ENGINEERING, COMPUTER & MATHEMATICAL SCIENCES

UNDERGRADUATE PROGRAMME GUIDE 2018

AUT

89%

AUT graduates have work experience where they apply their learnings

5
OUT OF **5**

EMPLOYABILITY
QS STARS 2017

TOP 3%
UNIVERSITIES WORLDWIDE

Computer Science & Information Systems **TOP 300**
Electrical and Electronic Engineering **TOP 400**

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

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

Image on page 74–75 by Simon Devitt Photographer.

Cover: 89% work experience (AUT Annual Report 2016), 5 out of 5 (QS Stars University Rating 2017), Top 3% (Universities New Zealand website www.universitiesnz.ac.nz)

International students should visit **www.aut.ac.nz/international** for entry requirements and detailed fee information.

Disclaimer: Although every reasonable effort is made to ensure accuracy, the information in this document is provided as a general guide only for students and is subject to change. All students enrolling at AUT should consult its official document, the AUT Calendar, which is available online at **www.aut.ac.nz/calendar**, to ensure that they are aware of, and comply with, all regulations, requirements and policies.

The information contained in this programme guide was correct at the time of print, May 2017.

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

Colab: Creative Technologies
Marautanga Matatini

FACULTY OF HEALTH AND ENVIRONMENTAL SCIENCES
TE ARA HAUORA A PŪTAIAO

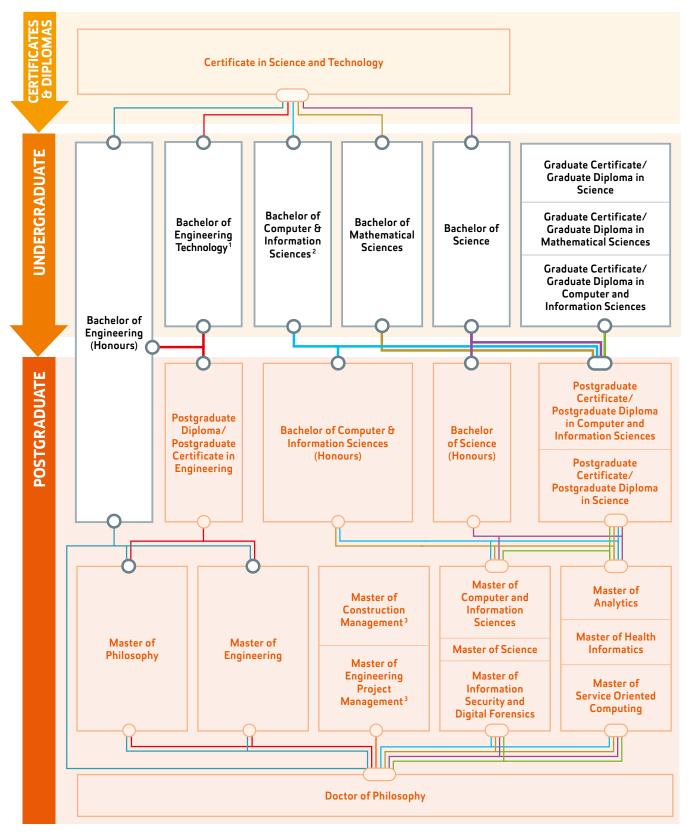**School of Clinical Sciences**
Te Kura Mātai Haumanu

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 Whakamahi Pūtaiao

School of Sport and Recreation
Te Kura Hākinakina

TE ARA POUTAMA
FACULTY OF MĀORI AND INDIGENOUS DEVELOPMENT

Qualifications and study pathways

CERTIFICATES & DIPLOMAS

Certificate in Science and Technology

UNDERGRADUATE

Bachelor of Engineering (Honours)

Bachelor of Engineering Technology [1]

Bachelor of Computer & Information Sciences [2]

Bachelor of Mathematical Sciences

Bachelor of Science

Graduate Certificate/ Graduate Diploma in Science

Graduate Certificate/ Graduate Diploma in Mathematical Sciences

Graduate Certificate/ Graduate Diploma in Computer and Information Sciences

POSTGRADUATE

Postgraduate Diploma/ Postgraduate Certificate in Engineering

Bachelor of Computer & Information Sciences (Honours)

Bachelor of Science (Honours)

Postgraduate Certificate/ Postgraduate Diploma in Computer and Information Sciences

Postgraduate Certificate/ Postgraduate Diploma in Science

Master of Philosophy

Master of Engineering

Master of Construction Management [3]

Master of Engineering Project Management [3]

Master of Computer and Information Sciences

Master of Science

Master of Information Security and Digital Forensics

Master of Analytics

Master of Health Informatics

Master of Service Oriented Computing

Doctor of Philosophy

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, contact the AUT Student Hub on 0800 AUT UNI (0800 288 864) or visit **www.aut.ac.nz/ecms**

Why study engineering, computer & mathematical sciences?

Internationally recognised and accredited degrees

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** AUT is New Zealand's fastest-growing university
3 Scanning Electron Microscope (SEM) at AUT

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 300 universities in the world for Computer Science and Information Systems and in the top 400 for Electrical and Electronic Engineering and our engineering degrees are professionally accredited and internationally benchmarked[1]. IPENZ (Institution of Professional Engineers NZ) 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 IPENZ. They are expected to be accredited in time.

University life

As an AUT student you study at a modern and innovative university, and have the chance to meet new people and develop lifelong skills, while getting the support you need to succeed at university and beyond.

At AUT, we celebrate diversity. Our students come from 140 different countries, and we're proud to be the only university that has the Rainbow Tick. Join us, and you'll quickly learn how inclusive and caring our community is.

