

Postgraduate Study Guide

Faculty of Engineering
Te Herenga Mātai Pūkaha



**UNIVERSITY OF
AUCKLAND**
Waipapa Taumata Rau
NEW ZEALAND

Gain knowledge to contribute to a better world



Engineering is increasingly ubiquitous – both in its variety and visibility. Our postgraduate programmes are designed to develop your abilities to solve problems, innovate and create positive change in our ever-evolving technological landscape.

We all approach postgraduate study for different reasons, but are united in the challenges and thought-provoking questions that we share. As a faculty, we're willing to satisfy intellectual curiosities, contribute to the ongoing developments in our fields and potentially create new knowledge. We welcome you to join us on our ongoing journey to do the same.

Te Herenga Mātai Pūkaha's research output spans diverse areas, many of them with tangible impact on our regular lives. This means you'll get the chance to learn from globally-recognised experts whose influence extends to decisions outside the classroom. We boast strong collaborations with industry and other research organisations, and work in increasingly cross-disciplinary fields – all these ensure that we're creating knowledge pathways towards the intellectual independence, practical skills and empathy to understand our world.

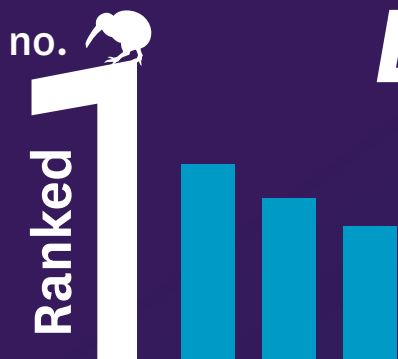
Engineering is becoming as diverse as those who pursue it. This is valuable to our potential to address tomorrow's global challenges – from environmental sustainability and

structural safety, to the design of software and advanced medical systems. To realise this potential, we are committed to fostering collaborative environments for all our students, regardless of their professional and research backgrounds.

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



PROFESSOR GERARD ROWE
Dean of Engineering
The University of Auckland



Leading the way

New Zealand's highest-ranking
University and Engineering faculty

Top University in New Zealand for Employability

According to the Times Higher Education World University Rankings 2020, QS World University Rankings 2020 and QS Graduate Employability Rankings 2020.

Our departments



Chemical and
Materials
Engineering



Electrical, Computer,
and Software
Engineering



Civil and
Environmental
Engineering



Engineering
Science



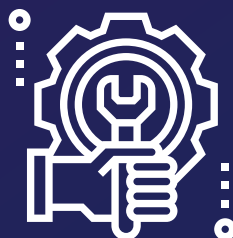
Mechanical
Engineering

First in NZ in Chemical, Electrical, Civil, Structural, and Mechanical Engineering according to the QS World University Rankings by Subject 2020.

We also offer



Student clubs, associations
and networks



Specialised
facilities



Tailored postgraduate
programmes

Teaching Excellence and Transformational Learning

Our engineering building was shortlisted this year for an Engineering New Zealand award, and represents a sustained commitment to providing a state-of-the-art home for our staff, students and researchers.

The University of Auckland is consistently ranked as New Zealand's leading tertiary education provider, both in general rankings and in specific criteria like employability and sustainability. We've also become home to industry partners through co-location and hotdesking opportunities at our Newmarket Innovation Precinct. Our Newmarket Campus also houses our cutting-edge Structures Testing Laboratory, Wind Tunnel and Creative Design and Manufacturing Lab, among other facilities.

Our research collaborations extend far beyond our campuses. They encompass other faculties, government organisations, private companies and other research institutions. These connections reinforce our status as a faculty with a global reach. Postgraduate students studying at the University of Auckland have access to our facilities and a wealth of knowledge from our staff.



Career Outcomes after Postgraduate Study

Our postgraduates have gone on to work at top companies in New Zealand and abroad, often with social and environmental responsibility in mind.

Our postgraduate programmes are designed with employability in mind. Our postgraduates have gone on to work at Beca, Downer, HEB Construction, EnviroNZ, Ernst & Young, Vector, Broad Solutions LTD, Auckland Council, Weta Digital, Serato, Rocket Lab, the Ministry of Energy and Mineral Resources, and more companies in New Zealand and abroad. Our graduates also put their efforts towards redressing inequity. One graduate went to work for the UN and taught people in landslide-prone areas to recognise and prepare for earthquakes. Another graduate stayed closer to home and worked on housing solutions for rural Māori communities.

While some of our postgraduate students go on to start their own businesses, others stay at the University as postdoctoral fellows and pursue cutting-edge research funded by the University of Auckland and industry partners.



Research and Taught Masters, Compared and Contrasted

We offer two types of postgraduate degrees at the University of Auckland: research and taught.

TAUGHT:

Taught programmes focus on classroom-based studies, and will give you advanced specialist knowledge in your field. They're usually completed via coursework, although some taught programmes can include a research project. Taught programmes are popular with students who want to advance their career prospects in New Zealand and overseas. Graduates from these programmes are confident and well-rounded individuals. They leave the University with a broad range of technical and interpersonal skills that they can use to solve problems and deliver solutions.

RESEARCH:

Our research degrees provide you with the opportunity to develop advanced research skills and present your findings in a thesis or dissertation. These projects can range from building robots, to creating liquid smoke, to modeling financial operations or traffic patterns.

The University of Auckland is New Zealand's premier research institution, and has earned a great reputation for delivering academic and research excellence within a supportive learning environment. Your research will make an independent contribution to learning or offer a critical perspective on existing scholarship or methodology. We also offer opportunities to commercialise your research with companies or Uniservices, the University of Auckland's commercialisation arm.



Continuous Learning with Graduate School of Engineering

We created the Graduate School of Engineering to deliver a postgraduate experience crafted around the needs of continuing learners and industry professionals.

