



Australian  
National  
University



## HIGHER DEGREE RESEARCH GUIDE

ANU College of  
Engineering &  
Computer Science

# WHY HIGHER DEGREE RESEARCH AT ANU?

ANU is unique in Australia for the large proportion of higher degree research students, attracted from around the world by the strong profile of our research and the vibrant intellectual life on campus.

The Australian National University (ANU) is one of the world's leading universities, and the smart choice for your research program. ANU is unique in Australia as it is the only university to be established by the Australian Federal Parliament, with its main focus on research. Today, ANU is known for its intense focus on research and research students, guaranteeing you will receive dedicated supervision throughout your research career. Our academics are globally recognised in their fields which is beneficial for you. ANU is well connected through our alliances with top universities, including Oxford and Harvard. Our students regularly travel and work with research groups who are at the forefront of emerging research.

Our location in the nation's capital means we regularly receive visiting scientist, policymakers, diplomats and heads of state. Any day of the week at ANU you can attend lectures and seminars given by world experts in their fields and prominent intellectuals.



**GROUP OF EIGHT AUSTRALIA**



INTERNATIONAL ALLIANCE OF RESEARCH UNIVERSITIES

# 94%

ANU is part of the Group of Eight, a coalition of Australia's leading universities for education, and distinguished by depth and breadth in research by the best researchers from Australia and around the world.

ANU is the only Australian university in the International Alliance of Research Universities (IARU), a collaboration between ten of the world's leading research-intensive universities.

94% of ANU research is rated 'above world standard'.

2012 Australian Government's Excellence in Research for Australia Report



## Ranked 1st in Australia and 25th in the world

Quacquarelli Symonds (QS) World University Rankings 2014/15



## Ranked 1st in Australia and 23rd in the world for graduate employability

2013 Emerging Global Employability University Survey



## Six Nobel Laureates among staff and alumni

# WHY HIGHER DEGREE RESEARCH IN ENGINEERING OR COMPUTER SCIENCE?

With the combined capacity of the Research School of Engineering and the Research School of Computer Science, the ANU College of Engineering and Computer Science is at the leading edge within numerous fields. Our world class academics undertake high quality research and with small classes, our students benefit from being part of a dynamic and pioneering research environment. The research training and educational experience ensures that students have a comprehensive understanding of a range of interconnected disciplines.

In collaboration with an extensive network of academic, government and industry partners in Australia, Europe, the Asia Pacific and the United States, we are delivering innovations in many areas. For instance, we are collaborating with Ford Motor Company and Boeing to ensure that their structures are lighter, stronger and more energy efficient.

Our large-scale computational research supports product development at companies including Microsoft Research, Facebook, Google, Intel, IBM and Oracle. We also provide specialist advice to business, governments and various professional bodies that influences public policy and decision-making. Our students have opportunities to engage with government and industry partners during research training activities.

Ultimately, our breakthrough research, incisive knowledge exchange transfer, and commercialisation of game-changing technologies are making significant contributions to a vibrant world economy and safer global community.

## Engineering research themes

### Energy

- > Energy Storage
- > Photovoltaics
- > Solar Thermal

### Fabrication

- > Manufacturing
- > Micro and Nano Systems
- > Optical Devices
- > Sensors

### Information

- > Acoustics and Audio
- > Communications
- > Computer Vision
- > Networked Systems
- > Quantum Cybernetics
- > Robotics
- > Signal Processing

### Materials

- > Biomaterials
- > Composite Materials
- > Computational Mechanics
- > Nanomaterials

## Computer science research themes

### Intelligence

- > Data Mining and Matching
- > Intelligent Agents
- > Knowledge Representation and Reasoning
- > Machine Learning
- > Planning and Optimisation

### System

- > High Performance Computing
- > Human-Centred Computing
- > Programming Languages, Design and Implementation
- > Software Engineering

### Theory

- > Algorithms
- > Databases
- > Logic

## Facilities at the ANU College of Engineering and Computer Science



### Supercomputer

The largest university-based supercomputer in the southern hemisphere is at the National Computational Infrastructure at ANU.



