School of Environment, Science & Engineering

The School of Environment, Science and Engineering is a leader in environmental sustainability, and draws on SCU’s outstanding research strengths. Students access new state-of-the-art facilities in the science and engineering precinct at the Lismore campus, while the University’s National Marine Science Centre in Coffs Harbour provides advanced analytical equipment and resources for marine science students and researchers.

Courses combine academic rigour, laboratory work, field trips, professional experience and industry internships to maximise career opportunities. Many units have flexible study options, with all environmental, marine and forest science courses available by distance education.

Teaching is informed by our research and students can rub shoulders with leading experts in the environmental sciences. In the 2012 Excellence in Research for Australia national report the University received the top rating of five for research ‘well above world standard’ in the specific fields of geochemistry, zoology, crop and pasture production and forestry sciences. In the broader research fields, the University received the top rating of ‘well above world standard’ in earth sciences, and agriculture and veterinary sciences.

Why study with us?

- Field trips to areas of ecological significance including World Heritage rainforests, subtropical forests and coastal and marine ecosystems.
- Professional experience and industry internships.
- Remarkable campus locations in a stunning, ecologically diverse region which serves as a living laboratory.
- Marine units taught at the National Marine Science Centre in Coffs Harbour.
- Leader in environmental sustainability.
- Cutting-edge field equipment and scientific laboratories.

Studying at SCU

Studying at Southern Cross University involves a range of learning experiences. It can 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, interactive video-conferenced lectures, podcasts, online units and discussion forums using cutting-edge technologies. You can bring your own device onto campus and use SCU’s extensive wireless network or access study materials off-campus as long as you have an internet connection.

Degrees which put you in the workplace

An internship program is available for students undertaking studies in environmental science, marine science and management and in science. Internships are undertaken as part of the course, to gain work-ready skills and establish networks and industry contacts before graduation.

They provide students with the opportunity to gain volunteer workplace experience to supplement the practical skills and the theoretical foundations provided throughout their studies. Students gain direct contact with professionals, industry organisations and potential employers in the field of natural resource management.

Forestry students complete 16 weeks of practical workplace experience during their studies in a forestry-related area including in plantation and forested regions across Australia. They are assisted to find paid and/or volunteer work placements that complement their studies.

Final-year students of the regional and urban planning degree undertake an eight-week internship in the planning field, where they gain exposure to the practical application of their knowledge in a work environment.
BACHELOR OF REGIONAL AND URBAN PLANNING (HONOURS)

The Bachelor of Regional and Urban Planning (Honours) provides graduates with the environmental, engineering, legal, economic, social and urban design skills required to work as planners throughout Australia and internationally.

Students develop the capacity to produce and critique environmental, economic, social, transport and urban design plans, utilise relevant acts and case law, implement planning regulations and policies, analyse data, assess social and environmental impacts, identify and resolve planning problems, communicate in written, oral and graphical form and resolve planning conflicts.

Graduate planners will have the knowledge and skills to design, allocate and manage land use, implement suitable governance, interpret planning law, implement and administer plans and proceed in a professional and ethical manner.

The distinctive features of this course include engineering and law units and a focus on sustainable regional and rural communities.

Professional recognition

Southern Cross University is undertaking staged accreditation for the degree from the Planning Institute of Australia (PIA) and has received interim accreditation until 2019. Graduates are eligible to apply for membership of PIA. Accreditation also enables the degree to be recognised worldwide.

Professional placement

At the end of the third year of study students undertake an eight-week (40 day equivalent) internship (work placement) in the planning field. The internship seeks to introduce students to the requirements of the working environment and to refine and practise workplace skills in a structured setting with the support of the University.

Students gain exposure to the practical application of their knowledge and skills in readiness to enter the workforce. The internship also provides students a structured framework to develop their generic workplace skills such as preparing a CV, addressing selection criteria and resolving conflict.

Major areas of study

The course incorporates cross disciplinary studies to equip graduates with an understanding of the social, environmental, economic and legal background required to practice as a professional planner. It provides integrated learning experiences in other disciplines including environmental science and management, engineering, law and social science, to prepare graduates for employment in a wide range of urban and regional planning positions.

