

UNDERGRADUATE GUIDE

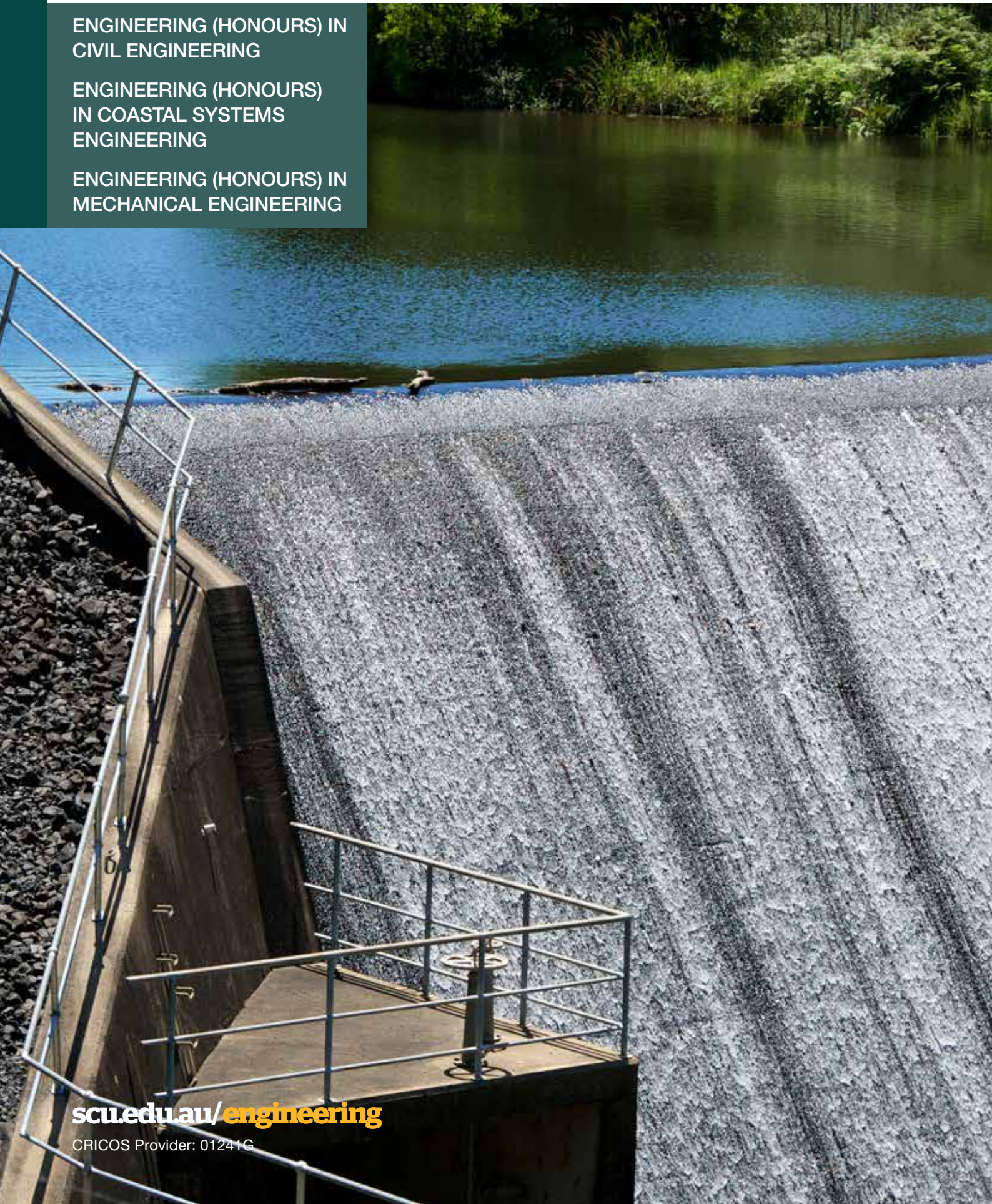
ENGINEERING **2018**



ENGINEERING (HONOURS) IN
CIVIL ENGINEERING

ENGINEERING (HONOURS)
IN COASTAL SYSTEMS
ENGINEERING

ENGINEERING (HONOURS) IN
MECHANICAL ENGINEERING




scu.edu.au/engineering

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Why study with us?

