ENGINEERING, COMPUTER & MATHEMATICAL SCIENCES

UNDERGRADUATE PROGRAMME GUIDE 2020

AUT

#1 IN NEW ZEALAND FOR **GLOBAL RESEARCH IMPACT**

5 OUT OF **5**

EMPLOYABILITY
QS STARS 2017–2019

TOP 1.2% UNIVERSITIES WORLDWIDE

Computer Science & Information Systems **TOP 250**
Electrical & Electronic Engineering **TOP 350**

Welcome to Engineering, Computer & Mathematical Sciences

A degree in engineering or computer and mathematical sciences is an opportunity to play a leading role in New Zealand's technological, social and economic development. Graduates from AUT's School of Engineering, Computer and Mathematical Sciences are well equipped to contribute to that as specialists, as well as thought leaders.

Major breakthroughs are unlikely to come from individuals toiling away in the lab. They will come from teams where ideas from across disciplines are combined to design innovative solutions. The School of Engineering, Computer and Mathematical Sciences is part of the Faculty of Design and Creative Technologies and this unique mix of disciplines means that our staff are familiar with innovation and cross-disciplinary work, enabling them to impart this knowledge to our graduates.

Our teaching and research staff are among the best in New Zealand and internationally. Our programmes achieve the highest standards in student experience and employer satisfaction.

You have a great future ahead of you. Our staff are interested in your success and will work hard to see you succeed. We strive to make your time here with us worthwhile, providing you with a springboard for your career. I look forward to seeing you develop and grow. Enjoy your time with us.

Professor Enrico Haemmerle
Dr.-Ing. *Bremen*, Dipl.-Ing. *Bochum*,
Dipl.-Ing.(FH) *Offenburg*
Dean of Engineering
Head of School – Engineering, Computer and Mathematical Sciences

Welcome to AUT

E ngā mana, e ngā reo
E te iti, e te rahi
E ngā mātāwaka o ngā tōpito o te ao
Ngā mahuetanga iho e kawe nei i ngā moemoeā o rātou mā
Tēnā koutou katoa

Piki mai rā, kake mai rā,
Nau mai, haere mai ki tēnei o ngā wānanga
Whakatau mai i raro i te korowai āhuru o Te Wānanga
Aronui o Tāmaki Makau Rau

To the prestigious, the many voices
The few, the great
To those of all races and creeds
We who remain to fulfil the dreams and aspirations of the ancestors
Greetings one and all

Climb, ascend
Embark on the journey of knowledge
Let us at AUT embrace and empower you
To strive for and achieve excellence

Te whakatupu i te kōunga, i te mana taurite me ngā tikanga matatika, i ngā pūkenga ako,
i ngā pūkenga whakaako me te āta rangahau hei hāpai i ngā hāpori whānui o te motu, otirā, o te ao.

To foster excellence, equity and ethics in learning, teaching, research and scholarship, and in so doing serve our regional, national and international communities.

Contents

Course information

About AUT

Applying for your programme

Key: F/T = full-time, P/T = part-time

Cover:
#1 global research impact: Ranked #1 in New Zealand for the number of times our research is cited globally (Times Higher Education World University Rankings 2019).

5 out of 5: QS Stars University Ranking.

Top 1.2%: Ranked in the world's top 301-350 universities (Times Higher Education World University Rankings 2019). We're ranked in the top 250 in the world for computer science and information systems, and in the top 350 for electrical and electronic engineering (QS World University Subject Rankings 2018).

Image 2 on page 5 by Jason Mann Photography.

AUT's faculties and schools

AUT has five faculties and 17 schools. The light orange box in the diagram below shows where the programmes in this programme guide sit within AUT.

FACULTY OF BUSINESS, ECONOMICS AND LAW
TE ARA PAKIHI, TE ŌHANGA ME TE TURE

- Business School
  Te Kura Kaipakihi
- Law School
  Te Kura Ture
- School of Economics
  Matauranga Ōhanga

FACULTY OF CULTURE AND SOCIETY
TE ARA KETE ARONUI

- School of Education
  Te Kura Mātauranga
- School of Hospitality and Tourism
  Te Kura Taurimatanga me te Mahi Tāpoi
- School of Language and Culture
  Te Kura Reo me te Ahurea
- School of Social Sciences and Public Policy
  Te Kura Pūtaiao ā-iwi me ngā Kaupapa Tūmatanui

FACULTY OF DESIGN AND CREATIVE TECHNOLOGIES
TE ARA AUAHA

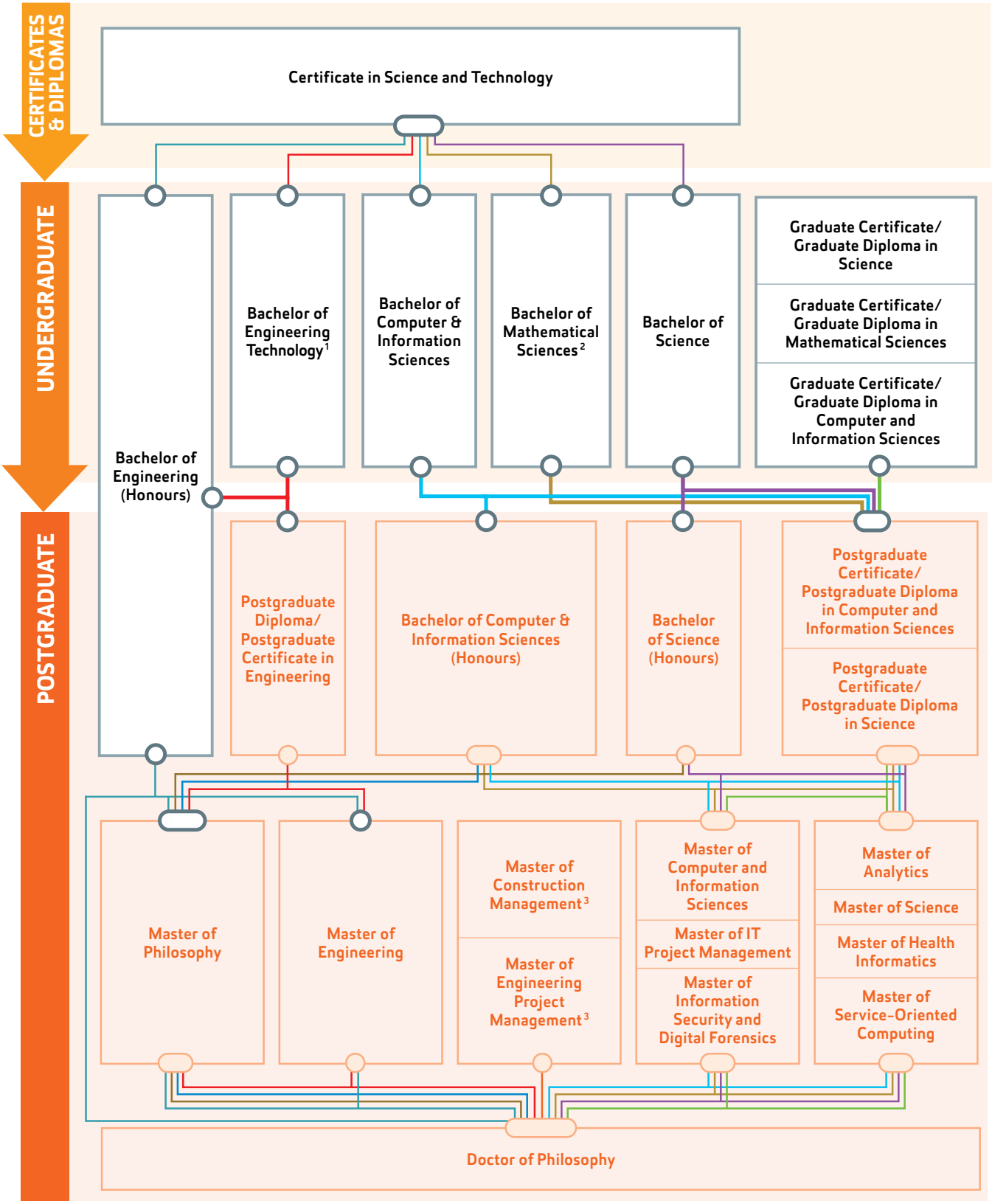
- School of Art and Design
  Te Kura Toi a Hoahoa
- School of Communication Studies
  Te Kura Whakapāho
- **School of Engineering, Computer and Mathematical Sciences**
  Te Kura Mātai Pūhanga, Rorohiko, Pāngarau
- Creative Technologies
  Marautanga Matatini

FACULTY OF HEALTH AND ENVIRONMENTAL SCIENCES
TE ARA HAUORA A PŪTAIAO

- School of Clinical Sciences
  Te Kura Mātai Haumanu
- School of Interprofessional Health Studies
  Te Kura Pākeho Ngaiotanga o Ngā Marau Akoranga Hauora
- School of Public Health and Psychosocial Studies
  Te Kura Hauora Tūmatanui
- School of Science
  Te Kura Pūtaiao
- School of Sport and Recreation
  Te Kura Hākinakina

TE ARA POUTAMA
FACULTY OF MĀORI AND INDIGENOUS DEVELOPMENT

Qualifications and study pathways



1. High-achieving students may progress directly to the Master of Engineering
2. You can also progress to the Graduate Diploma in Secondary Teaching to become a mathematics teacher, a role that is in high demand
3. Relevant bachelor's degree or equivalent plus relevant work experience required for entry

Note:

1) Completion of one qualification doesn't guarantee entry to a higher level qualification.

2) Apply for the qualification you are best suited for – you don't necessarily have to enrol in the qualification that appears at the top of the above diagram.

3) Some qualifications in the above diagram may be prerequisites to – and not credit towards – higher level qualifications.

For more information, visit www.aut.ac.nz/ecms

WHY STUDY

ENGINEERING, COMPUTER & MATHEMATICAL SCIENCES?

International recognition through Engineering New Zealand accreditation, Sydney and Washington Accords

New majors created in response to industry demand

Student access to high-tech labs network

1 Astronomy students have access to AUT's hi-tech astronomy facilities 2 The new WZ building is the home of AUT's School of Engineering, Computer and Mathematical Sciences 3 Dr Mahsa Mohaghegh, an expert on artificial intelligence and machine learning, and her students.

A solid career foundation

If you want a university with future-focused teaching, an engaging learning environment that embraces people and ideas, and programmes designed for rewarding careers – then welcome to AUT. Our qualifications are recognised and respected throughout the world, and our graduates are known for being talented, adaptable and career-ready.

We're ranked in the top 250 universities in the world for Computer Science and Information Systems and in the top 350 for Electrical and Electronic Engineering and our engineering degrees are professionally accredited and internationally benchmarked[1]. Engineering New Zealand recognises our Bachelor of Engineering (Honours) as meeting the Washington Accord and the Bachelor of Engineering Technology as meeting the Sydney Accord. The maritime majors at the Australian Maritime College are accredited by Engineers Australia. IT Professionals NZ (ITPNZ) recognises our Bachelor of Computer and Information Sciences as meeting the Seoul Accord.

Workplace experience during your study

Study with us and you not only learn academic knowledge related to your discipline but also gain valuable experience of the wider world. Workplace experience is at the heart of our degrees, and in your final year you complete a research and development project that could involve creating a commercial solution for an industry client. It's one of many reasons 9 out of 10 AUT graduates recommend us as a great place to study.

Social and collaborative

You study in an interactive environment where you collaborate with your classmates, debate and apply your knowledge to find innovative solutions. As you would in the workplace, you work with people from different disciplines – students, staff or industry contacts – to come up with a complete solution. This collaborative approach creates a close-knit, supportive environment, and for many of our students it's the highlight of their studies.

Research is our strength

We have a number of internationally-renowned research institutes and labs, and there are many opportunities for students to work with academic staff in these groups. Radio physics and space, health informatics, forensic IT and security, and intelligent multimedia are just some of the diverse research areas covered. The unique combination of engineering, computer and mathematical sciences within one school stimulates interdisciplinary research across and beyond traditional boundaries. Our research feeds directly into what we teach, which means that what you learn reflects the latest research and technologies.

1. The Mechanical, Maritime, and Electrical and Electronic Engineering majors are professionally accredited and internationally benchmarked. Our more recent majors are CUAP approved and have been developed in consultation with Engineering New Zealand. They are expected to be accredited in time.

Life at AUT

AUT is a modern and innovative university with endless opportunities and a supportive culture that celebrates diversity. Studying at AUT is your chance to meet new people and develop lifelong skills, while getting the support you need to succeed at university and beyond.

We're proactive in enabling all students to succeed, and our comprehensive student support services ensure that you have an amazing experience inside and outside the classroom.

We're here to help

No matter what the problem, the Student Hub is here to help. You can find a Student Hub on each campus and our specialist staff can help with anything from enrolment and student ID cards to matters far beyond university, like support with visa and immigration matters, StudyLink issues or landlord challenges.

Dedicated support for new students

From Orientation to our many academic and cultural support programmes, our student support services are there to make starting out as a new student as easy as possible.

Creating career-ready graduates

The AUT Employability and Careers team helps you plan in advance for your future career by developing job search and interview skills, while building your personal brand and networking skills. We'll also introduce you to employers looking to recruit AUT graduates.

Gain an edge on the competition

The AUT Edge Award challenges, rewards and formally acknowledges the 'C skills' – collaboration, co-operation, community, curiosity, communication and creativity – gained through your volunteering, leadership and employability activities.

International study opportunities

An international student exchange offers an amazing opportunity to study overseas as part of your degree. Study for a semester or a year at one of our partner universities around the world, immerse yourself in another culture, make lifelong friends and get international experience before you graduate.

Helping you succeed in your studies

Our library and learning support team offers a wide range of services and resources designed to help develop your academic skills. The Library also runs a range of workshops to help you get the most out of your studies, and our peer mentoring programme enables students to learn from others who have already completed the same paper.

Top internships around the world

A good internship can be the foundation of a great career. That's why AUT Internz places students and graduates with top companies in New Zealand, North America, Asia and Europe – including Paramount Recording Studios, the Sundance Institute and Westpac Institutional Bank in New York.

A launchpad for entrepreneurs

Every entrepreneur starts somewhere. At AUT, the best place for aspiring entrepreneurs is CO.STARTERS@AUT. This nine-week programme helps you turn your entrepreneurial ideas into a viable business.

An outstanding learning environment

At AUT you study in an innovative and interactive environment that embraces creativity, collaboration, and the sharing of ideas and culture. A number of our buildings have won prestigious architecture awards, and we're constantly improving our built environment to offer students the best possible learning experience.

Free access to digital tools and resources

We offer students all the digital tools needed to succeed, including free Wi-Fi on campus, the full Office 365 suite for up to five devices and free access to lynda.com, a world-leading online learning platform.

Getting involved in campus life

Joining a club is a great way to meet like-minded people and make lifelong friends outside of lectures. Choose from a range of student-run social, sustainability, academic and cultural clubs – a great way to meet new people, participate in events and get involved in campus life.

Join a gym or sports team

AUT is New Zealand's leading sports university, with state-of-the-art sports facilities, on-campus gyms and a huge number of sports teams and events. As an AUT student you can participate in a wide variety of sports, from social on-campus games to elite international competitions.

Holistic approach to wellness

AUT offers comprehensive medical, counselling and mental health services. We also run Te Puna Oranga, an integrated programme that regularly hosts wellness-related events on campus.

Disability student support and resources

Our Disability Support team is committed to helping you participate as fully as you can in learning and student life. We work with students before they start at AUT to help identify their specific needs and ensure they're set up for success.

Getting around

Whether it's finding your way to campus or getting around between lectures, AUT offers a range of resources to help you navigate your new environment, including shuttle buses that travel between campuses and interactive online maps.

Safe and friendly campuses

We make sure that our students are – and feel – safe. Our friendly security staff are available day and night to help if you have any concerns.

Jolene Alapatt
ICT Desktop Support, Fisher & Paykel Healthcare
Bachelor of Computer and Information Sciences in Computational Intelligence & IT Service Science

"AUT is known for teaching the skills that are relevant to the industry and I like that it offers workplace experience as part of your degree. For our final-year project, four of us worked for ASB to solve a range of business problems. I thoroughly enjoyed the project and learned a great deal. I was incredibly grateful to have been given such an opportunity while still at university and our client was completely supportive every step of the way. The ICT and Engineering Career Fair was also a great opportunity to get in touch with the industry experts and explore all aspects of the subjects."

Connected to industry and business

We're proud of our strong links with business, industry and the wider community – industry experts often come in to share their knowledge with you, key members of industry organisations provide input on our courses and many of our academics are still actively involved in their professional fields. Our ICT and Engineering Career Fair is AUT's largest recruitment event, connecting students with key employer organisations looking for fresh talent. Our ever deepening industry connections also mean that you can choose from a vast number of organisations to work with for your industry-based research project, which is at the heart of our degrees.

Our industry partners include:

- Auckland Airport
- Auckland Council
- Auckland District Health Board
- Beca
- Contact Energy
- DB Schenker
- Deloitte
- Fiserv
- Fishpond
- Fisher & Paykel Appliances
- Fisher & Paykel Healthcare
- Fletcher Building
- Fonterra New Zealand
- Fujitsu
- Fulton Hogan
- HortResearch
- Institute of IT Professionals
- Microsoft
- Opus
- Plant & Food Research
- RNZAF
- SDN IT Solutions
- Southern Spars
- Spark
- Statistics New Zealand
- Transpower
- Wireless Nation
- Yellow

Our ICT and Engineering Career Fair is AUT's largest recruitment event

Shane Birdsall
Test Engineer, Fiserv
Bachelor of Computer and Information Sciences in Computer Science and Software Development

"I really enjoyed the computer science papers as they challenged me and changed the way I approached problems. As part of my degree I also did a research and development project with Fiserv, which is now my employer. Due to the project needing such a wide range of personal and technical skills I had to step up and learn lots of new things to get myself and the team across the finish line. Some of the achievements I had at university that I'm particularly proud of are winning the 2017 AUT Programming Contest and the People's Choice award in the 2016 AUT Kickstart Weekend."

Bachelor of Engineering (Honours) [BE(Hons) | AK3751] Overview

QUICK FACTS

Level:	8
Points:	480
Duration:	4 years F/T, 8 years P/T
Campus:	City[1]
Starts:	24 Feb & 13 July 2020[2]

Cheng (Ivan) Meng
China
Owner, Lancom Commercial Aluminium
Master of Engineering
Bachelor of Engineering in Mechanical Engineering

"My dad is an engineer, and I wanted to follow the same career path, especially as engineering is a widely recognised and respected profession. During my bachelor's degree, AUT provided me with theoretical and practical skills that cover almost everything in the engineering industry. This helped me find my first job in New Zealand. Later on, I decided to enrol in AUT's Master of Engineering, which included a research project in collaboration with Fletcher Aluminium's industrial programme. Since then, I've been involved in and have managed a number of construction projects across New Zealand. I enjoy being able to show my family members, friends and customers a project I've worked on, and explain my involvement in the job. Throughout my career, I've received a number of promotions and had many opportunities."