We offer some of the most comprehensive student support services in New Zealand, including:

- Orientation for all new students
- Student Hub – with dedicated advisors to help with any issue
- Accommodation on campus
- AuSM – AUT student association and clubs
- International student support
- Sport and fitness centres – supporting everyone from elite athletes to social sports teams
- Childcare centres
- Māori student support
- Pacific student support
- Chinese-speaking student support
- Disability student support and resources
- Employability and Careers Hub
- Health, Counselling and Wellbeing centres
- IT support and computer labs
- Library and student learning services
- Rainbow community network and resources
- Student financial services and scholarships office

To find out more about what it's like to study at AUT visit www.aut.ac.nz

Luke Butters

Student, Bachelor of Engineering (Honours) in Electrical and Electronic Engineering

"I would absolutely recommend going on a student exchange! I'm currently studying at Clarkson University in New York State, a 30-minute drive to Canada. This is an amazing opportunity to not only 'fly the coop' to independence, but get the full US college lifestyle experience. I live on campus with my fellow students, and walk two minutes to classes. Everyone is heavily involved in clubs, sports, fraternities/sororities and other activities. I've made some of the strongest relationships in my life with other exchange students from all over the world, along with local Americans. Some particularly cool things here are going skiing in winter and hiking/camping in the spring in the Adirondack Mountains."

Helping you succeed

Our library and learning support team offers a wide range of services and resources, including access to an extensive collection of print and online databases, as well as workshops to help you get a head start on your studies. Drop in any time, we're happy to help any way we can.

Study overseas as part of your degree

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, and immerse yourself in another culture, make lifelong friends and get international experience before you graduate.

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. Be recognised for your 'C skills' – collaboration, co-operation, community, curiosity, communication and creativity – by completing the AUT Edge Award.

Easy to get help

The AUT Student Hub is the place to go for help. Located on each campus, the Student Hub provides a range of services, from academic or personal advice to questions about fees and support for our diverse student communities.

Support for first-year students

Studying at university can be quite an adjustment. That's why AUT is proactive in helping you transition to university life. From Orientation to our peer mentoring programme where senior students share their experience with you, our student support services make a huge difference to life as a first-year student.

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 NZ, Canada and the USA – including Facebook, Paramount Recording Studios, the Sundance Institute, Oxfam, the Metropolitan Museum 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.

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

Robert Lam
Response Engineer, Spark Digital
Bachelor of Computer and Information Sciences in IT Service Science & Networks and Security

"One of the main highlights of my time at AUT was getting a job at Datacom by attending the ICT and Engineering Careers Fair where students can meet potential employers. I never thought it would be so easy to get into the workplace while studying. I worked at Datacom while completing my last AUT papers, and was responsible for providing technical support to large corporate and enterprise customers. There were always new and different things to learn. I completed my AUT degree last year and have since obtained a new role at Spark Digital."

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 Careers 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 Ltd
- 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

Varsha Pai
Junior Software Developer, ANZ
3rd–year student, Bachelor of Engineering Technology in Computer and Mobile Systems Engineering

"In addition to my studies, I'm working as a software developer in ANZ's app development team. ANZ came in to present some of their apps to AUT students and talk about the opportunity to join their team as a junior software developer. By the end of the meeting, I knew I wanted the role. The interview process was an app challenge – we had to follow certain guidelines and create an app that acts as a timetable for students. I look forward to applying all the skills I'm learning at work into my projects. The flexibility and practical education AUT offers is something I'm grateful for."

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:	26 Feb & 16 July 2018[2]

Vincent Duxfield-Smith
4th-year student, Bachelor of Engineering (Honours) in Maritime Engineering

"What I love about maritime engineering is that you work on engineering projects in such an interesting environment – the ocean. And the size of the projects you could be involved in is huge. You could work in coastal engineering, and design harbours, ports or erosion protection like sea walls. There also many opportunities in offshore oil and gas engineering, working on the design, construction, installation and operation of the facilities. There's also a huge investment in renewable energy like off-shore wind farms, tidal turbines and other ways of energy generation. In your final two years of study you can really specialise in maritime engineering. At AMC, we have access to some amazing facilities, including the maritime simulation centre, towing tanks, a cavitation tunnel, and a model test basin with a wave-maker that can produce different types of waves. It's great preparation for my future career."

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 the Institution of Professional Engineers New Zealand (IPENZ[3]), and prepares you for IPENZ 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. Our strong industry partnerships with companies like Fisher & Paykel, Beca, Opus, Spark and Contact Energy help you gain valuable workplace experience as part of your study.

Entry requirements

Minimum entry requirements
- University Entrance or equivalent, including Calculus and Physics.
- For applicants with CIE, one of these subjects may be at AS Level.
- **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.

Selection criteria
Interview may be required

Preferred 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 IPENZ, 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

Brody Radford
Research Officer, High Performance Computing Research Laboratory Bachelor of Engineering (Honours) in Electrical and Electronic Engineering

"Being able to work on one of the world's next great science projects is what I love most about my work at the High Performance Computing Research Laboratory, AUT's hub for high performance computing projects. The Square Kilometre Array presents a fantastic opportunity to be part of something that could change the world for the better by changing how we see the universe and our place in it. The Square Kilometre Array is the largest scientific instrument currently in development, with a global team of 400 working to bring the system together. I enjoy using my programming and maths skills to develop computational models of the algorithms that will power the 'Central Signal Processor', a supercomputer that will swallow more than ten times the data moving across the entire internet every day."

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 Dynamics	Architectural Systems
	Structural Engineering Design	Geomechanics
	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. General electives can be any paper from any AUT programme

Marwa Saad
3rd-year student, Bachelor of Engineering (Honours) in Architectural Engineering

"I've always been interested in how things work around the house and how they are put together, therefore engineering was a passion of mine. Doing a CREativity in Science and Technology (CREST) project in my final year of high school reassured me that I was on the right path. I initially applied for mechanical engineering, but once I heard of architectural engineering I was eager to apply. Taking that leap was probably the best decision I've made in my life so far. Architectural engineering is so much more than what I had expected and I'm thoroughly enjoying it. I now have a new perspective on how everyday structures around us work. After I graduate, I'm planning to gain some industry experience before returning to complete a PhD in sustainable structures for the future."

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	Construction Integration Project (30 points)	
	Structural Engineering Design	Structural Dynamics
	Off-site Construction	Construction Equipment and Utilisation
	Foundation Engineering	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. General electives can be any paper from any AUT programme

April Faitua
3rd-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. AUT has so many support services for students. Whether it's to do with academic, financial, health or social issues, AUT always has a professional ready to help you."

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
	Introduction to Microcontrollers	Engineering Management I
	Electronics	Signals and Systems
	Circuit Theory	Fields and Waves
3 120 points	Electronics Project	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.