In the final year, students undertake a planning research thesis or an impact assessment project. The thesis enables students to explore critical planning issues and gives them the opportunity to contribute to new knowledge in their chosen topic. The project enables students to hone their social and environment impact knowledge and skills. The practical application of planning skills suitable for the workforce will also come together in the final year of study through the capstone project.

Your career

Graduates can build careers in a range of planning fields including environmental protection, urban design, development assessment, housing, transport, health, sport and recreation, heritage and conservation and tourism. There are opportunities to work in federal, state and local governments, large development companies and private planning consultancies.

Planning is a growth industry with above average earnings, and employment has risen strongly over the last 10 years and is expected to continue growing. (joboutlook.gov.au)

Summary

<table>
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<th>Locations: Lismore</th>
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<td>Duration: 4 years full-time or 8 years part-time</td>
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<td>QTAC code: 054801</td>
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<td>Total units: 32</td>
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Gavin Powell
Contaminated Site Management – Project Manager
Environmental Resources Management Australia
Bachelor of Environmental Science

As a project manager for Environmental Resources Management Australia (ERM), Gavin Powell supervises environmental site investigations for government departments and multi-national companies such as Shell and Mobil.

“I am responsible for development of project proposals; communicating with clients, contractors and regulatory bodies; coordinating appropriate human resources for projects; providing technical support to field staff; budget control and more.”

Gavin began work in the contaminated site management team at ERM’s Newcastle office shortly after he finished his environmental science degree in 2007.

“Studying environmental science was one of the best choices I have ever made. SCU is a perfect place to study an environmental or related science degree. I attribute much of my people skills, my practical application of knowledge, report writing skills and my work ethic to the education I received at SCU, all of which are valuable traits as an environmental consultant.

“I didn’t know much about SCU before I arrived, but the North Coast people and uni lifestyle were a perfect fit for me.”
The Bachelor of Environmental Science produces graduates who can manage the environment for future generations and focuses on building scientific knowledge and practical skills in land, water, and flora and fauna conservation.

As well as lectures and tutorials, students undertake classes in the School's scientific laboratories equipped with advanced analytical equipment and supported by technical staff.

Field trips feature in many units offered in this course, with the University located near a variety of unique study environments, including significant wetlands and estuaries, forests, coastal and inland national parks, and urban and rural development. Students gain first-hand knowledge of a range of hands-on skills and environments through the field trips run throughout the course.

Graduates are eligible for membership of the Environment Institute of Australia and New Zealand.

Students can elect to complete an eight-week industry internship for practical experience, to supplement the theory and field work components of the course. Students gain industry experience in organisations across the environmental science spectrum including local, state or federal government agencies; private consultancies; or business enterprises in Australia or overseas.

**Coastal Management** provides insights into processes that affect our use of the coastal zone. Students explore the impact of climate change, land use planning, protected area management, economics, and people in the coastal environment.

**Environmental Resource Management** prepares graduates to work in areas such as protected area management, catchment management and environmental restoration. Students learn how to conduct wildlife surveys, conserve fauna and flora and rehabilitate degraded land for future generations.

**Fisheries and Aquaculture Management** integrates fisheries biology, stock management, habitat protection, and aquaculture studies with environmental management. Students focus on developing strategies to maintain a sustainable fishery/ aquaculture enterprise. Some third year subjects for this major will be taught as intensive residential courses at the National Marine Science Centre in Coffs Harbour.

Graduates are employed in national parks and protected area management, environmental protection, environmental impact assessment and monitoring, environmental education and interpretation, sustainable forestry, fisheries management, aquaculture, ecotourism, and land/river/coast care programs, and in the private sector and all tiers of government.

**Summary**

- **Locations:** Lismore, Distance Education*
- **Duration:** 3 years full-time or 6 years part-time
- **UAC code:** 334100
- **QTAC code:** 054001
- **Total units:** 24  | Indicated ATAR: 68  | Indicated OP: 13

*Distance education students attend compulsory residential workshops at Lismore campus.
BACHELOR OF FOREST SCIENCE AND MANAGEMENT

Forest management is a science concerned with the nature of forest ecosystems and best management of these systems – not only for timber but for biodiversity conservation, protection of catchments, storage of carbon and other essential functions.