The Graduate School of Engineering offers a range of postgraduate taught programmes to help students progress in their careers. Graduates from the GSE cite the practical experience of their supervisors, teachers, and industry guest lecturers as key aspects of their learning. This connection with real-world outcomes is essential for developing engineers who are ready for the workforce. GSE programmes fall into the following categories to help engineers plan for their desired career paths:

- **Knowledge deepening programmes:**

Knowledge deepening programmes allow you to develop advanced knowledge in a chosen specialisation. They include the Master of Engineering Studies, among other degrees, and they're suitable for recent Bachelor of Engineering graduates, returning students who wish to specialise further, or people who wish to change direction and study a new specialisation.

- **Engineering leadership and management programmes:**

Engineering leadership and management programmes will give you the knowledge you need to lead and manage engineering projects. These programmes, which include the Master of Engineering Project Management Health Specialisation and the Master of Infrastructure Asset Management, are well-suited to returning students who are mid-career and to young professionals.

- **Sector specific programmes:**

Sector specific programmes draw together multiple disciplines to create effective engineers who are experts in their field. They include the Master of Energy, the Master of Robotics and Automation, and the Master of Aerospace Engineering.

- **Short study programmes:**

Short study programmes encompass most of our postgraduate certificates. They allow you to upskill on a flexible schedule and can also be used as pathways into longer degrees if you don't meet the entry requirements for direct entry into our Masters programmes.



Industry Partnerships

We've formed strong relationships with domestic and international companies thanks to our highly-skilled faculty, world-class research facilities, and hardworking students.

Companies regularly commission our academics and students for research. Our postgraduate students have worked to reduce landfill emissions and detoxify waste for EnviroNZ, have received funding from the Ministry of Business and Innovation to figure out how to track farm animals with biodegradable RFID tags and have partnered with the Environmental Defence Agency to launch satellites to track dangerous space debris, among many other projects.

Companies also look to the University of Auckland for its technical expertise and world-class facilities. Fisher & Paykel used our Newmarket Innovation Precinct facilities to develop environmentally friendly air circulation products, and Blunt Umbrella used our wind tunnel to test their famed umbrella strength. Other companies co-locate their businesses at Newmarket, allowing postgraduate students to make industry connections and mingle with people who may one day employ them.

Here are some of the other companies and organisations we've worked with who provide career opportunities in engineering:

AECOM	Milmeq
Air New Zealand	New Zealand Defence Force
Auckland Transport	New Zealand Space Agency
Auerecon	Oji
Auckland District Health Board	Opus
Baldwins	Pattle Delamore Partners Ltd (PDP)
Beca	Power by Proxi
Coffey	Prendos
Compac	Rocket Lab
Cubic	Society of Fire Protection Engineers
Downer	Synergine
Ergo Consulting	Tonkin+Taylor
EROAD	Transpower
EnviroNZ	TDG
Ernst & Young	Trustpower
Fisher & Paykel Healthcare	Veriphi/Klien Medical
Fletcher Construction	Vista
Fonterra	Vodafone
Fulton Hogan	Watercare
Genesis Energy	WorleyParsons
GHD	
Harrison Grierson	
HEB Construction	
Holmes Consulting Group	
Honeywell	
Jacobs	
McConnell Dowell	

Ryan Ainsworth

Master of Engineering Management

Ryan Ainsworth wanted to gain an understanding of business to complement the technical knowledge he gained with his undergraduate Engineering degree, so he went to the University of Auckland for a Master of Engineering Management.

Ryan particularly liked the Master of Engineering Management's business focus on client budgets, contracts and commercial drivers. "The MEMgt's 'one year MBA for engineers' philosophy is perfect, especially since I could tailor my programme to provide me with what was missing from the Engineering degree. The integration with business school also lets me progress towards an MBA, which I may do later in my career." Ainsworth said.

Ryan got a job as a project manager at Beca after he received his masters degree. "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, and I plan to carry on with my career as a project manager with my new knowledge." Ainsworth said.





Sergio Lautaro Castro Miranda

Master of Engineering
Studies in Construction
Management

Four years ago, Sergio moved to New Zealand from Chile with a degree in Construction Project Management. After working in New Zealand for a while and getting his family settled, he wanted a new job with a greater challenge. He believed a qualification that placed an emphasis on interpersonal skills and technical ability would expand his opportunities in New Zealand's construction industry.

Sergio chose to do a Master of Engineering Studies in Construction Management, with a research project that focused on a decades-old issue in the industry — inaccurate cost forecasting.

His research project revealed that data science and predictive analytics need to be an accepted part of construction projects to make the industry more competitive. Project data is the raw material for applying predictive analytics, and governments possess a large amount of it. Sergio proved that using project data can help companies and governments evaluate options and optimise public resources to benefit people.

Sergio believes being part of the Graduate School of Engineering gave his learning credibility, as employers understood that he had the appropriate training to provide real benefits for organisations.



General Overview Research at the Faculty of Engineering

Our engineering research programmes allow you to develop advanced research skills and present your findings in a scholarly thesis or dissertation. You can also commercialise research or create spin-off companies with the assistance of Uniservices, the University's commercialisation arm.

The University of Auckland has a great reputation for delivering academic and research excellence within a supportive learning environment. We give you the opportunity to learn from and collaborate with outstanding academic staff from New Zealand and around the world.

The University has also built strong research relationships with government and industry. Our students have conducted research to help with flood hazard mapping, landslide prevention, landfill detoxification, worked on capturing methane emissions to help the environment, built autonomous robots to help on the factory floor and more.

Here are some of our engineering research options:

- **Doctor of Philosophy (PhD)**

- The PhD involves undertaking independent and original research. You'll be able to pursue a specialisation of your choice under the supervision of our world-class academics. This can help you gain the advanced knowledge you need for specialised industry, consulting positions, teaching,

or academia. It's also the best route to become an expert in your field.

- Guaranteed scholarships are available to domestic research students and PhD applicants with a qualifying programme from a New Zealand university who meet GPA requirements.