Craig Conner
4th-year student, Bachelor of Engineering (Honours) in Electrical and Electronic Engineering

"My dream job would be to work for a small, tech-savvy company. I'd like to use my engineering skills to build the projects of the future for the New Zealand economy. I had been working in the industry, but decided I wanted to take my career further and be technically proficient in a subject I love. As a mature student, I was wondering if I would have trouble fitting in and keeping up. But the supportive AUT staff and the positive learning experience confirmed returning to study was the right decision. I have absolutely no regrets."

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.

Bryden Reay
Marine Engineering Officer, Royal New Zealand Navy
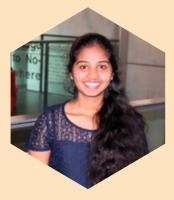**Bachelor of Engineering (Honours) in Maritime Engineering**

"The maritime engineering degree is great for those who have a passion for design work and are interested in an engineering career within the maritime industry, either in New Zealand or abroad. AUT was the first New Zealand university to offer a maritime engineering degree, and for me it also stood out for its focus on creating career-ready graduates. The learning environment is what I've enjoyed most. The AUT lecturers are approachable, and students work together and understand that collaborating will yield much better results than trying to be a one person team. I think that's a great strength to have when you head out into the industry."

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, 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.

Riya Koshy
3rd–year student, Bachelor of Engineering (Honours) in Mechanical Engineering

"AUT has such a friendly and welcoming environment – the diversity and inclusive nature are what set it apart from other universities. I also love that AUT is always adapting to keep up with the changing world. I always enjoyed mathematics at school, and was interested in how things worked. Engineering fits that well. As I learn how or why certain things – sometimes very simple everyday things – work, I gain a new sense of appreciation for them. It's so valuable when you realise how much engineering affects everything around us. I'd definitely recommend this programme, especially to women. It would be great to see more female faces taking up mechanical engineering!"

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	Software Construction	Instrumentation and Control Systems
	Embedded Digital Systems	Software Team Project
	Computer Aided Engineering and Analysis	Minor paper 3[1]
	Minor paper 2[1]	Fluids and Thermodynamics
4 120 points	Industrial Project (30 points)	
	Advanced Control Systems	Engineering Management II
	User Interface Design	Embedded Software Engineering
	Minor paper 4[1]	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.** A minor may be taken with the approval of the programme leader (depending on your selected minor).

Amritpal (Amrit) Kaur
2nd-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 horizon and enable you to see the opportunities. I really enjoy group assignments as they allow me to think creatively and come up with a solution to existing problems. Team assignments give everyone the opportunity to thrive and learn from each other's experiences. It's great preparation for your career because as an engineer you constantly work in a team."

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	Logical Database Design
	Data and Process Modelling	Software Construction
	Object Oriented Programming	Minor paper 1[1]
	Data Structures and Algorithms	Operating Systems
3 120 points	Software Team Project	Engineering Management I
	IT Service Provision	Highly Secure Systems
	Software Engineering	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
	User Interface Design	SECMS level 8 paper[2]
	Minor paper 4[1]	SECMS level 8 paper[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** 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 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. You also explore architectural design and sustainability, building information management (BIM) systems and engineering management.

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.

KEY FEATURES:

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

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

Bachelor of Engineering (Honours)
Architectural Engineering
continued

Workplace experience

Your individual industry project in Year 4 is your opportunity to gain real-life industrial experience in an architectural engineering environment, under the guidance of an experienced supervisor. You apply your knowledge of architectural and construction processes, architectural management techniques, building research applications and design on a project for organisations like Fletcher Building, Hawkins, Naylor Love Ltd, Auckland Council, Beca or Jasmax.

AUT encourages early application. Places are limited.

Durgeshni Chandra
3rd-year student, Bachelor of Engineering (Honours) in Architectural Engineering

"I've always had a keen interest in all types of engineering. Civil engineering particularly caught my attention, but I was more interested in the design aspects of civil engineering than the construction aspects. 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.

"There's more interaction in the AUT classes, and as a talkative person I like this interaction between the students and the lecturers. We also have a decent amount of group work in most of our papers. This has helped me develop my teamwork skills; vital skills all engineers must have.

"AUT's campuses are amazing. I feel that students need to have a positive environment to stimulate learning and keep them engaged. All of AUT's new buildings and facilities were created with students in mind. AUT also has a lot of support facilities on campus, whether it's for supporting students with study, social or health issues. The lecturers are very friendly and helpful, and will happily help if you're ever struggling. Peer mentors are also at hand, and they're easy to approach because they're students too."

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**

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 and Auckland Council.

AUT encourages early application. Places are limited.

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

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

Bachelor of Engineering (Honours)
Electrical and Electronic Engineering

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

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, circuit theory, and fields and waves.

Year 3

This year focuses on advanced topics including power engineering, electronics, embedded digital systems, control engineering and telecommunications. 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 can 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, Telecom 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 and questions 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**

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 design of our subsea pipelines. I like the variety of my role."

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 team.

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 user interface design.

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 operating systems, engineering management and 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
Campus:	City & South
Starts:	26 Feb & 16 July 2018

Jonathan Spraggs
Graduate Electrical Engineer,
Mott MacDonald
Bachelor of Engineering Technology
in Electrical Engineering

"I'm part of the team working on the electrical design of the four new City Rail Link stations. It's thrilling to be part of Auckland's regeneration. It's such exciting work, designing and then seeing designs play out into construction. I help with everything from the schematics and 3D modelling, to pedestrian modelling for the fire engineer, and the management of the project, including the invoicing. The skills I learned at AUT have helped out with more than just the electrical side of things. For example, I use 3D SolidWorks type software daily, and being able to pick it up in the workplace so much faster has really helped. Learning a wide range of subjects was beneficial too, as in my job we cross over with other disciplines."

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 the Institution of Professional Engineers New Zealand (IPENZ) and prepares you for Technical Membership of IPENZ (TIPENZ). 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
- Any level 3 subject from Calculus, Mathematics, Statistics. Physics at level 2 or above

Selection criteria
Interview may be required

Preferred 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
- Network and Communication 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.

