STUDY AREA
COMPUTING, MATHS AND TECHNOLOGY

WHERE WILL NEW TECHNOLOGY TAKE YOU?

THE UNIVERSITY OF NEWCASTLE AUSTRALIA
New can’t happen without a critical mind. It requires logic and creativity. Computing, maths and technology industries are at the forefront of new thinking, and are central to the way we work, learn, communicate, socialise and entertain ourselves. Our degrees will help you develop technology and systems to aid advancements in almost any area imaginable. And with high employment rates, these ever-growing fields can open you up to vast career possibilities. You could work for a global corporation like Google or Apple, or you could start a business of your own and become one of the world’s most innovative entrepreneurs.

INFORMATION TECHNOLOGY

NUMBER 1
in NSW for overall satisfaction, student resources and student support

83%
employed within four months of graduation

COMPUTER SCIENCE

90%
satisfaction with computer science learning resources

89%
employed within four months of graduation
Sometimes new is a code to be cracked. Just ask Bachelor of Information Technology student James, whose start-up Broader Learning is making coding and robotics accessible and fun for school kids. For this important mission – and for co-founding an app that provides real-time parking availability to drivers – James won the Student Entrepreneur of the Year award in 2017. The community of innovators at the University’s Three76 Hub inspire James to tackle real-world challenges every day.

James
Bachelor of Information Technology
NEW LIFESTYLE

Our coastline is world famous. Enjoying downtime at Newcastle’s pristine beaches and three coastal baths is made easy with long stretches of uncrowded sand, accessible public transport, and plenty of free parking. A creative hub, Newcastle is home to the bright ideas of countless innovators and entrepreneurs. Enjoy a dynamic art and music scene, chilled-out cafes, eclectic markets, micro-breweries and small bars. The people are friendly, the beaches are picture perfect and the coffee culture is taken seriously.

CAMPUS LIFE

On campus, you have access to a wide range of cafes, food outlets and bars. The University is also home to over 150 clubs, societies and social groups – offering an opportunity to meet new people, socialise, and be part of something new. The Forum, our on-campus gym, has something for everyone including a 50-metre indoor pool, cardio and strength training zones, rock-climbing wall, cycle zone, group fitness classes and multi-purpose courts.

ACCOMMODATION

While the thought of moving away from your home town to study might seem daunting, we’re here to make this transition as easy as possible. We offer students secure, affordable and comfortable accommodation while studying.

YOUR PATHWAYS

We are proud to be the largest provider of enabling programs in Australia.

If you do not have the qualifications required for direct entry, we offer you the opportunity to access university studies, regardless of your background or level of previous education. The programs are offered free of charge and upon successful completion, you’re guaranteed entry to selected undergraduate degrees at the University of Newcastle.

• Newstep - aged 18-20 years
  If you were unable to complete Year 12 due to adverse circumstances or missed the chance to get the marks needed for university entry, our Newstep program offers another pathway for you.

• Open Foundation - aged 20 years+
  If you are seeking a new career direction, considering attending university after time in the workforce or looking to further pursue your interests, our Open Foundation program can help make this happen.

• Yapug - Aboriginal and Torres Strait Islander Students
  Yapug is a pathway program designed to help Aboriginal and Torres Strait Islander people gain skills for entry into undergraduate degrees.

newcastle.edu.au/studentliving
newcastle.edu.au/accommodation
newcastle.edu.au/enabling
MA & MORLEY SCHOLARSHIP PROGRAM

The Ma & Morley Scholarship Program aims to inspire, educate and cultivate the next generation of globally aware and socially conscious Australian leaders - and help them change the world.

The Program was established through a generous $26 million commitment by Chinese entrepreneur Jack Ma, in honour of his life-long friendship with respected Novocastrian Ken Morley.

STUDENT JOURNEY

Your journey as a university student begins the minute you gain entry into a degree program.