As an engineer you address the key issues we face today, like access to clean water, sustainable energy systems, waste management, recycling and environmental pressures. The Bachelor of Engineering (Honours) prepares you for a rewarding career in engineering. It's accredited by Engineering New Zealand[3], and prepares you for Engineering New Zealand membership. You learn to formulate models and analyse, predict and monitor engineering systems – essential skills in professional engineering. Through engineering projects and other practical papers you have plenty of opportunities to apply what you have learnt in class.

Entry requirements

Minimum entry requirements

University Entrance or equivalent, including:

- **NCEA:** At least 14 level 3 credits in each of Calculus and Physics
- **CIE:** A level Mathematics and a minimum of AS in Physics OR A level in Physics and a minimum of AS in Mathematics
- **IB:** A grade of 4 or better in Mathematics and Physics

Applicants without UE must demonstrate competency in Mathematics and Physics to at least level 3.

Guaranteed entry

Applicants will automatically be offered a place in this programme if they have a rank score of 250 or higher, along with 14 NCEA level 3 credits in each of Calculus and Physics or CIE A levels in Mathematics and Physics.

All other applicants who have met the admission requirements will be considered on a case-by-case basis

English language requirements

IELTS (Academic) 6.0 overall with all bands 5.5 or higher; or equivalent.

Useful New Zealand school subjects

Chemistry, Digital Technologies, English

Don't meet the entry requirements?

Consider starting with our Certificate in Science and Technology.

Majors

- Architectural Engineering
- Construction Engineering
- Electrical and Electronic Engineering
- Maritime Engineering (Marine and Offshore Engineering, Naval Architecture, Ocean Engineering)
- Mechanical Engineering
- Mechatronics Engineering
- Software Engineering

Maritime majors

This joint venture between AUT and the Australian Maritime College (AMC) at the University of Tasmania (UTAS) enables New Zealand students to study maritime engineering[1].

Students spend the first two years in New Zealand and the final two years at AMC in Launceston, Tasmania. You can choose from three majors: Marine and Offshore Engineering, Naval Architecture and Ocean Engineering.

What this qualification covers

Most papers run for one semester and are worth 15 points. You must complete 120 points each year. You also need to complete 800 hours of planned, supervised work experience to graduate, in addition to completing all your papers.

Year 1

Students in all majors do the same papers in the first year:

- Introduction to Engineering Design
- Electrical Principles A
- Engineering Mathematics I
- Mechanical Principles A
- Introduction to Computing
- Electrical Principles B
- Engineering Materials I
- Mechanical Principles B
- Workshop Practice

Year 2

You develop an understanding of how to apply mathematical and engineering sciences across different engineering disciplines.

Year 3

You further develop what you've learnt in Year 2, and work on a piece of engineering design and analysis under the guidance of an academic supervisor. Maritime engineering students move to Tasmania this year.

Year 4

In your final year you complete an individual industrial project, working on a piece of engineering design and analysis for organisations like Mighty River Power, Fletcher Building, BECA, SKM, Genesis Energy, Contact Energy, Fisher & Paykel Appliances, Spark or Auckland Airport.

AUT encourages early application. Places are limited.

1. Maritime engineering (Marine and Offshore Engineering, Naval Architecture, Ocean Engineering) students study the first two years at AUT, and the last two years at Australian Maritime College (AMC) in Launceston, Tasmania.
2. Maritime engineering students can only start in Semester 1 because of the transfer to AMC in Year 3 and 4.
3. The Mechanical, Maritime, and Electrical and Electronic Engineering majors are professionally accredited and internationally benchmarked. Our more recent degrees in Construction, Architectural, Software and Mechatronics Engineering have been CUAP approved and developed in consultation with Engineering New Zealand, and are expected to be accredited in time.

For more details visit **www.aut.ac.nz/ecms**

New majors created in response to industry demand

Divya Kataria
India
3rd-year student, Bachelor of Engineering (Honours) in Construction Engineering

"Construction is a big and booming sector in New Zealand, and studying construction engineering gives me an understanding of the various opportunities and careers I can go into once I graduate. It's fascinating how one major can open up pathways to so many different and diverse roles. It gives you the freedom to realise your full potential and choose what you want to do. I would recommend this degree to anyone who has an interest in architecture, or civil and construction engineering. AUT is well-known for its friendly and international staff, and for offering a student-focused environment. The class sizes are small, so the lecturer can pay attention to each and every student. The lecturers are from all around the world, which makes the environment friendlier and more diverse. I also love the amount of group projects we get to work on at AUT as these are fun and challenging."

Course planners

Architectural Engineering

YEAR	SEMESTER 1	SEMESTER 2
1 120 points	Introduction to Engineering Design	Introduction to Computing
	Electrical Principles A	Electrical Principles B
	Mechanical Principles A	Mechanical Principles B
	Engineering Mathematics I	Engineering Materials I
2 120 points	Engineering Mathematics II	Introduction to Structural Engineering
	Solid Mechanics I	Construction Engineering Management I
	Construction Materials	Quantity Surveying
	Building Construction I	Engineering Design Methodology
3 120 points	Architectural Design and Sustainability	Illumination Engineering
	Geotechnical Engineering	Construction Engineering Management II
	Structural Analysis	Engineering Mathematics III
	Architecture and Design Development I	Heating, Ventilation and Air-conditioning Systems
4 120 points	Industrial Project (Architectural) (30 points)	
	Structural Engineering Design	Building Construction II
	Architectural Systems	Structural Dynamics
	Architecture and Design and Development II	General elective[1]

480 points total

All papers are 15 points unless indicated otherwise. All students also complete Workshop Practice in the second semester of Year 1.
1. Can be any paper from any AUT programme.

Durgeshni Chandra
4th-year student, Bachelor of Engineering (Honours) in Architectural Engineering

"I've always had a keen interest in all types of engineering. When AUT introduced architectural engineering that was the perfect choice for me. I also believe that it's very important to be mindful of environmental, economic and social factors when it comes to buildings. Buildings that are more sustainable and that consider these factors will be the buildings of the future. By studying architectural engineering, I feel that I'm doing my part to make this happen. AUT's campuses are amazing. All of AUT's new buildings and facilities were created with students in mind. It's a pleasure just to be on campus, and I'm more focused on campus than anywhere else."

Construction Engineering

YEAR	SEMESTER 1	SEMESTER 2
1 120 points	Introduction to Engineering Design	Introduction to Computing
	Electrical Principles A	Electrical Principles B
	Mechanical Principles A	Mechanical Principles B
	Engineering Mathematics I	Engineering Materials I
2 120 points	Engineering Mathematics II	Introduction to Structural Engineering
	Construction Materials	Construction Engineering Management I
	Solid Mechanics I	Quantity Surveying
	Building Construction I	Engineering Design Methodology
3 120 points	Architectural Design and Sustainability	Construction Engineering Management II
	Geotechnical Engineering	Engineering Mathematics III
	Structural Analysis	Concrete Structures
	Construction Planning	Steel Structures
4 120 points	Industrial Project (Construction) (30 points)	
	Structural Engineering Design	Structural Dynamics
	Off-site Construction	Elective[1]
	Foundation Engineering	General elective[2]

480 points total

All papers are 15 points unless indicated otherwise. All students also complete Workshop Practice in the second semester of Year 1.
1. Year 4, Semester 2 elective can be from any of the following: Construction Equipment and Utilisation, Construction Technology.
2. General elective can be any paper from any AUT programme.

April Faitua

4th-year student, Bachelor of Engineering (Honours) in Construction Engineering

"I chose to major in construction engineering because I've always been interested in the infrastructure of buildings and passionate about being innovative, analytical and resourceful. Construction engineering combines all of this. I would highly recommend this major to other students who are fascinated by buildings. I would love to be a project manager in the construction industry one day. I believe this major will help me develop the skills I need for a career as a construction engineer. The positive learning environment has been one of the highlights of my study. Everyone just works together. The group projects as part of your study give you many opportunities to meet, work and interact with a lot of different people."

Course planners
continued

Electrical and Electronic Engineering

YEAR	SEMESTER 1	SEMESTER 2
1 — 120 points	Introduction to Engineering Design	Introduction to Computing
	Electrical Principles A	Electrical Principles B
	Mechanical Principles A	Mechanical Principles B
	Engineering Mathematics I	Engineering Materials I
2 — 120 points	Engineering Mathematics II	Engineering Mathematics III
	Electronics	Engineering Management I
	Circuit Theory	Signals and Systems
	Introduction to Microcontrollers	Electronics Project
3 — 120 points	Fields and Waves	Design Project
	Embedded Digital Systems	Communication Engineering
	Power Electronic Systems	Instrumentation and Control Systems
	Engineering Numerical Techniques and Statistical Analysis	Power Systems Engineering
4 — 120 points	Industrial Project (Electrical) (30 points)	
	General elective[1]	Engineering Management II
	Elective[2]	Elective[2]
	Elective[2]	Elective[2]

480 points total

You also complete Workshop Practice in your second semester. 1. Can be from any AUT programme. 2. **Year 4, Semester 1 electives:** Advanced Control Systems, Electrical Power Systems Integrated Analysis, Power Systems in Quality Management, Advanced Power Electronics, Digital Signal Processing, Real Time Systems, Wireless Systems. **Year 4, Semester 2 electives:** System ID and Adaptive Control OR Optimal Control, Electrical Design and Protection, Digital Systems Design, Embedded Software Engineering, Advanced Power Electronics, Network Engineering, Innovation Management.

Kenaz Vergis
Final-year student, Bachelor of Engineering (Honours) in Electrical and Electronic Engineering

"What I loved about studying both electrical and electronic engineering was that it covers a mixture of different topics, which helped me understand what my passion was. I enjoyed focusing on electrical engineering, especially looking into emerging technologies like electric vehicles and battery storage technology. I've secured a role as a graduate electrical engineer at an international engineering firm, where I'll be helping design buildings like the Auckland Airport expansion. I'll also be involved in a range of international projects, which will enable me to travel all around the world to work."

Maritime Engineering

YEAR	SEMESTER 1	SEMESTER 2
1 — 120 points	Introduction to Engineering Design	Introduction to Computing
	Electrical Principles A	Electrical Principles B
	Mechanical Principles A	Mechanical Principles B
	Engineering Mathematics I	Engineering Materials I
2 — 120 points	Engineering Mathematics II	Offshore and Maritime Engineering
	Hydrostatics	Engineering Management I
	Solid Mechanics I	Fluid Mechanics and Thermodynamics
	Ship Design and Production	Engineering Mathematics III
3 — 120 points	**Marine and Offshore Systems:** Majors in Marine Systems and Offshore Systems. Each major has 7 compulsory papers and 1 elective.	
	Naval Architecture: Majors in Ship and Underwater Vehicles, and Yacht and Small Craft. Each major has 7 compulsory papers and 1 elective.	
	Ocean Engineering: Majors in Ocean and Subsea Structures, and Marine Aquaculture. Each major has 7 compulsory papers and 1 elective.	
4 — 120 points	**Marine and Offshore Systems:** Majors in Marine Systems and Offshore Systems. You undertake research and design projects as well as 60 points of compulsory papers (4 papers).	
	Naval Architecture: Majors in Ship and Underwater Vehicles, and Yacht and Small Craft. You undertake research and design projects as well as 60 points of compulsory papers (4 papers).	
	Ocean Engineering: Majors in Ocean and Subsea Structures and Marine Aquaculture. You undertake research and design projects as well as 60 points of compulsory papers (4 papers).	

480 points total

All students also complete Workshop Practice in the second semester of Year 1.

Tom Fletcher
Vessel Planner, DP World Australia, Sydney
Bachelor of Engineering (Honours) in Maritime Engineering

"I've always had an interest in engineering and the opportunity to study maritime engineering was perfect for me. Being able to study maritime engineering at AUT in New Zealand is a real advantage as you can be introduced to the subject matter without having to make a four-year commitment to move to Australia. After graduating in 2017, I now work as a vessel planner at DP World Australia, which is involved in national vessel planning operations across the Sydney, Melbourne, Brisbane and Freemantle ports. I'm enjoying the challenge of learning and applying engineering principles in a unique way, with a focus on the specialised maritime environment and the difficulties that entails."

Course planners
continued

Mechanical Engineering

YEAR	SEMESTER 1	SEMESTER 2
1 — 120 points	Introduction to Engineering Design	Introduction to Computing
	Electrical Principles A	Electrical Principles B
	Mechanical Principles A	Mechanical Principles B
	Engineering Mathematics I	Engineering Materials I
2 — 120 points	Engineering Mathematics II	Engineering Management I
	Manufacturing Technology	Engineering Design Methodology
	Mechanisms and Dynamics of Machinery	Fluids and Thermodynamics
	Solid Mechanics I	Engineering Mathematics III
3 — 120 points	Thermodynamics and Heat Transfer	Engineering Management II
	System Dynamics and Vibrations	Engineering Materials II
	Solid Mechanics II	Mechanical Design
	Engineering Numerical Techniques and Statistical Analysis	Mechatronics and Control
4 — 120 points	Industrial Project (Mechanical) (30 points)	
	Elective[1]	Elective[1]
	Computer Aided Engineering and Analysis	Elective[1]
	Advanced Mechanical Design	General elective[2]

480 points total

You also complete Workshop Practice in your second semester. 1. **Year 4, Semester 1 electives:** Advanced Manufacturing Technology, Biomedical Thermofluids Modelling, Fracture Mechanics and Failure Analysis. **Year 4, Semester 2 electives:** Advanced Operations Management, Internal Combustion Engines, Robotics and Automation, Advanced Fluids and Heat Transfer, Innovation Management. 2. Can be any paper from any AUT programme.

Leanne Goh
Operations Engineer, Fisher & Paykel Healthcare
Bachelor of Engineering (Honours) in Mechanical Engineering

"A career in engineering can vary from research and development, manufacturing and design to maintenance and management. This was very appealing to me. I chose to specialise in mechanical engineering because I enjoy working with large structures and wanted to understand the properties of materials. There were always things to do besides studying, from student events to volunteering for the students' association. Thanks to the international connections of Associate Professor Tim Pasang, the head of AUT's mechanical engineering department, I also had the opportunity to carry out a three-month engineering internship at the prestigious Fraunhofer Institute in Berlin."

Mechatronics Engineering

YEAR	SEMESTER 1	SEMESTER 2
1 — 120 points	Introduction to Engineering Design	Introduction to Computing
	Electrical Principles A	Electrical Principles B
	Mechanical Principles A	Mechanical Principles B
	Engineering Mathematics I	Engineering Materials I
2 — 120 points	Engineering Mathematics II	Minor paper 1[1]
	Introduction to Microcontrollers	Mechatronics Design
	Solid Mechanics I	Engineering Management I
	Electronics	Engineering Mathematics III
3 — 120 points	Minor paper 2[1]	Minor paper 3[1]
	User Interface Design	Fluids and Thermodynamics
	Object Oriented Programming for Engineers	Instrumentation and Control Systems
	Embedded Digital Systems	Software Construction
4 — 120 points	Industrial Project (30 points)	
	Advanced Control Systems	Engineering Management II
	Minor paper 4[1]	Embedded Software Engineering
	Computer Aided Engineering and Analysis	Robotics and Automation

480 points total

All papers are 15 points unless indicated otherwise. All students also complete Workshop Practice in the second semester of Year 1.
1. A list of minors is available at **www.aut.ac.nz/minors.** A minor may be taken with the approval of the programme leader (depending on your selected minor).

Amritpal (Amrit) Kaur
3rd-year student, Bachelor of Engineering (Honours) in Mechatronics Engineering

"If you enjoy learning a bit of everything then I highly recommend mechatronics as it gives you a taste of all the different fields of engineering. You'll come out with knowledge in more than one field, which will expand your horizons and enable you to see the opportunities. I initially enrolled in mechanical engineering, but after finishing my first year I realised that I wanted to extend my knowledge in other fields of engineering as well. That's why I decided to major in mechatronics. Don't feel that you'll be locked into what you enrol in; you can change majors if you need to."

Course planners
continued

Software Engineering

YEAR	SEMESTER 1	SEMESTER 2
1 120 points	Introduction to Engineering Design	Introduction to Computing
	Electrical Principles A	Electrical Principles B
	Mechanical Principles A	Mechanical Principles B
	Engineering Mathematics I	Engineering Materials I
2 120 points	Engineering Mathematics II	Data Structures and Algorithms
	Object Oriented Programming for Engineers	Software Construction
	Logical Database Design	Minor paper 1[1]
	Data and Process Modelling	Operating Systems
3 120 points	Software Team Project	Engineering Management I
	User Interface Design	Contemporary Methods in Software Engineering
	Highly Secure Systems	Engineering Mathematics III
	Minor paper 2[1]	Minor paper 3[1]
4 120 points	Industrial Project (30 points)	
	Formal Specification and Design	Engineering Management II
	SECMS level 8 paper 1[2]	SECMS level 8 paper 2[2]
	Minor paper 4[1]	SECMS level 8 paper 3[2]

480 points total

All papers are 15 points unless indicated otherwise. All students also complete Workshop Practice in the second semester of Year 1.
1. A list of minors is available at **www.aut.ac.nz/minors** A minor may be taken with the approval of the programme leader (depending on your selected minor).
2. School of Engineering, Computer and Mathematical Sciences (SECMS) papers may be any level 8 papers approved by the programme leader.

Bachelor of Engineering (Honours)
Architectural Engineering

Businesses, tenants and homeowners expect more from the buildings they work and live in. They want buildings that are energy efficient and more sustainable, comfortable to live and work in, offer more services and are fit for purpose, now and in the future. Architectural engineers help make this happen.

The Architectural Engineering major covers the skills you need to develop complex designs that can meet all those needs. From the foundations to the superstructure to the services, you'll learn how to engineer for high-quality buildings.

What this major covers

For papers in this major, refer to the course planner on page 12.

You need to complete 800 hours of planned supervised work experience to graduate, in addition to completing all your papers.

Year 1

Students in all majors do the same papers in the first year. These papers cover mathematics and computational techniques, as well as the communication and teamwork skills that are essential for the team environment engineers work in.

Year 2

You become familiar with construction materials, structural engineering, building construction, and quantity surveying. You also develop your analytical and engineering management skills.