National and international recognition through IPENZ accreditation – Sydney Accord

Johan Rickus
Ngāti Raukawa
Air Force Engineer, Royal New Zealand Air Force
Bachelor of Engineering Technology
in Mechanical Engineering

"I really enjoyed a lot during my time here at AUT. Being able to work on engineering projects was a highlight for me. In my second year, for example, a group of us helped design an Agua pallet to easily store and transport water in various scenarios, including disaster zones and the Pacific islands. We brainstormed and then designed CAD models of the pallet, taking into account the effects different scenarios could have on the pallet's product lifecycle. In our final year, we also got to design our own concrete mixer with detailed shaft design, drum diameter calculations and motor selection. I loved meeting people who have similar goals to me, and I also appreciated the engineering staff."

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

Building Engineering

YEAR	SEMESTER 1	SEMESTER 2
1 120 points	Introduction to Engineering Design	Construction Design and Implementation
	Engineering Mathematics	Engineering Mathematics I
	Statics	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	Dynamics I
	Engineering Mathematics	Introduction to Thermofluids and Energy
	Statics	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	Mechanics – Dynamics II
	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:** 30 points, including at least 15 points at level 7 from Engineering Mathematics II (level 6), Illumination Engineering (level 6), Strength of Materials I (level 6), Advanced Thermodynamics, Mechanical Design, Control Engineering, Asset and Facilities Management II and Building Energy Management.

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	Software Development Practice
	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, Digital Devices and Systems (level 5), Embedded Digital Systems, Engineering Mathematics II, Game Programming, Highly Secure Systems, Introduction to Microcontrollers, Logical Database Design and Linux Based Computing, Telecommunications Technologies.

Electrical Engineering

YEAR	SEMESTER 1	SEMESTER 2
1 **120** points	Engineering Mathematics	Analogue Electronics
	Electrical Engineering Principles	Elements of Power Engineering
	Introduction to Engineering Design	Personal Computer Engineering and Applications
	Digital Devices and Systems	Introduction to Engineering Programming
2 **120** points	Engineering Mathematics I	Elective [1]
	Electrical Machines	Project
	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
	Introduction to Microcontrollers	Engineering Management II
	Elective [1]	Elective [1]

360 points total

All papers are 15 points unless indicated otherwise.
1. **Year 2 & 3 electives:** Circuit Theory, Engineering Mathematics II, Illumination Engineering, Instrumentation and Control Systems, PLC Applications A (level 5), 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	Elements of Power Engineering
2 120 points	Engineering Mathematics I	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:** Circuit Theory, Electrical Building Services, Engineering Mathematics II, Instrumentation and Control Systems, PLC Applications A (level 5), PLC Applications B, PC Technical Skills, Power Electronic Systems, Power Electronics.

Mechanical Engineering

YEAR	SEMESTER 1	SEMESTER 2
1 120 points	Engineering Mathematics	Engineering Materials I
	Introduction to Engineering Design	Dynamics I
	Electrical Engineering Principles	Introduction to Thermofluids and Energy
	Statics	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, Control Engineering, Engineering Mathematics II, Mechanical Design, Strength of Materials II, Operations Management for Manufacturing, Product Design.

Network and Communication Engineering

YEAR	SEMESTER 1	SEMESTER 2
1 120 points	Engineering Mathematics	Analogue Electronics
	Electrical Engineering Principles	Introduction to Engineering Programming
	Introduction to Engineering Design	Computer Network Principles
	Digital Devices and Systems	Personal Computer Engineering and Applications
2 120 points	Engineering Mathematics I	Telecommunication Network Services
	Telecommunications Technology Principles	Network and Service Administration
	Computer Network Applications	Engineering Management I
	Elective[1]	Elective[1]
3 120 points	Network Design (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:** Advanced Network Technologies, Computer Architecture, Embedded Digital Systems, Engineering Mathematics II, Introduction to Microcontrollers, IT Service, Linux Based Computing, Network and Service Administration, Network Security, Radio Frequency Principles.

Kiap Bomm
2nd-year student, Bachelor of Engineering Technology in Network and Communication Engineering

"I've always been curious about how information – especially audio, video and data – is sent and received accurately, securely and on time. My degree gives me a better understanding of how our world is inter-connected, enabling modernisation and making life easier through advanced technology. After my study, I would like to become a network engineer or radio-frequency engineer working in my home country Papua New Guinea. The highlight for me so far has been the Engineers Without Borders project I participated in with my classmates. Our team of six created a solar panel as an alternative energy source to supply power to a refugee camp."

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

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**

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.

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

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

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, data structures, algorithms design and analysis. This year also introduces you to management and project management skills. You also complete a compulsory practical project, writing software for mobile communication applications, microcontrollers, and designing operating systems.
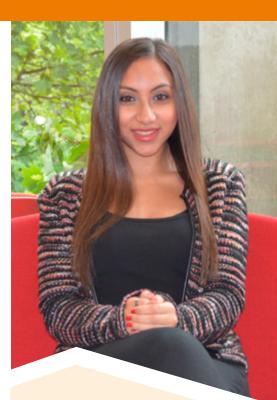
Year 3

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.

Madona Bekhit
Discover Graduate, Vodafone
New Zealand
Master of Engineering
Bachelor of Engineering Technology in Computer and Mobile Systems Engineering

"I had always been drawn to computers, ever since dial-up internet existed. When mobile and tablet apps came out, I knew I wanted to study how to make cool things like that. That's why I chose the Computer and Mobile Systems Engineering major.

"I loved the workplace experience that is part of your studies. For my final-year project, a classmate and I worked on a spinal sensor app, which could project a person's spinal movements in 3D motion by using wearable sensor technology. We spent a year developing the software, and the app is still being used by AUT's physiotherapy department.

"After completing my Master of Engineering last year, I'm now part of Vodafone's sought-after graduate programme. Through this two-year graduate programme, I get to rotate around the different departments within the broad range of tech teams at Vodafone. I get to try out different roles within the tech areas and gain insight into the different departments.

"I'm sure that this will lead me on the path of my dream career in IT project management and business analyst roles. I've always been passionate about technology and working in the telecommunications industry has proven to be challenging, yet very rewarding."

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

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, including the use of electrical circuits, digital signal processors, microcontrollers, building services and control. 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.

