Engineering
Postgraduate Prospectus 2018
Postgraduate study is filled with unique challenges – ones that often provoke more questions than answers. Completion of graduate study also represents a milestone in a journey that allows you to satisfy your intellectual curiosities, contribute to the ongoing developments in your field, potentially create new knowledge, and experience moments of personal and professional discovery.

Our knowledge is drawn from cross-disciplinary sources, industry judgments and specialist expertise to equip you with the intellectual independence, practical skills, and empathy to understand our world. As a part of our faculty, you will be supported along this path by our academic staff, professional networks and student services.

We value the increasing diversity of engineering, and its potential to address tomorrow’s global challenges – from environmental sustainability and maintaining large structures, to designing software and creating advanced healthcare systems. To realise this potential we are committed to fostering collaborative environments for all our students, regardless of their professional and research backgrounds.

We congratulate you for taking a step towards becoming part of our outstanding family, and look forward to seeing you apply your passions to academia, industry and society.

PROFESSOR NIC SMITH
Dean of Engineering
The University of Auckland

Join a community that makes a difference

Engineering is increasingly ubiquitous – both in its variety and visibility. Our postgraduate programmes are designed to develop your abilities as a versatile problem solver and innovator in this ever-evolving technological landscape.
LEADING THE WAY
NEW ZEALAND’S HIGHEST RANKING UNIVERSITY AND ENGINEERING FACULTY
TOP UNIVERSITY IN NEW ZEALAND FOR EMPLOYABILITY

According to the QS World University Rankings, QS World University Rankings by Faculty and the Times Higher Education Global University Employability Ranking Score

FIRST IN NEW ZEALAND IN

Chemical Engineering  Electrical Engineering  Civil and Structural Engineering  Mechanical Engineering

According to the QS World University Rankings by Subject

IN GOOD COMPANY
MORE THAN 1040 POSTGRADUATE STUDENTS ENROLLED IN 2016

20 student clubs, associations and networks

58.8% international students from over 50 countries

24.3% postgraduate women in engineering
The NZ Product Accelerator
Based at Newmarket Campus, this network of local research institutions partners with industry to develop new products and services for the global manufacturing market.

UniServices
The University of Auckland’s commercial company is the top commercialisation company in Australasia, boasting 1,200 active contracts with 300 firms.

Velocity
The country’s leading entrepreneurial development programme has supported over 110 ventures, raised $200m of capital and created over 460 jobs.

Placed at 27th, we are the only New Zealand university to appear on this 2016 list.

PIONEERS OF INNOVATION

Our faculty is spread across three major campuses: City, Grafton and Newmarket; all hubs for multidisciplinary research activity equipped with high-performance technology. They are also located on city-adjacent grounds with plenty of access to public transport, so you’ll be able to easily enjoy what Auckland has to offer outside of study.

3,000 PIECES OF SPECIALIST EQUIPMENT AND PURPOSE-BUILT FACILITIES

2016 IPENZ Arthur Mead Award winner for ENVIRONMENT AND SUSTAINABILITY*

NZ’S LARGEST WIND TUNNEL is The Boundary Layer Wind Tunnel, opened in 2015

AUSTRALASIA’S LARGEST ‘STRONG WALL’ is located in our Civil Structures Testing Lab

NEW ZEALAND’S LARGEST FLUME is hosted in our Hydraulic Engineering Laboratory

*The Newmarket Campus Innovation Centre received this award in the large project category.
As a postgraduate student, you will have access to internationally-recognised subject matter experts and our many research facilities, most of which are equivalent to, or beyond the standards offered in industry. Our range of expertise – from nanomaterials to large-scale structures – means that we are affiliated with a wide selection of top research centres, facilities and equipment:

The Auckland Bioengineering Institute applies mathematics and engineering science to biology, with a particular emphasis on human physiology. They collaborate with experts and practitioners worldwide to improve the diagnosis, and treatment of injuries and disease.

The Boundary Layer Wind Tunnel contains special instrumentation for many aerodynamic studies, such as investigating pedestrian flows around buildings, pressures on and vibrations of buildings, aerodynamic drag and power of elite cyclists, and pressures on model racing cars.

The Centre for Advanced Composite Materials combines expertise from engineering, science and medicine to conduct fundamental, applied and industry-focused research on synthetic and bio-based composite materials, manufacturing processes, design and performance.

The Civil Structures Hall includes a 200m² strong floor, 9m high strong walls and a shake table to develop full-scale engineering projects, including earthquake testing.