- **Master of Engineering (ME)**

- With a Master of Engineering, you'll undertake stimulating research to solve real-world problems at the cutting edge of engineering. Our programmes will also equip you for a career in industry, open the potential for further study, or lead to entrepreneurial opportunities.

- Master of Engineering students have done research that range across all ten engineering specialisations, from building autonomous robots to denaturing whey protein so dairy can be safely disposed of.

- **Sector specific programmes**

- These programmes are designed in conjunction with government and industry needs, with the goal of filling jobs that need high-level, specific engineering expertise.

- Examples: Master of Aerospace Engineering, Master of Earthquake Engineering, Master of Robotics and Automation

- **Applied-knowledge programmes**

- These programmes are particularly good for helping students hone their managerial skills and training them to lead and manage projects and engineering organisations.

- Examples: Master of Energy, Master of Operations Research



Investigating language development, pronunciation recognition and vocal health by applying signal processing techniques.

**ASSOCIATE PROFESSOR
CATHERINE WATSON**



Leading the way in structural steel innovations for earthquake-proofing and improved fire safety.

**ASSOCIATE PROFESSOR
CHARLES CLIFTON**



Making advancements in fundamental research for smarter regulation of stem cells to improve cancer treatment.

DR JENNY MALMSTROM

We have 14 world-class research institutes that enable top-notch engineering and cross-disciplinary research. They range across all our specialisations and encompass wind tunnels, 3D printing labs, and Australasia's largest 'strong wall' to test civil structures. Learn more about how you can test your research with our facilities.

The Acoustics Research Centre is a collaborative effort between experts from Mechanical Engineering, Audiology, Architecture and Music, focusing on research, teaching and the delivery of professional services.

The Boundary Layer Wind Tunnel

is New Zealand's largest wind tunnel, and contains special instrumentation for many aerodynamics studies, such as investigating pedestrian flows around

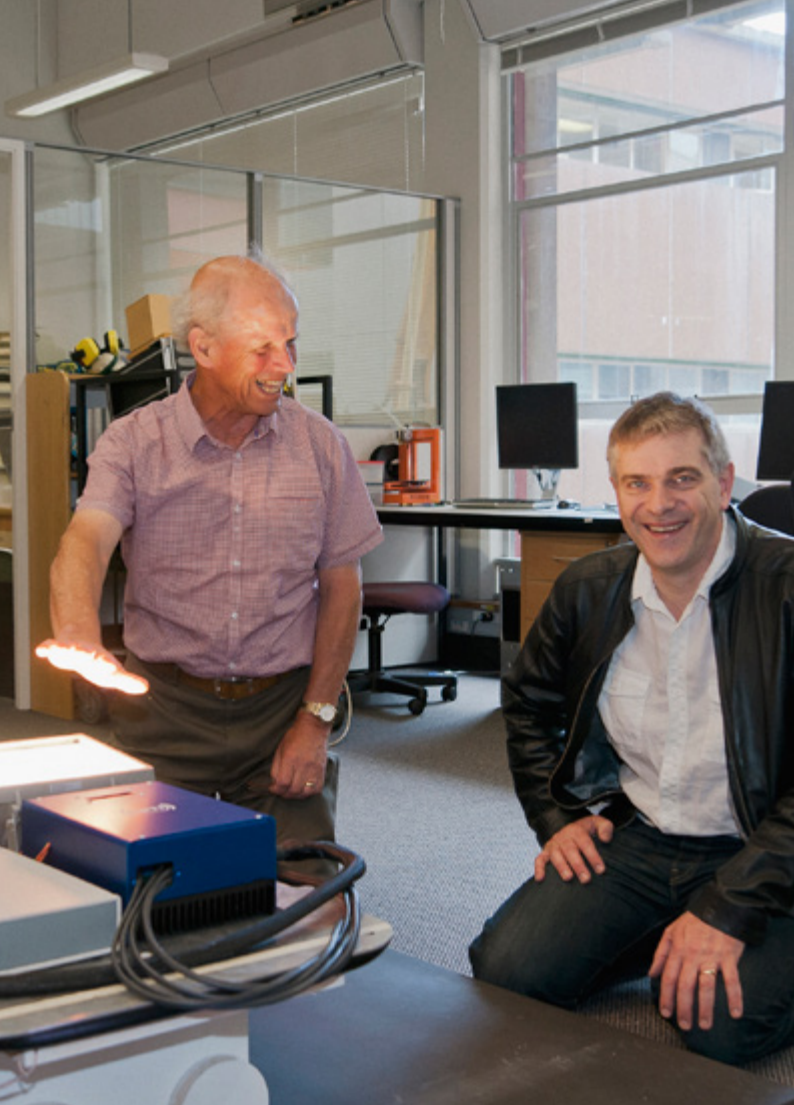
buildings, pressures on and vibrations of buildings, aerodynamic drag and the power of elite cyclists, and pressures on model racing cars.

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 Geothermal Institute is one of the most significant hubs in the world for geothermal education, research and consulting and addresses interdisciplinary topics that advance geothermal energy.

The Civil Structures Hall holds Australasia's largest 'strong wall' at 9m high, a 200m² strong floor and a shake table to develop full-scale engineering projects, including earthquake testing.

The Space Institute | Te Pūnaha Ātea is a cross-faculty space science and engineering centre committed to furthering New Zealand's capacities in space.



Pioneers in Inductive Power Transfer, the basis of wireless power technologies of the future.

**EMERITUS PROFESSOR JOHN BOYS AND
PROFESSOR GRANT COVIC**

Award-winning 3D-printed anatomical models for surgical planning at the Creative Design and Additive Manufacturing Lab.

PROFESSOR OLAF DIEGEL

The Creative Design and Additive

Manufacturing Lab is a modern research facility for product development and 3D printing manufacturing technologies, and a place where you can easily turn your ideas into reality. The Lab is open to all University staff and students.

The Hydraulic Engineering Laboratory

has a 45m-long flume – New Zealand's largest – capable of pumping sediment and water, and 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 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 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 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.

