level*
Bachelor of Engineering (Honours) conjoints	275 with 17 external Level 3 credits in Calculus and 16 external Level 3 credits in Physics	330 with Mathematics and Physics at A levels*	36 with Mathematics and Physics at HL level*

How your rank score is calculated

National Certificate of Educational Achievement (NCEA) Level 3

To be admitted to the University of Auckland you must gain the University Entrance Standard and be selected into a programme. You will be allocated a rank score based on your best 80 credits at Level 3 or higher over a maximum of five approved subjects, weighted by the level of achievement attained in each set of credits. If you achieve fewer than 80 credits, the rank score will be based on those credits you have gained at Level 3 over a maximum of five approved subjects and weighted by the level of achievement.

- The rank score will be calculated by awarding the following points for up to 24 credits in each approved subject taken at Level 3. The maximum rank score is 320.

Excellence	4 points
Merit	3 points
Achieved	2 points

- Credits obtained in any required subjects do not have to be among the best 80 credits used for ranking purposes.
- NCEA Level 3 credits achieved in previous years may be counted towards the 80 best credits used for ranking purposes.
- Level 3 subject requirements for a specific programme may be met in Year 12.
- You are strongly encouraged to take achievement standards as preparation for University study.

**For CIE students, AS level Mathematics and Physics may be accepted based on level of grade achieved. For IB students, SL level Mathematics and Physics may be accepted based on level of grade achieved. **The Faculty of Engineering will give consideration to students who missed out on admission to BE(Hons) who are able to demonstrate sufficient ability in engineering-related and approved study in the Bachelor of Science (BSc) programme, for admission in Semester 2. For more information, see www.engineering.auckland.ac.nz/entry-pathways.*

University of Cambridge International Examinations (CIE) (taken in New Zealand)

To be admitted to the University of Auckland you must gain the University Entrance Standard and be selected into a programme. You will be allocated a rank score using the UCAS Tariff for the best six subject units at AS or A Level, provided that no more than two subject units are included from any one syllabus group in the table of available syllabus groups, which are broadly equivalent to those in the list of approved subjects for NCEA. (1 AS level = 1 subject unit; 1 A level = 2 subject units.) (Thinking Skills and the General Paper will be excluded.)

- The rank score will be calculated from your UCAS Tariff points by awarding points for each syllabus group (to a maximum of six subject units). The maximum rank score is 420.

Level	A*	A	B	C	D	E
A	140 points	120 points	100 points	80 points	60 points	40 points
AS	-	60 points	50 points	40 points	30 points	20 points

- An A Level counts as two subject units. Where a student has studied more than six subject units the best six scores will be used.
- A CIE rank score may differ from the UCAS Tariff used for university entrance because only syllabuses that contribute to university entrance are used for ranking (Thinking Skills and the General Paper will be excluded).

International Baccalaureate (IB)

To be admitted to the University of Auckland you must gain the University Entrance Standard and be selected into a programme. You will be allocated a rank score according to your IB score. For example, if you achieve 33 points for IB, your rank score will also be 33 points. The maximum rank score is 45.

Alternative pathways into Engineering

For those students who do not have the appropriate secondary school qualification, subjects and/or rank score, there are a number of alternative pathways for gaining admission into the BE(Hons). These range from Summer School catch-up courses, a semester or two of successful study in a Bachelor of Science programme, a New Zealand Diploma of Engineering, or Manukau Institute of Technology's foundation-level Pre-Degree Certificate in Engineering Studies. For details, visit **www.engineering.auckland.ac.nz/entry-pathways**

Targeted Admission Schemes

The Faculty of Engineering is committed to equity within its programmes and offers admission schemes for eligible Māori, Pacific, students with disabilities, students from refugee backgrounds and students from low socio-economic backgrounds (decile 1, 2 or 3 schools). The Faculty reserves a number of places in our undergraduate programme for these students who have met the University Entrance Standard but have not met the guaranteed entry score for the BE(Hons). Places are limited. For further information, please visit **www.auckland.ac.nz/utas**

Māori and Pacific Targeted Entry Scheme (MAPTES)

The Faculty of Engineering invites applications from all eligible Māori and Pacific students. Places under MAPTES will be allocated based on academic performance and the applicant's potential to successfully complete the BE(Hons) degree. It is important that you apply for MAPTES even if you don't think you will have the grades to get in. If you are successful in gaining entry via MAPTES, you will be eligible to participate in Tuākana, the academic and mentoring support programme offered within the Faculty of Engineering. For further information, contact the Engineering Student Centre, or:

Dennis Matene
Kaiarahi Māori
Phone: +64 9 923 3251
Email: d.matene@auckland.ac.nz
www.engineering.auckland.ac.nz/maptes

International students

The Faculty of Engineering welcomes applications from international students. If you intend to seek admission to Part I of the BE(Hons) on the basis of New Zealand secondary school qualifications, you will require the same guaranteed entry score as domestic students. If you gained your university entrance qualification outside of New Zealand, the qualification will need to be approved by the University of Auckland. Frequently received qualifications from various countries and corresponding entry requirements can be found at **www.engineering.auckland.ac.nz/international-entry**

Scholarships

More than 40 engineering undergraduate scholarships ranging from $800 to $10,000 have been graciously established by individuals, societies, businesses and industry bodies. The Faculty of Engineering Kick Start Scholarships are specifically for school leavers applying to BE(Hons) Part I. For a full list of undergraduate scholarships and awards, visit **www.engineering.auckland.ac.nz/scholarships**

It's time to apply

So, you've made your decision on what you want to study, and now it's time to apply.

First you need to apply

Go to **www.apply.auckland.ac.nz** and complete the Application for Admission. If you haven't already, you'll be asked to sign up for a new account. It's easy and you'll soon be underway in making your application. To be considered under the MAPTES entry scheme, select the appropriate option. For the Accelerated Pathway, you will need to complete an additional application pack. You can get this from school careers advisers or by emailing foe-beaccelerated@auckland.ac.nz.

Next you will receive an acknowledgement email asking you to provide certified documents (and in some cases to complete other requirements*) before your application can be assessed.

Remember, you can apply for more than one programme. We'll be assessing your application, and you can check your application status online at any time. Be patient though – documents can take 3-4 weeks to process during peak admission periods. Some of your documents might take longer to process than others, despite being sent in at the same time.

If your application is successful, we'll email you an offer – normally from mid-January.**

**For some programmes, you may be required to submit supplementary information (eg, a portfolio of work, referee reports, an online form) or to attend an interview.*

***If you are not offered a place in the programme(s) of your choice, you will receive an email outlining alternative options. Your final offer of a place depends on two things: your admission to the University (which for school leavers may depend on your final school results) and your assessment by the relevant faculty.*

Next you need to enrol

Once you've accepted an offer of place in a programme, you can enrol in a course. If you need some help with the enrolment process, visit **www.auckland.ac.nz/enrolment** for an online tutorial. To find out more about the courses you'll need to enrol in for your engineering degree, go to **www.engineering.auckland.ac.nz/enrolment**

Next you need to make sure you pay your fees! You'll find all the details at **www.auckland.ac.nz/fees**

Stuck? At any point in the process you can find answers to your questions 24/7 at **www.askauckland.ac.nz.** Or there's someone who can help during business hours at 0800 61 62 63 or at studentinfo@auckland.ac.nz.

Money matters

The table below is based on the 2015 fees schedule for a first-year BE(Hons) student enrolled in a full-time load of 120 points and should be used as a guide only. Fees for 2016 will be set later in 2015.

For updated fees information, refer to **www.auckland.ac.nz/fees**

Domestic student (2015)	$7,470
International student (2015)	$39,412

All fees are charged on a per point basis. Part-time students taking fewer than 120 points will pay proportionately lower fees. Workshop practice course fees are not included in the above. In addition to tuition fees, a Student Services Fee is also charged. Students studying full-time (120 points) in 2015 paid $738. The fee for 2016 will be set later in 2015.

Dates to remember

The University of Auckland
courses and careers DAY
OPEN DAY 2015 Saturday 29 August 2015

www.coursesandcareersday.ac.nz

Closing dates for applications for admission in 2016	
MAPTES	21 November 2015
Accelerated Pathway	21 November 2015
BE(Hons) Semester One entry	8 December 2015
BE(Hons) Semester Two entry	4 July 2016

Some late applications may be accepted after 2015 school results are received. It is advisable, however, to apply for all programmes that you might wish to study before the published closing date. Multiple applications are acceptable and all applications will be considered when 2015 academic results are available.

Academic year 2016	
Summer School	Wednesday 6 January to Wednesday 17 February
Semester One	Monday 29 February to Monday 27 June
Semester Two	Monday 18 July to Monday 14 November

THE UNIVERSITY OF AUCKLAND
Te Whare Wānanga o Tāmaki Makaurau
NEW ZEALAND

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