- ★ Ranked in the top 150 universities under 50 years old in the world.
Times Higher Education Young University Rankings
- 
- ★ Outstanding research achievements – rated ‘at world standard or above’ in 24 key research areas.
Excellence in Research for Australia 2015 (ERA)
 - ★ Rated ‘above world standard’ in Civil Engineering; and in Resources Engineering and Extractive Metallurgy. Rated ‘at world standard’ in Engineering.
 - ★ Learn in state-of-the-art engineering laboratories.
 - ★ Major in environmental engineering.
 - ★ Participate in real world development projects through the humanitarian unit in first year and the capstone project in fourth year.
 - ★ Develop work-ready skills and experience with a professional internship of 60 days.
 - ★ Access specialist engineering software, hands-on experience and technical support.

School of Environment, Science & Engineering

Engineers develop solutions to complex problems and optimise the social, environmental and economic outcomes of engineering projects. In addition to having a deep knowledge of the disciplines that underpin modern engineering practice, engineers need to lead and be great communicators.

Southern Cross University’s engineering degrees are taught at our state-of-the-art science and engineering precinct at the Lismore campus by outstanding staff with strong research credentials. Students enjoy great access to staff and their extensive industry connections.

Our engineering graduates leave university with highly transferable skills that can be applied around the world in dynamic and diverse global careers. The course content is contemporary and future-focused, with strands including environmental engineering. Degrees feature a professional internship as well as the opportunity for field trips.

Studying at Southern Cross University

Studying with us involves a range of learning experiences which may vary based on your course of study, your location and your mode of study.

You may take part in face-to-face lectures, workshops and tutorials, and collaborative peer projects. Courses may include interactive video-conference lectures, podcasts and discussion forums. You can bring your own device onto campus (or use one of our on-campus computers) and tap into our extensive wireless network.

Students especially benefit from hands-on learning activities in our world-class laboratory facilities, and they regularly undertake field trips and site visits related to natural and engineered environments.

The professional engineering community works closely with students through our industry-linked curriculum, which includes an industry training component – and through various training and networking opportunities offered by Engineers Australia.

Southern Cross University’s specialised engineering facilities include three research laboratories and two teaching laboratories equipped for a range of sub-disciplines, to enable effective practical teaching and high level experimental research. (See facilities and resources heading in this brochure.)

Southern Cross University acknowledges the Aboriginal and Torres Strait Islander peoples as the Traditional Custodians of the lands where we live, learn and work.

Degrees which put you in the workplace

Professional industry placements are built into our engineering degrees. They offer students the opportunity to participate in 60 days of industry experience relevant to engineering. The placements are conducted under the supervision of experienced engineers and can be undertaken in multiple different environments if desired.

Students gain opportunities to develop their knowledge and skills, engage with a range of industry representatives, and create networks and contacts to prepare them for careers as professional civil or mechanical engineers.

ENGINEERING DEGREES

Degrees	Career Opportunities	Gold Coast	Lismore	Coffs Harbour	Online	UAC/QTAC codes	Units	Duration (years) F: full-time P: part-time
Indicative ATAR/OP								
B Engineering (Honours) in Civil Engineering ATAR: 72 OP: 12	Civil engineers work in a range of settings, including traffic and transport, humanitarian organisations, engineering design, government authorities, water supply and management agencies, construction companies, natural resource management organisations, consulting engineering companies, mining companies, irrigation authorities, research organisations and in tertiary education.		✓			UAC: 334103 QTAC: 054201	32	4F/8P
NEW IN 2018 Engineering (Honours) in Coastal Systems Engineering <i>(University approval pending)</i>	As a civil or environmental engineer in a range of settings involving systems and infrastructure in the coastal zone, including municipal and government authorities, water supply and management agencies, construction companies, natural resource management organisations, consulting engineering companies, airport authorities, mining companies, irrigation authorities, research organisations, and education organisations.		✓			UAC: 334106 QTAC: 054511	32	4F/8P
B Engineering (Honours) in Mechanical Engineering ATAR: 72 OP: 12	Mechanical engineers have broad employment prospects in local and global markets. They can work in diverse industries including heavy machinery, power generation, mining, manufacturing, production planning, automotive, aerospace, medical, environment, building industries and consumer product design and tertiary education. Mechanical engineers are in demand in government departments, building services, manufacturing centres, power plants and consulting engineering companies.		✓			UAC: 334109 QTAC: 054301	32	4F/8P