The Complex Fluid Dynamics Laboratory uses state-of-the-art high speed lasers, stereoscopic particle image velocimetry and rheometry to investigate the properties and behaviours of a wide variety of fluids, from the contents of a cow’s stomach to aerosols and foams.
The Geothermal Institute is one of the world’s first research and training centres for the field. As home to the world’s largest group of geothermal researchers, they also offer consulting services to support the planning, development and management of projects around the globe.

The Hydraulic Engineering Laboratory has a 45-metre long flume capable of pumping sediment and water. It is used to simulate conditions in rivers, such as flow and erosion in river beds, and at hydraulic structures.

The Laboratory for Industry 4.0 engages with essential industries to develop and test new concepts for the control of distributed automation systems within the context of the Industrial Internet of Things and Cloud Computing.

The Nanomechanical Research Laboratory is unique in its ability to test both traditional and hydrated biological materials. It specialises in measuring the properties of small-scale materials and thin films using advanced equipment including the Hysitron TriboIndenter, MTS XP and Activelife Biodent.

The Light Metals Research Centre has a dozen academics, and over 20 professional and doctoral researchers dedicated to research development, technical support, training, and maintaining long-standing industry relationships in this specialised field.

The Robotics and Intelligent Systems Laboratory provides expertise in robot programming, human interaction and intelligent systems including machine learning, artificial intelligence and speech communication, with applications in healthcare and agriculture.

The Software Engineering Process Tools and Applications Group focuses on the collaborative aspects of software engineering, such as the socio-technical aspects of teams and project management methodologies, as well as human-computer interaction, spanning areas that include serious gaming, usability, user-centred design, and smart energy consumption.

The Transportation Research Centre collaborates with local government, industry and international research institutes to cover a broad range of research, from road construction materials and infrastructure asset management to traffic studies and public transport.
"The guidance, and room for innovation and creative thinking that my supervisors offer has been exceptional."

"My research focuses on factors that influence the efficiency of molten aluminium production such as the economy, environment, health, process stability and gas treatment technologies. The results can inform operators of the possibilities of reducing emissions, and prevent harm to animal and plant life.

I completed my undergraduate study in Ghana, leading to years of work in smelting companies as a production engineer, operator and subsequently, supervisor. In pursuit of my passion to explore knowledge, I applied to study the University’s PGCertLMRT held in Bahrain in 2010, which eventually led me here.

I’ve had many questions answered whenever I contacted the Graduate Centre. In turn, I volunteered as a ‘Postgraduate Buddy’, an initiative set up by our Student Engagement team to help new students blend into the University community smoothly.

I’m located at the Light Metals Research Centre, where they facilitated setting up a safe, dedicated and equipped laboratory. I dare say that without the support and facilities, my programme would just be another ordinary chemical engineering PhD study."

Gordon Elinam Agbenyegah
Graduate: Postgraduate Certificate in Light Metals Reduction Technology
Current PhD candidate in Chemical and Materials Engineering
Our programmes

Our variety of postgraduate programmes reflects the diversity of our faculty and the ever-evolving engineering market – choose from over 20 specialist areas, study full-time or while working, pursue in-depth research by writing a thesis, or expand your practical skills through a coursework-based qualification.

**Postgraduate Certificate in Engineering (PGCertEng)**
Taught (60 points)
Full-time (6 months) or part-time (2 years)
This certificate provides graduate engineers with advanced technical or management foundation skills and new industrial perspectives, expanding their employability in their sector of choice. A specialisation in Plastics is available for those wishing to pursue further career opportunities in materials and processing in this field, and can be completed by distance learning.

www.engineering.auckland.ac.nz/pgcerteng

**Postgraduate Certificate in Geothermal Energy Technology (PGCertGeothermTech)**
Taught (60 points)
Full-time (6 months) or part-time (2 years)
This world-recognised programme gives engineers and scientists practical and applied skills in the geothermal energy industry, making them ready to pursue diverse roles in this sector. It includes two week-long field trips and a block structure to fit in with work commitments.

www.engineering.auckland.ac.nz/pgcertgeothermtech

**Postgraduate Certificate in Light Metals Reduction Technology (PGCertLMRTech)**
Taught (60 points)
Full-time (6 months)
A prestigious and globally respected certificate that equips engineers with highly valuable and lucrative skills to run light metal smelters across the world. It includes a stimulating three-week residential course at a working smelter, along with distance learning carried out at home to minimise disruption to your career.

www.engineering.auckland.ac.nz/pgcertlmrtech

“My decision to continue studying is based on my enjoyment of my undergraduate engineering degree.”

“My programme made me understand Albert Einstein and Raymond Serway’s reflection on the excitement of scientific discovery as ‘a marvellous time to be alive’. I see the thrill in overcoming challenges and coming up with solutions. The notion that my research might contribute to making society a safer place doesn’t hurt either!