Whether you choose to go directly into the workforce once you complete your bachelor (or undergraduate) degree, or continue studying is up to you. The options available to continue studying are vast. Even if you decide to take a break from studying, you can always come back if you would like to specialise in a new area, learn more, or refine a specific skill set.

Upon completion of your bachelor degree, you may wish to further your study with Honours - an additional year of study dedicated to research on a specific area of interest. Honours programs are highly regarded, they can enhance career prospects and prepare you for a Higher Research Degree. Your next step in studying may include earning a Master of Philosophy or a Doctor of Philosophy (PhD) in your area of choice. In doing so, you will open up incredible opportunities to advance your career, champion breakthrough discoveries and solve the world's greatest challenges.

Additional coursework (non-research) prospects are also available after completing your bachelor degree. The University of Newcastle offers over 70 postgraduate degree options to expand your career options and follow a path with the potential to make a global impact in your field of choice.

STUDY ABROAD

Are you adventurous? Keen to see the world and continue your studies at the same time?

Studying overseas is an experience that will stay with you forever. It's a chance to open up your world, expand your academic horizons and connect with people from around the globe. Whether it be a semester exchange, a short course or even an internship, there is an overseas experience out there to suit everyone.

newcastle.edu.au/studyoverseas

SCHOLARSHIPS

Through our scholarship programs, we are able to open up a world of possibility for those who might have all the talent in the world, but sometimes lack the opportunity to develop and explore it.

Our scholarship programs provide:

- scholarships for academic achievement
- support for individuals with financial hardship and educational disadvantage
- support for Indigenous students
- opportunities to travel, perform, play sport, relocate, or gain global experience

Many of our scholarships have been created as a result of generous philanthropic donations to the University of Newcastle, from individuals and organisations who share our belief that everyone with talent and dedication deserves the chance to pursue their dreams.

newcastle.edu.au/scholarships

YEAR 12 SUBJECT SPOTLIGHT

EARLY ENTRY PROGRAM

We believe that your ATAR doesn't define who you are – it is your unique passions, abilities and ambitions that matter. Our Year 12 Subject Spotlight program rewards you with an early offer for your hard work and strong results in individual subjects related to your degree. So, you can take some of the stress out of your final school exams, knowing your ATAR isn't all that matters. There is no separate application for the program – simply apply through UAC to qualify.

You can find more information on subjects aligned to specific degrees online.

newcastle.edu.au/subject-spotlight

newcastle.edu.au/subject-spotlight
Computer scientists work on challenging programming tasks, developing new software technologies and sophisticated online systems.

Computer science is fundamental to many everyday technologies like mobile phones, educational platforms, online shopping, navigation systems, social media, computer games and programmable appliances. With strong links to industry, you can specialise in data science, computer systems and robotics, software development or cybersecurity. This degree produces innovative and resourceful computer scientists who are experts in complex problem solving. They work across fields such as artificial intelligence, robotics, computer graphics, digital forensics, bioinformatics, web development, cryptography and cybersecurity.

Computer Science also offers a one year Honours program to high performing students.

WAYS OF TEACHING AND LEARNING
Our computer science laboratories offer cutting-edge facilities, providing the perfect practical environment to apply your knowledge and test your skills. Our Work Integrated Learning program is available in your final year where you complete 100 hours of work placement in an external organisation.
**NEW TRANSFORMS**

As more and more individuals, enterprises and governments conduct business online, securing cyberspace is more critical than ever. Professor Vijay Varadharajan is a global expert on cybersecurity, spending the past 20 years sharing his expertise in Australia. In his current role as Global Innovation Chair in Cybersecurity at the University of Newcastle, he is working to position the University at the forefront of cybersecurity, through research, education and external engagement. He is a highly-regarded member of cybersecurity boards across the world and past roles saw him contribute to technologies that generated over a billion dollars in revenue. The need to secure cyberspace grows exponentially each day and Professor Varadharajan is using his experience to not just look at research but translate it into practical solutions for society.