Mike Matson
Electrical Engineer, Beca
Bachelor of Engineering Technology in Electrical Engineering

"I was particularly impressed with AUT's extensive hands-on engineering labs and workshops. I also found the engineering administration staff and lecturers very approachable and keen to share their knowledge. At graduation time it was very hard to leave AUT. At Beca, there's such a wide range of projects I'm involved with and each one is very different – from shopping malls, hospitals and manufacturing plants, to emergency generator systems and network centres. I get great satisfaction from consulting with a client to come up with a design they're happy with, then developing that design and overseeing its implementation."

Employer comment

"Mike brings a strong technical ability to our electrical engineering team. His AUT degree has clearly helped to establish strong engineering fundamentals which have meant that Mike is able to pick up complex problems quickly and can be involved in a wider range of projects. Markets within the engineering environment are changing rapidly. Automation and technology are playing an ever-increasing role in the efficiency of how work can be completed and hence how competitive we are able to be. 3D visualisation and design tools are becoming the norm and we expect our graduates to be able to use them from the start."

Ben Hume, Technical Director, Beca

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

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

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**

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, fluid mechanics and electrical fundamentals.

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.

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

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
Network and Communication Engineering

Our world turns on information. Networks make exchanging information possible – communications networks transfer voice, video or data. Network and communication engineers are the people who make sure the information gets through – they design, test and build our communication networks.

The Network and Communication Engineering major covers the design, implementation, remediation and security of computer network devices and computer network systems. You develop core skills in network engineering, and computer and network programming and installation.

What this major covers

For papers in this major refer to the course planner on page 35.

Year 1

This major shares some of the first-year papers with the other majors in the degree. You also explore computer networking, digital devices and systems, programming and analogue electronics.

Year 2

You study advanced engineering mathematics, computer networking, telecommunication technologies and services. This year also introduces you to management and project management skills.

Year 3

You focus on advanced topics in telecommunications and computer networking. Year 3 also covers ethics and sustainability, and 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**

Students at the AUT City Campus.

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:	26 Feb & 16 July 2018

Alix Klingenberg
Software Engineer, Pushpay
Bachelor of Computer and Information
Sciences in Software Development

"AUT is well-known for working closely with industry, but I didn't expect to get quite that much industry knowledge from my degree. The courses were challenging, and I especially enjoyed programming. Some of the really cool stuff I got to do was making games and creating programmes. In one of the papers I learned how to make an Android application and a team of us created an app. It was cool to create something and complete my degree with something I can show employers. There is a bit of a bias against computer science and girls don't tend to be interested in it. It's such an interesting and diverse field, and I think showing girls the awesome stuff they can do with computing and technology will encourage more young women to get involved."

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) recognises 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 Careers 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

Selection criteria
Guaranteed entry: Applicants will automatically be offered a place in this programme if they have gained University Entrance and have one or more subjects from Calculus, Mathematics, Statistics at NCEA level 3. All other applicants who have met the admission requirements will be considered on a case-by-case basis. Students who do not have the above background may be directed to take certain papers in their first year of study.

Interview may be required.

Preferred 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).

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.
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

Vlad Spreys
Senior Software Developer Android & iOS, Trade Me
Bachelor of Computer and Information Sciences in Software Development

"Our team is responsible for creating the best user experience for buying and selling motor vehicles on Trade Me using mobile applications. Building applications that are going to be used by thousands of people on a daily basis is a very rewarding experience. We have a fantastic team and the company has an awesome work culture. Aside from the software development skills, AUT also taught me a lot about project management, software development methodologies and how to work in teams. These skills are all essential in my career now. I think what sets AUT apart is that the programmes go beyond the technical skills but also include opportunities for students to work on real-life projects. It was also a great environment to meet really smart, supportive and friendly academic staff."

Course planner

PAPERS	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	Research and Development Project Part 2
	Computing Technology in Society	IT Project Management	
	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:

		YEAR 2	YEAR 3
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	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 48.

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 48.

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 and Fonterra.

AUT encourages early application. Places are limited.

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

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 48.

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**

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

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 48.

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.

Mandeep Sandhu
3rd-year student, Bachelor of Computer and Information Sciences in IT Service Science & Networks and Security

"Computing is part of everyday life. Creating high-quality computing solutions is a highly creative activity, and there are so many different interesting and lucrative careers in computing and IT. For me it was clear what I wanted to study as I've always been interested in how networks work, and how we can protect data resources from hackers.

"AUT is known for teaching the skills that are relevant to the industry, and for offering great support for students. I've thoroughly enjoyed my computing degree so far. I think the lecturers have explored all aspects of the subjects, and I've met some amazing people along the way.

"I study at the AUT South Campus because it's near to my home. It's not too big, and I've really appreciated the interactive and collaborative classes. I'm looking forward to the rest of my study.

"I've enjoyed participating in events like the ICT and Engineering Careers Fair, a networking event for computing companies and AUT students, and the Programming Challenge for High School Girls. The tech industry needs more women, and it was great to encourage other young women to consider a career in computing."

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

★

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 48.

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.

Calli Bates
2nd-year student, Bachelor of Computer and Information Sciences in Networks and Security & Software Development

"Everything is becoming digitised and automated, and there's endless potential for what could be automated next. It feels like a technology revolution, and I want to be involved in that.

"I would love to work for a company that's shaping the world of technology, like Google. I'd like to work in their software engineering team; coming up with new, innovative software. I could also see myself working for the government, either here or in the US, and help to improve cybersecurity and prevent cyberattacks.

"I had visited campuses for tons of universities, in New Zealand and America, but AUT always felt right for me. Now, I realise that it was probably the community feel that attracted me to AUT. It seems like no matter what you're doing, everyone is willing to help each other out. Between the students and staff, there's an incredible network of support.

"What you learn is obviously valuable in the tech industry, and the papers tend to shift every year to keep up with what's new in the industry. That is so useful, because once you've finished the degree you won't have to play catch-up to get to the level needed by employers; you're already there."

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 48.