Facilities and resources

There are state-of-the-art engineering laboratories and teaching spaces in the science and engineering precinct at the Lismore campus.

Engineering students have access to computer labs with specialist engineering software and research and teaching laboratories equipped for the study of a range of sub-disciplines

including materials conditioning and testing, concrete and structures testing, fluids and hydraulics testing, soils and geotechnical testing, and mechanics and physics. The laboratories feature advanced analytical equipment to enable effective practical teaching and high level experimental research.

Lisa Hansberry

**Bachelor of Engineering (Honours)
in Civil Engineering
Civil Design Engineer
Ardill Payne & Partners, Ballina**

Lisa Hansberry secured an engineering job even before graduating from her degree with First Class Honours.

“My position as a civil design engineer puts into practice what I learnt through the engineering course, plus a lot more.

Ardill Payne & Partners is a consulting firm working in the areas of civil and structural engineering, environment, surveying and planning. I work with an amazing team and I am learning a lot from their extensive and valuable experience. I’m thoroughly enjoying it.

“I have been learning to use CAD software programs such as AutoCAD, Civil 3D, AutoTURN and Civil Site Design to assist the civil engineering team with design and drafting of engineering works. I also work on reports for government approvals and with clients in engineering problem solving. Every day has something different, challenging and interesting.”

As a confident speaker and presenter, Lisa has presented at many events about the value of pursuing a career in engineering and is a strong advocate for women in the field. Lisa is the Chair of the Northern Rivers regional group of Engineers Australia.

“The natural essence and intelligence that women can bring is needed in every industry. It is well known that engineering is one industry that lacks the numbers of women needed for an even gender contribution. Engineering is a very interesting and fulfilling career. More women would be employed if there were more women asking for the positions.”

Lisa embraced student life. She was the founding president of the SCU Engineering Society and later served on the Society in an advisory role. She was also a student representative on the University’s Engineering Industry Advisory Committee.





Bachelor of Engineering (Honours) in Civil Engineering

The Bachelor of Engineering (Honours) in Civil Engineering equips students with the relevant skills and knowledge to provide a range of professional civil engineering services in regional, national and international environments. The course prepares graduates for work involving the planning, design, construction and maintenance of critical civil engineering infrastructure such as buildings, roads, bridges, dams, pipelines, transport systems, and water supply and waste water treatment facilities.

The course is structured around 16 key competencies identified by Engineers Australia as being essential to the graduating engineer. These competencies are broadly grouped into: knowledge and skills, application, personal and professional skills.

Students develop core theoretical knowledge and skills vital to the engineering profession and the ability to apply these in the most relevant applications.

The course is strongly focused on project engineering from first year through to the final year, with an emphasis on critical issues for modern engineers such as professional ethics, sustainability, conflict resolution and negotiation. All students undertake a full-year subject in engineering research (thesis unit) in their final year, which enables them to explore the frontiers of engineering development and contribute to new knowledge in their chosen field.

Major areas of study

Students have the option to undertake a general course of study or select an eight-unit major in Environmental Engineering.

Students taking the general course of study gain knowledge and expertise across the breadth of disciplines encompassed by civil engineering, including construction, project management, hydraulic engineering, water and wastewater engineering, geotechnical engineering, traffic and transport engineering, and environmental engineering.