### Solar power

With the world's largest parabolic dish solar concentrator at 500m<sup>2</sup> on campus, you will find unparalleled opportunity for world-class solar energy research at ANU.



### New student spaces

The majority of our student spaces, such as labs and work areas, have recently been built or renovated.

# OUR PROGRAMS AND HOW TO APPLY

## Higher Degree Research Programs

You can undertake a research program at ANU through a Doctor of Philosophy (PhD) or a Master of Philosophy (MPhil). The major component of a research program is a substantial written work or thesis, which investigates a particular subject or issue. As a research student you will work with increased independence, under the direction of a supervisory panel of academic staff.

## Doctor of Philosophy

The Doctor of Philosophy award will take you between three and four years to complete full time. This award is conducted in English and is made principally on the basis of a research thesis comprising of original written work, typically up to 100,000 words. Your thesis will be independently assessed by two external examiners of international standing.

Admission: You are most likely to gain admission to a Doctor of Philosophy program if you hold a Master of Philosophy or a Bachelor degree with at least Second Class Honours – Upper (First Class Honours is often required). You may also be granted admission if you can demonstrate that you have a background equivalent to these qualifications.

W [programsandcourses.anu.edu.au/program/9000XPHD](http://programsandcourses.anu.edu.au/program/9000XPHD)

## Master of Philosophy

The Master of Philosophy award will take you between one and two years to complete full time. This award is conducted in English and is made principally on the basis of a research thesis comprising of original written work, typically up to 60,000 words.

Admission: You are most likely to gain admission to a Master of Philosophy program if you hold a Bachelor degree with First Class Honours. You may also be granted admission if you can demonstrate that you have a background equivalent to these qualifications.

W [programsandcourses.anu.edu.au/2017/program/8000XMPHIL](http://programsandcourses.anu.edu.au/2017/program/8000XMPHIL)

## How to apply

Go to  
[cecs.anu.edu.au/study/graduate-research](http://cecs.anu.edu.au/study/graduate-research)

Complete the self assessment tool  
to determine your eligibility to do research  
at ANU

Complete the pre-application process  
and identify a research group and supervisor

Complete a formal application  
either online or through an agent representative

### You will need:

- > CV
- > Transcripts
- > Three referee reports
- > Statement of support from your potential supervisor
- > Thesis proposal – written with your supervisor
- > Proof of meeting English language requirements

# STUDENT PROFILES



## Kiara Bruggeman

**PhD Candidate, ANU College of Engineering and Computer Sciences**

After completing undergraduate studies in Science and Engineering at the University of Waterloo, Canada, Kiara moved to Canberra to undertake her PhD at ANU. Her research involves engineering biomaterial systems for regenerative medicine applications in damaged or diseased brain tissue. “I’m developing drug delivery systems to be incorporated with biomaterials mimetic of healthy brain tissue. The ‘drugs’ are actually protein growth factors, signals that promote different aspects of cell growth and development. The delivery system needs to deliver different drugs at different times throughout regeneration, and this needs to be done without multiple injections, since every injection into brain tissue adds more trauma. Together, the biomaterials and drugs work right at the damaged site to provide cellular support and instructions to promote tissue regeneration.”

**“At ANU, I’ve never been restricted to traditional boundaries ... I work in a very interdisciplinary field including engineering, chemistry, biology and medicine.”**



## Dr Lachlan Blackhall

**PhD in Engineering 2011, ANU College of Engineering and Computer Sciences**

Dr Lachlan Blackhall has combined his love of business and skills in engineering and mathematics to become an inspiring teacher, mentor and innovator. While completing his PhD studies in engineering and applied mathematics at ANU, Lachlan founded InnovationACT, a business planning and entrepreneurship outreach program. It was awarded the Best Community Engagement and Outstanding Excellence in Collaboration awards by the Business and Higher Education Round Table in 2012. After finishing his PhD, Lachlan co-founded Reposit Power, a technology company that designs systems for grid-deployed energy storage. It supports the addition of renewable power onto the national energy grid.