For a list of available postgraduate research opportunities, visit:

[engineering.auckland.ac.nz/
researchprojects](http://engineering.auckland.ac.nz/researchprojects)

findathesis.auckland.ac.nz

Priya Mittal

Master of Engineering in Electrical and Electronic Engineering

Priya Mittal wanted to do her masters degree part-time so she could upskill while working. The University of Auckland's flexible scheduling opportunities allowed her to do that.

“I wanted to discover more. With so many new technologies available to us in the market, it's important to consider new ways of working,” Mittal said. She chose to do her Master of Engineering part-time, so she could pursue her passion for research while still working. “The ability to do this was one of the driving factors behind my choice to continue studying here,” Mittal said.

Priya's research investigates the use of 3D printing to manufacture microwave devices. Given 3D printing is an increasingly popular fabrication method, exploring the possibility of new alternatives for prototyping piqued her curiosity. Through the University of Auckland, she gained access to expertise, resources and facilities, and industry contacts. “It's interesting to see how many opportunities can arise from just a single conversation,” Mittal said.





Marina Drazba

PhD Candidate in Civil
and Environmental
Engineering

Marina Drazba had a problem. She was walking around Cox's Bazaar, a mountainside community in Bangladesh that was home to nearly a million Rohingya refugees, and she could see something the camp builders couldn't: the community was at risk of being wiped out by a landslide.

“Just walking around the camp, I had no words,” Drazba told *The Globe and Mail*. Drazba is a University of Auckland PhD candidate in Civil and Environmental Engineering who reads the earth the way others read books. The UN sent her to Bangladesh to assess landslide risk in March 2018, and she sent back a verdict. Cox's Bazaar was in trouble.

Drazba knew she'd have to create material that worked for everyone, from third-graders to their parents. Due to systemic oppression, many Rohingya people were denied formal education. “After just two months of working in the Rohingya, I've realised the importance of communication and how we – as engineers and geologists, as people who hold technical knowledge – need to be able to distill information,” she said. So, she wrote a picture book, “The Mountain That Walks,” to teach Rohingya people how to recognise the signs of oncoming landslides. “I learned that the images mattered more than its words. I know I've done my job when people can explain the images they see,” Drazba said.

New programmes

Our variety of postgraduate programmes reflects the diversity of our faculty and the ever-evolving engineering market. We offer doctorates, masters degrees, postgraduate diplomas, and postgraduate certificates, which vary in time commitment to best meet your needs.

Explore some of our newest programmes below.

Postgraduate Certificate in Infrastructure Asset Management (PGCertInfraAssetMgt)

Taught (60 points)

Full-time (6 months) or part-time (varies)

This course is for those looking to upskill and prepare to take on responsibilities in infrastructure asset management. PG-CertInfraAssetMgt graduates will be able to demonstrate knowledge and advanced understanding of the Infrastructure Asset Management discipline.

<https://bit.ly/PGCertInfraAssetMgt>

Postgraduate Certificate in Robotics and Automation Engineering (PGCertRobotEng)

Taught (60 points)

Full-time (6 months)

The PGCertRobotEng is a taught programme directed largely at those who want to put their skills to practice in industry. It's our most flexible option, and allows students to learn practical knowledge about the robotics and automation field to enhance their careers.

<https://bit.ly/PGCertRobotEng>

Postgraduate Certificate in Aerospace Engineering (PGCertAerospaceEng)

Taught (60 points)

Full-time (6 months)

The PGCertAerospaceEng is available to study part-time, and additionally provides students with a pathway towards pursuing the Master of Aerospace Engineering. It's an excellent way to upskill in the Aerospace Engineering field and enhance your employability.

<https://bit.ly/PGCertAerospaceEng>

Postgraduate Certificate in Medical Engineering (PGCertMedicalEng)

Taught (60 points)

Full-time (6 months) or part-time (varies)

Medical technology is getting more complex, and the field needs upskilled

engineering graduates to help maintain and create it. The PGCert in Medical Engineering is our most flexible option, and is designed to upskill graduates with industry relevant expertise in medical technologies and biomechanical engineering.

<https://bit.ly/PGCertMedicalEng>

Postgraduate Certificate in Engineering, Sustainable Resource Recovery specialisation (PGCertEng)

Taught (60 points)

Full-time (6 months) or part-time (varies)

A PGCert in Engineering with a Sustainable Resource Recovery specialisation gives you exposure to our departmental expertise in areas like resource recovery technologies, bioprocessing, materials processing and characterisation, and process control and optimisation. The postgraduate certificate is our most flexible degree option and is suited for students looking to explore this growing field.

<https://bit.ly/PGSusEng>

Postgraduate Certificate in Materials Engineering (PGCertMaterialsEng)

Taught (60 points)

Full-time (6 months)

Materials engineering challenges us to discover and design new materials for future innovation. The Postgraduate Certificate in Materials Engineering is suitable for those who aspire to a career in materials processing and production, manufacturing, new materials deployment and development disciplines either in a technical or management role.

<https://bit.ly/PGCertMaterialsEng>

Postgraduate Diploma in Infrastructure Asset Management (PGDipInfraAssetMgt)

Taught (120 points)

Full-time (1 year) or part-time (varies)

The primary goal of the PGDipInfraAssetMgt is to provide a pathway for infrastructure asset managers who are unable to commit to a full masters

programme. The programme will allow them to upskill in specific areas of infrastructure asset management and enhance their job prospects in this growing field.

<https://bit.ly/PGDipInfraAssetMgt>

Postgraduate Diploma in Robotics and Automation Engineering (PGDipRobotEng)

Taught (120 points)

Full-time (1 year)

The PGDipRobotEng is a taught programme directed largely at those who want to put their skills to practice in industry. It allows students to upskill in the robotics and automation field – in New Zealand and globally.