The Environmental Engineering major prepares students with the scientific knowledge and engineering skills needed to understand and assess the impact of an engineering project on the environment. This enables graduates to develop sustainable and ethical systems that optimise the relationship between human activities and the natural and built environments.

Professional recognition

The Bachelor of Engineering (Honours) in Civil Engineering degree is currently provisionally accredited by Engineers Australia, and full accreditation will be sought in 2018. Engineers Australia is the professional body representing engineering in Australia.

Accreditation of the course by Engineers Australia enables a graduate's qualification to be formally recognised in many different countries throughout the world in accordance with the Washington Accord, an international agreement governing recognition of engineering qualifications and professional competence. For more information, visit:

<http://www.ieagreements.org/accords/washington/>

Professional placement

As part of this course, students are required to undertake a compulsory 60-day industry experience unit in a relevant engineering role.

Industry experience enables students to gain experience in applying their knowledge and skills to engineering problems within a real work environment, and to make valuable contacts within the civil engineering industry. Students typically undertake one or more work placements with an organisation conducting work related to civil engineering practice. The nature of both the work and the employer can vary widely, from office-based engineering design with a small consultancy or local council to on-site project work with a major construction company.



NEW IN 2018

Bachelor of Engineering (Honours) in Coastal Systems Engineering

(University approval pending)

With strong population growth and significant changes in hydrology predicted for the coastal margin of Australia, there is an increasing demand for civil and environmental engineers with expertise in managing coastal and floodplain hydrology. The Bachelor of Engineering (Honours) in Coastal Systems Engineering is one of just a few specialist undergraduate professional engineering degrees in Australia to train industry-ready graduates for work in water engineering, coastal engineering and catchment management. The course addresses an increasing need for engineering expertise in these fields that is currently only available through on-the-job training and/or postgraduate qualifications.

Career opportunities

As a civil or environmental engineer in a range of settings involving systems and infrastructure in the coastal zone, including municipal and government authorities, water supply and management agencies, construction companies, natural resource management organisations, consulting engineering companies, airport authorities, mining companies, irrigation authorities, research organisations, and education organisations.

Professional Recognition

Southern Cross University will be seeking provisional accreditation for this course with Engineers Australia.

Engineers Australia is the professional body representing engineering in Australia.

Professional Placement

As part of this course, students are required to undertake a compulsory 60-day industry placement in a relevant engineering role.

Industry experience enables students to apply their knowledge and skills to engineering problems within a real work environment, and to make valuable contacts within industry. Students typically undertake one or more work placements with an organisation conducting work related to engineering practice.

The nature of both the work and the employer can vary widely, from office-based engineering design with a small consultancy or local council to on-site project work with a major company.

Major areas of study

Students will focus on core areas that include coastal engineering and management, floodplain engineering and management, project management, hydraulic engineering, water and wastewater engineering, engineering geochemistry and hydrology. The course is strongly focused on project engineering from first year through to the final year. The course also addresses fundamental concepts that cross all disciplines including professional ethics, sustainability, conflict resolution and negotiation.

Students undertake a full-year subject in engineering research (thesis unit) in their final year, which enables them to explore the frontiers of engineering development and contribute to new knowledge.

Bachelor of Engineering (Honours) in Mechanical Engineering

The Bachelor of Engineering (Honours) in Mechanical Engineering equips students with the relevant skills, experiences and knowledge to provide a range of professional mechanical engineering services in regional, national and international environments. The course prepares graduates for work involving the design of machinery, water supply, vibration, acoustics and noise control, robotics, heat transfer and refrigeration, energy technology, consumer product design, pollution control, and production planning.

The course is structured around 16 key competencies identified by Engineers Australia as being essential to the graduating engineer. These competencies are broadly grouped into: knowledge and skills, application, personal and professional skills.

Students develop core theoretical knowledge and skills vital to the engineering profession and the ability to apply these in the most relevant applications.