**“My time at ANU not only gave me the freedom to pursue deep academic studies but also to better understand how my studies could influence the world.”**



## Richa Awasthy

**PhD Candidate, ANU College of Engineering and Computer Sciences**

Richa Awasthy is a Software Engineering PhD student. After completing her Masters and having worked for a large multinational technology company, she chose to do a PhD at ANU. “ANU is the number 1 university in Australia, its strong inter-disciplinary focus is really unique for my software engineering field. It is a truly international university that provides a conducive environment and lots of opportunities to grow.” Richa is working on a project that would assist both industry and academia by bringing them closer. The project will help to achieve the aim of research to be both useful, and to have a positive impact on society.

**“If you want to make an impact in your area of research then ANU is the place. Research helps you discover the benefits of existing things, explore new things, and be innovative.”**

# ACCOMMODATION AND CANBERRA

## On-campus accommodation

More ANU students live on campus than at any other university in Australia, fostering a supportive and engaging student community. Postgraduate students can apply for on-campus accommodation at:

- > Bruce Hall Packard Wing
- > Burgmann College Postgraduate Village
- > Davey Lodge
- > Fenner Hall
- > Graduate House
- > Kinloch Lodge
- > Lena Karmel Lodge
- > Toad Hall
- > Ursula Hall Laurus Wing
- > Warrumbul Lodge

The availability of on-campus accommodation cannot be guaranteed and student residences are not suitable for children. There may be a need to investigate off-campus (external) accommodation options in a rental property or share accommodation.

## Private rental

When rental properties become available they are advertised by real estate agents and by private listing. Browse these online sites:

- > [allhomes.com.au](http://allhomes.com.au)
- > [Domain.com.au](http://Domain.com.au)
- > [Gumtree.com.au](http://Gumtree.com.au)
- > [Realestate.com.au](http://Realestate.com.au)

ANU Accommodation Office provides a free service to help ANU students find rental accommodation:

W [anu.edu.au/study/accommodation/housing-online](http://anu.edu.au/study/accommodation/housing-online)

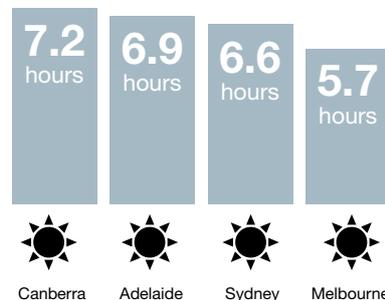
## ANU Apartments

ANU Apartments provide a range of accommodation for visitors and new arrivals, ranging from short stay to rental accommodation; they also cater to postgraduates with families.

W [anuapartments.anu.edu.au](http://anuapartments.anu.edu.au)

## Discover Canberra: Australia's capital city

**Canberra is a city that celebrates culture, with annual festivals, great food, and a diverse population. As a university city, Canberra thrives on youth culture and student-run events. For the more active, the capital is etched with bike paths and surrounded by stunning Australian bushland, just ready for you to explore.**



## World's most liveable city

Canberra provides an enviable quality of life for ANU students and their families; it is the best place to live in the world.

2014 OECD's Better Life Index Rankings  
My Survey 2014

## Hours of sunshine

Canberra is sunny, averaging 7.2 hours of sun per day all year round.

## Multiculturalism

Canberra is a multicultural city – around one quarter of Canberra's population are born overseas.

# SCHOLARSHIPS, FEES AND STUDENT SUPPORT

## Scholarships

ANU offers a range of scholarships for students undertaking Higher Degree Research. Please note that in addition to scholarships offered by ANU, there are funding support opportunities offered by Australian and overseas governments, and other industry partners and affiliates that you can take advantage of. Some of the scholarships on offer for HDR students:

### **Australian Postgraduate Awards (APA)**

\$25,849 per annum for up to three years. Each year a number of such scholarships are made available by the Department of Education and Training for study by research leading to a higher degree.

### **International Postgraduate Research Scholarship (IPRS)**

Full tuition, payments made for three years. The scholarship is funded by the Department of Education and Training. This scholarship is for applicants who hold a Bachelors degree with first class Honours, or a Master degree from a recognised university.