<https://bit.ly/PGDipRobotEng>

Postgraduate Diploma in Aerospace Engineering (PGDipAerospaceEng)

Taught (120 points)

Full-time (1 year)

The PGDipAerospaceEng's focus on taught courses means that you'll have the right balance of skills and knowledge for your career path. It also provides you with a solid base to pursue academic research via the Master of Aerospace Engineering.

<https://bit.ly/PGDipAerospaceEng>

Postgraduate Diploma in Medical Engineering (PGDipMedicalEng)

Taught (120 points)

Full-time (1 year) or part-time (varies)

Medical technology is getting more complex, and the field needs upskilled engineering graduates to help maintain and create it. The PGDip in Medical Engineering is designed to help working professionals enhance their careers with practical industry knowledge, based on sectors' demonstrated needs.

<https://bit.ly/PGDipMedicalEng>

Postgraduate Diploma in Engineering, Sustainable Resource Recovery specialisation (PGDipEng)

Taught (120 points)

Full-time (1 year) or part-time (varies)

A PGDip in Engineering with a Sustainable Resource Recovery specialisation gives you exposure to our departmental expertise in areas like resource recovery technologies, bioprocessing, materials processing and characterisation, and process control and optimisation. This degree is suited for students looking to upskill professionally.

<https://bit.ly/PGSusEng>

Postgraduate Diploma in Materials Engineering (PGDipMaterialsEng)

Taught (120 points)

Full-time (1 year) or part-time (varies)

The Postgraduate Diploma in Materials Engineering programme offers a balanced understanding of materials design, synthesis and deployment, whilst cultivating management skills. The degree will help you to develop knowledge, skills and competencies that are used in the materials, manufacturing and energy industries, and will also open job opportunities in the academic sector.

<https://bit.ly/PGDipMaterialsEng>

Master of Infrastructure Asset Management (MInfraAssetMgt)

Taught (120 or 180 points)

Research (120 or 180 points)

New Zealand's infrastructure is expected to grow dramatically in the next 20 years. And our new buildings, roads, and water systems are going to need people who know how to take care of them. Get a head start in this exciting field with the MInfraAssetMgt, designed to equip students with the skills, knowledge and expertise to be effective employees in an essential field. Two specialisations are available in Strategic Asset Management and Planning and Network Management and Systems. This subject can also be explored through postgraduate certificates and diplomas.

<https://bit.ly/MInfraAssetMgt>

Master of Engineering Project Management, Health Projects Specialisation (MEPMH)

Taught (120 or 180 points)

Full-time (18 months) or part-time (varies)

This programme provides students with the in-depth knowledge and skills needed to succeed in project management in a variety of industries. Focusing on two key project management practices, Waterfall and Agile, this programme enables students to work towards industry-

recognised professional certification. Students will gain sound fundamentals in project management concepts and application, whilst completing a spectrum of elective courses that broaden acquisition of knowledge and skills within the engineering project management specialisation.

This degree is also available with a health specialisation, which will prepare students for a career in designing, procuring, constructing and maintaining physical infrastructure in the health sector. This is in response to a need by District Health Boards (DHBs) in New Zealand.

<https://bit.ly/mepmh>

Master of Robotics and Automation Engineering (MRobotEng)

Taught (120 or 180 points)

Full-time (varies)

As the world of work evolves, we see a growing need for expertise in the robotics and automation field – in New Zealand and globally. The MRobotEng aims to produce graduates with the knowledge to develop, deploy and support these technologies at advanced levels, for years to come. Many of our teaching staff are well-recognised experts in the field and are a part of the University's Centre for Automation and Robotic Engineering Science, who boast collaborations with industry and researchers at a global scale. This ensures that our courses are kept up-to-date with recent real-world applications, as well as containing direct insights into the emerging technologies available here in New Zealand.

<https://bit.ly/MRobotEngineer>

Master of Aerospace Engineering (MAerospaceEng)

Taught (120 or 180 points)

Research (120 or 180 points)

Full-time (varies)

New Zealand's space industry is growing, as is its capacity for innovation in industry and research. Get a head start in your career in this exciting field with the MAerospaceEng, designed to equip students with the skills, knowledge and expertise to be effective employees in a field with increasing national and global economic significance. Our courses in Aerospace Engineering are supported by Te Pūnaha Ātea/Auckland Space Institute, which aims to enhance the growth of the New Zealand space sector. The institute is led by academics with deep expertise in the aerospace sector, making the University of Auckland ideally placed to deliver an excellent teaching and learning experience for our students. The MAerospaceEng programme has also received additional endorsements from the

New Zealand Space Agency, Rocket Lab CEO Peter Beck and the Royal Aeronautical Society.

<https://bit.ly/MAerospaceEng>

Master of Medical Engineering (MMedicalEng)

Taught (120 or 180 points)

Full-time (18 months) or part-time (varies)

Medical technology is getting more complex, and the field needs upskilled engineering graduates to help maintain and create it. Get a head start in this exciting field with the Masters in Medical Engineering, designed to equip students with the skills, knowledge and expertise to be effective employees in an essential field. This degree comes in two specialisations: Medical Devices and Technologies, and Biomechanical Engineering.

<https://bit.ly/MMedicalEng>

Master of Engineering Studies in Sustainable Resource Recovery (MEngSt)

Taught (120 and 180 points)

Full-time (varies) or part-time (varies)

A Master of Engineering Studies with a specialisation in Sustainable Resource Recovery gives you exposure to our departmental expertise in areas like resource recovery technologies, bioprocessing, materials processing and characterisation, and process control and optimisation. All these skills are valued in industry and are applicable to fields including food, waste management, manufacturing, pharmaceuticals and more.

<https://bit.ly/PGSusEng>

Master of Materials Engineering (MMaterialsEng)

Taught and Research (120 or 180 points)

Graduates of the Master of Materials Engineering programme can gain endorsements in biomaterials engineering, energy and environmental materials, and advanced materials processing. Industry is also looking for candidates willing to develop research projects and portfolios that draw on Māori and Indigenous knowledge, such as novel materials for green energy (e.g. New Zealand plant fibres or biomass-derived graphite) or extracting valuable metals from industry waste.