“I’m currently developing physical and computational models to study ballistic cranial splatter. By modelling a ballistic impact on a human head, I can develop a viable exemplar to be used in forensic research and studies.

“I love everything about my postgraduate programme – the labs, facilities and available resources contribute to me doing something I’m passionate about. The University’s essential services also provided support when I needed it the most.

“Ultimately, it’s the people that make this experience amazing. As a tutor, I can see that our staff are all passionate about teaching and will often work overtime to make sure our students have a positive learning experience. I also adore our multicultural atmosphere – you can meet five people in one afternoon and they all speak a different language!”

Eryn Kwon
Graduate: Master of Engineering in Mechanical Engineering
Current PhD candidate in Mechanical Engineering
“I’m constantly learning. I’ve discovered throughout my degree and current job that no two projects are the same, and that everything has its own unique challenge.”

“I wanted to gain an understanding of commercial business to complement the technical knowledge I gained in my undergraduate Engineering degree. The MEMgt is perfect for this, especially since the integration with Business School means that I could tailor my programme to provide me with complementary non-engineering skills that will be worthwhile in my career.

“I was given a good grounding for my current role as a project manager. I already know how to approach the technical aspects of a project, so I discovered how to tackle client budgets, contracts, and commercial drivers. Now I not just go to work to do my job, but also try to find ways of doing it smarter and more efficiently.

“I love that we take ideas and turn them into reality: the fact that I can look at a building or visit a place that I’ve had a hand in creating, and know that I was involved. You just can’t beat that feeling. It gives me a great sense of pride in my work.”

Ryan Ainsworth
Graduate: Master of Engineering Management
Current Project Manager, Beca

Postgraduate Diploma in Engineering (PGDipEng)
Taught (120 points)
Full-time (1 year) or part-time (4 years)
This qualification gives students with a three-year engineering bachelor’s degree an opportunity to build on their previous skills, resulting in a well-rounded knowledge of the principles, concepts and ideas that underpin a chosen specialisation. It is designed to provide a pathway to further study in a masters programme.

This programme is currently subject to CUAP approval.

Postgraduate Diploma in Operations Research (PGDipOR)
Taught (120 points)
Full-time (1 year) or part-time (4 years)
Offered alongside the Faculty of Science, this diploma equips engineers with the skills to solve problems in the design and management of large or complex systems found in business, industry and government. It is of particular interest to those pursuing roles in predictive or prescriptive analytics in a broad selection of industries.

www.engineering.auckland.ac.nz/pgdipor

Master of Disaster Management (MDisMgt)
Taught (120 or 180 points)
Full-time (1 year or 18 months) or part-time (2 or 3 years)
This programme draws on expertise throughout the University – Engineering, Development Studies, Science, Population Health, Environmental Law, and Architecture and Planning – to prepare our diverse professional cohort for leadership roles in disaster risk reduction, response and recovery, resilience, and more.

www.engineering.auckland.ac.nz/mdismgt

Master of Energy (MEnergy)
Taught or research (120 or 180 points)
Full-time (1 year) or part-time (2 or 4 years)
This programme is ideal for engineering, science or commerce graduates who want to develop their technical, business or policy-related expertise, leading to global, sustainable career pathways, including positions such as energy consultants, project managers, or energy modelling analysts.

www.engineering.auckland.ac.nz/menergy

Master of Engineering (ME)
Research (120 or 180 points)
Full-time (1 year or 18 months) or part-time (2 or 3 years)
Write a thesis under supervision by the leading academics and researchers in the specialisation of your choice. You will undertake a stimulating mix of theoretical and experimental research to solve real-world problems at the very cutting edge of engineering advancement, equipping you for a career in industry, or open up the potential for further study.

www.engineering.auckland.ac.nz/me
Master of Engineering Management (MEMgt)
Taught (120 points)
Full-time (1 year) or part-time (3 years)
This prestigious programme offered by the Faculty of Engineering and the University of Auckland Business School is viewed as ‘an MBA for engineers’, and provides you with the technical foundations, project management skills and business acumen needed to pursue leadership roles in technologically-driven companies.
www.engineering.auckland.ac.nz/memgt

Master of Engineering Studies (MesSt)
Taught or research (120 or 180 points)
Full-time (1 year or 18 months) or part-time (2 or 3 years)
A primarily taught masters with diverse specialisations, allowing you to tailor your course load towards your professional goals and interests. Gain applied knowledge in your field so you can pursue roles with a regulatory, management, or product development scope. A research option is available for the Food Process Engineering and Medical Devices and Technologies specialisations.
www.engineering.auckland.ac.nz/messt