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
Frontend Software Developer, Spark
Bachelor of Computer and Information Sciences in Software Development

"Spark is a great place to work – I feel technically challenged but also supported. It's very structured in that you have clear goals and deadlines, but you also have space to learn and grow. My job involves working in a scrum team and carrying out development projects for Spark and its business ventures. It's a very open and dynamic environment. A typical day might include a catch-up with the team, some individual work, a bit of pair programming, and seeing what the other teams are up to during their project review sessions. I left AUT with a good understanding of the IT industry and a solid foundation to build on."

Employer comment

"Julia had all the qualities we were looking for in our new employees – she has the right attitude, is keen to learn new technologies, and shows a real aptitude to understand them and then share her experience with others. We were looking for someone who was open to learning, humble in their approach, interested in writing quality code and improving their skills, and who could succeed in a team environment. Julia's qualification really helps set the base for her experience in the industry. It proves she can deliver and work on software development projects."

Jens Carlson, Team Leader – Software Delivery, Spark

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:	26 Feb & 16 July 2018

Gabriel Constantin
Services Analyst, Vista Entertainment
Bachelor of Science in Computer Science

"Whenever there's a theory about anything, it always comes back to the numbers. That's the reason I chose to study computational intelligence — it opened new ways of seeing things and taught me how numbers can be used to explain how everything works. I now work as a services analyst for Vista Entertainment Solutions, part of publicly listed Vista Group and the largest supplier of cinema management software worldwide. My responsibilities include working with our customers across our range of software products. I help to resolve anything from simple incidents in their ticketing system to rebuilding software systems in order to rectify configuration issues. My main clients are in the US, but I can also be working with China, the UK or anywhere really. This can be challenging in terms of time zones and communication lags, but I really enjoy the variety of it."

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

Selection criteria
- Preference will be given to applicants with one or more level 3 subjects from Calculus, Mathematics, Statistics
- Students who do not have the above background may be directed to take certain papers in their first year of study
- Interview may be required

Preferred 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 60.

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.

Core papers for all majors are:
- 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/dctminors

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

Asif Rayhan Rasha
Research Assistant, Institute for Radio Astronomy and Space Research
Master of Science
Bachelor of Mathematical Sciences in Analytics and Astronomy

"I've always had a strong passion for natural science, especially astronomy research, and I have aspirations to become an academic researcher in the future. I chose AUT because it has renowned academics, and owns and operates the only two radio telescopes in New Zealand. As a student you can use the telescopes for assignments and projects. AUT's involvement in key projects also appealed to me. The Square Kilometre Array is a billion dollar mega science project that involves more than 20 countries. It will be the largest and most capable radio telescope, spanning across continents. The AUT Institute for Radio Astronomy and Space Research has a very strong involvement with the project. The atmosphere at AUT is incredible. The academics and other staff are very helpful and approachable, and the campus facilities are great."

Course planner

PAPERS	YEAR 1	YEAR 2	YEAR 3
Papers for all majors	Applied Communication [1]		
	Programming for Engineering Applications		
	Object Oriented Programming		
	Introductory Astronomy		
	Physics I		
	Algebra and Discrete Mathematics		
	Differential and Integral Calculus		
	Applied Statistics		
	Mathematical Concepts		

PLUS 1 OR 2 OF THE FOLLOWING MAJORS:

Analytics		Statistical Methods	Industrial and Business Analytics
		Probability	Applied Stochastic Models
		Forecasting OR Logical Database Design	Statistical Computing with SAS OR Data Mining and Knowledge Engineering
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 60.

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.

Workplace experience

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 60.

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.

Workplace experience

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:
- Linear waves in shallow coastal waters
- 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
Master of Analytics student
Bachelor of Mathematical Sciences in Analytics and Applied Mathematics

"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, and I'm planning to research using big data as part of my master's degree project.

"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–world applications – merging my interests and mathematical sciences together. The poster presentation for this project also won the award for 'top presentation'.

"The opportunity to network with industry professionals has been one of the highlights of my study. One of the standouts for me was representing AUT at the SAS Users New Zealand Conference and networking with people who currently 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.

"I presented my findings from a cluster analysis report at the Sovereign main office. I found that to be a great experience in building my confidence to present findings in a corporate environment, and receiving valuable feedback on this work."

★

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 60.

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.

Workplace experience

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.

Krupa Nayak
Licensing Analyst, Accordo Group Ltd
Bachelor of Mathematical Sciences in Astronomy and Applied Mathematics

"Growing up, I was always captivated by the night sky. I loved mathematics and physics at school, and when I heard AUT was offering a degree in astronomy I decided to try it. We learned a lot about the cosmos and stars of course, but the degree also covers how to deal with large amounts of data, using software to separate it, categorise it and analyse it. The numeracy and data analysis skills I developed throughout my studies are essential for my current role. My role focuses on reconciliation analysis, which involves matching installation data with true ownership, creating customised reports, analysing customer license contracts and creating recommendations on how to reconcile licensing entitlements."

Employer comment

"Those who thrive in this role are people who, like Krupa, have already demonstrated excellence in a complex, data-driven field. In this role, it's important to be able to review and analyse large amounts of data, learn about and understand a wide variety of different IT environments, perform calculations based on complex licensing rules, use several different software tools to validate information, and draw it all together in a customer-facing report."

Joanna Smith, People and Capability Manager, Accordo Group Ltd

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**

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 overview and the course planner.

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.
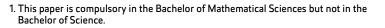
Workplace experience

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.

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

"Creating apps that could be used by millions of people is what I love most about my career. 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 always wanted to be part of the IT revolution that is happening right now. Computing and IT offer so many opportunities to shape our future. Studying at AUT was great. Every day we encountered new questions, ideas and interesting projects. Having the lecturers support us along the way was of great help."

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. At Putti, we are expecting developers to be able to adapt to 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

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**

Level: 4

Points: 120

Duration: 1 year F/T only

Campus: City & South

Starts: 26 Feb & 16 July 2018

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.

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 Classical Studies, Drama, English, Geography, Health Education, History, History of Art, Media Studies, Social Studies, Te Re Māori or Te Reo Rangatira
- **CIE:** 60 points on the UCAS Tariff

Selection criteria
- Literacy and numeracy tests
- Interview may be required
- The course of study of every applicant is subject to the approval of the programme leader.
- Preference will be given to applicants with:
  NCEA: 12 credits at level 2 or higher in Mathematics, and eight credits at level 2 or higher in at least one language rich subject.