Year 3

This year focuses on specialist architectural engineering papers, including geotechnical engineering, structural analysis, architectural design and development, and the specifics of building subsystems, including illumination engineering and heating, ventilation and air-conditioning (HVAC) systems, and architectural design and sustainability.

Year 4

In your final year you complete an individual industry project, as well as compulsory and optional papers that cover advanced analytical thinking and research experiences.

Workplace experience

Your individual industry project in Year 4 is your opportunity to apply your knowledge on a project for organisations like Fletcher Building, Hawkins, Naylor Love Ltd, Auckland Council, Beca or Jasmax.

1. This is an engineering qualification. Graduates will not be architects or qualified to register as architects.

For more details visit **www.aut.ac.nz/ecms**

KEY FEATURES:

- Industry projects with major construction and engineering companies
- Multi-disciplinary approach
- Local and international job opportunities in high-quality buildings

SEE YOURSELF AS:

- A problem-solver and analytical thinker
- Making a mark
- Good at developing pragmatic, robust design solutions
- A system integrator

CAREER OPPORTUNITIES:[1]

- Architectural design engineer
- Building services engineering
- Project management
- Building Information Management (BIM) specialist

KEY FEATURES:

- Tools to help construct essential housing and commercial buildings
- Workplace experience with construction, planning and engineering companies

SEE YOURSELF AS:

- A problem-solver
- Making a mark
- An analytical thinker
- Good at developing pragmatic, robust design solutions

CAREER OPPORTUNITIES:

- Construction design engineer
- Construction delivery systems
- Site engineer
- Project and construction management

Bachelor of Engineering (Honours)
Construction Engineering

Designing safe, cost effective and environmentally sustainable buildings and infrastructure is essential to our society. Professional construction engineers are involved with the design, planning and construction of the physical infrastructure that surrounds us. Whether the project is high-density housing or commercial construction, these engineers design reliable processes and build quality structures that enhance our living and working environments.

AUT's construction engineering programme will help you develop skills in structural engineering, materials technologies, construction systems, productivity improvement and waste reduction strategies.

What this major covers

For papers in this major, refer to the course planner on page 13.

You need to complete 800 hours of planned supervised work experience to graduate, in addition to completing all your papers.

Year 1

Students in all majors do the same papers in the first year.

Year 2

This year you become familiar with construction materials, structural engineering, building construction and quantity surveying. You also develop engineering management and analytical skills.

Year 3

This year focuses on specialist construction papers, including geotechnical engineering, structural analysis and construction planning. You also explore the design of concrete and steel structures.

Year 4

In your final year you complete an individual industry project, as well as compulsory and optional papers that cover advanced analytical thinking and research experiences.

Workplace experience

Your individual industry project in Year 4 is your opportunity to gain real-life industrial experience in organisations like:

- Fletcher Building
- Hawkins
- Naylor Love Ltd
- NZ Strong Ltd
- Auckland Council

AUT encourages early application. Places are limited.

Trang Ngoc Phong
3rd-year student, Bachelor of Engineering (Honours) in Construction Engineering

"I chose AUT's engineering degree because it gives me a strong background of knowledge, as well as practical experiences in architectural engineering and building services. I also like that I can strengthen my problem solving, decision making, critical thinking and other transferable skills while I'm studying.

"The lecturers inspire students with their experiences and use real examples to explain the topics. I've also enjoyed that the degree helps students build their knowledge step by step, and that the assignments help you develop your presentation and communication skills, and ability to collaborate. I would highly recommend studying engineering, as it exposes you to different technical fields and offers rewarding career pathways.

"AUT offers a wide range of student services – from student learning support services like peer mentors and learning workshops, to services that support your health and wellbeing. I've already attended several of the library and learning workshops, and used the online resources to develop my English language and academic writing skills.

"I also appreciate the support available to help students plan their future career. AUT's Employability and Careers team has given me useful advice on job-seeking. I've also attended a number of career events and workshops, which helped me expand my network and gave me essential tips for my future career."

For more details visit **www.aut.ac.nz/ecms**

KEY FEATURES:

- Develop a wide-ranging skill base
- Workplace experience with successful engineering companies
- Career opportunities in multiple industries

SEE YOURSELF AS:

- A problem-solver and technically oriented
- Able to work well under pressure
- An excellent communicator and leader
- Able to work well independently and in a team

CAREER OPPORTUNITIES:

- Electronic engineer
- Embedded system engineer
- Power engineer
- Engineering consultant
- Electrical engineer
- Telecommunications engineer/ ICT consultant
- Software engineer
- Aeronautical engineer
- Aerospace engineer
- System engineer
- Automation engineer
- Research engineer

Bachelor of Engineering (Honours)
Electrical and Electronic Engineering

Electrical and electronic engineers work for industries that focus on creating tomorrow's solutions for everything from must-have leisure gadgets to new power and energy sources, and medical and lifesaving equipment. The field of electrical and electronic engineering is a multi-billion dollar industry with limitless career opportunities.

You study a wide range of hardware and software theory at AUT. At the end of the programme you will be a creative engineering designer who can solve complex problems across:

- Power engineering – the provision and control of large scale electric power flow
- Control engineering – the design of automated production systems
- Computer engineering – the design of complex hardware and software programs
- Telecommunications engineering – the design of hardware and software for fixed and mobile networks for communications, navigation and security
- Embedded system engineering - the design of hardware and software for embedded digital systems

What this major covers

For papers in this major, refer to the course planner on page 14.

You need to complete 800 hours of planned supervised work experience to graduate, in addition to completing all your papers.

Year 1

Students in all majors do the same papers in the first year. These papers cover mathematics and computational techniques, as well as the communication and teamwork skills that are essential for the team environment engineers work in.

Year 2

You explore the core areas of study required by electrical and electronic engineers: computers and microcontrollers, signals and systems and circuit theory. You also study engineering mathematics and management.

Year 3

This year focuses on advanced topics including power engineering and power electronic systems, embedded digital systems and instrumentation and control systems. Year 3 also includes a design project that increases your ability to design and build engineering (hardware and software) solutions.

Year 4

In your final year you complete an individual industry project, as well as compulsory and optional papers that cover the recent advancements in your chosen field.

Workplace experience

Your individual industry project in Year 4 will help you gain real-life industrial experience in an engineering environment, under the guidance of an experienced supervisor. You work on a project for organisations like Mighty River Power, Genesis Energy, Contact Energy, Fisher & Paykel Appliances, Spark and Auckland Airport.

AUT encourages early application. Places are limited.

Joshua Cranch
Graduate Software Engineer, Cubic Defence New Zealand
Bachelor of Engineering (Honours) in Electrical and Electronic Engineering
Certificate in Science and Technology

"Through the projects I worked on during my third and fourth year at AUT, I was able to work closely with industry and make some great industry contacts. As part of my studies, I was also selected for an internship at Cubic Defence New Zealand, which gave me real-life software engineering industry experience. After the internship, I was offered a graduate position after my final year of study, and now help make high-tech training equipment for ground combat personnel. I enjoy the challenge of helping to create sophisticated training systems that are also easy and intuitive to use. The skills I gained at AUT are used in almost every part of my job."

Employer comment

"Joshua undertook an internship here, so we had plenty of opportunity to get to know him and for him to know us before accepting the permanent role. From his grades, university projects, and tests conducted by us during interviews we could see that he demonstrated a solid grasp of embedded software engineering. Joshua has progressed well from the time he started – his skills have allowed him to contribute effectively very quickly."

Gordon Macdonald, Software Engineering Manager, Cubic Defence New Zealand

For more details visit **www.aut.ac.nz/ecms**

KEY FEATURES:

- The only maritime engineering degree offered by a New Zealand university
- Career opportunities to travel and work at sea
- Study in New Zealand and Australia

SEE YOURSELF AS:

- A designer of yachts, ships, offshore structures
- Accurate, with an eye for detail
- A problem-solver and analytical thinker
- Good at mathematical modelling

CAREER OPPORTUNITIES:

Marine and Offshore Engineering

- Industrial process and power generation sectors
- Survey for government, class societies and insurance

Naval Architecture

- Shipbuilding – cargo vessels, ferries, naval vessels, ROVs (Remotely Operated Vehicles), sailing, power and mega-yachts

Ocean Engineering

- Design, installation and management of offshore oil and gas installations
- Renewable energy installations
- Coastal engineering

Bachelor of Engineering (Honours)
Maritime Engineering

Maritime engineering is critical. Across the globe a web of offshore infrastructure supports the delivery of oil and gas supplies that power the world's transportation. Maritime engineers keep these vital vessels and systems working.

Through a joint venture with Australian Maritime College (AMC), New Zealand students can now study maritime engineering[1]. You start with two years of study at AUT and then transfer to the AMC in Tasmania for your final two years. You then select your chosen field within maritime engineering – marine and offshore engineering, naval architecture or ocean engineering. There is no other programme of this kind in New Zealand.

What this major covers

For papers in this major, refer to the course planner on page 15.

You need to complete 12 weeks of planned supervised work experience to graduate, in addition to completing all your papers.

Year 1

Students in all majors do the same papers in the first year. These papers cover mathematics and computational techniques, as well as the communication and teamwork skills that are essential for the team environment engineers work in.

Year 2

This year covers the tools to apply mathematical and engineering sciences to different engineering disciplines. You also become familiar with hydrostatics and fluid mechanics, ship production and design, thermodynamics, and offshore science and maritime engineering.

Year 3 & 4

You transfer to the Australian Maritime College, University of Tasmania[1] for Year 3 and 4 where you study one of three majors:

Marine and Offshore Engineering

Year 3: Covers a wide range of marine subjects including mechanics, thermal energy and electrical power systems.

Year 4: Apart from the year-long design and research project, you learn integrated process and production systems, applied control and maritime engineering design.

Naval Architecture

Year 3: Your study focuses on subjects like structural analysis, ship resistance, design and underwater vehicle technology.

Year 4: Apart from papers on advanced ship structures and computational fluid dynamics, your focus will be on a year-long design and research project.

Ocean Engineering
Year 3: You study aquaculture, concrete structures, deep water and finite element analysis.

Year 4: This year covers coastal and subsea engineering, as well as the design of offshore structures. You also undertake a design and research project across the whole year.

Workplace experience

Workplace experience is a key component of the maritime engineering degree, and you gain exposure to the maritime industry in companies like:

- Alloy Yachts
- Babcock Engineering
- Marine Industrial Design
- Transfield Worley

AUT encourages early application. Places are limited.

1. Maritime majors are only open to New Zealand citizens. Students enrolling at UTAS are subject to Australian visa and fee requirements depending on their citizenship and residency status. New Zealand citizens are entitled to study in Australia on the same basis as Australian permanent residents. Most New Zealand citizens are eligible for student loans through StudyLink for this programme but you should check your eligibility with StudyLink.

For more details visit **www.aut.ac.nz/ecms**

Chan Joo Kim
Coastal/Offshore Engineer,
Foresys Co. Ltd, South Korea
Bachelor of Engineering (Honours)
in Maritime Engineering

"I lived in New Zealand for 14 years before returning to South Korea last year, and just fell in love with the ocean. I have worked as a boat-builder and am interested in offshore engineering structures, so studying maritime engineering felt like the natural next step.

"AUT is the only New Zealand university that offers a maritime engineering degree. Throughout the degree, you don't just cover the theory but have many opportunities to learn practical things like different software skills and experimental knowledge you can use in the engineering industry.

"I thought the programme was structured well and the lecturers were awesome. Being able to study in Tasmania thanks to the partnership with the Australian Maritime College was also attractive.

"What I like the most about my job is that I have so many opportunities to be close to the ocean for work due to the nature of the job. My job mainly involves the design and analysis of offshore structures like oil and gas platforms, marinas, breakwaters and any other structures floating in the ocean. I'm also involved in the design of our subsea pipelines. I like the variety of my role."

KEY FEATURES:

- Access to advanced engineering labs and equipment
- Local and international career opportunities
- Workplace experience with successful New Zealand companies

SEE YOURSELF AS:

- Accurate, with an eye for detail
- A problem-solver
- An analytical thinker
- Good at mathematical modelling

CAREER OPPORTUNITIES:

- Engineer and general manager
- Manufacturing engineer
- Mechanical engineer
- Product designer
- Project management

Bachelor of Engineering (Honours)
Mechanical Engineering

Mechanical engineers work with advanced technology across many fields – from transportation to energy systems, home appliances to robotics, manufacturing machinery and processes to medical technologies. In a world where global warming and environmental degradation are critical issues, mechanical engineers play a key role in developing new sustainable technologies.

The Mechanical Engineering major covers a broad base of engineering science and technology knowledge and skills. There is a focus on analytical and design skills, and you have the opportunity to apply these skills in an industry project.

What this major covers

For papers in this major, refer to the course planner on page 16.

You need to complete 800 hours of planned supervised work experience to graduate, in addition to completing all your papers.

Year 1

Students in all majors do the same papers in the first year. These papers cover mathematics and computational techniques, as well as the communication and teamwork skills that are essential for the team environment engineers work in.

Year 2

Papers cover solid mechanics, mechanisms and dynamics of machinery, engineering design methodology, fluids and thermodynamics and manufacturing technology. You also further your analytical engineering, management and teamwork skills.

Year 3

This year covers higher level dynamics, solid mechanics, materials, and thermodynamics and heat transfer. You also explore the role and working environment of professional engineers, and further your ability to learn independently and work in teams.

Year 4

In your final year you complete an individual industry project, as well as compulsory and optional papers that cover the recent advancements in your chosen field.

Workplace experience

Your individual industry project in Year 4 is your opportunity to gain real-life industrial experience in an engineering environment, under the guidance of an experienced supervisor. You work on a project for organisations like:

- Mighty River Power
- Genesis Energy
- Contact Energy
- Fisher & Paykel Appliances
- Spark
- Auckland Airport

AUT encourages early application. Places are limited.

Daniel Tat
Traffic Management Plan Co-ordinator, Auckland Motorway Alliance
Bachelor of Engineering (Honours) in Mechanical Engineering

"Thanks to my project supervisor at AUT, I've had the opportunity to intern in Berlin, Germany, for three months after my studies. I was employed as a research assistant at the prestigious Fraunhofer Institute for Production Systems and Design Technology (IPK), researching how to optimise rail grinding and gear grinding processes. I'm now working at the Auckland Motorway Alliance, and am responsible for co-ordinating and designing the Alliance's traffic management plans. I use my CAD drawing skills every day, and always apply my time management skills and ability to meet multiple deadlines. I enjoy being challenged to do something I've never done before. These are all skills I developed at AUT."

Employer comment

"Daniel has the ability to stay the course, and adapt to his surroundings very well. He applies his knowledge and skills from AUT to the task at hand, and has the promise of a bright future in his field. The ideal candidate in our company is someone we deem teachable. Daniel's qualification was exactly what we were looking for within the alliance, and he is the ideal candidate for sustaining the future of our business."

Gail Swanepoel, TTM Scheduling and Delivery Co-ordinator, Auckland Motorway Alliance

For more details visit **www.aut.ac.nz/ecms**

KEY FEATURES:

- Learn to apply engineering and science fundamentals to practical solutions
- Covers professional skills in several engineering disciplines
- Opportunity to include a minor in a subject outside your major area of study

SEE YOURSELF AS:

- Interested in engineering and computing
- Good at mathematics
- Adept at dealing with complex tasks

CAREER OPPORTUNITIES:

- Design of smart products
- Process and service design
- Systems integration
- Design of medical and sports devices
- Design of mechanical or electronics products
- Software engineering
- Embedded systems engineering
- Project engineer
- Design team leader
- Project management

Bachelor of Engineering (Honours)
Mechatronics Engineering

Mechatronics engineers design and develop smart products and processes. They use principles of mechanical, electrical and electronics engineering, and computer science to create solutions and systems that are effective and viable.

The Mechatronics Engineering major covers engineering fundamentals as well as human-centred design and systems thinking. You develop professional skills in several engineering disciplines, including complex technical, business and project management techniques.

What this major covers

For papers in this major, refer to the course planner on page 17.

Year 1

Students in all majors do the same papers in the first year. These papers cover mathematics and computational techniques, as well as the communication and teamwork skills that are essential for the team environment engineers work in.

Year 2

This year introduces you to microcontrollers, solid mechanics, electronics, engineering management and mechatronics design. You also further your engineering mathematics skills.

Year 3

You learn about embedded digital systems, fluids and thermodynamics, instrumentation and control and software construction. You also take part in a software team project.

Year 4

In the final year you grow your understanding of the engineering industry, robotics and automation, advanced control systems and embedded software engineering.

Workplace experience

Your individual industry project in Year 4 is your opportunity to gain real-life industrial experience in an engineering environment, under the guidance of an experienced supervisor.

You also need to complete 800 hours of planned supervised work experience to graduate, in addition to completing all your papers.

AUT encourages early application. Places are limited.

For more details visit www.aut.ac.nz/ecms

Bachelor of Engineering (Honours)
Software Engineering

Professional software engineers are responsible for constructing, deploying and maintaining high-quality software in a systematic, timely and disciplined manner. Software engineers must be technically proficient and work effectively in teams and with multiple stakeholders.

Through the Software Engineering major you develop cutting-edge skills for your future career. You learn to design, develop, test and maintain software. To prepare you for a career as a professional engineer you also develop your communication and teamwork skills.

What this major covers

For papers in this major, refer to the course planner on page 18.

Year 1

Students in all majors do the same papers in the first year. These papers cover mathematics and computational techniques, as well as the communication and teamwork skills that are essential for the team environment engineers work in.

Year 2

Topics cover data structures and algorithms, software theory and construction, data and process modelling and database design. You will also further your engineering mathematics skills.

Year 3

This year you learn about software engineering and undertake a software team project. Topics also cover user interface design, engineering management and highly secure systems.

Year 4

In the final year you grow your understanding of the engineering industry, interface design, engineering management, and choose from a range of elective papers.

Workplace experience

Your individual industry project in Year 4 is your opportunity to gain real-life industrial experience in an engineering environment, under the guidance of an experienced supervisor.

You also need to complete 800 hours of planned supervised work experience to graduate, in addition to completing all your papers.

AUT encourages early application. Places are limited.