**Professor Vijay Varadharajan**  
Global Innovation Chair in Cybersecurity, School of Electrical Engineering and Computing

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**DANIEL’S STORY**

Daniel is an engineer, mobile commerce champion, big data expert and Senior Manager at PayPal’s Braintree Enterprise Business in Australia. With clients like Uber, Airbnb, The Iconic and Dropbox, Braintree is revolutionising the global payments industry by delivering sophisticated payment tools for next generation consumers. Daniel’s keen interest in eCommerce also led him to provide support for a number of not-for-profits including UNICEF, Sydney Children’s Hospital and PayPal’s charity partnership. As part of this volunteer work, Daniel assisted UNICEF Australia with the upgrade and mobile optimisation of their donation and gift buying platforms. Daniel is using his Bachelor of Computer Science to not only make waves in the industry, but also make a meaningful impact.

Daniel  
Bachelor of Computer Science, 2004
Computer systems engineers combine creativity with technology to develop solutions to some of the world's greatest challenges.

They are essential in a wide range of industries like computer design, defence applications, communication networks and internet development. As a computer systems engineer, you might find yourself developing a precision agriculture system to optimise food production and minimise chemicals in farming. Or, you could design a computer system that creates greater efficiency in wind turbine energy production.

Computer systems engineering is flexible and diverse. Graduates might choose to focus on hands-on fieldwork, design and development, or pursue a leadership role managing people and projects. You are also able to gain a Master of Professional Engineering with just one extra year of study.

REAL-WORLD EXPERIENCE

All University of Newcastle engineering students must complete 12 weeks of professional practice during their degree. Through your work placement, you’ll build important professional networks and put your learning into practice.

2018 SELECTION RANK
85.60 | Median 88.03

COMBINE THIS DEGREE WITH
• Bachelor of Business
• Bachelor of Computer Science
• Bachelor of Mathematics
• Bachelor of Science

CAREER EXAMPLES
• Information and Communications Technologist
• Computer Systems Specialist
• Web Developer
• Information Technology Manager
• Computer Systems Analyst
• Network Engineer

PROFESSIONAL RECOGNITION

Through this degree, you will be professionally recognised with Engineers Australia and the Washington Accord allowing you to work around the world.
DAVID’S STORY

Passionate about using his skills for real human benefit, David has gone on to achieve great success since graduating from his Bachelor of Computer Engineering (Honours) and Bachelor of Computer Science. With a keen interest in artificial intelligence, David joined a world-leader in the field – DeepMind – as a Research Engineer. He is now part of the team developing Google’s cutting-edge machine learning technology. The artificial intelligence-type technology can change the landscape of data mining, making the analysis of information – like medical data – more efficient, leading to improved diagnostics and treatment decisions. David’s resume, both academic and professional, boasts the likes of MIT, Harvard, IBM and Google. David is proof that new can take you anywhere.

David
Bachelor of Engineering (Honours) (Computer)/Bachelor of Computer Science, 2012

JOIN THE TEAM

The University’s NUbots team develops software for robotic soccer and competes each year in the international RoboCup competition.

The goal of RoboCup is to foster artificial intelligence and robotics research – with the ultimate goal of developing a team of fully autonomous humanoid robots that can win against the human world soccer champion team by 2050.
Information technology (IT) is all about developing, building and maintaining software systems to meet the challenges faced by society, and seizing the opportunities that new technology creates.

You could specialise in areas including business technology, systems development or interactive media. Your studies could lead you to managing large and complex software systems for big corporations and government. You could focus on cloud architecture, software, mobile and app development for a wide range of industries – even your own startup. Or if you’re passionate about media and entertainment, you could create exciting games, animations and digital content.

Students have the opportunity to undertake a Work Integrated Learning industry placement and complete a major IT project with an industry partner.

Information Technology also offers a one year Honours program to high performing students.