The Bachelor of Forest Science and Management has been designed in consultation with a range of forestry stakeholders to meet a shortage of degree-qualified foresters.

Forestry graduates develop skills and an understanding of the multi-faceted aspects of sustainable resource management. They have the opportunity to specialise in small or large-scale plantations, restoration forestry, provision of environmental services, wood utilisation, forest inventory and planning, and international forestry.

Changes in the industry drive a continuing demand for degree-qualified foresters able to work in production, conservation and restoration forestry. Native forests continue to be important sources of high-value wood and require managers in public forest agencies and national parks where the focus is on fire management, weed and feral animal control and other important issues.

The course places an emphasis on field work and many trips to native and planted forest types. These provide an opportunity for students to learn key skills in forest science, in evaluating vegetation and planning management options. The Northern Rivers region offers a variety of accessible subtropical environments close to the Lismore campus.

Most lectures and tutorials are taught via online activities and video-linked or podcast virtual classes. The course includes compulsory residential teaching periods at Lismore campus that all students must attend. These occur toward the middle of sessions 1 and 2, and comprise approximately one to four days of lab classes and field work.

Professional recognition
Graduates are eligible for membership of the Institute of Foresters of Australia.

Professional placement
Students complete 16 weeks of practical workplace experience in a forestry-related area during their studies including in plantation and forested regions across Australia. Many students have found paid work experience through trainee positions with public or private forestry agencies.

Major areas of study
The course is distinctive for providing graduates with a strong foundation in forest science and incorporates field-based practicums and interactive tutorials. It also focuses on the business aspects of industrial forest management, while acknowledging the importance of alternatives such as small-scale farm forestry, mixed-species plantations and managed private native forests.

Your career
Forestry graduates are typically employed in the following fields: field forestry in plantation establishment and management; use of geographic information systems; natural resource management and environmental planning; native forest management, fire prevention and control; forest resource assessment; policy development; pest and disease management; agroforestry and farm forestry advisory services; forest growth modelling and yield prediction; protected area management; international forestry focused on developing countries, reserve management; and forestry research.

Summary

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<th>Locations: Lismore, Distance Education*</th>
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*Distance education students attend compulsory residential workshops at Lismore campus.
BACHELOR OF MARINE SCIENCE AND MANAGEMENT

This course develops practical skills in managing a range of tropical and subtropical coastal and marine environments focusing on the Solitary Islands, Cape Byron and Great Barrier Reef marine parks.

First year general science and most second year environmental science and fisheries units are based at Lismore campus. Some second year and most third year units are based at the University’s National Marine Science Centre (NMSC) in Coffs Harbour, situated near the Solitary Islands Marine Park. Units taught at the NMSC are usually run as intensive courses with a compulsory six-day on-campus period for all students. In these units, students study specialist topics such as ocean change biology, aquaculture, marine pollution and marine ecosystem management (read more about the NMSC on page 11).

Other highlights include units in marine mammal conservation and coral reef ecology. The coral reefs unit integrates the skills taught throughout the course and includes an extended residential period on a Great Barrier Reef Island.

The NMSC is part of the School of Environment, Science and Engineering. It provides students, academic and professional researchers practical opportunities in the study of marine science and management.

Professional recognition

Graduates are eligible for membership of the Environment Institute of Australia and New Zealand. During the course, students will have the option to gain a nationally recognised qualification in scientific scuba diving.

Professional placement

Students may elect to undertake an eight-week industry internship during their studies for practical experience to supplement the theory components of the course.

Major areas of study

While this course has no majors, it combines marine science with contemporary management concepts. The course includes the units Marine Mammals and Coral Reef on the Edge with a strong focus on conservation and management issues that challenge the marine environment. Additional specialist marine science units include Ocean Change Biology, Pollution of the Marine Environment, Successful Sampling and Marine Systems Science and Management.