For more details visit **www.aut.ac.nz/ecms**

KEY FEATURES:

- Covers a wide range of engineering skills
- Local and international career opportunities in a variety of professional roles
- A balance between technical and soft skills
- Opportunity to include a minor in a subject outside your major area of study

SEE YOURSELF AS:

- Interested in developing high-quality software
- Having a high attention to detail
- Technically proficient

CAREER OPPORTUNITIES:

- Software engineer
- Database programmer and architect
- Software tester
- Software development project manager
- Embedded software designer
- Embedded software developer
- Mobile apps designer or developer
- Cloud applications developer
- Solutions architect

Bachelor of Engineering Technology [BEngTech | AK3719] Overview

QUICK FACTS

Level:	7
Points:	360
Duration:	3 years F/T, 6 years P/T
Campus:	City & South[1]
Starts:	24 Feb & 13 July 2020

Komal Maisuria
Systems Engineer, Beca
Master of Engineering
Postgraduate Diploma in Engineering
Bachelor of Engineering Technology in Electronic Engineering

"I work on the Royal New Zealand Air Force base in Whenuapai, and I'm currently working on system upgrades for the P-3K2 Orion, which is New Zealand's surveillance aircraft. Working on aircraft systems is something I never saw myself doing. I enjoy working with a dynamic team where every day is different, and I like how I'm growing my skills and knowledge with the variety of work I'm exposed to. AUT stood out to me as it's known for providing a hands-on approach to university education and preparing students for their future careers. I also appreciated that AUT's engineering department keeps up-to-date with ever-changing technology by investing in future ideas. It was great to have people from all walks of life, different ethnicities and demographics in the same classes."

Engineering technologists focus on practical design and applied technology, working across a wide range of engineering disciplines. The Bachelor of Engineering Technology prepares you for these diverse careers. It's accredited by Engineering New Zealand[2] and prepares you for Technical Membership of Engineering New Zealand. You learn to make engineering judgements, solve problems creatively and ethically and design for sustainability. You develop strong interpersonal and teamwork skills, and communicate technical and non-technical information.

Our close links with companies like Fisher & Paykel, Beca, Opus, Spark, Vodafone, Sky TV and Contact Energy can help you gain valuable workplace experience as part of your studies.

Entry requirements

Minimum entry requirements

University Entrance or equivalent including:

- **NCEA:** 14 credits or more at level 2 or above (including AS91261 and AS91262) OR NCEA level 3 in Maths, Stats or Calculus AND 14 Level 2 credits in Physics
- **CIE:** A D grade or better in Mathematics and Physics at AS level
- **IB:** Passes (level 4) in both Mathematics and Physics

Applicants without UE must demonstrate competency in Mathematics and Physics to at least level 2.

English language requirements

IELTS (Academic) 6.0 overall with all bands 5.5 or higher; or equivalent.

Useful New Zealand school subjects

Digital Technologies, English, Technology

Don't meet the entry requirements?

Consider starting with our Certificate in Science and Technology.

Majors

- Building Engineering
- Building Services Engineering
- Computer and Mobile Systems Engineering
- Electrical Engineering
- Electronic Engineering
- Mechanical Engineering

What this qualification covers

Year 1

You study eight papers that build the foundation for your chosen major.

All students take two common papers:

- Introduction to Engineering Design
- Engineering Mathematics

You also study six other papers related to your chosen major.

Year 2 & 3

In your second year you begin to specialise in your chosen major. In Year 3 you further advance your knowledge of your major and undertake valuable workplace experience, working on an industry-based project related to your major. You also need to complete a minimum of 600 hours of planned supervised work experience to graduate, in addition to completing all your papers.

AUT encourages early application. Places are limited.

1. **Building Engineering major:** South Campus. **All other majors:** City Campus.
2. The Computer and Mobile Systems, Electrical, Electronic and Mechanical majors are professionally accredited and internationally benchmarked. Our more recent majors have been CUAP approved and developed in consultation with Engineering New Zealand, and are expected to be accredited in time.

For more details visit **www.aut.ac.nz/ecms**

National and international recognition through Engineering New Zealand accreditation – Sydney Accord

Jason Stewart
Senior Innovation Project Manager, adidas Running, Portland, USA
Bachelor of Engineering Technology in Mechanical Engineering

"I've worked on projects that have sold millions of running shoes to people all over the world. I've also been involved in projects that helped athletes win Olympic titles and break world records. I designed and developed the full track and field range for the past Olympic Games, and with my background in the sport this means a lot to me. As part of the adidas Running Future Innovation team, I project manage the creation and integration of large scale, industry leading sports footwear innovation. Basically, I make sure that our innovation is relevant and meaningful to our consumers. The whole experience of my engineering degree was great, and the people were the highlight for me. We had great camaraderie in the classes. AUT was definitely my style of university, with smaller, more interactive classes and more autonomy."

Building Engineering

YEAR	SEMESTER 1	SEMESTER 2
1 (120 points)	Introduction to Engineering Design	Construction Design and Implementation
	Engineering Mathematics	Engineering Mathematics I
	Engineering Mechanics – Statics I	Construction Technology I
	Introduction to Construction Materials	Computer Applications for Engineers
2 (120 points)	Strength of Materials I	Construction Engineering Management I
	Asset and Facilities Management I	Cost Engineering
	Construction Technology II	Resilience Engineering
	Human Factors Engineering	Engineering Design Methodology
3 (120 points)	Construction Integration Specialisation Project (30 points)	
	Asset and Facilities Management II	Construction Technology III
	Mechanical Design	Building Energy Management
	Elective [1]	Construction Engineering Management II

360 points total

All papers are 15 points unless advised otherwise. All students also complete Workshop Practice in the first semester of Year 1.
1. **Year 3 electives:** 15 points from any other engineering paper with the approval of the programme leader.

Building Services Engineering

YEAR	SEMESTER 1	SEMESTER 2
1 (120 points)	Electrical Engineering Principles	Elements of Power Engineering
	Introduction to Engineering Design	Engineering Mechanics – Dynamics I
	Engineering Mathematics	Introduction to Thermofluids and Energy
	Engineering Mechanics – Statics I	Computer Applications for Engineers
2 (120 points)	Engineering Mathematics I	Electrical Building Services
	Strength of Materials I	Construction Design and Implementation
	Thermodynamics and Heat Transfer	Construction Engineering Management I
	Fluid Mechanics	Engineering Design Methodology
3 (120 points)	Construction Integration Specialisation Project (30 points)	
	Ancillary Building Systems	Elective [1]
	Elective [1]	Heating, Ventilation and Air-conditioning Systems (HVAC)
	Elective [1]	Building Energy Management

360 points total

All papers are 15 points unless advised otherwise. All students also complete Workshop Practice in the first semester of Year 1. 1. **Electives:** 45 points, including at least 15 points at level 7 from Introduction to Illumination Engineering (level 5), Engineering Mathematics II (level 6), Illumination Engineering (level 6), Mechanics – Dynamics II (level 6), Strength of Materials II, Advanced Thermodynamics, Mechanical Design, Control Engineering, Asset and Facilities Management II, Construction Engineering Management II.

Computer and Mobile Systems Engineering

YEAR	SEMESTER 1	SEMESTER 2
1 120 points	Engineering Mathematics	Analogue Electronics
	Introduction to Engineering Design	Algebra and Discrete Mathematics
	Electrical Engineering Principles	Object Oriented Applications
	Programming for Engineering Applications	Personal Computer Engineering and Applications
2 120 points	Engineering Mathematics I OR Mathematics for Engineering Technology	Choose one of: Software Development Practice, Electronics Project, or Project
	Data Structures and Algorithms	Algorithm Design and Analysis
	Elective[1]	Engineering Management I
	Elective[1]	Elective[1]
3 120 points	Specialisation Project (30 points)	
	Distributed and Mobile Systems	Elective[1]
	Software Engineering	Elective[1]
	Game Programming	Engineering Management II

360 points total

All papers are 15 points unless indicated otherwise. 1. **Year 2 & 3 electives:** Computer Architecture, Computer Graphics, Programming, Digital Systems Development (30 points), Embedded Digital Systems, Engineering Mathematics II, Highly Secure Systems, Introduction to Microcontrollers, Logical Database Design, Linux Based Computing, Telecommunications Technology Principles.

Electrical Engineering

YEAR	SEMESTER 1	SEMESTER 2
1 120 points	Engineering Mathematics	Analogue Electronics
	Electrical Engineering Principles	Engineering Mathematics I OR Mathematics for Engineering Technology
	Introduction to Engineering Design	Personal Computer Engineering and Applications
	Digital Devices and Systems	Introduction to Engineering Programming
2 120 points	Elements of Power Engineering	Choose one of: Software Development Practice, Electronics Project, or Project
	Electrical Machines	Introduction to Microcontrollers
	Industrial Measurement and Control	Engineering Management I
	Introduction to Illumination Engineering	Electrical Building Services
3 120 points	Specialisation Project (30 points)	
	Distributed and Alternative Generation	Power Systems Engineering
	Elective[1]	Engineering Management II
	Elective[1]	Elective[1]

360 points total

All papers are 15 points unless indicated otherwise.
1. **Year 2 & 3 electives:** Industrial Circuit Models, Engineering Mathematics II, Illumination Engineering, Instrumentation and Control Systems, PLC Applications A, PLC Applications B, Power Electronic Systems, Power Electronics.

Electronic Engineering

YEAR	SEMESTER 1	SEMESTER 2
1 (120 points)	Engineering Mathematics	Introduction to Engineering Programming
	Introduction to Engineering Design	Analogue Electronics
	Electrical Engineering Principles	Personal Computer Engineering and Applications
	Digital Devices and Systems	Engineering Mathematics I OR Mathematics for Engineering Technology
2 (120 points)	Engineering Mathematics I	Choose one of: Software Development Practice, Electronics Project, or Project
	Electrical Machines	Engineering Management I
	Industrial Measurement and Control	Electronic Circuits
	Introduction to Microcontrollers	Embedded Digital Systems
3 (120 points)	Digital Systems Development (30 points)	
	Specialisation Project (30 points)	
	Elective[1]	Engineering Management II
	Elective[1]	Elective[1]

360 points total

All papers are 15 points unless indicated otherwise. 1. **Year 2 & 3 electives:** Industrial Circuit Models, Engineering Mathematics II, Instrumentation and Control Systems, PLC Applications A, PLC Applications B, Linux Based Computing, Power Electronic Systems, Power Electronics.

Mechanical Engineering

YEAR	SEMESTER 1	SEMESTER 2
1 (120 points)	Engineering Mathematics	Engineering Materials I
	Introduction to Engineering Design	Engineering Mechanics – Dynamics I
	Electrical Engineering Principles	Introduction to Thermofluids and Energy
	Engineering Mechanics – Statics I	Computer Applications for Engineers
2 (120 points)	Thermodynamics and Heat Transfer	Fluid Mechanics
	Strength of Materials I	Mechanics – Dynamics II
	Manufacturing Technology	Engineering Management I
	Engineering Mathematics I	Engineering Design Methodology
3 (120 points)	Specialisation Project (30 points)	
	Elective[1]	Engineering Management II
	Elective[1]	Elective[1]
	Elective[1]	Elective[1]

360 points total

All papers are 15 points unless indicated otherwise. All students also complete Workshop Practice in the first semester of Year 1.
1. **Year 3 electives (you must take at least two level 7 papers from the electives available):** Advanced Manufacturing Processes, Advanced Materials, Advanced Thermodynamics, Computer Aided Design and Manufacturing (level 6), Control Engineering, Engineering Mathematics II (level 6), Mechanical Design, Strength of Materials II, Operations Management for Manufacturing (level 6), Product Design, Advanced Manufacturing Technology.

Bachelor of Engineering Technology
Building Engineering

Building Engineering covers core engineering technology skills related to construction and incorporates three pathways:

Asset and Facilities Management
The Asset and Facilities Management pathway helps you develop the skills to provide cost-effective lifecycle sustainability of commercial buildings. It covers building technology, building management systems, energy management and the commercial aspects of construction.

Building Surveying Technology
Poor construction quality and buildings that are cold or damp are a huge problem in New Zealand, in commercial real estate and private homes. There's a need for engineering professionals who can conduct full and complete surveys before a sale, identify defects in new construction, and can recommend materials and design solutions for renovation projects.

Construction Safety Engineering
Health and safety in the workplace are of immense importance for the construction industry in New Zealand and worldwide. The Construction Safety Engineering pathway will equip you with the skills to manage construction sites and organisational health and safety activities.

What this major covers

For papers in this major refer to the course planner on page 32.

Year 1
This major shares some of the first year with the other majors in the Bachelor of Engineering Technology. You develop skills in essential construction technology and materials, as well as generic engineering skills.

Year 2
This year introduces skills specific to your pathway.

Year 3
You complete the compulsory integration specialisation project. Working as part of a team alongside students from other construction disciplines, the experience will expose you to real engineering practices and management systems and help you to build engineering networks.

AUT encourages early application. Places are limited.

For more details visit **www.aut.ac.nz/ecms**

KEY FEATURES:
- High demand for building engineering skills
- Real-life experience working in building companies
- Covers construction, operation and maintenance of buildings

SEE YOURSELF AS:
- Interested in construction and how buildings work
- Someone who wants a hands-on career in the engineering of buildings
- A practical and pragmatic problem-solver

CAREER OPPORTUNITIES:
- Health and safety manager
- Construction site management
- Engineering risk management
- Building condition surveyor
- Renovation/refurbishment specialist
- Valuation surveyor
- Building inspector
- Facilities/asset management
- Building energy management
- Commercial property management

KEY FEATURES:

- High demand for building services engineering skills
- Hands-on building services, maintenance and engineering experience
- Real-life experience working in building services companies

SEE YOURSELF AS:

- Interested in construction and how buildings work
- Someone who wants to develop a hands-on career in the engineering of buildings
- A practical and pragmatic problem-solver

CAREER OPPORTUNITIES:

- Building services technician
- Building energy management
- HVAC specialist
- Building ancillary systems specialist
- Commercial property management
- Middle management

Bachelor of Engineering Technology
Building Services Engineering

As cities around the world expand and become more densely populated, buildings are increasingly complex. The demand for buildings with high-quality services engineered into their design has also grown. Building services engineers have substantial input into the design and development of heating, ventilation and air conditioning, ancillary systems (including multimedia and data) and building management. They could also be involved in the maintenance and repair of existing building services.

The Building Services Engineering major is designed to provide industry with skilled building service engineers for the commercial property sector. It focuses on mechanical and electrical building services, as well as ancillary and support systems that are key for high-quality commercial buildings.

What this major covers

For papers in this major refer to the course planner on page 32.

Year 1

This major shares some of the first year with the other majors in the Bachelor of Engineering Technology. You develop skills in essential construction technology and materials, as well as generic engineering skills.

Year 2

You become familiar with design, design implementation as well as core technologies in building services. This year also introduces building services engineering specific knowledge in electrical and mechanical engineering. Papers this year also cover management, cost engineering and project management.

Year 3

This year covers multiple aspects of advanced building services, mechanics, as well as heating, ventilation and air conditioning. You also complete a compulsory integration specialisation project. You work as part of team, undertaking the role of a building services engineer to develop building services specifications and plans, working alongside students from other construction disciplines.

AUT encourages early application. Places are limited.

For more details visit **www.aut.ac.nz/ecms**

Bachelor of Engineering Technology

Computer and Mobile Systems Engineering

Computer engineering is about the design of computers and computer systems. But it's about much more than PCs. Apps, video game consoles and mobile phones are all devices computer engineers work on. Designing new hardware, apps, developing designs for a supercomputer or using computers to control an industrial plant – it all fits the computer engineer's job description.

Mobile communication devices, embedded systems and networks are the focus of this major. You develop a clear understanding of the development, operation and maintenance of software and hardware, and their application to mobile communications devices, embedded systems and networks.

What this major covers

For papers in this major refer to the course planner on page 33.

Year 1

This major shares some of the first year with the other majors in the Bachelor of Engineering Technology. You also develop essential program development skills in algebra and discrete mathematics, programming in C++ and Java for engineering applications, and object oriented applications.

Year 2

You become familiar with advanced engineering mathematics, and management and project management skills. You also complete a compulsory practical project, writing software for mobile communication applications, microcontrollers, and designing operating systems.

Year 3

This year covers advanced software engineering programming, and management topics that include ethics and sustainability. You also complete a full-year industry project.

Workplace experience

All students complete an industry-based project this year. This is your chance to apply what you've learnt in a research or industry environment.

You also need to complete a minimum of 600 hours of planned supervised work placement to graduate. This work experience exposes you to real engineering practices and management systems and helps you build engineering networks.

AUT encourages early application. Places are limited.

For more details visit **www.aut.ac.nz/ecms**

KEY FEATURES:

- Broad skill base for a wide range of careers related to computing and mobile systems
- First-hand software development experience
- Java and C++ programming skills

SEE YOURSELF AS:

- Up-to-date with mobile technologies
- Strong at programming
- Able to work well under pressure
- Able to work well independently and in a team

CAREER OPPORTUNITIES:

- Computer systems engineer
- Software engineering designer
- Middle management

KEY FEATURES:

- High demand for electrical engineering skills
- First-hand software or hardware development experience
- Access to specialised equipment and facilities

SEE YOURSELF AS:

- Interested in everything from computer circuits to fuel cells
- Always wanting to know how things work
- Passionate about physics and maths

CAREER OPPORTUNITIES:

- Control system engineer
- Lighting and building services engineer
- Middle management
- Power systems engineer
- Electrical, lighting, building and power industries
- Armed Forces

Bachelor of Engineering Technology
Electrical Engineering

Interested in the electrical, control and power industry? Electrical engineers keep the power running for businesses and our communities. Electrical engineering skills are needed in a wide range of industries and you could find yourself working in a lab, on a building project, at a power station or in a workshop.

The Electrical Engineering major equips you with the skills to design, implement, and maintain power and utility systems. You also learn about electrical power engineering circuits, process control systems and programmable logic displays. In your final year you specialise in building services, power or control papers.

What this major covers

For papers in this major refer to the course planner on page 33.

Year 1

This major shares some of the first year with the other majors in the Bachelor of Engineering Technology.

Electrical engineering students also explore power, computer systems, digital devices and programming.

Year 2

The focus this year is power and control engineering. This year also introduces you to management and project management skills, and includes a compulsory practical project.

Year 3

This year covers power systems engineering, distributed and alternative generation, and management topics like ethics and sustainability. You also complete a full-year industry project.

Workplace experience

All students complete an industry-based project this year. This is your chance to apply what you've learnt in a research or industry environment.

You also need to complete a minimum of 600 hours of planned supervised work placement to graduate. This work experience exposes you to real engineering practices and management systems and helps you build engineering networks.

AUT encourages early application. Places are limited.

For more details visit **www.aut.ac.nz/ecms**

Bachelor of Engineering Technology
Electronic Engineering

Take a look at the appliances and systems that make our daily lives easier – they were created by electronic engineers. Electronic engineers are also involved in robotics research, which relies heavily on using digital systems to control and monitor motors, communications, and sensors.

You develop an in-depth understanding of electronic engineering circuits, with a focus on microelectronic systems and their applications in commercial, industrial and domestic systems and appliances. The Electronic Engineering major also covers the design, implementation and maintenance of electronic systems.

What this major covers

For papers in this major refer to the course planner on page 34.