For further information about scholarships and how to apply for them, visit the ANU Scholarships website – [anu.edu.au/students/scholarships-support](http://anu.edu.au/students/scholarships-support)

## Fees

Domestic research students are not required to pay tuition fees as they are enrolled under the Research Training Scheme, which provides funding for up to a maximum of four years for a PhD program.

International students at ANU are required to pay international student fees (ISF). Annual indicative fees for international students for the Doctor of Philosophy and Master of Philosophy are \$36,528.

For up-to-date course fees please visit our website on [students.anu.edu.au/fees](http://students.anu.edu.au/fees)

## Student Support

ANU has a diverse range of support services, programs, and activities to enhance your student experience and help you succeed at University.

### **Academic Skills and Learning Centre**

The Academic Skills and Learning Centre offers ANU students of all levels free and confidential help with their academic work through individual tutorials, workshops, courses and handouts. For more information please visit [academicskills.anu.edu.au](http://academicskills.anu.edu.au)

### **Access and Inclusion**

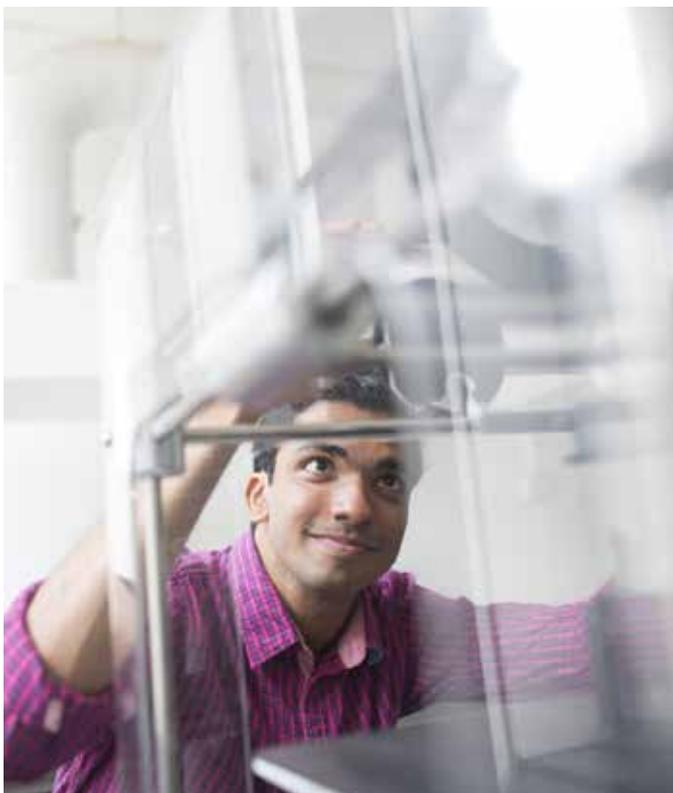
Access and Inclusion includes support for the following backgrounds: alternative and mature age entry, student carers, student athletes, students with disabilities and LGBTI students. For more information please visit [access.inclusion@anu.edu.au](mailto:access.inclusion@anu.edu.au)

### **ANU Health Service**

The ANU Health Service is a fully accredited primary health care facility that provides comprehensive health service to current students and staff of the University. For more information please visit [health.anu.edu.au](http://health.anu.edu.au)

### **ANU Careers Centre**

The ANU Careers Centre offers students many services relating to planning and starting a career, including career target strategies, tools and career development strategies. Students can book online for a confidential consultation, attend a drop-in session with one of our Consultants or use ANU Career Hub to look for employment.



# CONTACT US

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E [international.enquiry@anu.edu.au](mailto:international.enquiry@anu.edu.au)

W [cecs.anu.edu.au](http://cecs.anu.edu.au)

## **ANU Social Media**



[facebook.com/anu.cecs](https://facebook.com/anu.cecs)



[youtube.com/ANUexperience](https://youtube.com/ANUexperience)



[twitter.com/anucecs](https://twitter.com/anucecs)



[instagram.com/anu.cecs](https://instagram.com/anu.cecs)



[i.youku.com/ANUexperience](https://i.youku.com/ANUexperience)

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