<https://bit.ly/MMaterialsEng>

Subject	PGCert	PGDip	Taught masters	Research masters	Doctorate
Aerospace	✓	✓	✓	✓	r
Bioengineering				r	✓
Chemical and Materials Engineering	✓	✓	✓	✓	✓
Civil Engineering	✓	✓	✓	✓	✓
Computer Systems Engineering	✓	✓	✓	✓	✓
Construction Management	✓	✓	✓	r	r
Earthquake Engineering	✓		✓	r	r
Electrical and Electronic Engineering	✓	✓	✓	✓	✓
Energy ¹			✓	✓	r
Engineering Management ¹			✓	r	r
Engineering Science	✓	✓	✓	✓	✓
Environmental Engineering	✓	✓	✓	✓	r
Food Engineering	✓	✓	✓	✓	r
Geothermal Energy Technology	✓		✓	r	r
Geotechnical Engineering			✓	✓	r
Infrastructure Asset Management	✓	✓	✓	r	r
Materials Engineering	✓	✓	✓	✓	r
Mechanical Engineering	✓	✓	✓	✓	✓
Mechatronics Engineering	✓	✓	✓	✓	✓
Medical Engineering	✓	✓	✓	r	r
Operations Research and Analytics ³	✓	✓	✓	✓	✓
Polymers	✓	✓	✓	✓	r
Project Management	✓		✓	r	r
Robotics and Automation	✓	✓	✓	r	r
Software Engineering	✓	✓	✓	✓	✓
Sustainable Resource Recovery	✓	✓	✓	r	r
Transportation Engineering	✓	✓	✓	✓	r

*1 Interfaculty with Science and Business. 2 Interfaculty with Business. 3 Interfaculty with Science.
r Available as a research area in the associated department*

Our programmes

Our postgraduate programmes reflect 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 PROGRAMMES

Postgraduate certificates are our most flexible option. They can include customisation and the opportunity to learn specialist skills. A postgraduate certificate is 60 points, or one semester of full-time study. Some can be taken part-time, too, and they can be used as pathways into masters programmes.

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 foundations and new industrial perspectives, expanding their employability in their sector of choice. A Plastics specialisation is available for those wishing to pursue further career opportunities in materials and processing in this field, and can be completed by distance learning.

<https://bit.ly/PGCertificateEng>

Postgraduate Certificate in Engineering Project Management (PGCertEPM)

Taught (60 points)

Full-time (6 months) or part-time (2 years)

A career-focused qualification that capitalises on New Zealand's position as a cultural force in the world of successful start-ups. The PGCertEPM provides key management practices as you study towards an industry-recognised professional certification.

<https://bit.ly/PGCertEPM>

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, equipping them to pursue diverse roles in this sector. It includes two week-long field trips and a block structure to fit in with work commitments.

<https://bit.ly/PGCertGeothermTech>

Postgraduate Certificate in Earthquake Engineering (PGCertEqEng)

Taught (60 points)

Full-time (6 months)

A coursework-based programme that fulfils increasing industry needs for the next generation of leaders. The PGCertEqEng draws from our internationally-recognised expertise in geotechnical and structural engineering. This course is excellent for people looking to learn quickly and gain practical knowledge.

<https://bit.ly/PGCertEqEng>

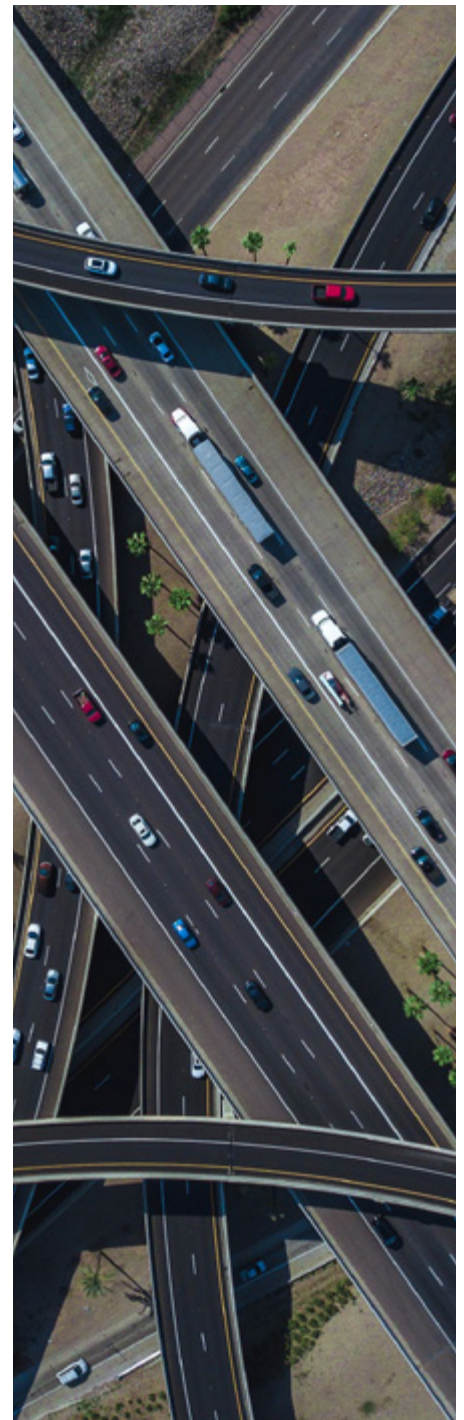
Postgraduate Certificate in Operations Research and Analytics (PGCertORAn)

Taught (60 points)

Full-time (6 months)

The PGCertOR 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 industry problems in healthcare, transport, finance, energy, telecommunications, government and manufacturing.