Year 1

This major shares some of the first year papers with the other majors in the Bachelor of Engineering Technology. You also explore programming, analogue electronics, and digital devices and systems.

Year 2

You further your understanding of power engineering, electrical machines, microcontrollers, measurement and control, electronic circuits, and embedded systems. This year also introduces you to management and project management skills, and includes a compulsory practical project.

Year 3

This year you choose elective papers in digital or analogue electronics, and explore management topics like ethics and sustainability. You also complete a full-year industry project.

Workplace experience

All students complete an industry-based project this year. This is your chance to apply what you've learnt in a research or industry environment.

You also need to complete a minimum of 600 hours of planned supervised work experience to graduate. This work experience exposes you to real engineering practices and management systems and helps you build engineering networks.

AUT encourages early application. Places are limited.

For more details visit **www.aut.ac.nz/ecms**

KEY FEATURES:

- Broad skill base in electronic systems
- Access to specialised equipment and facilities
- First-hand software or hardware development experience

SEE YOURSELF AS:

- A problem-solver and creative
- Adaptable and excellent at communication and organisation
- Interested in physics and maths
- Practical and able to do hands-on work

CAREER OPPORTUNITIES:

- Electronics engineer
- Embedded system engineer
- Software engineer
- Middle management

KEY FEATURES:

- CAD and product design options
- Access to high-end equipment and facilities
- Real-life experience working on an industry-based project

SEE YOURSELF AS:

- Able to work well independently and in a team
- Accurate, with an eye for detail
- A creative and practical problem-solver
- A leader

CAREER OPPORTUNITIES:

- Maintenance engineer
- Mechanical design engineer
- Mechanical engineer
- Middle management
- Product development engineer
- Production/manufacturing engineer
- Project management

Bachelor of Engineering Technology
Mechanical Engineering

What do food processing, plastics manufacturing, metal machining and mechanical design have in common? They're all career options for skilled mechanical engineering technologists.

The Mechanical Engineering major prepares you for careers as an engineering technologist in mechanical engineering, and production or manufacturing engineering. You develop the skills to maintain, develop and design different aspects of modern mechanical technology.

What this major covers

For papers in this major refer to the course planner on page 34.

Year 1

You explore engineering mechanics, statics and dynamics and further your understanding of mathematics. You also develop an understanding of design processes along with practical workshop, drawing, CAD and computer skills. You become familiar with engineering materials, thermodynamics and energy, and computer applications for engineers.

Year 2

You advance your knowledge of mechanics, design, thermodynamics, fluid mechanics and mathematics. You also become familiar with manufacturing technology and engineering management.

Year 3

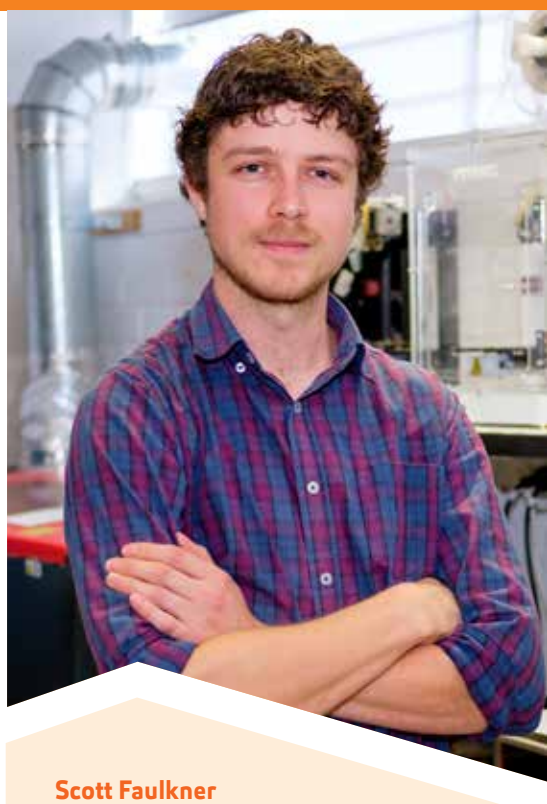
This year you study one compulsory management paper and complete a full-year industry project. You also choose five elective papers from a selection of key mechanical engineering topics to advance your skills in a specific area (eg mechanics or thermodynamics) or give yourself a broad range of mechanical engineering skills.

Workplace experience

All students complete an industry-based project this year. This is your chance to apply what you've learnt in a research or industry environment.

You also need to complete a minimum of 600 hours of planned supervised work experience to graduate. This work experience exposes you to real engineering practices and management systems and helps you build engineering networks.

AUT encourages early application. Places are limited.



Scott Faulkner
Mechanical Engineer,
Globex Engineering Ltd
Bachelor of Engineering Technology in Mechanical Engineering

"At Globex we take projects of all sizes from the initial concept development, through to the creation of prototypes using our in-house capabilities and close suppliers, and finally onto design for manufacture and all that entails. This means on any given day I might be sitting at my desk working on a design in CAD, in the lab building up a prototype for testing, or out visiting a supplier. Often all three in a day. The academic skills I developed throughout my engineering degree translate pretty directly of course, as does the CAD knowledge. However, the networking and project management skills I gained at AUT are particularly useful for my role now."

Employer comment

"We employed Scott because we liked his attitude, and the engineering jobs he had worked on throughout his degree showed he was willing to start from the bottom and work his way up. Scott's final-year project was also an interesting one and highly relevant to what we do at Globex. He had put a lot of work into it and that really showed. A degree is a degree in our eyes, however a degree from AUT is perceived to have more hands-on value, and we do see that in the AUT graduates we employ."

Edward Scholten, Managing Director, Globex Engineering Ltd

For more details visit **www.aut.ac.nz/ecms**

Bachelor of Computer and Information Sciences [BCIS | AK3697] Overview

QUICK FACTS

Level:	7
Points:	360
Duration:	3 years F/T, 6 years P/T
Campus:	City & South[1]
Starts:	24 Feb & 13 July 2020

Vlad Spreys
Senior Developer (Cross-Platform), Trade Me
Bachelor of Computer and Information Sciences in Software Development

"Trade Me is a place like no other. We know that making even a tiny change in our products can have a positive impact on hundreds of thousands of Kiwis in lots of different ways. We have a huge audience which lets us experiment and allows us to learn what is best for our customers. It's a massive responsibility to make sure that we get things right. And it's exactly what makes Trade Me such a rewarding place to work for. I use what I learned at AUT every day now. Aside from the software development skills, AUT also taught me a lot about project management, software development methodologies and how to approach design and development of complex systems. I use this knowledge every day."

Study computer and information sciences with us and choose from a wide range of programmes that prepare you for careers spanning everything from telecommunications to education, and healthcare to finance. The Institute of IT Professionals NZ (IITP) accredits our Bachelor of Computer and Information Sciences as meeting the Seoul Accord. You benefit from our outstanding facilities and industry connections, including our ICT and Engineering Career Fair where you can meet representatives from New Zealand's biggest and most exciting companies, from Datacom and Deloitte to Slingshot and Fisher & Paykel Healthcare. Pair this with the industry research project in your final year, and you have the perfect foundation to launch your career in computer and information sciences.

Entry requirements

Minimum entry requirements
University Entrance or equivalent

English language requirements
IELTS (Academic) 6.0 overall with all bands 5.5 or higher; or equivalent.

Useful New Zealand school subjects
Calculus, Digital Technologies, Mathematics, Statistics

Don't meet the entry requirements?
Consider starting with our Certificate in Science and Technology.

Majors[2]

- Analytics
- Computational Intelligence
- Computer Science
- IT Service Science
- Networks and Security
- Software Development

What this qualification covers

Year 1 & 2
You complete eight papers as an introduction to computer and information sciences before focusing on a chosen major in Year 2 and 3.

Compulsory papers for all majors are: Applied Communication, Programming 1, Computing Technology in Society, Foundations of IT Infrastructure, Enterprise Systems, Programming 2, Computer Network Principles and one mathematics paper from level 5 maths options (depending on your maths background). Some majors require specific maths papers.

Year 2 & 3

You specialise in your chosen major. You develop strong technical knowledge in IT, creative problem-solving skills and the ability to analyse, design and maintain IT solutions. You gain professional skills and knowledge in programming, IT infrastructure and networks, communication and teamwork, project management, ethics and professional practice, security and information systems.

In Year 3, you work on a real-life research and development project, which may involve software development or commercial research for organisations like Fisher & Paykel Healthcare Ltd, Eagle Technology and FutureTech.

Double your career options – study computer and information sciences, and:

- Bachelor of Arts (conjoint)
- Bachelor of Business (conjoint)

You can also study the Bachelor of Computer and Information Sciences as a double degree with many AUT bachelor's degrees.

Conjoint programme

You study two degrees at the same time in a single programme of study. It's usually possible to complete two three-year degrees in four to five years. You need to maintain a B grade average across all papers and do papers from each degree every year.

Double degrees

The difference between double degrees and conjoint programmes is that in the double degrees you apply for and enrol separately in each of the two degrees. If you're considering doing this, it's important that you contact AUT to discuss your plans. Double degrees can be completed either one after the other or concurrently.

AUT encourages early application. Places are limited.

1. **IT Service Science, Networks and Security, Software Development:** You can study the full degree at the South Campus. **Other majors:** First-year papers available at the South Campus, all other papers offered at the City Campus
2. Single and double major options are available as well as the standard pathway (no major).

IT INDUSTRY IT Professionals NEW ZEALAND ACCREDITED

DEGREE ACCREDITED BY IT PROFESSIONALS NEW ZEALAND

For more details visit **www.aut.ac.nz/ecms**

Huge opportunities for workplace experience

Racheal Herlihy

Data Scientist Intern, Shopify, Ottawa, Canada
Bachelor of Computer and Information Sciences in Computational Intelligence

"Many people believe technology is changing the world. But computers don't have that power. People do. There's a huge opportunity to make a real difference in the world with the right people influencing new technologies. I love that by being able to code I can create products that can help people and make a difference. I came to AUT as I loved the balance between theory and practical skills. It's also known for its strong industry connections. For example, in the final year you do a research and development project, working alongside clients to solve real-life problems. This is invaluable and gives you the chance to practically apply all the learning you've done in your classes. I would absolutely recommend this degree. The lecturers have really made my university experience – their passion and obvious knowledge is inspiring."

Course planner

	YEAR 1	YEAR 2	YEAR 3
Compulsory papers for all majors	Applied Communication	Data and Process Modelling	Research and Development Project Part 1
	Programming 1	Logical Database Design	
	Computing Technology in Society	IT Project Management	Research and Development Project Part 2
	Foundations of IT Infrastructure		
	Enterprise Systems		
	Programming 2		
	Computer Network Principles		
	PLUS select 1 from: • Applied Statistics • Differential and Integral Calculus • Algebra and Discrete Mathematics • Mathematical Concepts		

PLUS 1 OF THE FOLLOWING MAJORS:

Analytics		Probability	Industrial and Business Analytics
		Statistical Methods	Applied Stochastic Models
		Forecasting OR Logical Database Design	Data Mining and Knowledge Engineering OR Statistical Computing with SAS
Computational Intelligence		Foundations of Information Science	Data Mining and Knowledge Engineering
		Statistical Methods	Artificial Intelligence
		Data Structures and Algorithms OR Physical Database Design	Text and Vision Intelligence OR Nature Inspired Computing
Computer Science		Data Structures and Algorithms	Theory of Computation
		Algorithm Design and Analysis	Programming Languages
		Operating Systems OR Logic and Discrete Structures	Artificial Intelligence OR Distributed and Mobile Systems
IT Service Science		IT Service Provision	IT Strategy and Control
		Needs Analysis Acquisition and Training	IT Service Management
		Network and System Administration OR Information Security Technologies	Information Security Management OR Contemporary Information Systems
Networks and Security		Computer Network Applications	Advanced Network Technologies
		Network & System Administration	Network Security
		Operating Systems OR Physical Database Design	Information Security Management OR Distributed and Mobile Systems
Software Development		Program Design and Construction	Contemporary Methods in Software Engineering
		Software Development Practice	Applied Human Computer Interaction
		Operating Systems OR Physical Database Design	Web Development OR Distributed and Mobile Systems

PLUS 5 ELECTIVE PAPERS

Add five elective papers at level 5 or above. At least one paper from the BCIS and four papers from any other AUT degree.
For details about electives visit **www.aut.ac.nz/ecms**

Bachelor of Computer and Information Sciences
Analytics

Analytical skills are essential in today's business environment. The ability to analyse data using appropriate statistical, mathematical and computational techniques is highly sought after in New Zealand and internationally. Career options include sales analysis, customer profile analysis, data analysis for research projects or analysis of financial trends.

The Analytics major focuses on business and industry. You gain key skills in sophisticated predictive modelling and quantitative and statistical analysis. Our close links with organisations like Statistics NZ give you relevant insights into current industry thinking and hands-on experience for your career.

What this major covers

For papers in this major refer to the course planner on page 44.

Year 1

All students take seven core papers that are compulsory for all majors. Analytics students also take additional prerequisite maths papers in Year 1 and 2 [1].

Year 2

You study forecasting, statistical methods and probability, and complete additional selected papers from the Bachelor of Computer and Information Sciences.

Year 3

Papers this year cover applied stochastic models, and industrial and business analytics. You can study either data mining and knowledge engineering, or statistical computing with SAS. You also complete additional selected papers.

Workplace experience

The Research and Development Project paper brings together the skills you've developed throughout your degree. You apply what you've learnt in a project for an industry client or research centre, under the guidance of an experienced supervisor. Datamine Ltd and Advance Retail Technology Ltd have sponsored recent student projects that required knowledge in this area.

AUT encourages early application. Places are limited.

1. Please discuss your maths paper selection with the programme leader or academic advisor.
2. After an additional year of teacher training.

For more details visit **www.aut.ac.nz/ecms**

KEY FEATURES:

- Analytical skills are in demand in many industries
- Close links with Statistics NZ
- Includes a major research project for companies like Fisher & Paykel Healthcare Ltd, Eagle Technology and FutureTech

SEE YOURSELF AS:

- Precise
- Curious and analytical
- Meticulous and a planner
- Interested in business

CAREER OPPORTUNITIES:

- Biostatistician
- Business/quality/statistical analyst
- Government statistician
- Industrial forecaster
- Logistics or quality analyst
- Secondary teacher [2]

KEY FEATURES:

- High demand for graduates who can create solutions for information generation, processing and delivery
- Career options in multiple sectors
- Includes a major research project for an industry organisation or research centre

SEE YOURSELF AS:

- An investigator
- Able to see patterns and trends in data
- Paying attention to detail
- Interested in mathematical modelling

CAREER OPPORTUNITIES:

- Data analyst
- Information analyst and designer
- IS services consultant
- IT supervisor/manager
- Logistics analyst
- Technical or business analyst
- Project leader

Bachelor of Computer and Information Sciences
Computational Intelligence

Information makes the world go round. Computational intelligence gives you the power to capture information and make sense of it – a highly sought after skill. This major explores the theory and science behind the management and use of information, including information science, information modelling, data mining, knowledge engineering and database design.

You learn to devise effective solutions for information generation, processing and delivery. You'll also develop an understanding of the technical aspects of database design and programming for information retrieval and presentation.

What this major covers

For papers in this major refer to the course planner on page 44.

Year 1

All students take seven core papers that are compulsory for all majors. You also choose one other mathematics paper.

Year 2

You become familiar with the foundations of information science and statistical methods. You also choose between papers on physical database design, and data structures and algorithms.

Year 3

This year focuses on more advanced topics in computational intelligence. Papers cover artificial intelligence, data mining and knowledge engineering. You also study either text and vision intelligence, or nature inspired computing.

Workplace experience

The Research and Development Project paper brings together the skills you've developed throughout your degree. You apply what you've learnt in a project for an industry client or research centre, under the guidance of an experienced supervisor.

Recent client companies included:

- Datamine Ltd
- Advanced Retail Technology Ltd
- Fonterra

AUT encourages early application. Places are limited.

For more details visit **www.aut.ac.nz/ecms**

Anthony Ngan
Web Developer and Digital Marketing Support, iRefi Mortgages Ltd
Bachelor of Computer and Information Sciences in Computational Intelligence and Software Development
Certificate in Science and Technology

"I chose to follow my passion at AUT because I wanted to learn about software development methodologies and artificial intelligence. One of my fondest memories was in my first year. In groups, we were instructed to build a model aeroplane, and got to use the 3D printers at AUT. We 3D printed parts and then constructed the plane – and it flew.

"The academic staff are superb and willing to help every step of the way. In the last year of study, students can also undertake a research and development project with an internal or external client. It serves as a true testament of the knowledge they gained during their studies and gives students opportunities to apply their knowledge to a real-life project.

"Make the most of your time at university. Use this opportunity to be curious, and apply yourself in extracurricular activities like student organisations, clubs and personal projects.

"At iRefi, we offer mortgage and insurance advice to people. What's awesome about working there is seeing the technology being used to assist our advisers who can then provide the best solutions to our clients. I use my programming skills every day to help maintain our website, which involves updating, enhancing and optimising the overall user experience."

Bachelor of Computer and Information Sciences
Computer Science

Computer science holds the answers to many questions. The rapid evolution of technology makes computer science an exciting and demanding career option – one with huge job opportunities in New Zealand and around the world.

In the Computer Science major you learn effective ways to solve computing problems and devise new ways to use computing technologies. You explore advanced aspects of technical software, including how to devise computing algorithms for new technologies, and how to develop multi-tasking systems and 3D user interfaces.

What this major covers

For papers in this major refer to the course planner on page 44.

Year 1

All students take seven core papers that are compulsory for all majors. You also choose one other mathematics paper.

Year 2

You become familiar with algorithm design and data structures. You also study either operating systems, or logic and discrete structures.

Year 3

You explore more advanced papers in computer science, including programming languages and the theory of computation. You also study either artificial intelligence, or distributed and mobile systems.

Workplace experience

The Research and Development Project paper brings together the skills you've developed throughout your degree. You apply what you've learnt in a project for an industry client or research centre, under the guidance of an experienced supervisor. Recent client companies included Deloitte, Pinnacle Life Ltd and Compucon NZ.

AUT encourages early application. Places are limited.

KEY FEATURES:

- Skills that are in demand around the world
- Develop effective ways to solve computing problems
- Includes a major research project for an industry organisation or research centre

SEE YOURSELF AS:

- Able to understand software and coding
- Interested in digging for the root of problems
- Quick to learn
- Having a practical attitude

CAREER OPPORTUNITIES:

- Entrepreneur
- Industrial researcher
- Research and development manager
- Software architect
- Software designer and implementer

For more details visit www.aut.ac.nz/ecms

Bachelor of Computer and Information Sciences
IT Service Science

Technology is vital in our day-to-day lives but the IT we rely on needs to be secure, well-designed and fit for purpose. IT service science is the foundation for secure, well-designed technology solutions that enhance people's lives.