What this qualification covers

- Academic Literacies

Plus select seven papers from:
- Foundation Programming
- Foundation Problem Solving
- Tertiary English and Critical Thinking
- Foundation Mathematics
- Foundation Mathematics and Design
- Foundation Algebra
- Foundation Design Technologies
- Foundation Design Principles
- Foundation Physics A
- Foundation Physics B
- Foundation Statistics
- Introduction to Engineering

Papers are selected subject to the approval of the programme leader and depend on your interest.

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.

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].

AUT encourages early application. Places are limited.

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:	26 Feb & 16 July 2018

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:	26 Feb & 16 July 2018

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:	26 Feb & 16 July 2018

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:	26 Feb & 16 July 2018

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.

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 [1].

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 an applied or professional nature, 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 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 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 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 domestic students.
For more information visit www.aut.ac.nz/apply

International students should visit www.aut.ac.nz/international

1

APPLY EARLY

- Check if your programme has a specific closing date
- Places are limited. Submit your application well before the semester starts

APPLYING FOR 2018

- Semester 1
  – try to apply by 24 November 2017
- Semester 2
  – try to apply by 4 May 2018

2

COMPLETE THE APPLICATION FORM

- Apply online
- Indicate your programme(s) of choice and major (if known)
- You will be automatically assessed for all your programme choices at the same time

SUBMIT YOUR APPLICATION

WE ACKNOWLEDGE YOUR APPLICATION

- We will send you an acknowledgment email/letter, 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

FOUR 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, for example University Entrance, then this offer will be withdrawn

DECLINED If you don't meet the entry requirements or all places are taken, check our website for other study options

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

3

YOU CAN
ACCEPT ONLINE

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 all admission categories and specific programme requirements 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)[1] and International Baccalaureate Diploma Programme (IB) if taught in a New Zealand secondary school
- Discretionary Entrance
- Special Admission

1. Domestic students who study CIE in another country may be eligible for this admission depending on subjects covered and levels attained with the qualification. As requirements vary such students should seek advice from AUT.

Common University Entrance requirements

STANDARD	NCEA	CIE[1]	IB[4]
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[2] 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. Different regulations if CIE is taken outside of NZ or UK. See the AUT Calendar which is available online at **www.aut.ac.nz/calendar**
2. UCAS (Universities and Colleges Admissions Services for the UK) Tariff = system which converts AS and A level grades into points.
3. IGCSE = International General Certificate of Secondary Education.
4. New Zealand residents who have taken IB but have not been awarded the Diploma may apply for discretionary entrance.

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

Classical Studies, Drama, English, Geography, Health Education, History, History of Art, Media Studies, Social Studies, Te Reo Māori or 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/apply**

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
- 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

If you are over 20 years of age you can apply through Special Admission for degree-level study without a University Entrance qualification, if you are a New Zealand citizen or resident. You must be 20 years of age on or before the first day of the semester in which the programme commences. Your ability to succeed in your chosen programme will be taken into consideration.

English language requirements

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 cannot be substituted.

Please refer to the English language requirements in the "General Academic Regulations" section of the AUT Calendar or 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.

Tel: +64 9 921 9099

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.

Fees

To give you an idea of approximate costs, the 2017 tuition fees for domestic students are shown below (based on full-time study and completing 120 points a year). The 2018 tuition fees will be advertised on **www.aut.ac.nz/fees** as soon as they have been set.

Undergraduate qualifications

Fee (per year)	Approximately $6,324.00[1] (GST inc)

1. Part-time students pay a proportion of the fee based on the number of academic points they are studying.

If you are an international student, please visit **www.aut.ac.nz/fees** for fees and information.

Other fees you may have to pay:

- 2017 Compulsory Student Services Fee – $641.80 for 120 points or $5.12 per academic point (GST incl)
- 2017 Building Levy – $68.20 for 120 points or $0.57 per academic point (GST incl)
- 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 visit **www.aut.ac.nz/fees**

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 **(09) 921 9837** or visit **www.aut.ac.nz/scholarships**

Student loans and allowances

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**

Help with planning and budgeting

We know that studying can be hard on your finances, and can help students manage their money and stay within budget. We also assist students in financial hardship through food and transport grants, and provide assistance with student loans and allowances.

For more information visit **www.aut.ac.nz/student_services/financial**

StudyLink Sussed website

A useful financial resource is the StudyLink Sussed website. The website has handy tools, tips and information to help you plan and understand the costs you will have while studying.

Visit **www.studylink.govt.nz**

How to pay your fees

ONLINE	You can pay by credit card or by internet banking online at **www.aut.ac.nz**. Your login details will be required.
	OR
	Bank transfer: You can make a direct fee payment into AUT's bank account. Visit **www.aut.ac.nz/payment-options**
POST	Pay by cheque, credit or debit card by completing the payment slip on your statement/tax invoice, detach and post to: Fee Payment, AUT, Private Bag 92006, Auckland 1142
FAX	Pay by credit or debit card by completing the payment slip on your statement/tax invoice and fax to (09) 921 9985
IN PERSON	City Campus: AUT Student Hub, WA building
	North Campus: AUT Student Hub, AS building
	South Campus: Campus Reception, MB building
STUDENT LOAN (STUDYLINK)	StudyLink will pay your fees directly to AUT. See your student loan documentation for more information.

Find out more

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**

Call or email us

To speak to one of our friendly advisors call the AUT Student Hub on **0800 AUT UNI** (0800 288 864). If you need help with your application to study at AUT, want more information or would like to order a brochure – we're here to help.

You can also email any questions you have to **futurestudents@aut.ac.nz**

International students should email **internationalstudy@aut.ac.nz**

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 (09) 921 9239.