Master of Operations Research (MOR)
Research (120 points)
Full-time (1 year) or part-time (2 years)
This programme gives students from a variety of backgrounds – including arts, commerce, engineering or science – skills in network design simulations and dynamic programming to perform rigorous intellectual analysis, as well as solve complex problems in industries such as healthcare, transport, finance, energy, telecommunications, government, and manufacturing.
www.engineering.auckland.ac.nz/mor

Doctor of Philosophy (PhD)
Doctoral research
Full-time (3–4 years); a part-time option is available to domestic students only.
The PhD programme involves undertaking advanced, independent and original research. You will be able to pursue a specialisation of your choice under the supervision of – and by collaborating with – our world-class academics. You will gain the advanced knowledge needed for specialised industry or consulting positions, or teaching or academia.
www.engineering.auckland.ac.nz/phd

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1 Interfaculty with Science and Business
2 Interfaculty with Business
3 Interfaculty with Science
r Available as a research area in the associated department
s Subject to CUAP approval

FUNDING YOUR STUDY

NEARLY 400 postgraduate scholarships OFFERED ACROSS THE UNIVERSITY

FIND ONE THAT SUITS YOU AT www.engineering.auckland.ac.nz/scholarships

Guaranteed scholarships are available to domestic research students who meet GPA requirements: www.auckland.ac.nz/makethegrade

Summer Research Scholarships give you a $5,500 tax-free stipend to enhance your CV and gain research experience: www.summer.ac.nz

Doctoral students receive an annual stipend paid into their PReSS accounts for up to four years to cover direct research costs, such as overseas conferences: www.auckland.ac.nz/press-accounts

For a list of available postgraduate research opportunities, visit:
www.engineering.auckland.ac.nz/researchprojects
www.findathesis.auckland.ac.nz
Admission and application

This is a general guide. Please refer to www.auckland.ac.nz/pg-entry-reqs for detailed information.

Admission to postgraduate programmes

- Admissions for 2018 close on 8 December 2017 (Semester One) and 4 July 2018 (Semester Two) with the following exceptions:
  - Postgraduate Certificate candidates should refer to the programme websites for up-to-date information on admission deadlines.
  - Eligible candidates can apply for a PhD throughout the year.
  - Information on your fees are available on www.auckland.ac.nz/fees, this is based on your subject choices and workload.
  - English language requirements: We require an overall IELTS academic score of 6.5, with no bands below 6.0. See www.auckland.ac.nz/pg-english-reqs for approved alternatives to IELTS.

- Grades from previous study: Grades or marks achieved at the University of Auckland are given a Grade Point Average (GPA). Grades obtained at other institutions are converted to Grade Point Equivalent (GPE) on our scale. See www.gpecalculator.auckland.ac.nz for more information.

Entry requirements

Postgraduate certificates or postgraduate diplomas
You must have completed an undergraduate degree at a recognised tertiary institution, in a field relevant to your specialisation. Visit our website for GPA or GPE requirements.

Masters degrees
You will need a GPA or GPE of 4.0 for the Master of Engineering Studies. For all other masters, a GPA or GPE of 5.0 is required. If you don’t meet this criteria, passing courses towards a postgraduate certificate with the appropriate GPA may gain you entry into a masters degree.

- 120-point programme: a four-year bachelors degree in engineering where the final year consists of postgraduate-level study relevant to your chosen specialisation
- 180-point programme: an undergraduate degree in engineering at a university (or similar institution) in a field relevant to your chosen specialisation

Doctoral degrees
You must be able to carry out independent research and have completed a significant research project, dissertation or thesis, at university. Acceptance into our doctoral programme is dependent on the availability of supervision and facilities.

- Applicants with New Zealand qualifications must have completed a postgraduate bachelor’s (honours) degree with first class or second class (division 1) honours, or a masters degree with first class or second class (division 1) honours, in a field related to your doctoral studies.
- Applicants with overseas qualifications must have completed a masters-level qualification in a field related to your doctoral studies with a GPE of at least 5.5.

How to apply

Applying for a non-doctoral programme

- The Application for Admission is available at www.apply.auckland.ac.nz, where you can also check your application status and see what supporting documents you will need to provide.
- If you applied for an intake in the following semester, a decision will be made within four weeks. Delays may occur for future semester intakes, during peak admission periods, or if documents take longer to process.

Applying for a PhD programme

- Make sure you meet all entry requirements and have decided on an area of interest or potential research topic.
- Apply at www.auckland.ac.nz/applydoctorate.
- Assessment of your doctoral application can take eight weeks or longer. You can check your application status online and see what supporting documents are required.

International students
A copy of your offer of place from the University is required to supplement your visa application. We recommend starting your University application as soon as possible and contacting an overseas representative for help at www.auckland.ac.nz/overseasrep.