With the IT Service Science major you learn to analyse, design, procure and implement information technology solutions. You develop the skills to manage IT installations and draw up service-level contracts, manage security and implement internet solutions.

What this major covers

For papers in this major refer to the course planner on page 44.

Year 1

All students take seven core papers that are compulsory for all majors. You also choose one other mathematics paper.

Year 2

You become familiar with the provision of IT services, needs analysis acquisition and training. You also choose between information security technologies, and network and system administration.

Year 3

This year covers more advanced topics in IT service science. You investigate IT strategy and control, and service management. You also study either information security management or contemporary information systems.

Workplace experience

The Research and Development Project paper brings together the skills you've developed throughout your degree. You apply what you've learnt in a project for an industry client or research centre, under the guidance of an experienced supervisor.

Recent client companies included:

- Auckland Council
- Business Mechanix
- Clearvision
- Fisher & Paykel Healthcare
- Waitemata District Health Board

AUT encourages early application. Places are limited.

For more details visit **www.aut.ac.nz/ecms**

KEY FEATURES:

- Universal demand for IT services
- A wide range of career opportunities
- Includes a major research project for an industry organisation or research centre

SEE YOURSELF AS:

- A good communicator
- A people person
- A fixer and technical problem-solver
- Analytical

CAREER OPPORTUNITIES:

- Call centre manager
- Database administrator
- Information analyst and designer
- IT support role
- Logistics analyst
- Network and systems administrator
- Outsourced IT services co-ordinator
- Solutions architect
- Integration and functional consultant
- IS operational manager
- IT service supervisor

KEY FEATURES:

- Design and implement network and security solutions
- Prepare for Cisco CCNA certification and the requirements of CCNP certification
- A major research project for an industry organisation or research centre

SEE YOURSELF AS:

- Logical
- A planner
- Strategically-minded
- A problem-solver

CAREER OPPORTUNITIES:

- IT security analyst
- Network analyst
- Network designer
- Systems and network administrator

Bachelor of Computer and Information Sciences
Networks and Security

Information is often an organisation's most precious asset – but it's also one of its most vulnerable assets. New information security threats and attacks are constantly developing and the only solution is to develop increasingly secure networks. That's why networks and security are areas that are universally important.

This major focuses on practical projects where you apply your knowledge to implement networks and secure systems. You study the basics and infrastructure of networking, and learn to configure, implement and analyse network devices. This includes information network administration and network security to an advanced level.

What this major covers

For papers in this major refer to the course planner on page 44.

Year 1

All students take seven core papers that are compulsory for all majors. You also choose one other mathematics paper.

Year 2

You explore computer network applications, and network and system administration. You also study either physical database design or operating systems.

Year 3

This year you study advanced topics in networks and security, including network technologies, and network security. You also study either information security management, or distributed and mobile systems.

Workplace experience

The Research and Development Project paper brings together the skills you've developed throughout your degree. You apply what you've learnt in a project for an industry client or research centre, under the guidance of an experienced supervisor.

Recent client companies included:

- Auckland Council
- Fisher & Paykel Healthcare
- NZcare

AUT encourages early application. Places are limited.

Timoti Wharewaka
Ngāpuhi
Cloud Application Associate, Accenture
Postgraduate Certificate in Computer and Information Sciences
Bachelor of Computer and Information Sciences in IT Service Science & Networks and Security

"I decided to study computing because I could see that a degree in computer and information science would enable me to be at the forefront of innovation and new development. AUT was the university of my choice because I really liked the structure of the degree. I also had the opportunity to explore which area of IT I enjoyed before specialising in a specific field. AUT has provided me with the skills I need to transition successfully into the workplace. I also believe that a degree from AUT differentiates you from other graduates."

Employer comment

"At Accenture, we look for a wide range of aptitudes in our technology graduates. Timoti has been able to bring a solid technical skillset to the role. His experiences at AUT have given him the ability to break complex problems into parts and propose possible solutions, be an effective communicator, take initiative, ask for and apply feedback to improve, be adaptable and comfortable dealing with ambiguity, be outcome-focused, and seek to understand the broader team's priorities and goals. He also has a high learning agility and the ability to assimilate information and learn new techniques and methodologies quickly."

Daniel Lund, Cloud First NZ Lead, Accenture

For more details visit **www.aut.ac.nz/ecms**

KEY FEATURES:

- High demand for software development skills
- Exciting pace of innovation and change
- A major research project for an industry organisation or research centre

SEE YOURSELF AS:

- Interested in IT and innovation
- Logical
- A planner
- Careful and meticulous
- Technically innovative

CAREER OPPORTUNITIES:

- Computer programmer
- Mobile/app developer
- Software developer, engineer or tester
- Systems analyst or architect
- Technology consultant
- Web developer
- Project manager

Bachelor of Computer and Information Sciences
Software Development

Demand for new technology is constantly increasing. Technological solutions could lead to advances in areas as diverse as biomedicine, communications, business and entertainment. Software developers play a role in those advances. This major prepares you for these diverse and exciting roles.

You develop the skills to design and develop new and existing software solutions using common development tools. You design and develop secure software and use the latest technologies including modern programming languages, operating systems, networks, distributed computing systems, databases and modelling. You also carry out quality assurance tasks.

What this major covers

For papers in this major refer to the course planner on page 44.

Year 1

All students take seven core papers that are compulsory for all majors. You also choose one other mathematics paper.

Year 2

This year covers programme design and construction, and software development. You also choose to study either physical database design or operating systems.

Year 3

Papers this year focus on software engineering and applied human computer interaction. You also study either web development, or distributed and mobile systems.

Workplace experience

The Research and Development Project paper brings together the skills you've developed throughout your degree. You apply what you've learnt in a project for an industry client or research centre, under the guidance of an experienced supervisor.

Recent client companies included:

- Basement Theatre
- Deloitte
- Fiserv
- Fonterra
- Pinnacle Life Ltd
- Plant & Food Research

AUT encourages early application. Places are limited.

Julia Bower

Senior Analyst Programmer, ANZ
Bachelor of Computer and Information Sciences in Software Development

"I took a programming course when I was in high school. I loved it and I knew I could make a career out of it. ANZ has been challenging but also very rewarding. I'm lucky to be involved in a space that is undergoing a major transformation – it keeps me on my toes. I left AUT with a good understanding of the IT industry and a solid foundation of skills to build on. I felt so supported at AUT – everyone truly wants you to succeed. My classmates and I all got to know each other very well, and supported each other from the first day through to finding our first jobs."

Employer comment

"Julia takes the bull by the horns when it comes to any project or task. We work in a very complex environment which requires a solid work ethic, transparency and everyone to work as a team. Julia has shown leadership in encouraging other team members to see the opportunities and drive projects through to completion. Values and motivation are really important to our organisation, both of which Julia has demonstrated. Julia is a very talented developer and contributes massively to new projects, helping other team members and leading improvement features."

Monique McRae, Delivery Manager, ANZ

For more details visit **www.aut.ac.nz/ecms**

Bachelor of Science/Bachelor of Mathematical Sciences Overview

[BSc/BMathSci | AK1041/AK1271]

QUICK FACTS

Level:	7
Points:	360
Duration:	3 years F/T, 6 years P/T
Campus:	City
Starts:	24 Feb & 13 July 2020

Biyuan Wang
China
Master of Science (Research) student
Bachelor of Science (Honours)
Bachelor of Mathematical Sciences in Analytics and Applied Mathematics

"I love maths. For my future research, I would like to focus on mathematical modelling. Eventually I would like to do a PhD in mathematics, and I believe that completing the master's degree will be a great experience for my future career. AUT's reputation for being a student-focused university is a key reason I chose AUT. I like that AUT students are encouraged to discuss academic problems in the tutorials. I enjoy being able to share my knowledge with others. I would definitely recommend studying mathematical sciences at AUT. The lecturers are very supportive and responsive to students. If I ever feel that I need help with my research project, my supervisors always help me patiently."

Can you imagine developing the next search algorithm for Google or creating mathematical theories that help discover the secret of the universe? A degree in mathematical sciences could help you achieve just that. Mathematical sciences is the key to analysing data and developing algorithms that turn numbers and figures into goals or projections. This is extremely valuable and those that can visualise data are highly sought after. This degree prepares you to take advantage of these growing career opportunities. Your final year includes valuable workplace experience, working on a project for an organisation related to your major.

Entry requirements

Minimum entry requirements
University Entrance or equivalent

English language requirements
IELTS (Academic) 6.0 overall with all bands 5.5 or higher; or equivalent.

Useful New Zealand school subjects
Calculus, Mathematics, Physics, Statistics

Majors

- Analytics
- Applied Mathematics
- Astronomy
- Computer Science

If you want to study a broad range of papers, you can also complete this qualification with no major.

You can also choose how your degree is named: Science or Mathematical Sciences. The Bachelor of Mathematical Sciences is a more industry-focused degree and includes an industry research project in your final year. The Bachelor of Science is a more traditional university qualification that enables you to combine your chosen major with a broad range of science subjects[1].

What these qualifications cover

To plan your degree refer to the course planner on page 56.

Year 1

You study a range of technology-focused papers that have modelling applications in industry and help you develop tools for evidence-based decision-making.

Papers include:

- Programming for Engineering Applications
- Object Oriented Applications
- Introductory Astronomy
- Physics I
- Algebra and Discrete Mathematics
- Differential and Integral Calculus
- Applied Statistics
- Mathematical Concepts

Because communication skills are essential for today's workplaces you also study a communications paper.

Year 2 & 3

There is a wide range of second and third year papers, depending on your major. In Year 3, you may work on a real-life research and development project for an organisation related to your major.

Second majors and minors

Today, standing out from the crowd is more important than ever. Having skills in more than one discipline can give you the competitive edge and increase your career opportunities. If you choose a second major or a minor you can study an area of interest from a range of subjects. To find out more visit **www.aut.ac.nz**

AUT encourages early application. Places are limited.

1. The Bachelor of Science is also offered through the School of Science.

For more details visit www.aut.ac.nz/ecms

Students work on live, real industry briefs

Jamie Allan
Ngāti Whakaue, Ngāti Pikiao, Ngāti Awa
Marketing Analyst, Luggage.co.nz, Tauranga
Master of Analytics
Bachelor of Mathematical Sciences in Analytics

"In my final years of high school, I really enjoyed maths so when I was looking through the degrees on offer, the Bachelor of Mathematical Sciences jumped right out. My koro and aunty were both maths teachers, so I also knew I'd have extra help if I needed it. My partner was heading up from Rotorua to Auckland to do a graphic design degree at AUT, so I thought I would tag along and do a degree in something I enjoyed. I'm glad I made that decision. I'm now employed as a marketing analyst at Luggage.co.nz where I'm able to apply my database and mathematical skills, as well as the marketing skills I developed thanks to my Master of Analytics industry project."

Course planner

	YEAR 1	YEAR 2	YEAR 3
Papers for all majors	Applied Communication[1]		
	Chose five of:		
	Programming for Engineering Applications		
	Object Oriented Applications		
	Introductory Astronomy		
	Physics I		
	Algebra and Discrete Mathematics		
	Differential and Integral Calculus		
	Applied Statistics		
	Mathematical Concepts		
	Computer Organisation		
PLUS 1 OR 2 OF THE FOLLOWING MAJORS:			
Analytics		Statistical Methods	Industrial and Business Analytics
		Probability	Applied Stochastic Models
		Forecasting OR Logical Database Design	Data Mining and Knowledge Engineering OR Statistical Computing with SAS
Applied Mathematics		Differential Equations	Numerical Analysis
		Multivariate Calculus	Linear Partial Differential Equations
		Linear Algebra OR Mathematics of Finance	Industrial and Financial Mathematics OR Applied Stochastic Models
Astronomy		Astrophysics	Radio Astronomy
		Physics II	Practical Astrophysics
		Computational Spherical Astronomy	Frontiers of Astronomy
Computer Science		Algorithm Design and Analysis	Theory of Computation
		Data Structures and Algorithms	Programming Languages
		Logic and Discrete Structures OR Operating Systems	Distributed and Mobile Systems OR Artificial Intelligence
PLUS ELECTIVES:			
		Elective	Elective
		Elective	Elective
		Elective	Elective
		Elective	Elective
		Elective	Elective
			OR
			Elective
			Elective
			Elective
			Research Project (30 points) (Compulsory for BMathSci, not compulsory for BSc)

All papers are 15 points unless indicated otherwise

1. Must be completed in Year 1 or 2

Bachelor of Science/Bachelor of Mathematical Sciences
Analytics

Analytical skills are essential in today's business environment. The ability to analyse data using appropriate statistical, mathematical and computational techniques is highly sought after in New Zealand and internationally. Career options include sales analysis, customer profile analysis, data analysis for research projects or analysis of financial trends.

The Analytics major focuses on business and industry. You gain key skills in sophisticated predictive modelling and quantitative and statistical analysis. Our close links with organisations like Statistics NZ give you relevant insights into current industry thinking and hands-on experience for your career.

What this major covers

For papers refer to course planner on page 56.

Year 1

Students in all majors study the same core papers this year.

Year 2

You become familiar with forecasting, logical database design, probability and statistical methods. You complete selected papers from the Bachelor of Science/Bachelor of Mathematical Sciences.

Year 3

You explore advanced topics in analytics, including stochastic models, data mining and knowledge engineering. You also become familiar with SAS, and complete additional papers from the Bachelor of Science/Bachelor of Mathematical Sciences.

Final-year project

In your final year you can complete a research project[1], investigating a scientific problem. These projects have practical applications to the workplace and may include workplace experience. This paper counts as two papers and you can complete it over one semester or the whole year. Through this paper you develop skills in experimental design, literature searching, the collection and analysis of data, interpretation and reporting of the results. Recent student projects included a study of the various factors behind house price movements in the NZ housing market.

AUT encourages early application. Places are limited.

1. This paper is compulsory in the Bachelor of Mathematical Sciences but not in the Bachelor of Science.
2. After an additional year of teacher training.

For more details visit **www.aut.ac.nz/ecms**

KEY FEATURES:

- High demand for analytical skills
- Career options in multiple sectors
- Close links with organisations like Statistics NZ
- A major research project for an industry organisation[1]

SEE YOURSELF AS:

- Precise
- Curious and analytical
- Meticulous and a planner
- Interested in business

CAREER OPPORTUNITIES:

- Biostatistician
- Business/quality/statistical analyst
- Government statistician
- Industrial forecaster
- Logistics or quality analyst
- Medical statistician
- Secondary teacher[2]

KEY FEATURES:

- Tools to be a proactive problem-solver
- Varied career options
- A major research project for an industry organisation [1]

SEE YOURSELF AS:

- Logical
- Good at calculations
- Interested in real-world analysis
- A problem-solver

CAREER OPPORTUNITIES:

- Actuary
- Control buyer or purchasing agent
- Industrial engineering scientist
- Market and financial analyst
- Mathematician
- Research analyst and associate
- Secondary teacher [2]

Bachelor of Science/Bachelor of Mathematical Sciences
Applied Mathematics

Applied mathematics tells us about our world and helps predict what will happen next. Whether you want to look at global warming patterns, figure out the structural integrity of a building or forecast economic trends – it all relies on applied mathematics.

This major will give you the skills to carry out modelling research and the analysis of problems in the fields of engineering, science and business. With these skills you can be part of the solution to a vast array of complex issues facing the world.

What this major covers

For papers in this major refer to the course planner on page 56.

Year 1

Students in all majors study the same core papers this year.

Year 2

You investigate modelling and techniques for solving ordinary and differential equations. You're introduced to actuarial mathematics, financial risk management and linear algebra. You develop skills in the development, interpretation and use of mathematical methods appropriate to engineering and science. You also take five elective papers.

Year 3

The focus is on modelling, covering computational modelling, numerical method and mathematics modelling in finance and the modelling of electronic and mechanical engineering situations. You also complete elective papers.

Final-year project

In your final year you can complete a research project[1], investigating a scientific problem. These projects have practical applications to the workplace and may include workplace experience. This paper counts as two papers and you can complete it over one semester or the whole year. Through this paper you develop skills in experimental design, literature searching, the collection and analysis of data, interpretation and reporting of the results.

Recent student projects included:

- A study of the mathematical modelling of linear waves in shallow waters
- The sound field around an acoustically hard cylindrical scatterer
- The modelling of sound waves around a physical boundary

AUT encourages early application. Places are limited.

1. This paper is compulsory in the Bachelor of Mathematical Sciences but not in the Bachelor of Science.
2. Following an additional year of teacher training.

For more details visit **www.aut.ac.nz/ecms**

Elliot Rohl
CRM Analyst, Westpac
Master of Analytics
Bachelor of Mathematical Sciences in Analytics and Applied Mathematics

"An understanding of computing and analytics is crucial in today's technology-driven world. With the rapid rise in computer technology, having skills in computer science and data analytics is becoming more important and opening many career pathways. Big data is becoming increasingly valued in larger companies.

"In my bachelor's degree I completed a one-year research project on linear wave theory. As an avid surfer, fisherman and diver, the topic highlighted real-life applications – merging my interests and mathematical sciences together. The poster presentation for this project also won the award for 'top presentation'.

"One of the standouts for me was representing AUT at the SAS Users New Zealand Conference and networking with people who work in the analytics industry. I was able to exchange contact details with representatives from a few of the country's top analytics and data science companies; a great opportunity when nearing the end of my master's qualification.

"During my master's degree, I was working as a teacher's assistant in addition to my studies. It was great to have the opportunity to pass on my knowledge and support fellow students, as well as enhancing my own understanding of key concepts in the process."

KEY FEATURES:

- Access to AUT's hi-tech astronomy facilities, including NZ's only radio astronomy telescopes
- Work with the Institute for Radio Astronomy and Space Research
- A major research project in your final year [1]

SEE YOURSELF AS:

- Scientifically engaged
- Having above-average mathematical ability
- Fascinated by space and the universe

CAREER OPPORTUNITIES:

- Astronomer
- Industrial mathematician
- Observatory technician or research officer
- Planetarium lecturer
- Programmer or systems developer
- Technical software developer
- Scientific programmer
- Secondary teacher [2]

Bachelor of Science/Bachelor of Mathematical Sciences
Astronomy

Turn your fascination for space into a career in astrophysics and radio astronomy. High-performance computing and broadband networking are central to modern astronomy and space science. AUT's Warkworth Observatory is linked to New Zealand's most powerful super computers and has the only radio telescopes in the country. That's why AUT's Institute for Radio Astronomy and Space Research (IRASR) can process enormous amounts of data from deep space, used for cutting-edge research in astrophysics and earth science.