AUT Open Day

Our Open Day on Saturday 2 September 2017 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**

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
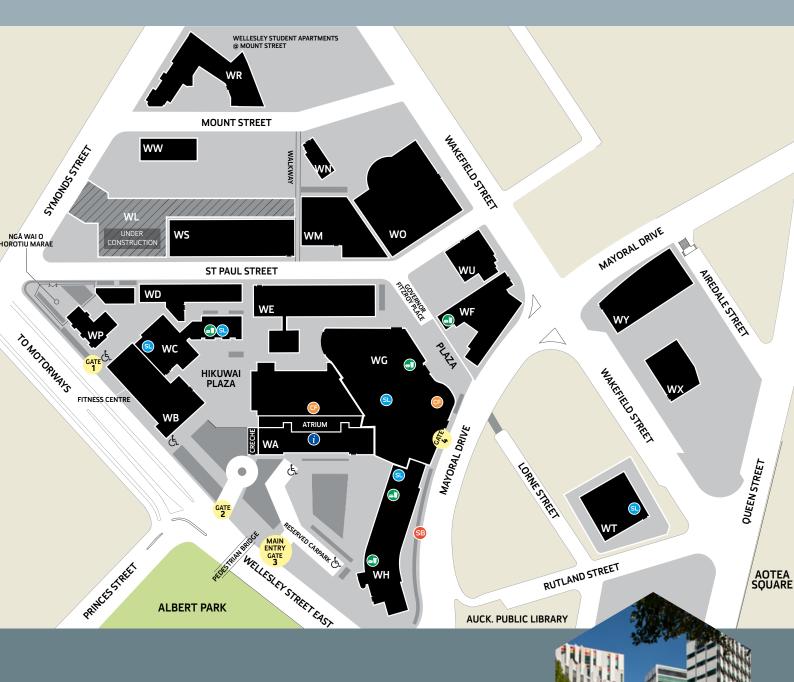AS building, 90 Akoranga Drive, Northcote, Auckland

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.

Campus maps

WELLESLEY STUDENT APARTMENTS
@ MOUNT STREET

WR

MOUNT STREET

WW

SYMONDS STREET

WALKWAY

WN

WL
UNDER CONSTRUCTION

WS

WM

WO

WAKEFIELD STREET

NGĀ WAI O HOROTIU MARAE

ST PAUL STREET

WD

WE

WU

GOVERNOR FITZROY PLACE

WF

MAYORAL DRIVE

AIREDALE STREET

WP

WC

SL

SL

WG

SL

CF

WY

WX

GATE 1

FITNESS CENTRE

HIKUWAI PLAZA

CF

PLAZA

WAKEFIELD STREET

WB

ATRIUM

SL

GATE 4

MAYORAL DRIVE

QUEEN STREET

CRECHE

WA

SL

LORNE STREET

GATE 2

SL

SB

SL

WT

PEDESTRIAN BRIDGE

RESERVED CARPARK

MAIN ENTRY GATE 3

WH

RUTLAND STREET

AOTEA SQUARE

PRINCES STREET

WELLESLEY STREET EAST

ALBERT PARK

AUCK. PUBLIC LIBRARY

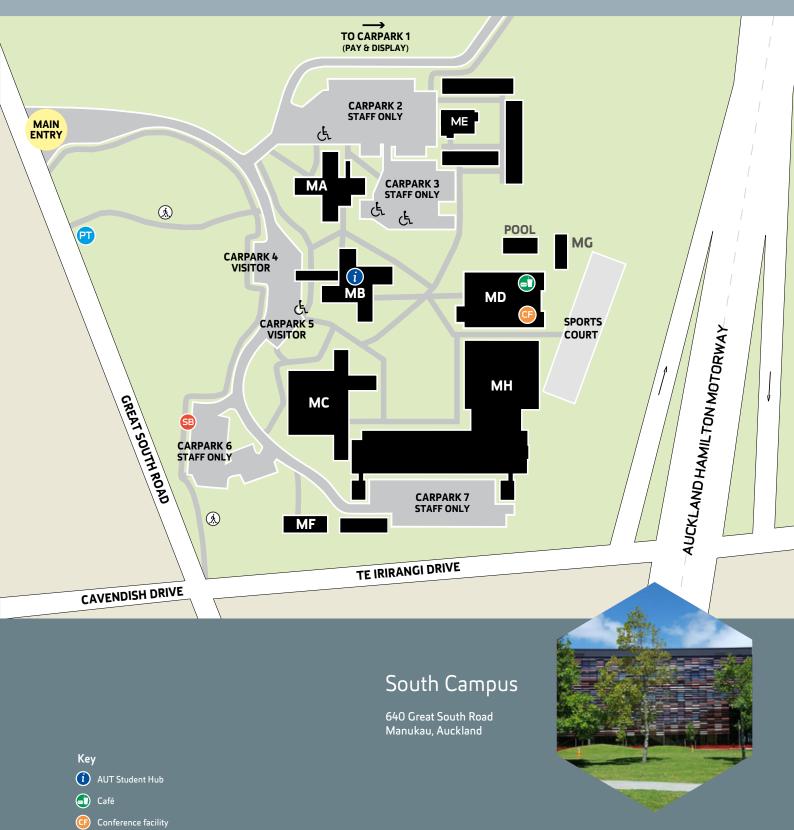## City Campus

55 Wellesley Street East
Auckland Central

Key

(i) AUT Student Hub

Café

CF Conference facility

SB Intercampus shuttle bus stop

Mobility parks

SL Student lounge

TO CARPARK 1
(PAY & DISPLAY)

CARPARK 2
STAFF ONLY

ME

MAIN
ENTRY

PT

MA

CARPARK 3
STAFF ONLY

POOL

MG

CARPARK 4
VISITOR

MB

i

MD

CARPARK 5
VISITOR

SPORTS
COURT

MC

MH

SB

CARPARK 6
STAFF ONLY

CARPARK 7
STAFF ONLY

MF

GREAT SOUTH ROAD

TE IRIRANGI DRIVE

CAVENDISH DRIVE

AUCKLAND HAMILTON MOTORWAY

South Campus

640 Great South Road
Manukau, Auckland

Key

- **i** AUT Student Hub
- Café
- **CF** Conference facility
- **SB** Intercampus shuttle bus stop
- Mobility parks
- Pedestrian access
- **PT** Public transport

AUT

0800 AUT UNI (0800 288 864)
Auckland University of Technology
futurestudents@aut.ac.nz
www.aut.ac.nz

International future students
internationalstudy@aut.ac.nz
+64 9 921 9099

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