Major areas of study

The course addresses the fundamental areas of mechanical engineering including: applied mechanics, fluid mechanics, thermodynamics, dynamics, heat transfer, manufacturing, and materials.

All students undertake a full-year subject in engineering research (thesis unit) in their final year, which enables them to explore the frontiers of engineering development and contribute to new knowledge in their chosen field.

Professional recognition

The Bachelor of Engineering (Honours) in Mechanical Engineering is provisionally accredited by Engineers Australia, and full accreditation will be sought in 2020. Engineers Australia is the professional body representing engineering in Australia.

Accreditation of the course by Engineers Australia enables a graduate's qualification to be formally recognised in many different countries throughout the world in accordance with the Washington Accord, an international agreement governing recognition of engineering qualifications and professional competence. For more information, visit:

www.ieagrements.org/accords/washington/

Professional placement

As part of this course, students are required to undertake a compulsory 60-day industry experience unit in a relevant engineering role.

Industry experience enables students to gain experience in applying their knowledge and skills to engineering problems within a real work environment, and to make valuable contacts with potential employers and other members of the mechanical engineering community. Students engage with industry representatives from the early stages of the course, creating valuable professional networks.



Mitch Mahnken

Bachelor of Engineering (Honours) in Mechanical Engineering

Student internship, Mazda Motor Corporation Japan

Mitch Mahnken is only the second Australian to complete a prestigious internship with Mazda Motor Corporation in Japan. For two weeks, Mitch immersed himself in the design, technology and history of Mazda.

“Thanks to the internship I developed an understanding of Mazda engineering, such as the mechanics of its SkyActiv powertrain and chassis technology and Kodo design language. I also got to test drive vehicles on one of their test tracks which was exciting.”

Mitch spent time in several other departments, including brand strategy, business strategy, consumer insights, global sales planning, human resources, product marketing and ASEAN marketing and vehicle development.

“Being a car enthusiast, this opportunity to be involved in what they do and how they do it – from engineering through to business and marketing – was just awesome.

“My goal with doing the mechanical engineering degree is to work on designing vehicles that are powered by renewables and other forms of alternative energy.”

Key dates for 2018

Rising Stars Scholarship applications for 2018	Open July 2017 Check website for closing dates: scu.edu.au/scholarships
UAC and QTAC on-time applications for 2018 entry (Session 1) <i>Late UAC and QTAC applications incur an extra fee</i>	Open early August 2017 Close late September 2017
STAR Early Entry opens	Early July 2017
STAR Early Entry offers	Early December 2017
Southern Cross University Info Days	4, 5 and 7 December 2017
UAC and QTAC main round offers <i>For the full list of offer rounds visit the UAC and QTAC websites</i>	Mid January 2018
Session 1 2018 teaching dates	26 February – 25 May 2018
Orientation	21 – 23 February 2018
Session 2 2018 teaching dates	9 July – 5 October 2018
Orientation	4 – 6 July 2018
Session 3 2018 teaching dates	5 November 2018 – 30 January 2019
Orientation	31 October – 2 November 2018

5 steps to Southern Cross

1 Choose a course



scu.edu.au/courses

2 Find out more



campustours@scu.edu.au

scu.edu.au/yourfuture

E: futurestudent@scu.edu.au

Freecall: 1800 626 481

3 Apply



To study on campus (full-time or part-time) apply via

UAC www.uac.edu.au or QTAC www.qtac.edu.au

To study online, apply direct to the University.

scu.edu.au/howtoapply

4 Accept your offer



scu.edu.au/gettingstarted

5 Enrol in units



scu.edu.au/enrol



The information in this brochure was correct at the time of publishing (April 2017). All University courses are subject to change by the University and the information provided in this brochure should be used as a guide only. To the extent permitted by law, Southern Cross University excludes all liability arising from the use of, or reliance on, the information contained in this brochure.

International students: Southern Cross University welcomes international students. This guide however is not intended for their use. International students should contact SCU International. W: scu.edu.au/international E: intoff@scu.edu.au T: 02 6620 3876
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