2018 SELECTION RANK
60.10 | Median 68.60

COMBINE THIS DEGREE WITH
• Bachelor of Business

CAREER EXAMPLES
• Web Developer
• Games Designer/ Animator
• Infrastructure Business Analyst
• Systems Analyst
• Software Developer
• Mobile App Designer

PROFESSIONAL RECOGNITION
This degree offers professional recognition through the Australian Computing Society.

JACQUELINE’S STORY

In the male-dominated field of information technology, Jacqueline is fast becoming a trailblazer. After graduating from her Bachelor of Information Technology with First Class Honours in 2016, she has gone on to gain national recognition for her research exploring how virtual human fidelity influences the emotional experience during user and virtual human interactions. For her groundbreaking work, Jacqueline was awarded the best research paper prize at the Australasian Simulation Congress – the premier national technology, academia and industry collaboration event. Following her win, Jacqueline was invited to present her research at the Interservice/Industry Training, Simulation and Education Conference in Florida. She continues to break barriers, challenge stereotypes and be a driving force for women in IT.

Jacqueline
Bachelor of Information Technology
(First Class Honours), 2016
A spatial scientist, Dr Karen Blackmore is always on the lookout for innovative solutions to help keep up with the demands of society. With a passion for problem-solving, Dr Blackmore is transforming the training industry by making best use of virtual reality technology. Stemming from a career designing 3D environments and teaching game design, she has now taken an educational stance on how virtual reality technology and gaming programming can be used to train for real-world situations. Dr Blackmore has forged a solid partnership with the Defence Simulation Centre to provide simulation-based training as a tool for preparing our defence personnel before deployment. After realising a definite skill shortage in the defence space, she is developing new ways to ensure information technology students can fill this void. Dr Blackmore has led a Memorandum of Understanding with the University of Newcastle where Honours students in the IT program can collaborate with the Defence College on projects. Dr Blackmore is guiding students on a new path to better job prospects.

Dr Karen Blackmore
Senior Lecturer,
School of Electrical Engineering and Computing
(Information Technology)
The Bachelor of Mathematics attracts the very best problem-solvers – those who analyse things critically and are eager for technological discovery.

Computing, maths and technology industries are at the forefront of new thinking. Through this degree, you could mathematically model the way diseases spread to find a cure for malaria, or search for algorithms to speed up computations. Specialist areas include pure mathematics, applied mathematics, statistics and maths and statistics combined. You will use your skills in technology, creativity and logic to push the boundaries and make a difference in society. Graduates from the Bachelor of Mathematics will find their degree can take them to varied and groundbreaking places.

Graduates work in a wide range of fields including communications, international finance and the futures market, the mining and energy sectors, and medical and health research.

WAYS OF TEACHING AND LEARNING
Mathematics students learn in our Access Grid Room – a fully equipped facility with computers, cameras, projectors, microphones and SmartBoards to enable users to connect with other groups in real-time.

2018 SELECTION RANK
81.65 | Median 91.50

COMBINE THIS DEGREE WITH
- Bachelor of Computer Science
- Bachelor of Chemical Engineering (Honours)
- Bachelor of Civil Engineering (Honours)
- Bachelor of Computer Systems Engineering (Honours)
- Bachelor of Electrical and Electronic Engineering (Honours)
- Bachelor of Mechanical Engineering (Honours)
- Bachelor of Mechatronic Engineering (Honours)
- Bachelor of Science

PROFESSIONAL RECOGNITION
With this degree, students may join the Australian Mathematical Society (AustMS) and Statistics major graduates are eligible for Graduate Accreditation with the Statistical Society of Australia.
HAYDEN’S STORY

From forecasting the weather, to finding the perfect fix for a wobbly table at a restaurant, Hayden always loved how maths could be used to solve real-world challenges. So, when it came to choosing a degree, a combined Bachelor of Science/Bachelor of Mathematics seemed like the perfect fit. Throughout his studies, Hayden puts theory into practice with exciting results – like his most recent project that used complex statistical time series analysis to forecast international tourism in Australia. Hayden has also embraced the University’s focus on global experience – attending a winter school at the University of Science and Technology in China. Now, Hayden has his sights set on postgraduate study, combining his knowledge of mathematics and chemistry to explore the field of surface and materials science. For Hayden, new means calculating a better world.