Your career

Graduates may be employed within the public and private environmental sectors as consultants, marine park planners, marine biologists and ecologists, marine reserve officers, aquaculturalists, fisheries managers, project officers, technical officers, and state coordinators. Graduates also have opportunities to develop careers as marine researchers by undertaking marine research for Honours and postgraduate research degrees.

Summary

Locations: Lismore*, Distance Education#

Duration: 3 years full-time or 6 years part-time

UAC code: 334104

QTAC code: 054101

Total units: 24 | Indicative ATAR: 68 | Indicative OP: 13

*Lismore students complete the final-year units at the National Marine Science Centre in Coffs Harbour, which are delivered in intensive mode.

*Distance education students attend compulsory residential workshops at the Lismore campus and at the National Marine Science Centre in Coffs Harbour.
As regional manager for Wetland Care Australia, Cassie Price coordinates wetland conservation projects from Bundaberg to Kempsey and the adjacent parts of the Great Dividing Range.

“We work with grassroots community groups and farmers through to regional, state and federal government agencies as well as international groups like the World Wetland Network to protect, promote and restore Australian wetlands,” Cassie said.

“My degree transformed my thinking. I got more interested in fisheries management because I could see how far behind aquaculture was from an environmental perspective,” she said.

Cassie was also attracted to the University’s small size, the regional location of its Lismore campus and the practical components of its environmental degrees.

“Having that practical experience was really invaluable. My internship got me my first job.”
BACHELOR OF SCIENCE

The Bachelor of Science offers a program of study central to a broad education in science. The course includes a selection of majors from a range of disciplines that enable students to focus on their areas of interest.

Professional placement
Students can elect to complete an eight-week industry internship during their studies for practical experience to supplement the theory components of the course.

Majors

- **Biology** (some units are studied by distance education with on-campus residential workshops)
- **Engineering**
- **Environmental Chemistry**
- **Human Biology** (some units can also be studied at the Gold Coast or by distance education)
- **Information Technology** (units are available to study by distance education only)
- **Mathematics** (units are available to study by distance education only)
- **Psychology** (units are available to study at Coffs Harbour or by distance education)

The degree prepares graduates for continuing study and/or professional participation in diverse fields across public and private sectors and creates opportunities for careers as resource managers and sustainability advisors and planners, policy developers, as biologists and ecologists, or health scientists. Graduates also have opportunities to specialise in disciplines, or develop careers as researchers by undertaking postgraduate coursework or research.

Your career

The degree prepares graduates for continuing study and/or professional participation in diverse fields across public and private sectors and creates opportunities for careers as resource managers and sustainability advisors and planners, policy developers, as biologists and ecologists, or health scientists. Graduates also have opportunities to specialise in disciplines, or develop careers as researchers by undertaking postgraduate coursework or research.

Summary

- **Location:** Lismore
- **Duration:** 3 years full-time or 6 years part-time
- **UAC code:** 334116
- **QTAC code:** 054611
- **Total units:** 24 | **Indicative ATAR:** 68 | **Indicative OP:** 13

*Some units may only be available to study by distance education and some include residential workshops.*
This four-year full-time (or part-time equivalent) combined degree brings together the terrestrial aspects of environmental management with marine science and management. It aims to produce graduates who can manage the environment for future generations. The degree focuses on building scientific knowledge and practical skills in land and water management, and flora and fauna conservation, as well as having an emphasis on field training in a range of tropical and subtropical coastal and marine environments.

Professional recognition
Graduates are eligible for membership of the Environment Institute of Australia and New Zealand.

Professional placement
Students have the opportunity to undertake an eight-week industry internship during their studies for practical experience to supplement the theory components of the course.

Majors
Coastal Management provides insights into processes that affect our use of the coastal zone. Students explore the impact of climate change, land use planning, protected area management, economics, and people in the coastal environment.

Environmental Resource Management prepares graduates to work in areas such as protected area management, catchment management and environmental restoration. Students learn how to conduct wildlife surveys, conserve fauna and flora and rehabilitate degraded land for future generations.

Fisheries and Aquaculture Management integrates fisheries biology, stock management, habitat protection, and aquaculture studies with environmental management. Students focus on developing strategies to maintain a sustainable fishery/aquaculture enterprise. Some third year subjects for this major will be taught as intensive residential courses at the National Marine Science Centre in Coffs Harbour (read more about the NMSC on page 11).