The Astronomy major covers the latest developments in astronomy and space science, spherical astronomy, celestial mechanics, theoretical astrophysics and mathematical physics. You have the opportunity to work with IRASR during your study.

What this major covers

For papers refer to course planner on page 56.

Year 1

Students in all majors study the same core papers this year.

Year 2

You become familiar with astrophysics and computational spherical astronomy. You also complete more advanced physics papers and study multivariate calculus, as well as other papers from the Bachelor of Science/Bachelor of Mathematical Sciences.

Year 3

You study practical astrophysics, radio astronomy and applied stochastic models. You also explore the frontiers of astronomy and choose from a range of electives.

Final-year project

In your final year you can complete a research project[1], investigating a scientific problem. These projects have practical applications to the workplace and may include workplace experience.

This paper counts as two papers and you can complete it over one semester or the whole year. Through this paper you develop skills in experimental design, literature searching, the collection and analysis of data, interpretation and reporting of the results.

Recent student projects included the creation of a catalogue of Southern Hemisphere radio sources using the AUT 30-metre radio telescope.

AUT encourages early application. Places are limited.

1. This paper is compulsory in the Bachelor of Mathematical Sciences but not in the Bachelor of Science.
2. Following an additional year of teacher training.

For more details visit **www.aut.ac.nz/ecms**

Axl Floyd Rogers

Ngāpuhi

Master of Science (Research) student
Bachelor of Mathematical Sciences in Applied Mathematics and Astronomy

"I would recommend studying astronomy to all those who look up at the night sky and find themselves filled with a deep sense of wonder, to those who wish to learn about the to-and-fro of celestial objects, and to those who have a curious mind and a passion for astronomy. AUT has an array of excellent and inspiring astronomy lecturers who will assist you along the journey to the stars.

"My final-year research project was an opportunity to apply all the skills I learned throughout my degree, focused around an area of research of my choosing. This entailed long hours, hard work and learning a few new skills along the way, but proved extremely rewarding and beneficial. Throughout this project I worked under the supervision of an esteemed and admired lecturer, Dr Willem van Straten, who aided me with his support and encyclopaedic knowledge.

"In the bachelor's degree, you learn a vast number of skills that will be useful in the future, either for work, study or further research. For me, postgraduate study is a chance to take all those skills and use them to master my passions and field of expertise. After completion of my master's degree, I aim to go on to do a PhD in astrophysics."

KEY FEATURES:

- Global demand for computer science skills
- Hands-on experience developing technical software
- Opportunity to complete a research project for an industry organisation[1]

SEE YOURSELF AS:

- A coder
- A gaming enthusiast
- A programmer
- A problem-solver

CAREER OPPORTUNITIES:

- Computer game and 3D graphics programmer
- Cryptographer
- Mobile computer systems developer
- Security analyst
- Software developer
- Systems analyst or designer
- Systems architect or designer
- Technical software developer

Bachelor of Science/Bachelor of Mathematical Sciences
Computer Science

Computer science holds the answers to many questions. The rapid evolution of technology makes computer science an exciting and demanding career option – one with huge job opportunities in New Zealand and around the world.

In the Computer Science major you learn effective ways to solve computing problems and devise new ways to use computing technologies. You explore advanced aspects of technical software, including how to devise computing algorithms for new technologies, and how to develop multi-tasking systems and 3D user interfaces.

What this major covers

For more information about papers and planning your degree, please refer to the course planner on page 56.

Year 1

Students in all majors study the same core papers this year.

Year 2

You become familiar with algorithm design and data structures. You also study either operating systems, or logic and discrete structures.

Year 3

You explore more advanced papers in computer science, including programming languages and the theory of computation. You also study either artificial intelligence, or distributed and mobile systems.

Final-year project

In your final year you can complete a research project[1], investigating a scientific problem. These projects have practical applications to the workplace and may include workplace experience.

This paper counts as two papers and you can complete it over one semester or the whole year. Through this paper you develop skills in experimental design, literature searching, the collection and analysis of data, interpretation and reporting of the results.

Recent student projects included:

- Game theoretical approach to how people behave when confronted with stalking
- Sequential strategies used when playing Colonel Blotto; a game with applications in real business decisions

AUT encourages early application. Places are limited.

1. This paper is compulsory in the Bachelor of Mathematical Sciences but not in the Bachelor of Science.

For more details visit **www.aut.ac.nz/ecms**

Nilson Santos Filho
Mobile Developer, Putti
Bachelor of Science in Computer Science

"Being able to develop something that will be used by thousands, maybe millions, of people is something that really excites me about my work. I enjoy working with clients and designers to create mobile solutions. I've worked with a range of clients implementing mobile applications – from airlines and shopping all the way through to field service applications. As part of the degree we worked on a lot of projects, which made my coding skills very neat. The complexity of some of the projects helped me learn not just coding but also how to solve problems. That's what I now do on a daily basis at work; solve problems. My AUT degree prepared me well for this."

Employer comment

"We employed Nilson because he demonstrated an understanding of key concepts of software engineering in general and mobile development in particular around the time he graduated from AUT. We were looking for developers with a solid grasp of the fundamentals of computer science/software engineering, and an ability to pick up and evaluate new concepts quickly. At Putti, we are expecting developers to be able to adapt to a variety of project settings and client requirements. This ability is grounded on an academic foundation and good communication skills. Nilson has proven that he's capable of doing all these."

Charles Wang, Technical Lead Developer, Putti

Certificate in Science and Technology

CertScT | AK1311

The one-year Certificate in Science and Technology gives you an introduction to the main areas involved in studying design, engineering, or computer or mathematical sciences. Papers cover mathematics, physics, engineering science and academic literacy. It's a great pathway to gain a taste of university life and develop the knowledge and study skills for further study at bachelor's level.

QUICK FACTS

Level:	4
Points:	120
Duration:	1 year F/T only
Campus:	City & South
Starts:	24 Feb & 13 July 2020

Katie Reidpath
Trainee Service Engineer, Siemens Healthineers
Bachelor of Engineering Technology in Electrical Engineering
Certificate in Science and Technology

"I have a naturally curious mind that drives me to want to know more about how things work. Engineering is a career focused on constantly improving and changing technology, and I'm sure I'm never going to get bored with this career path. I chose AUT because I prefer practical subjects and hands-on learning. A family member had studied at AUT and recommended it over other universities. The projects where we could create something are what I enjoyed most about my studies. They gave me a real sense of achievement, and motivated me to work harder and be creative. I had only completed NCEA level 2 in secondary school, and the Certificate in Science and Technology was good preparation to study the Bachelor of Engineering Technology."

Entry requirements

Minimum entry requirements

- Completion of Year 12
- **NCEA:** 48 level 2 credits or higher, plus eight level 1 credits in at least one subject from Art History, Classical Studies, Drama, English, Geography, Health Education, History, Media Studies, Social Studies, Te Re Māori or Te Reo Rangatira
- **CIE:** 60 points on the UCAS Tariff

English language requirements

IELTS (Academic) 5.5 overall with all bands 5.0 or higher; or equivalent.

What this qualification covers

- Academic Literacies

Plus select seven papers from:

- Foundation Algebra
- Foundation Calculus
- Foundation Design Principles
- Foundation Design Technologies
- Foundation Mathematics
- Foundation Mathematics and Design
- Foundation Physics A
- Foundation Physics B
- Foundation Programming
- Foundation Problem Solving
- Foundation Statistics
- Introduction to Engineering
- Tertiary English and Critical Thinking

Further study

Students who complete this programme successfully can apply for bachelor's degrees in design, engineering, computer and mathematical sciences.

AUT encourages early application. Places are limited.

For more details visit **www.aut.ac.nz/ecms**

Graduate Diploma in Science/ Graduate Diploma in Mathematical Sciences

GradDipSc/GradDipMathSc | AK1042/AK1301

Graduate Certificate in Science/ Graduate Certificate in Mathematical Sciences

GradCertSc/GradCertMathSc | AK1043/AK1302

Gain advanced expertise and knowledge in mathematical sciences through study at graduate diploma and graduate certificate level. These qualifications are aimed at professionals, including secondary school teachers, who want to update their knowledge of current technologies and applications of mathematical sciences.

Entry requirements

- A bachelor's degree OR
- Relevant professional qualification or experience approved by the Dean (or representative) to be equivalent to a bachelor's degree.

English language requirements

IELTS (Academic) 6.5 overall with all bands 6.0 or higher; or equivalent.

What these qualifications cover

Graduate Diploma in Science

You choose papers from the Bachelor of Science to make up a total of 120 points. At least 75 points must be at level 7. You can include 30 points from any other bachelor's degree[1].

Graduate Diploma in Mathematical Sciences

You choose papers from the Bachelor of Mathematical Sciences to make up a total of 120 points. At least 75 points must be at level 7. You can include 45 points from any other bachelor's degree[1].

Graduate Certificate in Science

You choose papers from the Bachelor of Science to make up a total of 60 points. At least 45 points must be at level 7.

Graduate Certificate in Mathematical Sciences

You choose papers from the Bachelor of Mathematical Sciences to make up a total of 60 points. At least 45 points must be at level 7. You can include 15 points from any other bachelor's degree[1].

1. With the approval from your programme leader.

For more details visit **www.aut.ac.nz/ecms**

Graduate Diploma in Science & Graduate Diploma in Mathematical Sciences

QUICK FACTS

Level:	7
Points:	120
Duration:	1 year F/T, P/T available
Campus:	City
Starts:	24 Feb & 13 July 2020

Graduate Certificate in Science & Graduate Certificate in Mathematical Sciences

QUICK FACTS

Level:	7
Points:	60
Duration:	½ year F/T, 1 year P/T
Campus:	City
Starts:	24 Feb & 13 July 2020

CAREER OPPORTUNITIES:

- Business analyst
- Engineering systems analyst
- Financial analyst
- Forecasting in business industry
- Operations research
- Quality assurance
- Secondary school teacher (following an additional year of teacher training)
- Statistical analyst

Graduate Diploma in Computer and Information Sciences

QUICK FACTS

Level:	7
Points:	120
Duration:	1 year F/T, P/T available
Campus:	City
Starts:	24 Feb & 13 July 2020

Graduate Certificate in Computer and Information Sciences

QUICK FACTS

Level:	7
Points:	60
Duration:	½ year F/T, 1 year P/T
Campus:	City
Starts:	24 Feb & 13 July 2020

Graduate Diploma in Computer and Information Sciences

GradDipCIS | AK3698

Graduate Certificate in Computer and Information Sciences

GradCertCIS | AK3756

Develop a sound technical understanding of computing and information technology with the Graduate Diploma and Graduate Certificate in Computer and Information Sciences. Throughout your studies you gain the ability to plan, develop and apply appropriate technologies and tools to frame and solve computing problems.

Entry requirements

- A bachelor's degree OR
- Relevant professional qualification or experience approved by the Dean (or representative) to be equivalent to a bachelor's degree.

English language requirements

IELTS (Academic) 6.5 overall with all bands 6.0 or higher; or equivalent.

What these qualifications cover

Graduate diploma[1]

You choose papers from the Bachelor of Computer and Information Sciences to make up a total of 120 points. At least 75 points must be at level 7. You can include 30 points from any other bachelor's degree[2].

Graduate certificate

You choose papers from the Bachelor of Computer and Information Sciences to make up a total of 60 points. At least 45 points must be at level 7. You can include 15 points from any other bachelor's degree[2].

Career opportunities

These programmes prepare you for careers in a wide range of fields in computing and information technology.

AUT encourages early application. Places are limited.

1. To study some areas, such as programming, you may need to enrol in additional lower level papers in order to complete this qualification.
2. With the approval from your programme leader.

For more details visit **www.aut.ac.nz/ecms**

AUT City Campus in the Auckland CBD

Overview of our postgraduate qualifications

All study areas

Master of Philosophy

The Master of Philosophy is a one-year research-only master's degree. It gives you the opportunity to undertake a research project of your interest, under the supervision of AUT staff. It can also serve as a pathway to more advanced research at doctoral level.

Doctor of Philosophy

The Doctor of Philosophy is a thesis-based research degree that leads to advanced academic and theoretical knowledge in a specialist area. You can make an original contribution to knowledge or understanding in your discipline, and meet recognised international standards for such work. You work closely with a supervisor to prepare a thesis, which is then examined by independent experts applying contemporary international standards.

Engineering

Postgraduate Diploma and Postgraduate Certificate in Engineering

These coursework-based qualifications are for students who want advanced study in mechanical, electrical or electronic engineering. They can serve as a pathway for Bachelor of Engineering Technology graduates who want to progress to the Master of Engineering.

Master of Construction Management

The Master of Construction Management has been developed in partnership with construction industry leaders to meet the demand for professionals who can manage modern construction projects. It's aimed at construction professionals including engineers, quantity surveyors and architects.

Master of Engineering Project Management

The Master of Engineering Project Management is the first of its kind in New Zealand. It provides an exciting career opportunity for practising engineering project managers aspiring to senior positions, and equips recent graduate engineers with business and project management skills for modern engineering companies.

Master of Engineering

The Master of Engineering is designed to develop your research skills and enhance your knowledge in a specialised area of engineering. You build on the knowledge from your undergraduate degree and have the opportunity to undertake a research project. You can choose between two pathways: research pathway (includes a thesis) or coursework pathway (includes a research project).

Computer and Mathematical Sciences

Bachelor of Computer and Information Sciences (Honours)

The Bachelor of Computer and Information Sciences (Honours) is aimed at high-performing students in the Bachelor of Computer and Information Sciences. It can give you a competitive advantage in the job market, and fast-track your progress to doctoral studies.

Bachelor of Science (Honours)

The Bachelor of Science (Honours) is aimed at students who have an undergraduate qualification in applied mathematics or computer science. It prepares you for higher-level industry careers or postgraduate research in applied mathematics through a master's degree or PhD.

Postgraduate Diploma and Postgraduate Certificate in Computer and Information Sciences

These coursework-based qualifications include papers from the Master of Computer and Information Sciences. Papers focus on advanced analytical, planning and critical thinking skills, broadening your knowledge within specialist fields of computer and information sciences. The programmes can serve as a pathway to further study at master's level.

Postgraduate Diploma and Postgraduate Certificate in Science

These coursework-based qualifications include papers from the Master of Science. Papers cover advanced knowledge and skills in applied mathematics, analytics or applied probability. The programmes can serve as a pathway to further study at master's level.

Master of Analytics

The Master of Analytics addresses the global demand for professionals who can help organisations organise, store and manipulate data. It caters for students from a variety of disciplines, as well as professionals already working in the industry. Papers cover advanced analytics and database skills and the latest theory and techniques for statistical modelling and mathematical simulation.

Master of Computer and Information Sciences

The Master of Computer and Information Sciences is for those looking to advance their undergraduate qualification, improve their career opportunities, or explore a specialist area of interest. The master's thesis, a significant research project, is at the heart of the programme. You develop the skills and judgement to manage and lead teams of information and communication technology professionals. The programme can serve as a pathway to further study at doctoral level.

Master of Health Informatics

The Master of Health Informatics explores the technical aspects of health informatics. It's ideal for information and communication technology graduates, and professionals interested in the latest developments, both in research and practice. It can open up careers in the healthcare software industry, hospitals and district health boards, government, private healthcare providers, non-governmental organisations, or primary health organisations.

Master of IT Project Management

With the Master of IT Project Management you gain the skills to design, implement and manage software development projects throughout their life cycle. You develop project management skills in planning, team facilitation, risk and change management for IT projects. Practical components like the Research and Development Project will give you opportunities to apply what you learn in class to the real world.

Master of Information Security and Digital Forensics

The Master of Information Security and Digital Forensics is designed for people interested in protecting computer systems and recovering evidence from compromised systems. Papers cover the skills to secure systems from attackers and analyse storage media including computer hard drives, solid state drives and networks.

Master of Science

The Master of Science focuses on original research in applied mathematics, analytics, applied probability, modelling or astronomy. You work with researchers active in your chosen field and write a thesis on a topic of current research interest within the field of computer and mathematical sciences.

Master of Science (Research)

The Master of Science (Research) is a great opportunity to gain advanced research skills and explore an area within computer and mathematical sciences through the one-year research thesis. You work with expert academics in your chosen field of computer and mathematical sciences.

Master of Service-Oriented Computing

The Master of Service-Oriented Computing focuses on flexible and dynamic business processes across organisations and computing platforms. It builds on your professional experience in the information technology industry and prepares you for the growing cloud computing, service science and service-oriented computing sectors.

For more details visit **www.aut.ac.nz/ecms**

HOW TO APPLY

Below is the step-by-step guide to the applications process. For more information visit www.aut.ac.nz/apply

1

APPLY EARLY

Places are limited. Submit your application well before the semester starts.