Hayden
Bachelor of Science/Bachelor of Mathematics

NEW CALCULATES

Professor George Willis is a world-renowned mathematician. He is a true innovator and a creator of new mathematics. While his early work was in functional analysis, more recently his research is aimed at developing the algebraic theory of zero-dimensional symmetry. Recognised for being a leader in mathematics research, Professor Willis was awarded a $2.8 million grant to support his project which works to create tools for understanding the geometry of large networks. He is at the forefront of new mathematics which is benefiting the fields of computer science and data structures and potentially optimising computer performance. If you have a head for mathematics, Professor Willis can help you push the boundaries of traditional mathematic research.

Professor George Willis
Mathematician,
School of Mathematical and Physical Sciences (Mathematics)
Engineers and technologists research and develop creative ways to transform renewable energy into usable power. They are vital in the design of sustainable technologies as well as their implementation. With specialisation in either electrical or mechanical majors, you will study areas including geothermal heat sources, carbon capture and storage, mineral sequestration, photovoltaics, polymer cells, oxyfuel technologies and wind turbines. Engineers in the field of renewable energy work on a variety of technologies such as solar, wind and geothermal energy and their integration into systems. You could work for an energy company, a consultancy, a renewable energy equipment manufacturer, a research and development organisation or a government department.

WAYS OF TEACHING AND LEARNING
This pathway program will allow you to build on the knowledge gained from your TAFE Associate Degree of Engineering (Renewable Energy Technologies), and finish with a bachelor degree after one year of university study. You will develop the business and technical skills required for a career as a renewable energy professional.

2018 SELECTION RANK
N/A | Median N/A

CAREER EXAMPLES
- Energy Consultant or Advisor
- Renewable Energy Project Officer
- Solar Energy Systems Designer
- Thermal Energy Systems Manager
- Wind Energy Technician

newcastle.edu.au/study/computing-maths-and-technology
NEW COLOMBO SCHOLARS

In 2018, six exceptional students from the University of Newcastle were announced as New Colombo Scholars.

Georgia and Zachary were two scholarship recipients who represented the areas of computing, maths and IT.

GEORGIA
Bachelor of Science/Bachelor of Mathematics

Georgia is completing a combined Bachelor of Mathematics and Bachelor of Science degree. Following an initial trip to Japan as part of a Rotary International Youth Exchange in 2014, Georgia’s interest in the country was ignited. The scholarship will allow her to return to Japan to intern with key players in the solar industry while studying at Tokyo Metropolitan University.

ZACHARY
Bachelor of Science/Bachelor of Mathematics

Zachary is another extraordinary mind - completing a double degree in mathematics and science. Through the scholarship, he will be able to strengthen his combined passion for educating young people and sharing his love of mathematics. He will benefit from an academic mentorship from our esteemed exchange partner, Nanyang Technological University in Singapore.
You may also be interested in the following degree that touches on the Computing, Maths and Technology study area.

BACHELOR OF SOFTWARE ENGINEERING (HONOURS)

Software engineering is behind much of the everyday technology we take for granted – from our iPads, computer software and mobile phones through to digital televisions, computer games and online banking.

For further information on this program refer to the Engineering brochure or visit newcastle.edu.au/study/engineering

Spanning 145 countries, the University of Newcastle’s global alumni network is making a positive difference to the world. This diverse group of global professionals also provide invaluable support for our students – sharing their time and expertise and offering exclusive opportunities. Whether it’s through a mentoring program, internship or attending a networking event, you’ll be inspired and empowered by those who’ve blazed the trail before you. And, when you graduate, you too will join this outstanding group of over 142,000 alumni around the world. Because wherever you are, whatever you’re doing, you are always new.

newcastle.edu.au/alumni