Summary

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*Lismore students complete the final-year units at the National Marine Science Centre in Coffs Harbour, which are delivered in intensive mode.

*Distance education students attend compulsory residential workshops at the Lismore campus and at the National Marine Science Centre in Coffs Harbour.
ASSOCIATE DEGREE OF SCIENCE

The Associate Degree of Science is a two-year (full-time or part-time equivalent) course that equips students with knowledge and skills in areas including environmental, health and physical sciences such as engineering. The course includes a pathway to Southern Cross University’s Bachelor of Science, Bachelor of Environmental Science, Bachelor of Marine Science and Management, Bachelor of Forest Science and Management and Bachelor of Engineering (Honours) in Civil Engineering. Graduates of the Associate degree may receive up to two years’ credit (advanced standing) into their Bachelor degree.

The Diploma of Science (new in 2016), a one year (full-time or part-time equivalent) course, is also available as an entry point, equipping students with foundational knowledge and skills. It is a pathway to the Associate degree and offers up to one year of credit into the above Bachelor degrees.

Graduates can seek para-professional work in a range of industries, including positions as field assistants, laboratory assistants, revegetation officers and environmental monitors.

These courses are offered by SCU College which provides students with a highly supportive study environment.

For more information visit scu.edu.au/scucollege

Equipment and facilities

Depending on their chosen degree, students in the School of Environment, Science and Engineering have access to laboratories on Lismore campus across a range of scientific disciplines.

Laboratories feature advanced analytical equipment, specifically for geochemistry, microscopy, aquaculture, genetic analysis, wood science and Geographic Information Systems (GIS).

Field equipment includes boats and 4WD vehicles, fish and animal sampling equipment, sediment samplers, diving equipment, underwater video recorder, geotechnical and geochemical data collection equipment, and a portable weather station and data loggers.

SCU also operates the National Marine Science Centre (NMSC) in Coffs Harbour, on the northern side of the city, in walking distance to Charlesworth Bay, and adjacent to the Solitary Islands Marine Park, a protected marine habitat.

The NMSC provides the perfect setting for third-year marine science students and researchers to undertake field work. Facilities include a flow-through seawater supply system that supplies labs, tank farm, hatchery and aquarium room; aquaculture farm; broodstock facility and hatchery; and a survey and research vessel providing a platform for scuba diving, water and sediment sampling and fish collection.

Civil and mechanical engineering students (see separate brochure) have access to computer labs with specialist engineering software and state-of-the-art laboratories covering a range of sub-disciplines including materials conditioning and testing, concrete and structures testing, fluids/hydraulics testing, soils/geotechnical testing, and mechanics and physics. The laboratories are fully equipped with advanced analytical equipment to enable effective practical teaching and high level experimental research.
Key dates for 2016 entry

SCU has a teaching calendar of three sessions. Depending on the course of study, this can enable students to spread their study load, or to accelerate and complete their degree in less time than the usual duration indicated on the course pages.

All dates in the table opposite are provisional only and may be subject to change. For the most up-to-date information visit the SCU teaching calendar page at: scu.edu.au/teachingcalendar

UAC and QTAC dates may also be subject to change. Please refer to their websites. Visit: www.uac.edu.au www.qtac.edu.au

Also note that late UAC and QTAC applications incur an extra fee.

Applying to study on campus
For full details go to: scu.edu.au/howtoapply
To study on campus, either as a full-time or part-time student, you will need to apply online through either the Universities Admission Centre (UAC) or Queensland Tertiary Admissions Centre (QTAC) – either can process your application.

Applying to study by distance education
To study by distance education, you can apply online direct to Southern Cross University. scu.edu.au/howtoapply
E: futurestudent@scu.edu.au
Freecall: 1800 626 481

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

5 steps to SCU

1. Choose a course

   scu.edu.au/courses

2. Find out more

   campustours@scu.edu.au

3. Apply

   scu.edu.au/howtoapply

4. Accept your offer

   scu.edu.au/gettingstarted

5. Enrol in units

   scu.edu.au/enrol