APPLYING FOR 2020

- Semester 1
  – apply by 2 December 2019
- Semester 2
  – apply by 1 May 2020

2

COMPLETE THE APPLICATION FORM

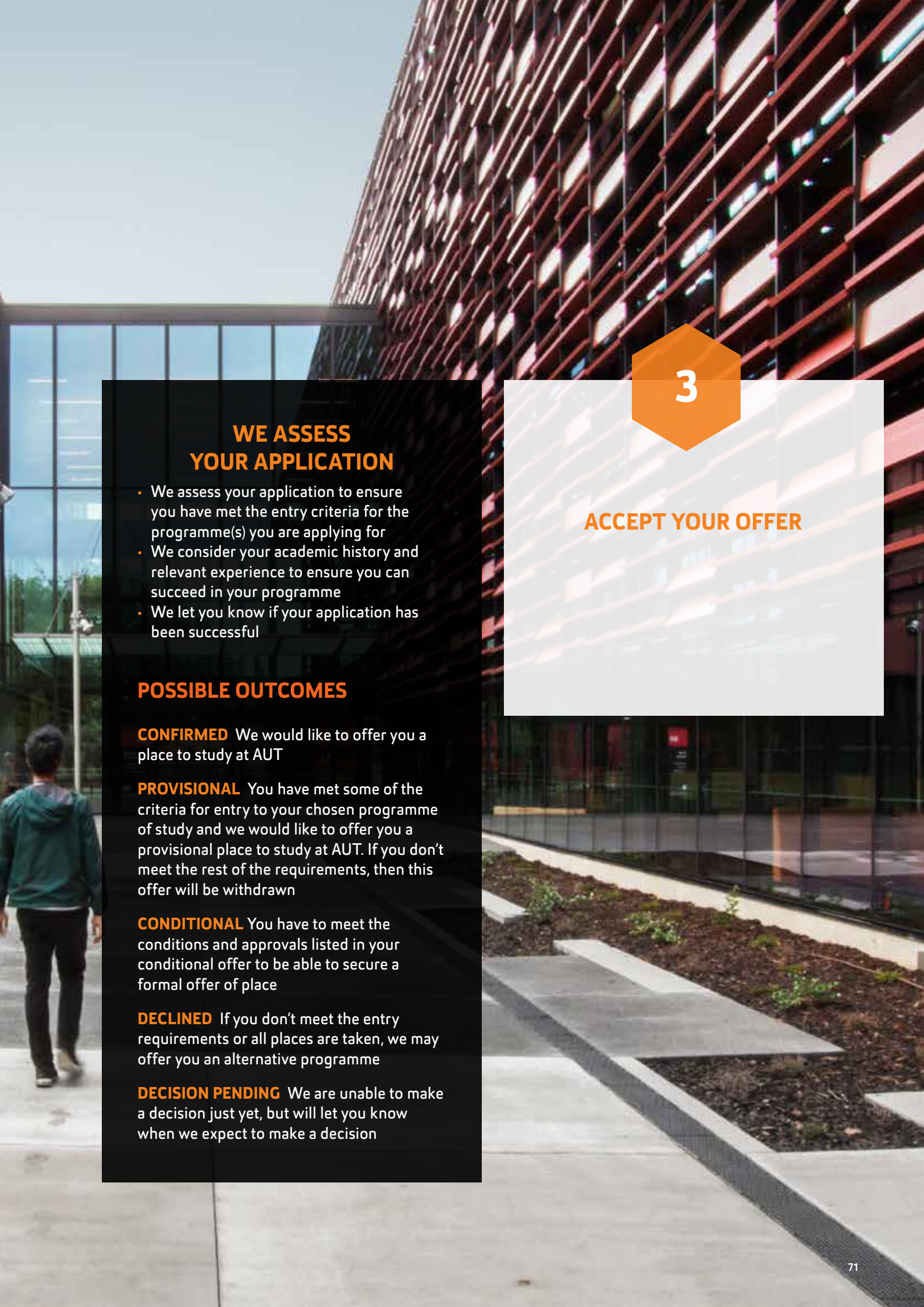
- Apply online
- Indicate your programme(s) of choice and major (if known)

International students can also apply using an AUT approved international agent. For a list of AUT registered agents visit **www.aut.ac.nz/international-agents**

SUBMIT YOUR APPLICATION

WE ACKNOWLEDGE YOUR APPLICATION

- We will send you an acknowledgment email, which explains how to check the status of your application
- We will contact you if we need more information



WE ASSESS YOUR APPLICATION

- We assess your application to ensure you have met the entry criteria for the programme(s) you are applying for
- We consider your academic history and relevant experience to ensure you can succeed in your programme
- We let you know if your application has been successful

POSSIBLE OUTCOMES

CONFIRMED We would like to offer you a place to study at AUT

PROVISIONAL You have met some of the criteria for entry to your chosen programme of study and we would like to offer you a provisional place to study at AUT. If you don't meet the rest of the requirements, then this offer will be withdrawn

CONDITIONAL You have to meet the conditions and approvals listed in your conditional offer to be able to secure a formal offer of place

DECLINED If you don't meet the entry requirements or all places are taken, we may offer you an alternative programme

DECISION PENDING We are unable to make a decision just yet, but will let you know when we expect to make a decision

3

ACCEPT YOUR OFFER

University admission to AUT bachelor's degrees

For New Zealand citizens and residents and international students studying in a high school in New Zealand

To gain admission to bachelor's degrees, you must have met the requirements for University Entrance plus any specified admission requirements for a programme, such as specific subjects, portfolios and interviews.

For more information on entry requirements, including entry requirements for international students, refer to the AUT Calendar or visit www.aut.ac.nz/calendar

Please note: AUT, like all other New Zealand universities, is required to manage enrolments. This is because of government policies that restrict the number of funded places available for domestic students in tertiary education.

Admission categories
You may be granted University Entrance under one of the following categories:

- NCEA University Entrance
- Ad Eundem Statum admission (at an equivalent level) – this includes Cambridge International Examinations (CIE) and International Baccalaureate Diploma Programme (IB)
- Discretionary Entrance
- Special Admission

Common University Entrance requirements

STANDARD	NCEA	CIE	IB [2]
Overall	Require **NCEA level 3** certificate which consists of 80 credits, including at least 60 credits at level 3 or higher. Can include up to 20 credits at level 2. **Note:** Credits to achieve NCEA level 3 may include unit standards from non-approved subjects. **Subject credits** Total of 42 level 3 credits including: • 14 credits from one approved subject • 14 credits from a second approved subject • 14 credits from a third approved subject	A minimum of 120 points on the UCAS Tariff [1] at A or AS level from an approved list (equivalent to NCEA approved subject list). Must include at least three subjects (excluding Thinking Skills) with grades D or above.	IB Diploma with minimum 24 points
Numeracy	At least 10 level 1 (or higher) numeracy credits (can be achieved through a range of subjects)	A minimum grade of D in IGCSE [3] mathematics or any mathematics subject at AS or A level.	Any mathematics subject – IB Group 5
Literacy	Total of 10 level 2 (or higher) literacy credits including: • 5 reading credits • 5 writing credits From specific standards in a range of NZQA English language rich subjects.	A minimum grade of E in English Language and/or English Literature subject at AS or A level.	Literature or language and literature (SL or HL) – IB Group 1, with English as the language.

1. UCAS (Universities and Colleges Admissions Services for the UK) Tariff = system which converts AS and A level grades into points.
2. New Zealand residents who have taken IB but have not been awarded the Diploma may apply for discretionary entrance.
3. IGCSE = International General Certificate of Secondary Education.

Where programmes require a specific subject, it is expected that a student will have achieved a minimum of 14 credits in that subject (unless indicated otherwise).

NCEA approved subjects

For a list of NCEA approved subjects for University Entrance visit the NZQA website, www.nzqa.govt.nz

AUT language rich subject list

Art History, Business Studies, Classical Studies, Drama, Economics, English, Geography, Health Education, History, Media Studies, Physical Education, Social Studies, Te Reo Māori, Te Reo Rangatira.

Alternative pathways into AUT bachelor's degrees

Students who have just missed University Entrance or did not get into their chosen degree could consider enrolling in one of the foundation studies certificates offered at AUT. Please visit www.aut.ac.nz/universityentrance

Discretionary Entrance

Discretionary Entrance is available to applicants who have attained a high level of achievement in Year 12 and want to undertake university study.

International students can't apply for Discretionary Entrance.

You can apply if you:

- Have not completed Year 13 in a New Zealand secondary school or have done Year 13 but not attempted to gain University Entrance
- Have not otherwise qualified for admission (or have attempted University Entrance)
- Are a domestic student (New Zealand or Australian citizen or permanent resident). If Australian, your most recent schooling must have been in New Zealand
- Are under 20 years of age on the first day of the semester in which you begin study and meet other requirements of the programme for which you apply

People who missed University Entrance in Year 13 may be considered for mid-year admission in the following year.

You can't apply for admission for Semester 1 if you studied in Year 13 after 1 June. However, you can apply for admission into Semester 2.

Minimum academic criteria for Discretionary Entrance

- NCEA level 2 certificate endorsed with minimum of Merit or CIE/IB equivalent
- Minimum of 14 credits in each of four NCEA level 2 (or higher) subjects, at least three of which must be on the approved subject list
- Meet UE literacy and numeracy standards, or their equivalent.

The application is a two-step process. First, you indicate you want to apply through Discretionary Entrance on the standard application form. If you meet the criteria you are sent a second form in which you provide further information and a school recommendation.

The recommendation will provide proof of your maturity, motivation, capability and readiness to undertake degree-level study and also verify that you were not enrolled in Year 13 beyond 1 June in the year prior to admission. Please refer to the AUT Calendar or visit **www.aut.ac.nz/calendar**

Please note: Applicants are considered on a case-by-case basis and must also meet other selection criteria for the programme for which they have applied. There is a non-refundable assessment fee of $50.00.

Admission at equivalent level (Ad Eundem Statum)

An applicant will be considered for Ad Eundem Statum admission if they:

- Have successfully gained University Entrance through CIE or IB or an approved qualification from a New Zealand secondary school of special character
- Have successfully completed a recognised foundation programme or other recognised tertiary qualification/ study of at least 120 points at level 3, or at least 60 points at level 4 in one course of study and have completed Year 13 at a NZ secondary school, or equivalent.
- Have qualifications from an overseas secondary school or tertiary institution deemed by AUT to be sufficient for entry into an undergraduate degree programme.

Please note: Applicants will be required to supply an official academic transcript with their application.

Bursary

If you sat Bursary (prior to 2004) rather than NCEA please refer to the AUT Calendar or visit **www.aut.ac.nz/calendar**

Special Admission

New Zealand citizens or residents who are over 20 years of age on or before the first day of semester can apply for degree-level entry through Special Admission.

English language requirements

If you don't have English as your first language, you may have to show evidence of your English language skills.

International students studying at secondary school and applying for University Entrance must achieve UE Literacy through New Zealand secondary school qualifications NCEA, CIE or IB. IELTS can't be substituted.

In all other cases another form of English language testing is required. Minimum IELTS requirements for each programme are included on the relevant pages in this publication. For other recognised English tests and more information, visit **www.aut.ac.nz/englishrequirements**

International students

Contact us for information regarding studying at AUT if you're not a citizen or permanent resident of New Zealand or Australia, or a citizen of the Cook Islands, Niue or Tokelau islands.

Visit **www.aut.ac.nz** for entry requirements for specific countries.

Email: **internationalstudy@aut.ac.nz**

Fees & scholarships

Cost is an important factor when thinking about university study. This page gives you an idea of the approximate tuition fees at AUT, and different options to help you fund your education including scholarships, student loans and allowances.

To give you an idea of approximate costs, the 2019 tuition fees are shown below (based on full-time study and completing 120 points per year). All fees are in NZ dollars and include GST. The 2020 tuition fees will be advertised on **www.aut.ac.nz/fees** as soon as they have been set.

Domestic student tuition fees

First-time domestic students are entitled to one year of fees free.

Undergraduate programmes

Fee (per year)	**Approximately $3,299.00-$6,783.00**[1, 2]

Bachelor of Engineering (Honours)

Fee (per year)	**Approximately $6,580.00-$8,540.00**[1]

1. Part-time students pay a proportion of the fee based on the number of academic points they are studying.
2. This fees range includes 60-point (one-semester) programmes.

International student tuition fees

Undergraduate programmes

Fee (per year)	**Approximately $17,160.00-$39,600.00**[1]

Bachelor of Engineering (Honours)

Fee (per year)	**Approximately $39,600.00**

1. This fees range includes 60-point (one-semester) programmes.

Other fees you may have to pay:

- 2019 Compulsory Student Services Fee – $646.00 for 120 points or $5.38 per academic point
- 2019 Building Levy – $71.00 for 120 points or $0.59 per academic point
- Additional fees for course materials or elective papers (check with your faculty if there are additional fees for your programme)

Please note that you have to pay your fees in full by the date specified on your fees invoice.

To find out more about fees call **+64 9 921 9779** or the AUT Student Hub on **0800 AUT UNI** (0800 288 864).

Free fees for your university study

Eligible domestic students starting tertiary education receive one year of full-time study fees-free[1].

To check if you're eligible for fees-free study in 2020 visit **www.aut.ac.nz/fees**

1. Domestic students only, not available to international students.

Scholarships and awards

Scholarships and awards are a great way to fund your university study. There is a wide range of scholarships and awards available to AUT students at all stages of their study. Visit the scholarships website for a current list of scholarships offered by AUT and external funders, as well as application forms and closing dates. You can also contact AUT's Scholarships Office for advice on scholarships, awards and the scholarship application process.

To find out more call **+64 9 921 9837** or visit **www.aut.ac.nz/scholarships**

Support for scholarship students

Undergraduate scholarship students – whether the scholarship was awarded for academic endeavour or for excellence in sports, culture or leadership – have access to an extensive programme of support, including professional development and networking opportunities, and one-on-one support.

Student loans and allowances[1]

If you are a full-time domestic student, you may qualify for a student loan or allowance. Student loans and allowances are administered and paid by StudyLink. The application process can take some time, so it's a good idea to apply early. You can apply for a student loan or student allowance before your enrolment at AUT is complete.

To find out more call **0800 88 99 00** or visit **www.studylink.govt.nz**

1. For domestic students only

Help with planning and budgeting

We know that sometimes things happen and financial stress can impact your academic success. That's why we offer financial support that ranges from offering grocery or fuel vouchers, to helping with that unexpected bill.

StudyLink Sussed website

Visit **www.studylink.govt.nz** for tools, tips and information to help you plan and understand the costs you will have while studying.

Find out more

AUT Open Day

Our Open Day at the City Campus will showcase everything AUT has to offer to help you make an educated decision about university study. To find out more visit **www.aut.ac.nz/live**

Visit our website

For the latest information on AUT programmes and to keep up-to-date with what's happening at AUT visit **www.aut.ac.nz**

Contact us online

If you have any questions about studying at AUT, you can contact us at **www.aut.ac.nz/enquire**

Secondary schools

If you are a secondary school teacher or career advisor, our Future Students Team can help you with any questions you may have. Contact the team on **+64 9 921 9239.**

Connect with us

AUT has a range of social media channels to keep our students and the general public aware of what is going on around the university.

Connect with us now:

@autuni #autuni

Drop in and see us

AUT Student Hub

City Campus
Level 2, ground entry, WA building, 55 Wellesley Street East, Auckland

North Campus
AS building, 90 Akoranga Drive, Northcote, Auckland

South Campus
MB building, 640 Great South Road, Manukau, Auckland

Campus tours

If you want to check out the campus and facilities, contact us and we will arrange a campus tour for you and your family. Call **0800 AUT UNI** (0800 288 864) for more information.

To take a virtual tour of our campuses visit **www.aut.ac.nz/virtualtour**

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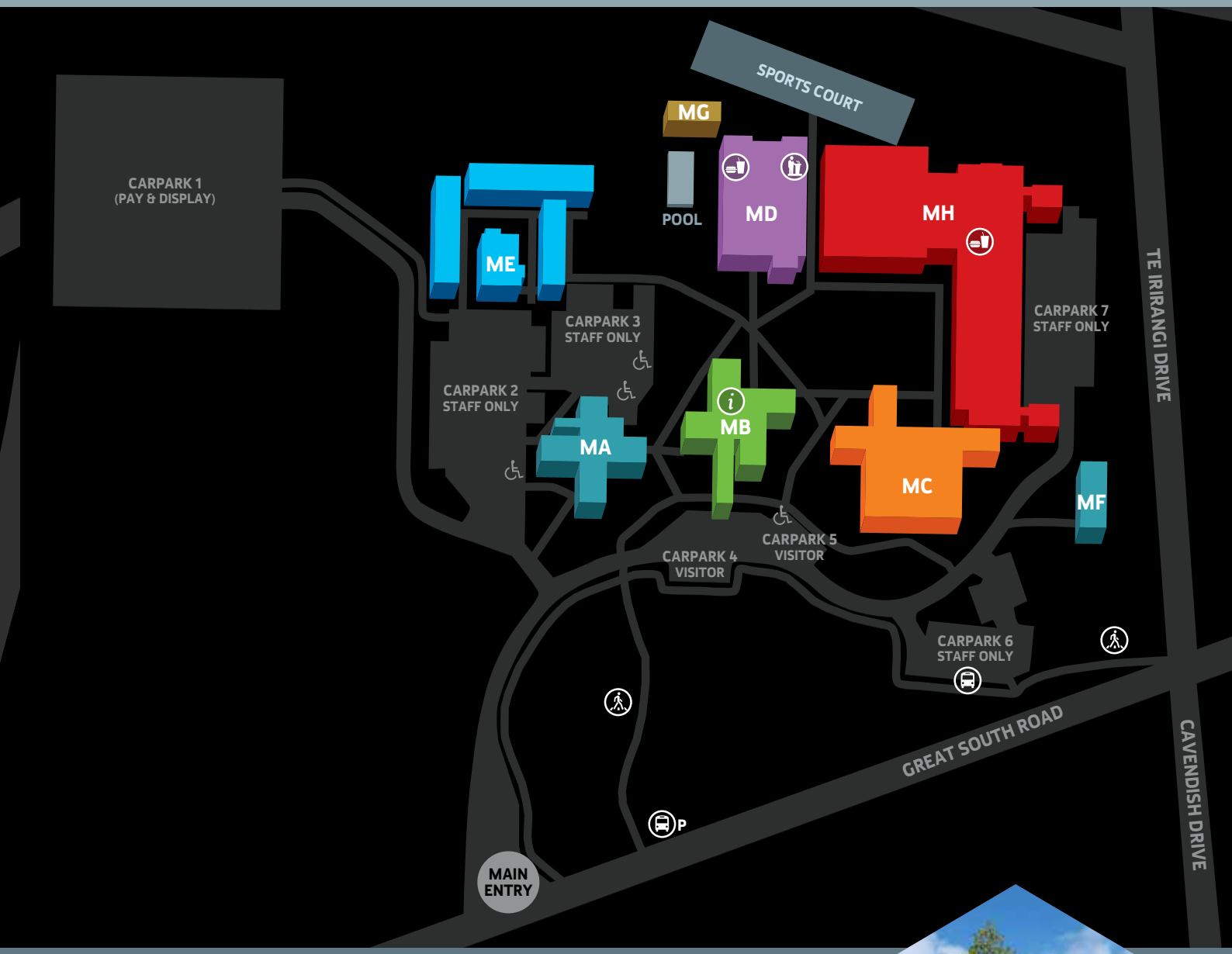
Campus maps

Key

- AUT Student Hub
- Café
- Conference facility
- Intercampus shuttle bus stop
- Mobility parks
- Student lounge
- Gym
- Library
- Creche
- Breastfeeding and baby change room

City Campus

55 Wellesley Street East
Auckland Central



Key

- AUT Student Hub
- Café
- Conference facility
- Pedestrian access
- Intercampus shuttle bus stop
- P Public bus stop
- Mobility parks

South Campus

640 Great South Road
Manukau, Auckland

ENGINEERING, COMPUTER & MATHEMATICAL SCIENCES

UNDERGRADUATE PROGRAMME GUIDE 2020

AUT

0800 AUT UNI (0800 288 864)
Auckland University of Technology
Auckland, New Zealand
www.aut.ac.nz

Enquire now
www.aut.ac.nz/enquire

CITY CAMPUS
55 Wellesley Street East, Auckland Central

NORTH CAMPUS
90 Akoranga Drive, Northcote, Auckland

SOUTH CAMPUS
640 Great South Road, Manukau, Auckland

Connect with us now:

@autuni #autuni

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