<https://bit.ly/mprojectmanagement>



POSTGRADUATE DIPLOMA PROGRAMMES

Postgraduate diplomas build on knowledge you gained as an undergraduate. They're perfect for people looking for a shorter-term commitment than those pursuing a masters degree and often focus on practical knowledge for enhanced employability. They can also be used as pathways into masters programmes.

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 bachelors 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.

<https://bit.ly/PGDipEng>

Postgraduate Diploma in Operations Research (PGDipOR)

Taught (120 points)

Full-time (1 year) or part-time (4 years)

The PGDipOR is offered alongside the Faculty of Science to equip engineers with problem-solving skills in the design and management of large or complex systems 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.

<https://bit.ly/PGDipORAn>

MASTERS PROGRAMMES

Our masters programmes allow you to build on your previous study by increasing your engineering knowledge in specific subject areas. Our masters programmes can help enhance your career prospects, teach you transferrable skills and let you research alongside leading academic staff in a top-ranked institution. Masters degrees are offered in research and taught options.

Master of Engineering (ME)

Research (120 or 180 points)

Full-time (1 year or 18 months)

Part-time (2 or 3 years)

Write a thesis under supervision by leading academics and researchers in your chosen specialisation. You will undertake a stimulating mix of theoretical and experimental research to solve real-world problems at the cutting edge of engineering advancement. Our programmes will also equip you for a career in industry or open the potential for further study.

As part of this degree, you can specialise in:

- Bioengineering
- Chemical and Materials Engineering
- Civil Engineering
- Computer Systems Engineering
- Electrical and Electronic Engineering
- Engineering Science
- Environmental Engineering
- Mechanical Engineering
- Mechatronics Engineering
- Software Engineering

<https://bit.ly/MasterofEnergy>

Master of Engineering Project Management (MEPM)

Taught (120 or 180 points)

Full-time (1 year or 18 months)

Part-time (3 or 4 years)

The MEPM is a career-focused qualification that capitalises on New Zealand's position as a cultural force in the world of successful start-ups. It provides key management practices as you study towards an industry-recognised professional certification.

<https://bit.ly/mprojectmanagement>

Master of Engineering Studies (MEngSt)

Taught (120 or 180 points)

Research (120 points)

Full-time (1 year or 18 months) or part-time (2 or 3 years)

The MEngSt is a taught masters with diverse specialisations, which allows you to tailor your study towards your professional goals and interests. With this programme, you can gain applied knowledge to pursue roles with regulatory, management or product develop-

ment scopes. A research option is available for the Food Process Engineering and Medical Devices and Technologies specialisations.

<https://bit.ly/MEngSt>

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.' It provides you with the technical foundations, project management skills and business acumen needed to pursue leadership roles in technologically-driven companies.

<https://bit.ly/MEMgt>



Master of Earthquake Engineering (ME-qEng)

Taught (120 points)
Research (120 or 180 points)
Full-time (1 year or 18 months)

This is a coursework-based programme that fulfils industry needs for the next generation of leaders, and draws from our internationally-recognised expertise in geotechnical and structural engineering.
<https://bit.ly/MEqEng>

Master of Energy (MEnergy)

Master of Energy (MEnergy)
Taught (120 or 180 points)
Research (120 points)
Full-time (1 year or 18 months) or
Part-time

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. It can lead to work in fields like energy consulting, project management, or energy modelling analytics.

<https://bit.ly/MasterofEnergy>

Master of Engineering Geology (MEngGeol)

Research (120 and 180 points)
Full-time (varies) or part-time (varies)

By focusing on the development of accurate and reliable geological ground models, you will be well equipped to work within New Zealand's complex environment and contribute to the projected construction boom. This interfaculty programme, between the Faculty of Engineering and the Faculty of Science is for students who want to pursue an industry-relevant programme.

<https://bit.ly/MEngGeol>

Master of Operations Research and Analytics (MORAn)

Taught (120 and 180 points)
Research (120 and 180 points)
Full-time (1 year to 18 months)

The MORAn 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. It also gives them the tools to solve complex industry problems in healthcare, transport, finance, energy, telecommunications, government and manufacturing.

<https://bit.ly/MORAn>

PHD PROGRAMMES

Our PhD is a globally recognised postgraduate research degree and is the highest level of degree you can achieve. PhD students are critical, curious, creative thinkers who undertake original research over at least three years. This option is best for students looking to become experts in their field and who want to explore some of engineering's most difficult challenges.

A New Zealand government funding programme enables the University of Auckland to offer PhD study opportunities to domestic and international students for the same price.

Doctor of Philosophy (PhD)

Doctoral research (120 points per year)

Full-time (3–4 years) or
Part-time (6–8 years)

The PhD 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, and gain the advanced knowledge needed for specialised industry, consulting positions, teaching or academia.

auckland.ac.nz/phd



Funding Options



\$40 million

in postgraduate scholarships are offered by the University of Auckland each year

NEARLY

400

POSTGRADUATE SCHOLARSHIPS

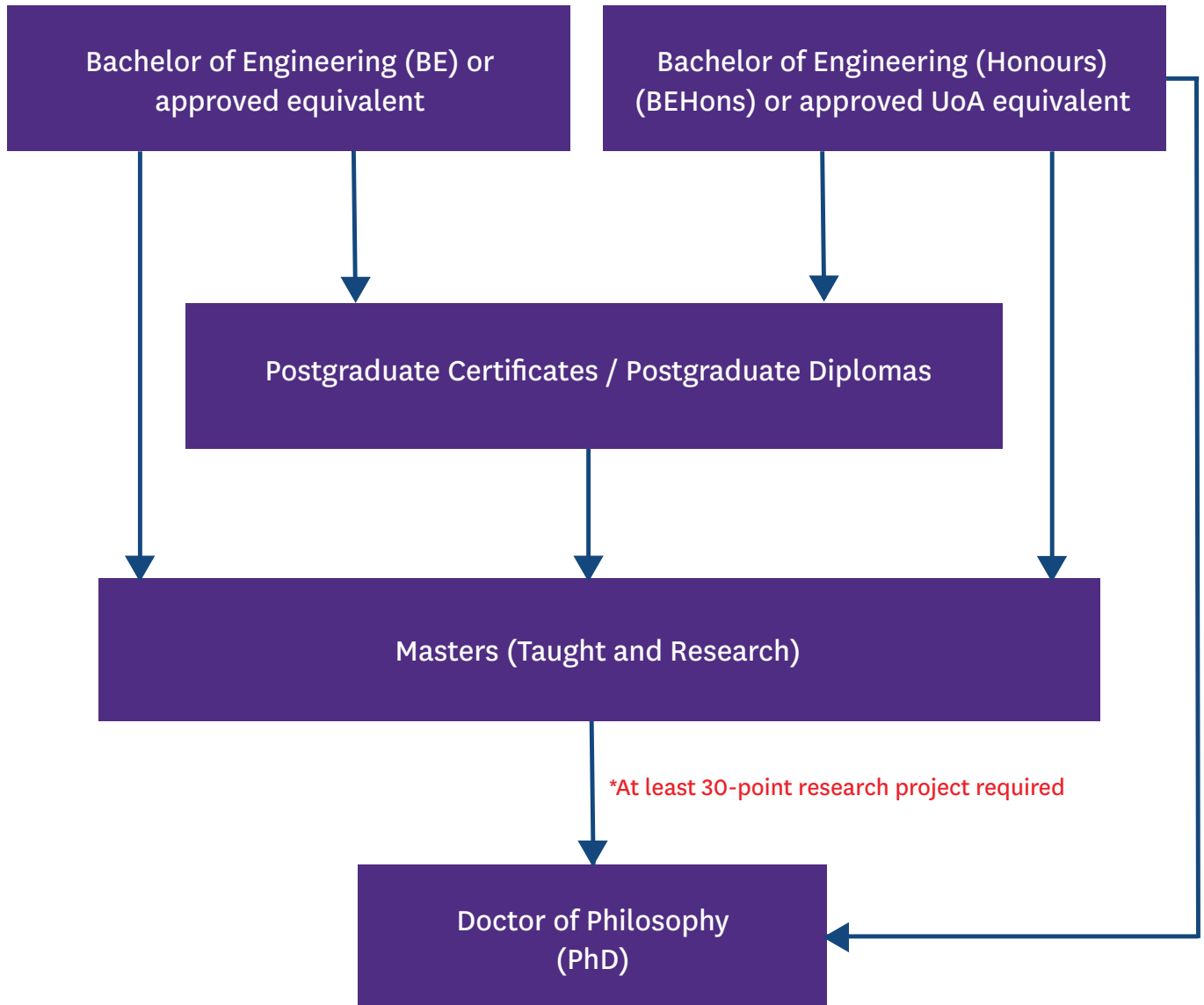
OFFERED ACROSS
THE UNIVERSITY

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

- Guaranteed scholarships are available to domestic research students and PhD applicants with a qualifying programme from a New Zealand university who meet GPA requirements: auckland.ac.nz/makethegrade
- Summer Research Scholarships give you a \$6,000 tax-free stipend to enhance your CV and gain research experience: 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: auckland.ac.nz/press-accounts



General Faculty of Engineering Postgraduate Pathways*



* If you don't see your qualifications listed in the diagram but you're still interested in pursuing postgraduate study with us, please feel free to call our Support Centre at 0800 61 62 65 (domestic), or either +64 9 923 1535 or +64 9 373 7999 (international). One of our representatives will be happy to discuss our options with you.

Admission and application

Admission to postgraduate programmes

- All admissions for 2022 close in December 2021 (Semester One) and July 2022 (Semester Two) with some following exceptions. However, many masters programmes have earlier deadlines, so it's best to start the application process before November 2021 for Semester One and before June 2022 for Semester Two. You should check your specific masters programme page for up-to-date application deadlines.
- 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 is available at 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 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 gpecalculator.auckland.ac.nz for more information.

Entry requirements

Certificate of Proficiency

A Certificate of Proficiency provides you with the opportunity to meet a major requirement or try a subject you're interested in by taking one or two courses at the University of Auckland without committing to a full programme. If you decide you have a taste for learning and want to reassign the points from your COP course to a qualification, our student advisers can help plan the best study option for you.

Postgraduate certificates or postgraduate diplomas

You must have completed an undergraduate degree at a recognised tertiary institution in a field relevant to your specialisation.

Masters degrees

- You will need a GPA or GPE of either 4.0 or 5.0 depending on the programme. Please refer to the website for more details. If you don't meet this criteria, you may begin your pathway into a masters programme by enrolling in our one-year Postgraduate Diploma in Engineering.
- 120-point programme: a four-year bachelors degree in engineering where the final year consists of postgraduate-level study relevant to your chosen specialisation. Students who have a Washington Accord accredited engineering degree from other institutions are also eligible for 120-point taught masters programmes.
- 180-point programme: an undergraduate degree in engineering at a university (or similar institution) in a field relevant to your chosen specialisation.
- We also consider applicants from cognate degree areas such as science, architecture and other fields. In exceptional circumstances, we consider applicants with relevant industry experience.

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 must have achieved a B+ and have a BE(Hons) or Masters. This applies to both domestic and international students alike.
- To determine whether you're academically eligible for our programmes, you can check out our GPE calculator at gpecalculator.auckland.ac.nz.

How to apply

Applying for a non-doctoral programme

- Follow the step-by-step guide at auckland.ac.nz/pg-admission.
- The Application for Admission is available at 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. If you have decided on an area of interest or potential research topic, you can apply at 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 auckland.ac.nz/overseasrep.





**UNIVERSITY OF
AUCKLAND**
Waipapa Taumata Rau
NEW ZEALAND

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Auckland, New Zealand

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or 923 1969 (within Auckland)
or +64 9 923 1969 (International)

Email

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Postal

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